



Perinatal, Infant and Maternal Mortality in Western Australia

5 YEAR COHORT OF 2002 - 2006 BIRTHS

December 2008

**Maternal and Child Health Unit
Data Collection and Analysis
Information Management and Reporting Directorate
Health Information Division**

**Department of Health
Western Australia**

Statistical series number 77

ISSN: 0816-2999

Acknowledgments

The authors acknowledge the contribution of many people for input essential to this document.

- The midwives of Western Australia for their cooperation in providing the data related to all birth incidences;
- The Registry of Births, Deaths and Marriages for providing information on deaths of liveborn infants;
- The Australian Bureau of Statistics for population estimates;

Further Information

Enquiries or comments on this publication and/or requests for additional information should be addressed to –

Principal Consultant, Statutory Mortality Committees
Data Collection and Analysis
Information Management and Reporting Directorate
Department of Health Western Australia
189 Royal Street
EAST PERTH WA 6004

Telephone: (08) 9222 4262

Facsimile: (08) 9222 4236

Email: vivien.gee@health.wa.gov.au

Citation

The citation below should be used in reference to this publication.

Gee V and Ernstzen AN. (2008). Perinatal, Infant and Maternal Mortality in Western Australia, 2002-2006. Department of Health. Perth, Western Australia.

Table of Contents

Executive Summary	6
1. Introduction	8
2. Births In Western Australia In 2002-2006	9
2.1 Births Incidence	9
2.2 Crude Birth Rate	9
2.3 Condition at Birth	9
2.4 Aboriginality Of Mother	9
2.5 Place of Birth	9
2.6 Maternal Place of Residence	9
2.7 Maternal Age	9
3. Perinatal Mortality in Western Australia, 2002-2006 Birth Cohort	11
3.1 Perinatal Deaths	11
3.1.1 Maternal Age and Parity	12
3.1.2 Birthweight and Gender	12
3.1.3 Cause of Death and Plurality	12
3.2 Fetal Deaths	12
3.2.1 Birthweight and Gestational Age	12
3.2.2 Gestational Age and Plurality	12
3.2.3 Cause and Time of Death for Fetal Deaths	12
3.2.4 Cause of Death and Aboriginality Of Mother	13
3.3 Neonatal Deaths	13
3.3.1 Birthweight and Gestational Age	13
3.3.2 Gestational Age and Plurality	13
3.3.3 Cause of Death and Age at Death	13
3.3.4 Cause of Death and Aboriginality of Mother	13
4. Infant Mortality in Western Australia, 2002-2006 Birth Cohort	14
4.1 Infant Deaths	14
4.1.1 Maternal Age and Parity	15
4.1.2 Birthweight and Gender	15
4.1.3 Gestational Age and Plurality	15
4.2 Post-Neonatal Deaths	15
4.2.1 Cause of Death and Age at Death	15
4.2.2 Cause of Death and Aboriginality of Mother	15
5. Maternal Mortality in Western Australia 2002-2006	16
5.1 Introduction	16
5.2 Classification of Maternal Deaths	16
5.3 Maternal Deaths in 1981-2006	16
5.4 Trend of Maternal Mortality	17
5.5 Long Term Trend of Maternal Mortality	17
5.6 National and International Comparisons	18
6. References	19
7. Definitions	36
Appendix A	37
Appendix B	38
Appendix C	39

List of Figures

1. Crude birth rate, perinatal and infant mortality by health region of maternal residence for births in Western Australia, 2002-2006	10
2. Perinatal, fetal and neonatal mortality in Western Australia, 2002-2006	12
3. Perinatal mortality and Aboriginality of mother in Western Australia, 2002-2006	12
4. Infant, neonatal and post-neonatal mortality in Western Australia, 2002-2006	14
5. Infant mortality and Aboriginality of mother in Western Australia, 2002-2006	14
6. Trends in maternal mortality in Western Australia, 1931-2006	18

List of Tables

Births

1. Live and total births by health region of maternal residence in Western Australia, 2002-2006	20
2. Live birth count and crude birth rate by Aboriginality of mother in Western Australia, 1992-2006	22
3. Percentages of fetal, neonatal and post-neonatal deaths and fetal, perinatal and infant death rates by health region of maternal residence in Western Australia, 2002-2006	22
4. Number and rates of fetal, neonatal and perinatal deaths by Aboriginality of mother in Western Australia, 2002-2006	23
5. Fetal, neonatal and perinatal death rates by Aboriginality of mother in Western Australia, 1992-2006	23

Perinatal Mortality

6. Condition at birth by gender of births in Western Australia, 2002-2006	24
7. Condition at birth by Aboriginality of mother for births in Western Australia, 2002-2006	24
8. Condition at birth by place of birth for births in Western Australia, 2002-2006	24
9. Maternal age by parity of perinatal deaths in Western Australia, 2002-2006	25
10. Maternal age by Aboriginality of mother for all births in Western Australia, 2002-2006	25
11. Birthweight by gender of perinatal deaths in Western Australia, 2002-2006	26
12. Cause of death by plurality of perinatal deaths in Western Australia, 2002-2006, PSANZ-PDC classification of perinatal deaths	26
13. Cause of death by plurality of neonatal deaths in Western Australia, 2002-2006, PSANZ-NDC classification of neonatal deaths	27
14. Fetal, neonatal and perinatal deaths by performance of autopsy in Western Australia, 2002-2006	27
15. Birthweight by gestational age of fetal deaths in Western Australia, 2002-2006	27
16. Birthweight by gestational age of livebirths in Western Australia, 2002-2006	28
17. Birthweight by gestational age of all births in Western Australia, 2002-2006	28
18. Gestational age by plurality of fetal deaths in Western Australia, 2002-2006	29
19. Cause of death by time of death of fetal deaths in Western Australia, 2002-2006	29
20. Cause of death by Aboriginality of mother of fetal deaths in Western Australia, 2002-2006	29
21. Birthweight by gestational age of neonatal deaths in Western Australia, 2002-2006	30
22. Gestational age by plurality of neonatal deaths in Western Australia, 2002-2006	30
23. Cause of death by age at death of neonatal deaths in Western Australia, 2002-2006	31
24. Cause of death by Aboriginality of mother of neonatal deaths in Western Australia, 2002-2006	32

Infant Mortality

25. Neonatal, post-neonatal and infant deaths by Aboriginality of mother in Western Australia, 2002-2006	32
26. Neonatal, post-neonatal and infant death rates by Aboriginality of mother in Western Australia, 1992-2006	33
27. Maternal age by parity of infant deaths in Western Australia, 2002-2006	33
28. Birthweight by gender of infant deaths in Western Australia, 2002-2006	34
29. Gestational age by plurality of infant deaths in Western Australia, 2002-2006	34
30. Cause of death by age at death of post-neonatal deaths in Western Australia, 2002-2006	35
31. Cause of death by Aboriginality of mother of post-neonatal deaths in Western Australia, 2002-2006	35

Executive Summary

The Maternal and Child Health data collections record perinatal, infant and maternal deaths on an ongoing basis in Western Australia. This Report presents an overview of mortality data for the five year period from 2002 to 2006, categorised by mortality grouping. It also describes trends over the fifteen year period from 1992 to 2006.

Births in Western Australia

- During 2002-2006 period 130,640 babies were born to 128,567 women with 99.3% of births being liveborn.
- Births occurred in hospital for 99.4% of women and 74.5% of women were resident in the Perth Metropolitan area.
- The crude birth rate of 13.1 per 1000 total population for the period has decreased from 15.2 per 1000 in 1992. For Aboriginal women the crude birth rate reduced from 26.5 per 1000 in 1992 to 24.5 per 1000 in 2006.
- Mothers in their teenage years accounted for 5.5% of births and women aged 40 years or more represented 3.0%.
- Aboriginal women represented 6.4% of all mothers and the crude birth rate for these women (23.4 per 1000) was almost twice that of the overall rate (13.1 per 1000) for the 5 year period from 2002-2006.

Perinatal Mortality

- Perinatal deaths during 2002-2006 consisted of 955 fetal deaths (7.3 per 1000 total births) and 307 neonatal deaths (2.4 per 1000 livebirths), giving a perinatal mortality rate of 9.7 per 1000 total births.
- The majority of fetal deaths occurred during the antenatal period before onset of labour (51.4%) with the remainder being either intrapartum deaths (30.7%) or where time of death was unknown (16.9%). Most perinatal deaths were related to prematurity and/or congenital anomalies.
- Perinatal mortality increases with decreased birthweight, decreased gestational age and among multiple births.
- The neonatal death rate among babies of Aboriginal mothers over the 2002-2006 period (7.8 per 1000) was almost 4 times that of babies of non-Aboriginal mothers (2.0 per 1000).
- The perinatal death rate among babies of Aboriginal mothers over the 2002-2006 period (22.1 per 1000), was 2.5 times that of babies of non-Aboriginal mothers (8.8 per 1000).

Infant Mortality

- There were 483 infant deaths identified during the 2002-2006 period, providing an infant mortality rate of 3.7 per 1000 livebirths. This rate has reduced from 6.8 per 1000 in 1992. For babies of Aboriginal women the rate reduced from 23.4 per 1000 in 1992 to 17.0 per 1000 in 2006.
- Among babies of Aboriginal mothers, the infant mortality rate of 13.0 per 1000 was more than four times that of the rate for babies of non-Aboriginal women (3.1 per 1000) during the 5 year period. This may be attributed to the high proportion of deaths among babies of Aboriginal mothers in the post-neonatal period (5.2 per 1000 livebirths), being nearly five times the rate recorded for babies of non-Aboriginal women (1.1 per 1000).
- Causes of infant death are principally Sudden Infant Death Syndrome (SIDS), lethal congenital anomaly, low birthweight and infection. Among babies of Aboriginal women, Sudden Infant Death Syndrome (SIDS) (18.6%) and infection (14.0%) were the principal known causes of death during the post-neonatal period.

Maternal Mortality

- There were 10 maternal deaths for the period 2002-2006 giving a maternal mortality rate of 7.7 per 100,000 livebirths in Western Australia. This calculation includes only direct and indirect maternal deaths and excludes incidental maternal deaths.
- Australian national reporting measures maternal mortality based on reported direct and indirect maternal deaths. For the period 1992-2006, where classification of deaths is known in Western Australia, the maternal mortality rate was 6.5 per 100,000 livebirths and the maternal mortality ratio was 6.6 per 100,000 women who gave birth.
- During the period 1992-2006, twenty nine maternal deaths were reported in Western Australia. In accordance with prescribed definitions (page 11) these deaths have been classified as seventeen direct, eight indirect and four incidental maternal deaths.
- Long term trend data for Western Australia shows a dramatic improvement in maternal mortality rates which halved every ten years from 1931 to 1980. Maternal mortality since that time averaged 1.6 maternal deaths per year.
- The Western Australian maternal mortality rate of 6.5 per 100,000 livebirths for the 26 year period (1981-2006) was calculated including all maternal deaths. Even so, this rate compares favourably with a national maternal mortality rate of 8.3 per 100,000 livebirths and a national maternal mortality ratio of 8.4 per 100,000 women who gave birth for the 3 year period 2003-2005.

1. Introduction

Aims

This report is a 5 year cohort addition to the continuing series of Department of Health reports examining perinatal and infant mortality in Western Australia since 1984. The aim of compiling the data in this report is to measure relationships between mortality among infants and variables such as maternal ethnic status, age, parity, conjugal state and infant plurality, gestation and birthweight. The Report also includes information about maternal mortality in Western Australia. Early reports in this series were published annually (1984 to 1995), while later reports have been published triennially since 1996.

This report relates to a cohort of childbearing women and their babies, born in the period 2002-2006 and includes information on birth outcomes to the age of twelve months. Prior to 1984, mortality data was calculated according to year of death rather than year of birth.

Epidemiological studies in the area of infant mortality are naturally long term and this report compiles basic factual data which will assist research aimed at limiting human loss in future years.

Data Sources

The Western Australian Midwives' Notification System formed the basis of this 5 year report of perinatal, infant and maternal mortality¹.

Information relating to deaths was obtained from the Registry of Births, Deaths and Marriages, the Hospital Morbidity Data System, and the Australian Bureau of Statistics (Western Australian Office). As far as can be determined from the above-mentioned sources, the data relating to the number of deaths in this report is complete. Data for 2006 may be considered preliminary.

Information on deaths of Western Australians who died outside the State was not received by this Department and therefore could not be included in this Report.

A computer file of deaths was created and linked to the Midwives' Notification System. This provided a comprehensive database from which this report was written. After all follow up procedures were complete, linkage was 100% successful.

Intercensal estimates of total population of Western Australia and Statistical Divisions, and female populations by age were supplied by the Australian Bureau of Statistics (Western Australian Office).

2. Births in Western Australia in 2002-2006

2.1 Births incidence

Notifications by midwives received by this department indicate that 130,640 babies (Table 1) were born to 128,567 women during the 2002-2006 period. This report includes statistics on all births of 20 weeks or more gestation, or a birthweight of 400 grams or more¹.

2.2 Crude birth rate

An overall crude birth rate of 13.1 per 1000 total population was identified for all Western Australian women during 2002-2006, more than half that recorded for Aboriginal women (23.4 per 1000). The crude birth rate has decreased from 15.2 per 1000 in 1992 to 13.8 per 1000 in 2006 (Table 2). The crude birth rates are highest in those health regions with a higher proportion of Aboriginal people (Figure 1).

2.3 Condition at birth

Analysis of the condition at birth showed 129,685 (99.3%) babies were liveborn and 955 (0.7%) babies were stillborn. There were 8,207 (98.6%) livebirths and 69 (1.4%) fetal deaths to Aboriginal women providing a fetal death rate of 14.4 per 1000 total births. For non-Aboriginal women there were 121,478 (99.3%) livebirths and 835 (0.7%) fetal deaths providing a fetal death rate of 6.8 per 1000 total births (Table 7).

2.4 Aboriginality of mother

Examination of births showed that 8,327 (6.4%) babies were born to Aboriginal women, and 122,313 (93.6%) to non-Aboriginal women (Table 7).

2.5 Place of birth

The majority of births, 129,854 (99.4%), occurred either in hospital or on route to a hospital. Of these, births in metropolitan hospitals numbered 103,529 (79.7%) and non-metropolitan hospital births totaled 26,325 (20.3%). There were 786 (0.6%) planned supervised homebirths (Table 8).

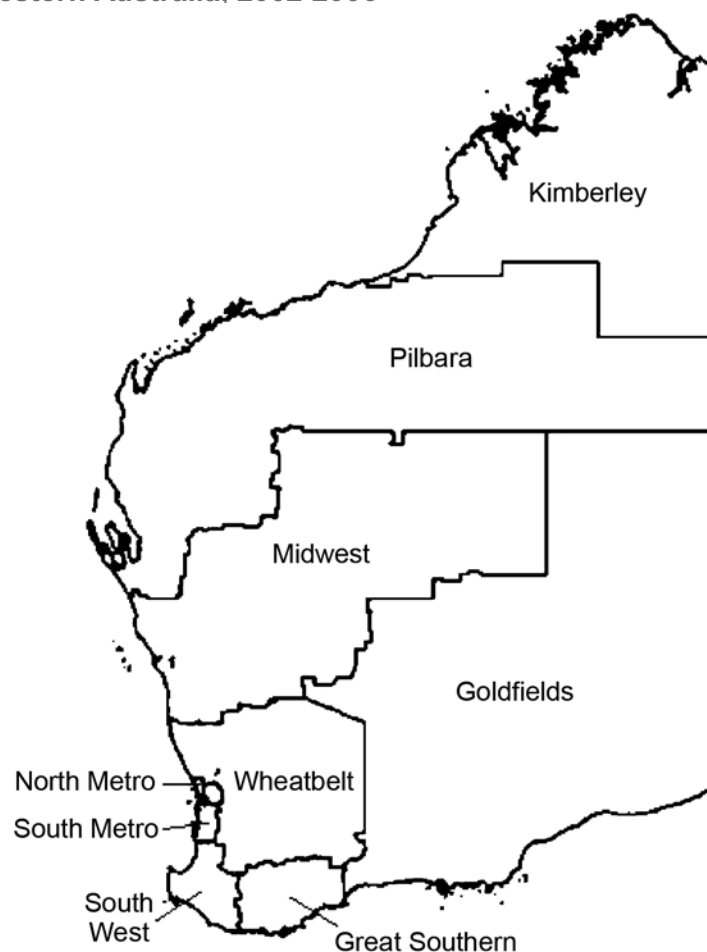
2.6 Maternal place of residence

Assessment of usual place of residence of birth mothers throughout the state shows that the majority of births 97,360 (74.5%) were to women who lived within one of the Perth Metropolitan Health Regions (Table 1).

2.7 Maternal age

Consideration of maternal age in five-year age groups shows that the highest percentages of women who gave birth were in the 30 to 34 year age category (32.5%) followed by the 25 to 29 year age category (27.3%). Women in their teenage years accounted for 5.5% of total women who gave birth. Almost a quarter (24.2%) of Aboriginal women who gave birth were teenage women (less than 20 years of age) in contrast with non-Aboriginal women of whom 4.3% were teenagers. Women aged 40 years or more represented 3.0% of all women confined (Table 10).

Figure 1: Crude Birth Rate, Perinatal and Infant Mortality by Health Region of maternal residence for births in Western Australia, 2002-2006



Health Region	Crude Birth Rate	Perinatal Mortality	Infant Mortality
Kimberley	19.3	20.2	11.7
Pilbara	17.9	11.9	5.5
Midwest	14.5	9.6	4.8
Wheatbelt	12.8	7.2	3.9
Goldfields	17.1	11.4	4.1
South West	12.7	8.8	2.9
Great Southern	13.0	13.2	4.8
North Metro	12.6	8.6	2.8
South Metro	12.6	9.6	3.9
Total WA	13.1	9.7	3.7

Crude Birth Rate is the number of livebirths per 1000 total population

Perinatal Mortality is calculated per 1000 total births

Infant Mortality is calculated per 1000 livebirths

3. Perinatal Mortality in Western Australia, 2002-2006 Birth Cohort

3.1 Perinatal deaths

There were 1,262 perinatal deaths identified in the 2002-2006 birth cohort providing a perinatal mortality rate of 9.7 per 1000 total births (Table 4 and Figure 2).

Trend data on individual years shows that there has been little variation, over a fifteen year period, in the overall rate from 10.9 per 1000 in 1992 to 9.5 per 1000 in 2006. The rate for babies of Aboriginal mothers was 24.9 per 1000 in 2006, this rate has varied over the period being as high as 27.2 per 1000 in 1992 and as low as 16.5 per 1000 in 2004 (Figure 3).

Figure 2: Fetal, neonatal and perinatal death rates in Western Australia, 1992-2006

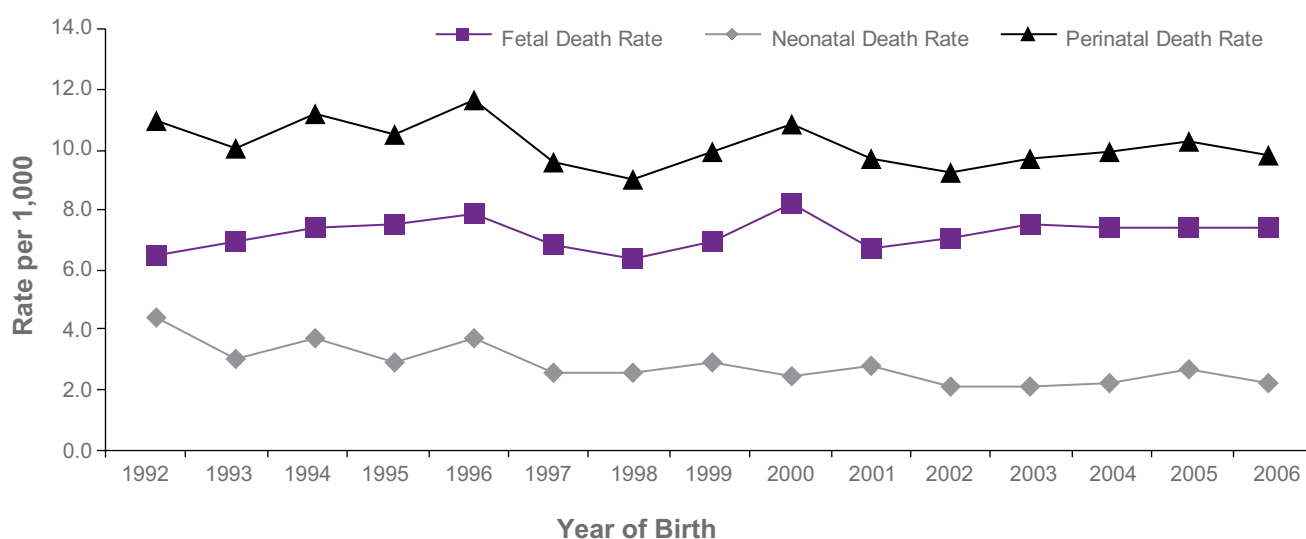
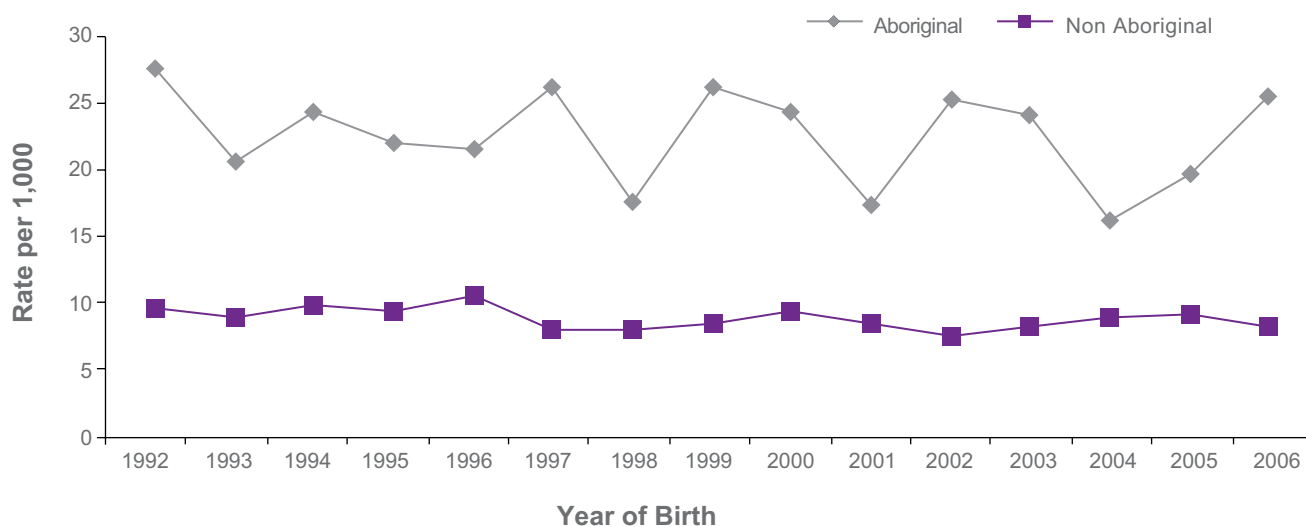


Figure 3: Perinatal death rates and Aboriginality in Western Australia, 1992-2006



3.1.1 Maternal age and parity

Perinatal deaths of babies born to first time mothers numbered 542 with a rate of 10.0 per 1000 total births. Of these, 90 were born to teenage mothers with a rate of 15.1 per 1000. As a large proportion of births to teenage mothers are their first birth this rate is similar to the overall rate of perinatal deaths to babies of teenage mothers (14.9 per 1000) (Table 9).

3.1.2 Birthweight and gender

More than three quarters of the perinatal deaths were of low birthweight providing a rate of 108.8 per 1000 total births. The ratio of male to female perinatal deaths was 1.11:1 (Table 11).

3.1.3 Cause of death and plurality

Perinatal deaths in Western Australia have been classified, retrospectively, in accord with the Perinatal Society of Australia and New Zealand's Perinatal Death Cause (PSANZ-PDC)². This classification system indicated that congenital abnormality was the cause of 27.4% of deaths with a further 19.6% being spontaneous preterm (<37 weeks). A further 14.4% were unexplained antepartum fetal deaths. Among multiple birth perinatal deaths, 41.7% were attributed to spontaneous preterm birth (<37 weeks) and 37.7% to specific perinatal conditions. A further 9.9% of multiple birth perinatal deaths were due to congenital abnormalities incompatible with life. (Table 12).

Information relating to cause of death was gained from an autopsy for 61.2% of perinatal deaths while 37.5% of perinatal deaths were not examined. It is not known whether or not an autopsy was performed for the remaining 1.3% of deaths (Table 14).

3.2 Fetal deaths

There were 955 fetal deaths in Western Australia during 2002-2006 providing a fetal death rate for the period in Western Australia of 7.3 per 1000 total births (Table 3).

Fetal death proportions relating to the Health Region of maternal residence are shown in Table 1. Among babies of Aboriginal mothers the fetal death rate was more than double (14.4 per 1000) that for babies of non-Aboriginal women (6.8 per 1000) (Table 4).

3.2.1 Birthweight and gestational age

There was a decrease in the fetal death rate as birthweight increased, except among babies with birthweight in excess of 4000 grams. For low birthweight babies (weighing less than 2500 grams) the rate of fetal death was 84.3 per 1000. As gestation increased the fetal death rate fell. The rate of 499.1 per 1000 for fetal deaths at 20-27 weeks was in sharp contrast to the rate of 1.5 per 1000 for births at 37-43 weeks (Table 15).

3.2.2 Gestational age and plurality

The fetal death rate for all multiple births (19.7 per 1000 total births) remains higher than the fetal death rate for all singleton births (6.9 per 1000). The rate of fetal death among babies of 28-32 weeks gestation for singleton births (92.8 per 1000) was almost 4 times that for multiple births (24.1 per 1000). Among babies born of 20-27 weeks gestation singleton births had a higher fetal mortality rate (550.4 per 1000) than did multiple births (269.6 per 1000)(Table 18).

3.2.3 Cause and time of death for fetal deaths

Of the 955 fetal deaths during the 5 year period there were 491 (51.4%) antepartum deaths and 287 (30.1%) intrapartum deaths. It was not known when the remaining 177 (18.5%) fetal deaths occurred. The principal causes were those related to conditions of extremely low birth weight (341, 35.7%) and lethal congenital anomaly (261, 27.3%). An additional 247 (25.9%) fetal deaths were not able to be classified for cause (Table 19).

3.2.4 Cause of fetal death and Aboriginality of mother

Among fetal deaths to women recorded as Aboriginal the proportion of deaths due to lethal congenital anomaly (11.7%) was lower than for fetal deaths of babies born to non-Aboriginal women (29.6%). Extremely low birthweight contributed to a higher proportion of fetal deaths among babies born to Aboriginal women (44.2%) than for those born to non-Aboriginal women (34.5%) (Table 20).

3.3 Neonatal deaths

There were 307 neonatal deaths in Western Australia during the 2002-2006 5 year cohort leading to a neonatal mortality rate of 2.4 per 1000 livebirths (Table 21). For babies of Aboriginal women the neonatal mortality rate was 7.8 per 1000 which was almost four times the rate recorded for babies of non-Aboriginal women (2.0 per 1000) (Table 25).

3.3.1 Birthweight and gestational age

In general the neonatal death rate decreased as birthweight increased until birthweight reaches 4000 grams. All neonatal deaths with gestational age of 27 or less weeks had a birthweight of less than 1500 grams. Overall nearly three quarters (223, 72.6%) of all neonatal deaths were of low birthweight (Table 21).

3.3.2 Gestational age and plurality

Consideration of neonatal death rates by plurality for all gestational ages shows a marked difference, the singleton rate (1.9 per 1000 livebirths) being only one ninth the rate for multiple births (17.4 per 1000) (Table 22).

3.3.3 Cause of death and age at death

The principal causes of neonatal death of livebirths aged less than a day were attributed to low birthweight (66.2%) and lethal congenital anomaly (26.6%). Early neonatal deaths, those who died at less than 8 days, numbered 237 (77.2%) of all neonatal deaths (Table 23).

3.3.4 Cause of death and Aboriginality of mother

Among neonatal deaths where the mother was recorded as Aboriginal, the proportion of deaths due to factors associated with low birthweight (60.9%) was similar to that for babies of non-Aboriginal women (50.6%). The proportion of neonatal deaths among babies of Aboriginal mothers attributed to lethal congenital anomaly (15.6%) was half the proportion for those identified as non-Aboriginal (31.3%) (Table 24).

4. Infant Mortality in Western Australia, 2002-2006 Birth Cohort

4.1 Infant deaths

There were 483 infant deaths of the 129,685 livebirths in the 2002-2006 period. Of these, 307 (63.6%) were neonatal deaths and 176 (36.4%) were post-neonatal deaths. The infant mortality rate for Western Australia in 2002-2006 was 3.7 per 1000 livebirths (Table 25). Over the 15 year period from 1992-2006 the infant mortality rate has almost halved from 6.8 per 1000 in 1992 to 3.7 per 1000 in 2006 (Table 26 and Figure 4).

Infant mortality among babies born to Aboriginal women (13.0 per 1000) during the period was more than four times that for babies born to non-Aboriginal women (3.1 per 1000) (Table 25). Although infant mortality rates among both groups have reduced overall, the rate for babies of Aboriginal mothers in 2006 remains more than six times the rate for babies of non-Aboriginal mothers being 17.0 per 1000 and 2.8 per 1000 respectively in 2006 (Table 26 and Figure 5).

Figure 4: Neonatal, post-neonatal and infant death rates in Western Australia, 1992-2006

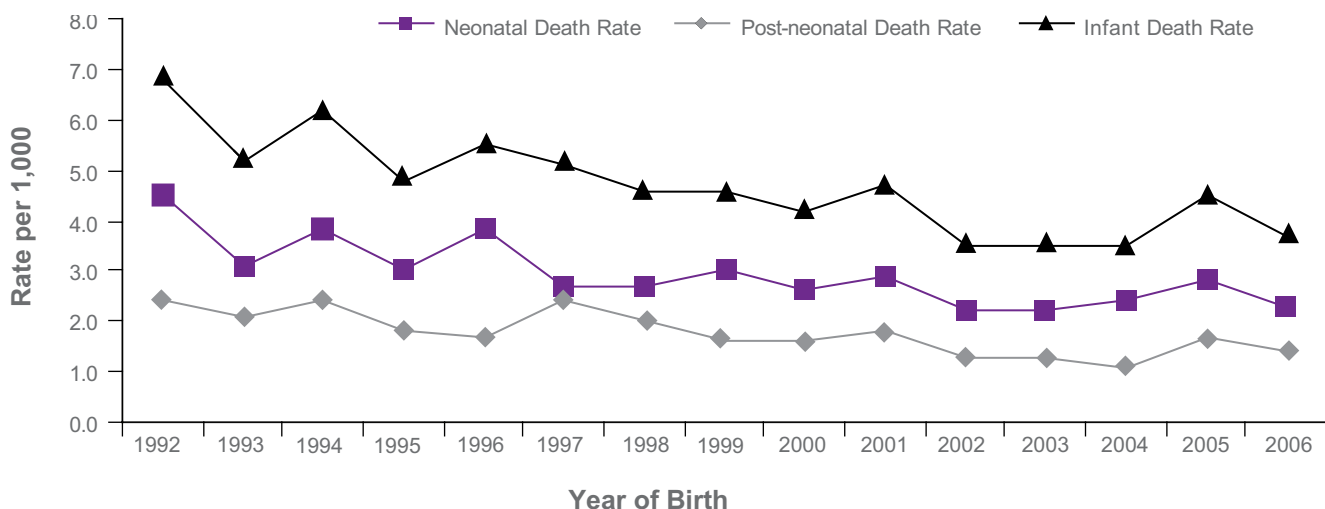
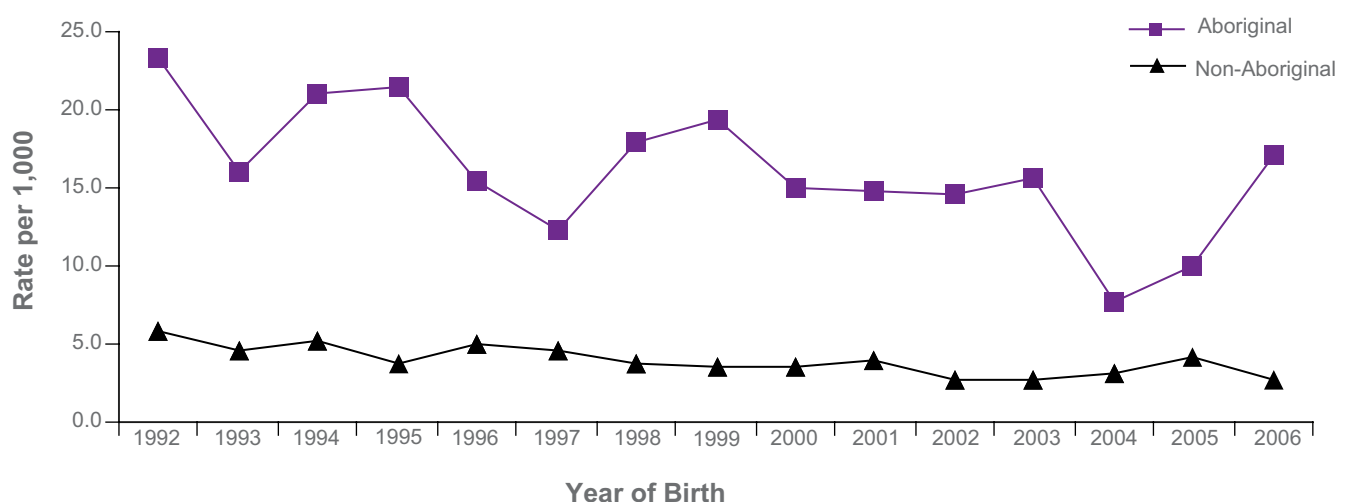


Figure 5: Infant death rates and Aboriginality in Western Australia, 1992-2006



4.1.1 Maternal age and parity

Of the 483 infant deaths in the 2002-2006 period 56 (11.6%) were among babies of teenage mothers. Of these, 40 (71.4%) were the first born child and 16 (28.0%) were born to mothers having a parity of one or two. Infant death rates among babies of teenage mothers is more than double that of older mothers (Table 27).

4.1.2 Birthweight and gender

Low birthweight (<2500 grams) was present in 286 (59.2%) infant deaths during the 2002-2006 quinquennium. Male babies suffered higher rates of infant death than female babies, in the low birthweight category (12.0 per 1000 versus 8.2 per 1000) while overall the rates were similar (3.7 per 1000 for both male and female infant deaths). The mortality rates for both male and female infants decreased as birthweight increased with the exception of births greater than 4000 grams (Table 28).

4.1.3 Gestational age and plurality

The rate of infant mortality among multiple births (19.6 per 1000 livebirths) was six times the rate of singleton births (3.2 per 1000 livebirths) but this is entirely accounted for by the excess mortality in multiple birth babies with gestational age of 20-27 weeks (Table 29).

4.2 Post-neonatal deaths

There were 176 post-neonatal deaths among the 129,685 livebirths during the 2002-2006 time period, providing a rate of 1.4 per 1000 livebirths (Table 25).

The post-neonatal mortality rate for babies of Aboriginal women was 5.2 per 1000 livebirths, being more than four times the rate of 1.1 per 1000 for babies of non-Aboriginal women (Table 25).

Post-neonatal deaths in relation to Health Region of maternal residence are shown in Table 3. It should be noted however, that due to small numbers of births in some Regions the rates may vary significantly from year to year and should be interpreted with caution, even for the 5 year period.

4.2.1 Cause of death and age at death

Among post neonatal deaths where cause is known, the principal causes of death were Sudden Infant Death Syndrome (SIDS) (15.3%), lethal congenital anomaly (17.0%) and infection (10.2%). There were a further 44 babies (25.0%) for whom cause of post neonatal death was classified as other (Table 30).

4.2.2 Cause of death and Aboriginality of mother

Among post-neonatal deaths of babies born to Aboriginal women almost a fifth (18.6%) were attributed to SIDS, with infection (14.0%) being also a major cause. The proportion of deaths resulting from lethal congenital anomalies (9.3%) was lower among babies of Aboriginal mothers than the proportion for babies of non-Aboriginal women (19.5%) (Table 31).

5. Maternal Mortality in Western Australia 2002-2006

5.1 Introduction

Maternal mortality as defined by the World Health Organization is the death of a woman during pregnancy, childbirth or in the 42 days of the puerperium. Classification of deaths in Western Australia is defined in accordance with the NHMRC Triennial Reports on Maternal Mortality for Australia³. Thus, maternal mortality is the death of a woman during pregnancy, childbirth or the puerperium. The puerperium normally refers to the 42 days after pregnancy, but deaths occurring after 42 days are also included if their origin and illness relates to the pregnancy and/or birthing process.

This definition includes deaths from abortion and ectopic pregnancy, but excludes deaths from assisted reproduction technology where pregnancy has not yet occurred.

5.2 Classification of maternal deaths

Maternal mortality as defined by the World Health Organisation, provides for deaths to be classified into three groups³:

Direct maternal deaths – those resulting from obstetric complications of the pregnant state (pregnancy, labour and puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above – they are complications of the pregnancy itself (for example, eclampsia, amniotic fluid embolism, rupture of the uterus, postpartum haemorrhage).

Indirect obstetric deaths – resulting from pre-existing disease or disease that developed during pregnancy and was not due to direct obstetric causes, but which was aggravated by the physiological effects of pregnancy (for example, heart disease, pulmonary embolism, diabetes, renal disease).

Incidental deaths – resulting from conditions occurring during pregnancy, where the pregnancy is unlikely to have contributed significantly to the death, although it is sometimes possible to postulate a distant association (for example, road accidents, some malignancies).

Maternal mortality rates are calculated per 100,000 live births.

5.3 Maternal deaths in 1981-2006

During the period 1981–2006 there were 42 maternal deaths. These include direct, indirect and incidental. However, a paucity of information available in the data collection means that the WHO Classification can only be applied to the 29 maternal deaths reported over the period from 1992 to 2006. These 29 deaths, based on information from death certificates and classified in accord with prescribed definitions, would appear to be 17 direct maternal deaths, 8 indirect maternal deaths and 4 incidental maternal deaths.

Of the 17 direct maternal deaths, five occurred at the time of delivery with the principal cause being haemorrhage. The remaining 12 deaths occurred either during pregnancy with complications arising from ruptured ectopic pregnancy or in the post delivery period with causes including hypertensive disorders, pulmonary embolus, obstetric haemorrhage and septicaemia.

Causes of the eight indirect deaths included cerebral haemorrhage, amniotic fluid embolus during pregnancy, psychiatric causes, septicaemia and cardiac disorders.

The cause of the four deaths classified as incidental maternal deaths included motor vehicle accidents and manslaughter during pregnancy.

5.4 Trend of maternal mortality

In accordance with Australian national reporting, measurement of maternal mortality may more effectively be determined by calculation of maternal mortality rates based on reported direct and indirect maternal deaths.

Years	Direct & Indirect Maternal Deaths	Number of live births in WA	Maternal Mortality Rate per 100,000
1992-1996	7	126,192	5.5
1997-2001	8	125,999	6.3
2002-2006	10	129,685	7.7
1992-2006	25	381,875	6.5

Alternatively a similar outcome may be achieved by calculation of a maternal mortality ratio based on the numbers of women reported to have given birth.

Years	Direct & Indirect Maternal Deaths	Number of women who gave birth in WA	Maternal Mortality Ratio per 100,000
1992-1996	7	125,296	5.6
1997-2001	8	124,851	6.4
2002-2006	10	128,567	7.8
1992-2006	25	378,725	6.6

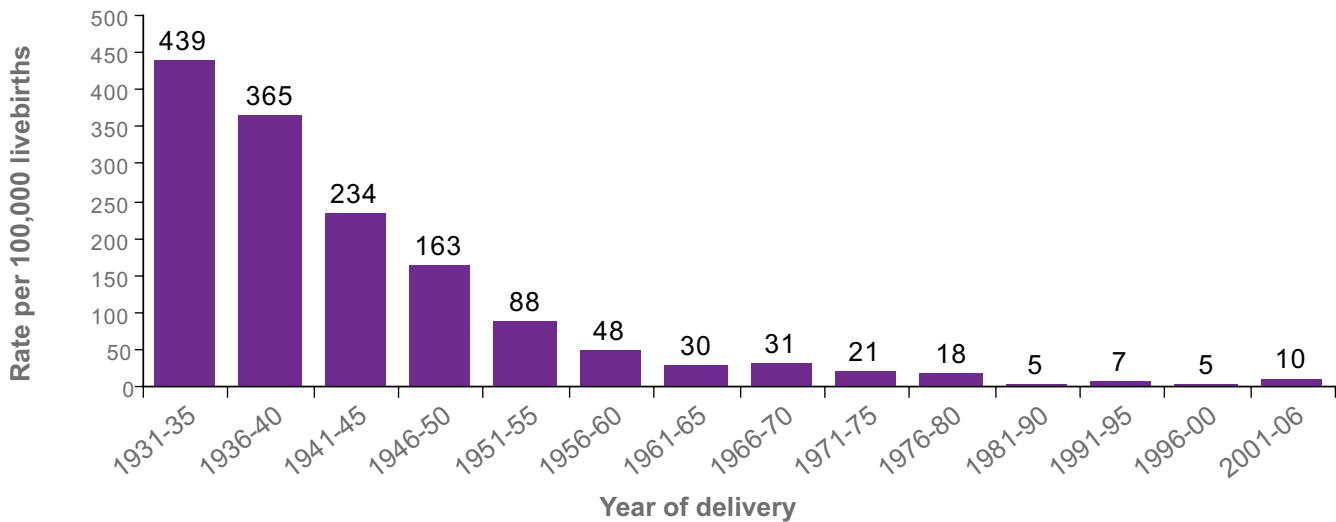
5.5 Long term trend of maternal mortality

Examination of all maternal deaths in Western Australia showed that during the 25 years from 1981 to 2006 there were 42 reported maternal deaths resulting in an overall maternal mortality death rate of 6.5 per 100,000 livebirths for that period.

Year	Maternal Deaths	Live births in WA	Rate per 100,000
1981-1985	5	113,058	4.4
1986-1990	7	123,902	5.6
1991-1995	9	125,624	7.2
1996-2000	6	126,609	4.7
2001-2006	15	154,457	9.7
1981-2006	42	643,323	6.5

The accompanying figure shows the dramatic improvement in the maternal mortality rate for Western Australia which more than halved every ten years between 1931 and 1970. From that time the rate of decline of maternal mortality rates eased to a rate of 6.5 per 100,000 livebirths for the years 1981 to 2006.

Figure 6: Maternal death in Western Australia, 1931-2006



5.6 National and international comparisons

The World Health Organisation estimates that approximately 500,000 women die each year due to complications of pregnancy and childbirth. Of these women 99 per cent are from African, Asian and Latin American countries³.

Considering international differences in methods of ascertainment and reporting, the most recent Australian national report⁵ focused on comparable countries for which the ICD-10 definition of maternal death was used for classification, uniformity in reporting and calculations of cases with an inclusion criteria of 42 days after delivery.

This evaluation showed the Western Australian maternal mortality rate of 6.5 per 100,000 livebirths for the 1992-2006 period was lower than the reported Australian national statistic of 8.4 per 100,000 livebirths during the years 2003-2005.

The World Health Organization defines the maternal mortality rate as the number of direct and indirect maternal deaths during a given time period per 100,000 livebirths. The maternal mortality rate of the developed regions (including Australia, New Zealand, USA, Europe, Japan and Canada) in 2000 was an estimated 20 deaths per 100,000 livebirths compared with an estimated 440 deaths per 100,000 livebirths in the developing regions³.

It is therefore appropriate to state that the decline in the Western Australian maternal mortality rate to 7.7 per 100,000 livebirths for the 2002 to 2006 period compares favourably with Australian and international maternal mortality rates.

6. References

1. Gee V et al. *Perinatal Statistics in Western Australia, 2002, 2003, 2004, 2005 and 2006. Nineteenth, Twentieth, Twenty First, Twenty Second and Twenty Third Annual reports of the Western Australian Midwives' Notification System*. Department of Health. Perth, Western Australia.
2. Perinatal Society of Australia and New Zealand (PSANZ) online: www.psanz.org
3. National Health Medical Research Council and Australian Institute of Health and Welfare. (2008). *Maternal Deaths in Australia, 2003-2005*. Canberra. Commonwealth of Australia. www.npsu.unsu.edu.au
4. Giles PFH. (1992). *The Report of the Maternal Mortality Committee 1989-1991*. Department of Health. Perth, Western Australia.

Table 1: Live and total births by health region of maternal residence in Western Australia, 2002-2006

Health Region of Residence	2002				2003			
	Live Births		Total Births		Live Births		Total Births	
	No.	%	No.	%	No.	%	No.	%
Metropolitan								
North	9672	39.3	9740	39.3	9812	40.1	9875	40.0
South	8417	34.2	8470	34.2	8512	34.8	8584	34.8
Total Metropolitan	18089	73.7	18210	73.5	18324	74.8	18459	74.8
Country								
Kimberley	701	2.9	708	2.9	622	2.5	630	2.6
Pilbara	683	2.8	687	2.8	638	2.6	646	2.6
Midwest	926	3.8	931	3.8	803	3.3	808	3.3
Wheatbelt	979	4.0	985	4.0	876	3.6	879	3.6
Goldfields	936	3.8	952	3.8	938	3.8	942	3.8
South West	1644	6.7	1655	6.7	1607	6.6	1617	6.6
Great Southern	630	2.6	634	2.6	661	2.7	669	2.7
Total Country	6499	26.4	6552	26.4	6145	25.1	6191	25.1
Outside WA	22	0.1	23	0.1	24	0.1	27	0.1
TOTAL	24610	100.0	24785	100.0	24493	100.0	24677	100.0

	2004				2005				2006			
	Live Births		Total Births		Live Births		Total Births		Live Births		Total Births	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	10089	39.8	10170	39.8	10685	39.9	10752	39.9	11246	39.5	11322	39.5
	8764	34.6	8822	34.6	9346	34.9	9422	34.9	10138	35.6	10203	35.6
	18853	74.4	18992	74.4	20031	74.8	20174	74.8	21384	75.1	21525	75.1
	658	2.6	662	2.6	671	2.5	682	2.5	670	2.4	681	2.4
	706	2.8	713	2.8	741	2.8	746	2.8	840	3.0	849	3.0
	824	3.3	832	3.3	908	3.4	913	3.4	928	3.3	935	3.3
	904	3.6	910	3.6	967	3.6	975	3.6	933	3.3	936	3.3
	912	3.6	918	3.6	929	3.5	936	3.5	970	3.4	982	3.4
	1714	6.8	1724	6.8	1780	6.7	1794	6.7	1939	6.8	1953	6.8
	734	2.9	741	2.9	661	2.7	735	2.7	761	2.7	771	2.7
	6452	25.5	6300	24.7	6727	25.1	6781	25.1	7041	24.7	7107	24.8
	38	0.2	39	0.2	24	0.1	27	0.1	32	0.1	33	0.1
	25343	100.0	25531	100.0	26782	100.0	26982	100.0	28457	100.0	28665	100.0

Table 2: Live birth count and crude birth rate by Aboriginality of mother in Western Australia, 1992-2006

Year of Birth	Aboriginal			Non-Aboriginal			Total		
	Live Births	Population	Crude Birth Rate	Live Births	Population	Crude Birth Rate	Live Births	Population	Crude Birth Rate
1992	1412	53317	26.5	23747	1604728	14.8	25159	1658045	15.2
1993	1436	54732	26.2	23724	1622937	14.6	25160	1677669	15.0
1994	1431	56142	25.5	23806	1646867	14.5	25237	1703009	14.8
1995	1444	57577	25.1	23811	1676210	14.2	25255	1733787	14.6
1996	1425	59055	24.1	23960	1706201	14.0	25385	1765256	14.4
1997	1549	60405	25.6	23547	1736233	13.6	25096	1796638	14.0
1998	1506	61780	24.4	24011	1765047	13.6	25517	1826827	14.0
1999	1603	63229	25.4	23989	1791184	13.4	25592	1854413	13.8
2000	1587	64597	24.6	23435	1815297	12.9	25022	1879894	13.3
2001	1631	66069	24.7	23142	1835090	12.6	24773	1901159	13.0
2002	1646	67272	24.5	22963	1860050	12.3	24609	1927322	12.8
2003	1524	68724	22.2	22973	1883514	12.2	24497	1952238	12.5
2004	1557	70125	22.2	23785	1912079	12.4	25342	1982204	12.8
2005	1697	71454	23.7	25084	1938659	12.9	26781	2010113	13.3
2006	1781	72639	24.5	26676	1986406	13.4	28457	2059045	13.8

Table 3: Percentages of fetal, neonatal and postneonatal deaths and fetal, perinatal and infant death rates by health region of maternal residence in Western Australia, 2002-2006

Health Region of Residence	Fetal		Neonatal		Postneonatal		Fetal		Perinatal		Infant	
	No.	%	No.	%	No.	%	No.	Rate	No.	Rate	No.	Rate
Metropolitan												
North	355	37.2	91	29.6	55	31.3	355	6.8	446	8.6	146	2.8
South	324	33.9	112	36.5	65	36.9	324	7.1	436	9.6	177	3.9
Total Metropolitan	679	71.1	203	66.1	120	68.2	679	7.0	881	9.1	323	3.3
Country												
Kimberley	41	4.3	27	8.8	12	6.8	41	12.2	68	20.2	39	11.7
Pilbara	33	3.5	12	3.9	8	4.5	33	9.1	45	12.4	20	5.5
Midwest	30	3.1	11	3.6	10	5.7	30	6.8	41	9.3	21	4.8
Wheatbelt	26	2.7	10	3.3	8	4.5	26	5.5	36	7.7	18	3.9
Goldfields	45	4.7	11	3.6	8	4.5	45	9.5	56	11.8	19	4.1
South West	59	6.2	18	5.9	7	4.0	59	6.7	77	8.8	25	2.9
Great Southern	33	3.5	14	4.6	3	1.7	33	9.3	47	13.2	17	4.8
Total Country	267	28.0	103	33.6	56	31.8	267	8.1	370	11.2	159	4.8
Outside WA	9	1.0	1	0.3	0	0.0	9	60.4	10	67.1	1	7.1
TOTAL	955	100.0	307	100.0	176	100.0	955	7.3	1260	9.7	483	3.7

Rate is number of deaths per 1000 total births or livebirths in each health region.

Table 4: Number and rates of fetal, neonatal and perinatal deaths by Aboriginality of mother in Western Australia, 2002-2006

Aboriginality of Mother	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	Rate	No.	Rate	No.	Rate
Aboriginal	120	14.4	64	7.8	184	22.1
Non-Aboriginal	835	6.8	243	2.0	1078	8.8
TOTAL	955	7.3	307	2.4	1262	9.7

Rate is number of deaths per 1000 total births or livebirths by Aboriginality of mother.

Table 5: Fetal, neonatal and perinatal death rates by Aboriginality of mother in Western Australia, 1992-2006

Year of Birth	Fetal Death Rate			Neonatal Death Rate			Perinatal Death Rate		
	Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total
1992	15.3	6.0	6.5	12.0	4.0	4.5	27.2	10.0	10.9
1993	13.7	6.5	6.9	7.0	2.9	3.1	20.6	9.4	10.0
1994	16.5	6.8	7.4	7.7	3.5	3.8	24.1	10.3	11.1
1995	13.0	7.1	7.5	9.0	2.6	3.0	21.9	9.7	10.4
1996	14.5	7.4	7.8	7.0	3.6	3.8	21.5	10.9	11.5
1997	20.9	5.9	6.8	5.2	2.6	2.7	25.9	8.4	9.5
1998	9.9	6.2	6.4	8.0	2.3	2.7	17.8	8.5	9.0
1999	13.5	6.5	6.9	12.5	2.4	3.0	25.8	8.9	9.9
2000	16.7	7.6	8.2	7.6	2.3	2.6	24.2	9.8	10.7
2001	10.9	6.4	6.7	6.7	2.7	2.9	17.6	9.0	9.6
2002	16.1	6.4	7.1	9.1	1.7	2.2	25.1	8.0	9.2
2003	16.1	6.9	7.5	7.9	1.8	2.2	23.9	8.6	9.6
2004	10.8	7.1	7.4	5.8	2.2	2.4	16.5	9.3	9.8
2005	13.9	7.0	7.4	5.9	2.6	2.8	19.8	9.6	10.2
2006	14.9	6.7	7.3	10.1	1.8	2.3	24.9	8.5	9.5

Rate is number of deaths per 1000 total births for fetal and perinatal deaths and livebirths for neonatal deaths

Table 6: Condition at birth by gender of births in Western Australia, 2002-2006

Gender	Condition at Birth				TOTAL	
	Livebirth		Fetal death			
	No.	%	No.	%	No.	%
Male	66047	50.9	507	53.1	66554	50.9
Female	63636	49.1	444	46.5	64080	49.1
Indeterminate	2	0.0	4	0.4	6	0.0
TOTAL	129685	100.0	955	100.0	130640	100.0

Table 7: Condition at birth by Aboriginality of mother for births in Western Australia, 2002-2006

Aboriginality of Mother	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%			
Aboriginal	8207	6.3	120	12.6	8327	6.4	14.4
Non-Aboriginal	121478	93.7	835	87.4	122313	93.6	6.8
TOTAL	129685	100.0	955	100.0	130640	100.0	7.3

Table 8: Condition at birth by place of birth for births in Western Australia, 2002-2006

Place of Birth	Condition at Birth				TOTAL		Fetal death rate
	Livebirth		Fetal death		No.	%	
	No.	%	No.	%			
Metropolitan							
Teaching	24104	18.6	612	64.1	24716	18.9	24.8
Public	29804	23.0	84	8.8	29888	22.9	2.8
Private	48803	37.6	122	12.8	48925	37.5	2.5
Country							
Public	23237	17.9	121	12.7	23358	17.9	5.2
Private	2952	2.3	15	1.6	2967	2.3	5.1
Non-Hospital							
Planned homebirth	785	0.6	1	n/a	786	0.6	1.3
TOTAL	129685	100.0	955	100.0	130640	100.0	7.3

Table 9: Maternal age by parity of perinatal deaths in Western Australia, 2002-2006

Maternal Age	Parity								TOTAL	
	0		1-2		3-4		≥ 5			
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
≤ 15	9	29.2	0	n/a	0	n/a	0	n/a	9	28.5
16	16	24.4	2	n/a	0	n/a	0	n/a	18	26.0
17	12	9.7	1	n/a	0	n/a	0	n/a	13	9.5
18	19	11.6	6	16.3	0	n/a	0	n/a	25	12.4
19	34	16.0	8	11.5	1	n/a	0	n/a	43	15.2
≤ 19	90	15.1	17	13.7	1	n/a	0	n/a	108	14.9
20-24	107	9.8	90	10.0	17	21.5	4	n/a	218	10.5
25-29	133	8.4	124	7.5	38	13.9	11	24.9	306	8.6
30-34	123	8.2	187	8.1	42	11.7	14	15.9	366	8.6
35-39	71	12.7	86	7.3	29	11.4	17	22.0	203	9.8
40-44	18	19.9	21	11.1	15	22.2	5	17.2	59	15.7
≥ 45	0	n/a	2	n/a	0	n/a	0	n/a	2	n/a
TOTAL	542	10.0	527	8.3	142	13.7	51	20.8	1262	9.7

Rate is number of deaths per 1000 total births.

Table 10: Maternal age by Aboriginality of mother for all births in Western Australia, 2002-2006

Maternal Age	Aboriginal		Non-Aboriginal		TOTAL	
	No.	%	No.	%	No.	%
≤ 15	180	2.2	136	0.1	316	0.2
16	261	3.1	432	0.4	693	0.5
17	462	5.5	912	0.7	1374	1.1
18	521	6.3	1492	1.2	2013	1.5
19	591	7.1	2242	1.8	2833	2.2
≤ 19	2015	24.2	5214	4.3	7229	5.5
20-24	2670	32.1	18017	14.7	20687	15.8
25-29	1910	22.9	33737	27.6	35647	27.3
30-34	1161	13.9	41315	33.8	42476	32.5
35-39	479	5.8	20208	16.5	20687	15.8
40-44	86	1.0	3673	3.0	3759	2.9
≥ 45	6	0.1	149	0.1	155	0.1
TOTAL	8327	100.0	122313	100.0	130640	100.0

Table 11: Birthweight by gender of perinatal deaths in Western Australia, 2002-2006

Birth weight	Gender				Indeterminate		TOTAL	
	Male		Female					
	No.	Rate	No.	Rate	No.	Rate	No.	Rate
< 500	265	992.5	224	957.3	3	n/a	492	976.2
500-999	144	407.9	108	356.4	1	n/a	253	385.1
1000-1499	50	117.6	55	140.3	0	n/a	105	128.4
1500-1999	34	41.6	36	39.0	0	n/a	70	40.2
2000-2499	32	13.0	39	13.3	0	n/a	71	13.2
< 2500	525	121.4	462	96.7	4	n/a	991	108.8
2500-2999	50	5.7	60	5.1	0	n/a	110	5.3
3000-3499	50	2.2	41	1.7	0	n/a	91	1.9
3500-3999	19	0.9	21	1.2	0	n/a	40	1.0
4000-4499	10	1.3	9	2.0	0	n/a	19	1.6
≥ 4500	9	6.5	2	n/a	0	n/a	11	5.5
TOTAL	663	10.0	595	9.3	4	n/a	1262	9.7

Rate is number of deaths per 1000 total births.

Table 12: Cause of death by plurality of perinatal deaths in Western Australia, 2002-2006
PSANZ-PDC classification of perinatal deaths

Cause of Death	Plurality				TOTAL	
	Singleton		Multiple			
	No.	%	No.	%	No.	%
Congenital abnormality	331	29.8	15	9.9	346	27.4
Perinatal infection	70	6.3	1	0.7	71	5.6
Hypertension	60	5.4	2	1.3	62	4.9
Antepartum haemorrhage	66	5.9	4	2.6	70	5.5
Maternal conditions	39	3.5	0	-	39	3.1
Specific perinatal conditions	47	4.2	57	37.7	104	8.2
Hypoxic peripartum death	49	4.4	0	-	49	3.9
Fetal growth restriction	67	6.0	3	2.0	70	5.5
Spontaneous preterm (< 37 weeks)	184	16.6	63	41.7	247	19.6
Unexplained antepartum death	176	15.8	6	-	182	14.4
No obstetric antecedent	22	2.0	0	-	22	1.7
TOTAL	1111	100.0	151	100.0	1262	100.0

Table 13: Cause of death by plurality of neonatal deaths in Western Australia, 2002-2006
PSANZ-NDC classification of neonatal deaths

Cause of Death	Plurality				TOTAL	
	Singleton		Multiple		No.	%
	No.	%	No.	%		
Congenital abnormality	76	32.1	10	14.3	86	28.0
Extreme prematurity	57	24.1	28	40.0	85	27.7
Cardio-respiratory disorders	20	8.4	16	22.9	36	11.7
Infection	25	10.5	4	5.7	29	9.4
Neurological	34	14.3	6	8.6	40	13.0
Gastrointestinal	6	2.5	3	4.3	9	2.9
Other (inc. SIDS)	19	8.0	3	4.3	22	7.2
TOTAL	237	100.0	70	100.0	307	100.0

Table 14: Fetal, neonatal and perinatal deaths by performance of autopsy in Western Australia, 2002-2006

Autopsy	Fetal deaths		Neonatal deaths		Perinatal deaths	
	No.	%	No.	%	No.	%
Yes	637	66.7	135	44.0	772	61.2
No	308	32.3	165	53.7	473	37.5
Unknown	10	1.0	7	2.3	17	1.3
TOTAL	955	100.0	307	100.0	1262	100.0

Table 15: Birthweight by gestational age of fetal deaths in Western Australia, 2002-2006

Birth weight	Gestational Age								TOTAL	
	20-27		28-32		33-36		37-43		No.	Rate
	No.	Rate	No.	Rate	No.	Rate	No.	Rate		
< 500	407	840.9	7	636.4	4	n/a	5	n/a	423	839.3
500-999	132	251.4	30	241.9	1	n/a	1	n/a	164	249.6
1000-1499	16	155.3	51	86.1	8	80.0	2	n/a	77	94.1
1500-1999	2.0	n/a	23	33.4	23	25.1	6	44.4	54	31.0
2000-2499	0.0	n/a	7	38.9	26	9.0	17	7.4	50	9.3
< 2500	557	499.1	118	74.0	62	15.8	31	12.5	768	84.3
2500-2999	0.0	n/a	2	n/a	22	7.0	56	3.2	80	3.9
3000-3499	0.0	n/a	0.0	n/a	6	5.3	50	1.1	56	1.2
3500-3999	0.0	n/a	0.0	n/a	1.0	n/a	31	0.8	32	0.8
4000-4499	0.0	n/a	0.0	n/a	2	n/a	10	0.8	12	1.0
≥ 4500	0.0	n/a	0.0	n/a	2	n/a	5	2.5	7	3.5
TOTAL	557	499.1	120	73.6	95	11.2	183	1.5	955	7.3

Rate is number of deaths per 1000 total births.

Table 16: Birthweight by gestational age of livebirths in Western Australia, 2002-2006

Birth weight	Gestational Age								TOTAL	
	20-27		28-32		33-36		37-43			
	No.	%	No.	%	No.	%	No.	%	No.	%
< 500	77	13.8	4	0.3	0	0.0	0	0.0	81	0.1
500-999	393	70.3	94	6.2	4	0.0	2	0.0	493	0.4
1000-1499	87	15.6	541	35.8	92	1.1	21	0.0	741	0.6
1500-1999	2	0.4	665	44.0	892	10.6	129	0.1	1688	1.3
2000-2499	0	0.0	173	11.5	2878	34.4	2290	1.9	5341	4.1
< 2500	559	100.0	1477	97.8	3866	46.1	2442	2.0	8344	6.4
2500-2999	0.0	0.0	17	1.1	3101	37.0	17427	14.6	20546	15.8
3000-3499	0.0	0.0	12	0.8	1123	13.4	46553	39.0	47688	36.8
3500-3999	0.0	0.0	2	0.1	229	2.7	38816	32.6	39047	30.1
4000-4499	0.0	0.0	2	0.1	45	0.5	12019	10.1	12067	9.3
≥ 4500	0.0	0.0	0	0.0	14	0.2	1979	1.7	1993	1.5
TOTAL	559	100.0	1510	100.0	8378	100.0	119236	100.0	129685	100.0

Table 17: Birthweight by gestational age of all births in Western Australia, 2002-2006

Birth weight	Gestational Age								TOTAL	
	20-27		28-32		33-36		37-43			
	No.	%	No.	%	No.	%	No.	%	No.	%
< 500	484	43.4	11	0.7	4	0.0	5	0.0	504	0.4
500-999	525	47.0	124	7.6	5	0.1	3	0.0	657	0.5
1000-1499	103	9.2	592	36.3	10	0.0	23	0.0	818	0.6
1500-1999	4	0.4	688	42.2	915	10.8	135	0.1	1742	1.3
2000-2499	0	0.0	180	11.0	2904	34.3	2307	1.9	5391	4.1
< 2500	1116	100.0	1595	97.9	3838	45.3	2473	2.1	9112	7.0
2500-2999	0	0.0	19	1.2	3123	36.9	17484	14.6	20625	15.8
3000-3499	0	0.0	12	0.7	1129	13.3	46602	39.0	47744	36.5
3500-3999	0	0.0	2	0.1	230	2.7	38847	32.5	39079	29.9
4000-4499	0	0.0	2	0.1	47	0.6	12029	10.1	12079	9.2
≥ 4500	0	0.0	0	0.0	16	0.2	1984	1.7	2000	1.5
TOTAL	1116	100.0	1630	100.0	8473	100.0	119419	100.0	130640	100.0

Table 18: Gestational age by plurality of fetal deaths in Western Australia, 2002-2006

Gestation	Plurality				TOTAL	
	Singleton		Multiple			
	No.	Rate	No.	Rate	No.	Rate
20-27	502	550.4	55	269.6	557	499.1
28-32	109	92.8	11	24.1	120	73.6
33-36	86	12.9	9	5.0	95	11.2
37-43	177	1.5	6	3.7	183	1.5
TOTAL	874	6.9	81	19.7	955	7.3

Rate is number of deaths per 1000 total births.

Table 19: Cause of death by time of death of fetal deaths in Western Australia, 2002-2006

Cause of Death	Time of Death						TOTAL	
	Antepartum		Intrapartum		Unknown			
	No.	%	No.	%	No.	%	No.	%
Lethal congenital anomaly	66	13.2	149	50.9	46	28.6	261	27.3
Extremely low birthweight	162	32.3	109	37.2	70	43.5	341	35.7
Unknown	191	38.1	22	7.5	34	21.1	247	25.9
Maternal Obstetric	8	1.6	2	0.7	0	0.0	10	1.0
Maternal Medical	11	2.2	1	0.3	2	1.2	14	1.5
Maternal Hypertension	2	0.4	0	0.0	0	0.0	2	0.2
Placenta and Cord	47	9.4	4	1.4	6	3.7	57	6.0
Other	14	2.8	6	2.0	3	1.9	23	2.4
TOTAL	501	100.0	293	100.0	161	100.0	955	100.0

Table 20: Cause of death by Aboriginality of mother of fetal deaths in Western Australia, 2002-2006

Cause of Death	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal			
	No.	%	No.	%	No.	%
Lethal congenital anomaly	14	11.7	247	29.6	261	27.3
Extremely low birthweight	53	44.2	288	34.5	341	35.7
Unknown	32	26.7	215	25.7	247	25.9
Maternal obstetric	3	2.5	7	0.8	10	1.0
Maternal medical	7	5.8	7	0.8	14	1.5
Maternal hypertension	0	-	2	0.2	2	0.2
Placenta and cord	6	5.0	51	6.1	57	6.0
Other	5	4.2	18	2.2	23	2.4
TOTAL	120	100.0	835	100.0	955	100.0

Table 21: Birthweight by gestational age of neonatal deaths in Western Australia, 2002-2006

Birth weight	Gestational Age								TOTAL	
	20-27		28-32		33-36		37-43			
	No.	Rate	No.	Rate	No.	Rate	No.	Rate	No.	Rate
< 500	68	883.1	1		-		-		69	851.9
500-999	84	213.7	4		1		-		89	180.5
1000-1499	7	80.5	16	29.6	4		1		28	37.8
1500-1999	-		8	12.0	6	6.7	2		16	9.5
2000-2499	-		-		6	2.1	15	6.6	21	3.9
< 2500	159	284.4	29	19.6	17	4.4	18	7.4	223	26.5
2500-2999	-		1		12	3.9	18	1.0	30	1.5
3000-3499	-		-		3		31	0.7	35	0.7
3500-3999	-		-		1		7	0.2	8	0.2
4000-4499	-		-		-		7	0.6	7	0.6
≥ 4500	-		-		-		4	2.0	4	2.0
TOTAL	159	284.4	30	19.9	33	3.9	85	0.7	307	2.4

Rate is number of deaths per 1000 livebirths.

Table 22: Gestational age by plurality of neonatal deaths in Western Australia, 2002-2006

Gestation	Plurality				TOTAL	
	Singleton		Multiple			
	No.	Rate	No.	Rate	No.	Rate
20-27	101	246.3	58	389.3	159	284.4
28-32	23	21.6	7	15.7	30	19.9
33-36	30	4.6	3	1.7	33	3.9
37-42	83	0.7	2	1.2	85	0.7
≥ 43	-		-		-	
TOTAL	237	1.9	70	17.4	307	2.4

Rate is number of deaths per 1000 livebirths.

Table 23: Cause of death by age at death of neonatal deaths in Western Australia, 2002-2006

Cause of Death	Age at Death (days)								TOTAL
	0	1	2	3	4-7	8-14	15-21	22-28	
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Lethal Congenital Anomaly	37	8	6	7	5	11	8	4	86
Low birthweight	92	22	10	6	9	9	11	3	162
Asphyxia	9	6	2	2	3	1	1	0	24
Pregnancy conditions	0	0	0	0	0	0	0	0	0
Infection	1	1	1	1	1	0	0	0	5
Hydrops fetalis	0	0	0	0	0	0	0	0	0
Other	0	0	2	0	0	1	0	0	3
SIDS/accidental	0	2	1	0	1	7	7	5	23
Unknown	0	0	1	1	0	1	1	0	4
TOTAL	139	39	23	17	19	30	28	12	307
	%	%	%	%	%	%	%	%	%
Lethal Congenital Anomaly	26.6	20.5	26.1	41.2	26.3	36.7	28.6	33.3	28.0
Low birthweight	66.2	56.4	43.5	35.3	47.4	30.0	39.3	25.0	52.8
Asphyxia	6.5	15.4	8.7	11.8	15.8	3.3	3.6	0.0	7.8
Pregnancy conditions	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Infection	0.7	2.6	4.3	5.9	5.3	0.0	0.0	0.0	1.6
Hydrops fetalis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	8.7	0.0	0.0	3.3	0.0	0.0	1.0
SIDS/accidental	0.0	5.1	4.3	0.0	5.3	23.3	25.0	41.7	7.5
Unknown	0.0	0.0	4.3	5.9	0.0	3.3	3.6	0.0	1.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 24: Cause of death by Aboriginality of mother of neonatal deaths in Western Australia, 2002-2006

Cause of Death	Aboriginality of Mother				TOTAL
	Aboriginal		Non-Aboriginal		
	No.	%	No.	%	No.
Lethal Congenital Anomaly	10	15.6	76	31.3	86
Low birthweight	39	60.9	123	50.6	162
Asphyxia	4	6.3	20	8.2	24
Pregnancy conditions	0	0.0	0	0.0	0
Infection	0	0.0	5	2.1	5
Hydrops fetalis	0	0.0	0	0.0	0
Other	1	1.6	2	0.8	3
SIDS/accidental	9	14.1	14	5.8	23
Unknown	1	1.6	3	1.2	4
TOTAL	64	100.0	243	100.0	307

Table 25: Neonatal, postneonatal and infant deaths by Aboriginality of mother in Western Australia, 2002-2006

Aboriginality of Mother	Neonatal deaths		Postneonatal deaths		Infant deaths	
	No.	Rate	No.	Rate	No.	Rate
Aboriginal	64	7.8	43	5.2	107	13.0
Non-Aboriginal	243	2.0	133	1.1	376	3.1
TOTAL	307	2.4	176	1.4	483	3.7

Table 26: Neonatal, postneonatal and infant death rates by Aboriginality of mother in Western Australia, 1992-2006

Year of Birth	Neonatal Death Rate			Postneonatal Death Rate			Infant Death Rate		
	Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total	Aboriginal	Non-Aboriginal	Total
1992	12.0	4.0	4.5	11.3	1.9	2.4	23.4	5.9	6.8
1993	7.0	2.9	3.1	9.1	1.6	2.1	16.0	4.5	5.2
1994	7.7	3.5	3.8	13.3	1.8	2.4	21.0	5.3	6.2
1995	9.0	2.6	3.0	12.5	1.1	1.8	21.5	3.7	4.8
1996	7.0	3.6	3.8	8.4	1.3	1.7	15.4	4.9	5.5
1997	5.2	2.6	2.7	7.1	2.0	2.4	12.3	4.6	5.1
1998	8.0	2.3	2.7	10.0	1.5	2.0	17.9	3.8	4.6
1999	12.5	2.4	3.0	6.9	1.2	1.6	19.3	3.6	4.6
2000	7.6	2.3	2.6	7.6	1.2	1.6	15.1	3.5	4.2
2001	6.7	2.7	2.9	8.0	1.3	1.8	14.7	4.0	4.7
2002	9.1	1.7	2.2	5.5	1.0	1.3	14.6	2.7	3.5
2003	7.9	1.8	2.2	7.9	0.9	1.3	15.7	2.7	3.5
2004	5.8	2.2	2.4	1.9	1.0	1.1	7.7	3.2	3.5
2005	5.9	2.6	2.8	4.1	1.6	1.7	10.0	4.1	4.5
2006	10.1	1.8	2.3	6.8	1.0	1.4	17.0	2.8	3.7

Table 27: Maternal age by parity of infant deaths in Western Australia, 2002-2006

Maternal Age	Parity						TOTAL	
	0		1-2		≥ 5			
	No.	Rate	No.	Rate	No.	Rate	No.	Rate
≤ 15	4	n/a	-	-	-	-	4	n/a
16	8	12.4	2	n/a	-	-	10	14.7
17	4	n/a	3	n/a	-	-	7	5.1
18	8	4.9	5	13.7	-	-	13	6.5
19	16	7.6	6	8.7	-	-	22	8.2
≤ 19	40	6.8	16	13.0	-	-	56	8.0
20-24	38	3.5	65	7.3	1	n/a	104	5.8
25-29	39	2.5	56	3.4	6	13.8	101	3.5
30-34	29	1.9	49	2.1	6	6.9	185	2.4
35-39	19	3.4	28	2.4	8	10.5	240	3.1
40-44	6	6.7	6	3.2	-	-	12	4.3
≥ 45	-	-	1	n/a	-	-	1	n/a
TOTAL	171	3.2	221	3.5	21	8.7	483	3.7

Rate is number of deaths per 1000 total livebirths in each age group category.

Table 28: Birthweight by gender of infant deaths in Western Australia, 2002-2006

Birth weight	Gender				TOTAL	
	Male		Female			
	No.	Rate	No.	Rate	No.	Rate
< 500	36	947.4	34	790.1	70	864.2
500-999	59	228.7	46	195.7	105	213.0
1000-1499	19	48.7	16	45.7	35	47.2
1500-1999	13	16.4	15	16.8	28	16.6
2000-2499	26	10.7	22	7.6	48	9.0
< 2500	153	12.0	8	8.2	286	9.9
2500-2999	33	3.7	36	3.1	69	3.4
3000-3499	28	1.2	51	2.1	79	1.7
3500-3999	21	1.0	12	0.7	33	0.8
4000-4499	9	1.2	3	n/a	12	1.0
≥ 4500	3	n/a	1	n/a	4	n/a
TOTAL	247	3.7	111	3.7	483	3.7

Rate is number of deaths per 1000 total livebirths in each birthweight category.

Table 29: Gestational age by plurality of infant deaths in Western Australia, 2002-2006

Gestation	Plurality				TOTAL	
	Singleton		Multiple			
	No.	Rate	No.	Rate	No.	Rate
20-27	113	275.6	61	409.4	174	311.3
28-32	34	31.9	9	20.2	43	28.5
33-36	60	9.1	6	3.3	66	7.9
37-42	197	1.7	3	1.8	200	1.7
≥ 43						
TOTAL	404	3.2	79	19.6	483	3.7

Rate is number of deaths per 1000 total livebirths in each gestational group category

Table 30: Cause of death by age at death of postneonatal deaths in Western Australia, 2002-2006

Cause of Death	Age at Death (weeks)						TOTAL
	5-8	9-12	13-16	17-20	21-24	25-52	
	No.	No.	No.	No.	No.	No.	No.
SIDS	10	4	3	3	4	3	27
Lethal Congenital Anomaly	8	3	4	4	3	8	30
Infection	5	1	5	2	2	3	18
Other	12	5	5	5	3	14	44
Unknown	10	4	14	10	3	7	48
Prematurity	4	0	0	2	1	2	9
TOTAL	49	17	31	26	16	37	176
	%	%	%	%	%	%	%
SIDS	20.4	23.5	9.7	11.5	25.0	8.1	15.3
Lethal Congenital Anomaly	16.3	17.6	12.9	15.4	18.8	21.6	17.0
Infection	10.2	5.9	16.1	7.7	12.5	8.1	10.2
Other	24.5	29.4	16.1	19.2	18.8	37.8	25.0
Unknown	20.4	23.5	45.2	38.5	18.8	18.9	27.3
Prematurity	8.2	0.0	0.0	7.7	6.3	5.4	5.1
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 31: Cause of death by Aboriginality of mother of postneonatal deaths in Western Australia, 2002-2006

Cause of Death	Aboriginality of Mother				TOTAL	
	Aboriginal		Non-Aboriginal		No.	%
	No.	%	No.	%		
SIDS	8	18.6	19	14.3	27	15.3
Lethal Congenital Anomaly	4	9.3	26	19.5	30	17.0
Infection	6	14.0	12	9.0	18	10.2
Other	9	20.9	35	26.3	44	25.0
Unknown	12	27.9	36	27.1	48	27.3
Prematurity	4	9.3	5	3.8	9	5.1
TOTAL	43	100.0	133	100.0	176	100.0

7. Definitions

Aboriginality

Identification as of Aboriginal and/or Torres Straight Islander origin.

Refers to mother's identification, not that of the baby or of the father of the baby.

Birthweight

The first weight, measured to the nearest five grams, of the newborn. It is usually obtained within the first hour after birth.

Low Birthweight A birthweight of less than 2500 grams

Very Low Birthweight A birthweight of less than 1500 grams

Extremely Low Birthweight A birthweight of less than 1000 grams

Congenital Anomaly

Any defect present at birth, probably of developmental origin.

Crude Birth Rate

The number of livebirths per 1000 total population.

Fetal Death

The complete expulsion or extraction from its mother, of a product of conception of at least 20 weeks gestation and/or 400 grams birthweight, which after separation did not show any sign of life.

Infant Death

The death of a liveborn infant within the first year of life.

Livebirth

The complete expulsion or extraction from its mother of a product of conception, irrespective of duration of pregnancy, which after separation shows signs of life.

Mortality Proportions

Fetal Mortality Rate The number of fetal deaths per 1000 total births in a year.

Neonatal Mortality Rate The number of neonatal deaths per 1000 livebirths in a year.

Perinatal Mortality Rate The number of fetal and neonatal deaths per 1000 total births in a year.

Post-neonatal Mortality Rate The number of post-neonatal deaths per 1000 livebirths in a year.

Infant Mortality Rate The number of infant deaths per 1000 livebirths in a year.

Maternal Mortality Rate The number of maternal deaths per 100,000 livebirths in a year.

Maternal Mortality Ratio The number of maternal deaths per 100,000 women who gave birth in a year.

Neonatal Death

The death of a liveborn infant within 28 days of birth.

Parity

The total number of livebirths and fetal deaths of the mother prior to the parturition under consideration.

Perinatal Death

A fetal death or neonatal death.

Post-neonatal Death

The death of a liveborn infant occurring after the first month and within the first year of life.

Plurality

The number of fetuses or babies resulting from the pregnancy. On this basis, pregnancy may be classified as singleton or multiple.

APPENDIX A

Health Act (Notification by Midwife) Regulations Form 2. NOTIFICATION OF CASE ATTENDED

MR 15

Surname _____		Unit Record No _____		Hospital _____	
Forenames _____		Birth Date (Mother) _____ 2 0 _____		Ward _____	
Address of usual residence Number and Street _____		State _____ Post Code _____		Marital Status 1=never married 2=widowed 3=divorced <input type="checkbox"/> 4=separated 5=married (incl. defacto) 6=unknown	
Town or City _____		Height (cms) _____		Ethnic Origin 1=Caucasian 2= Aboriginal / TSI <input type="checkbox"/>	
Maiden name _____		Tel. No. _____		Other _____	
Pregnancy Details		Labour Details		Baby Details	
Previous Pregnancies: - total number (excluding this pregnancy) _____ Previous pregnancy outcomes: - children now living: _____ - born alive, now dead: _____ - stillborn: _____ Previous caesarean section: 1=yes 2=no _____ Caesarean last delivery: 1=yes 2=no _____ Previous multiple birth: 1=yes 2=no _____ This Pregnancy: Date of LMP: _____ 2 0 _____ This date certain 1=yes 2=no _____ Expected due date: _____ 2 0 _____ based on 1=clinical signs/dates _____ 2=ultrasound < 20 weeks _____ Smoking during Pregnancy: 1=yes 2=no _____ Complications of Pregnancy: 1 <input type="checkbox"/> threatened abortion (<20wks) 2 <input type="checkbox"/> threatened preterm labour (<37 wks) 3 <input type="checkbox"/> urinary tract infection 4 <input type="checkbox"/> pre-eclampsia 5 <input type="checkbox"/> APH - placenta praevia 6 <input type="checkbox"/> abruptio 7 <input type="checkbox"/> other _____ 8 <input type="checkbox"/> pre-labour rupture of membranes 9 <input type="checkbox"/> gestational diabetes 10 <input type="checkbox"/> other (specify)..... _____ Medical Conditions: 1 <input type="checkbox"/> essential hypertension 2 <input type="checkbox"/> pre-existing diabetes mellitus 3 <input type="checkbox"/> asthma 4 <input type="checkbox"/> genital herpes 8 <input type="checkbox"/> other (specify)..... _____ Procedures/treatments: 1 <input type="checkbox"/> fertility treatments (include drugs) 2 <input type="checkbox"/> cervical suture 3 <input type="checkbox"/> CVS/placental biopsy 4 <input type="checkbox"/> amniocentesis 5 <input type="checkbox"/> ultrasound 6 <input type="checkbox"/> CTG antepartum 7 <input type="checkbox"/> CTG intrapartum Intended place of birth at onset of labour: 1=hospital 2=birth centre attach. hospital <input type="checkbox"/> 3=birth centre free standing 4=home 8=other		Onset of Labour: 1=spontaneous 2=induced 3=no labour <input type="checkbox"/> Augmentation: 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 8 <input type="checkbox"/> other Induction: 1 <input type="checkbox"/> none 2 <input type="checkbox"/> oxytocin 3 <input type="checkbox"/> prostaglandins 4 <input type="checkbox"/> artificial rupture of membranes 8 <input type="checkbox"/> other Analgesia (during labour): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> nitrous oxide 3 <input type="checkbox"/> intra-muscular narcotics 4 <input type="checkbox"/> epidural / caudal 5 <input type="checkbox"/> spinal 8 <input type="checkbox"/> other Duration of Labour: 1st stage (hours & mins): _____ hrs _____ mins 2nd stage: _____ hrs _____ mins Delivery Details Anaesthesia (during delivery): 1 <input type="checkbox"/> none 2 <input type="checkbox"/> local anaesthesia to perineum 3 <input type="checkbox"/> pudendal 4 <input type="checkbox"/> epidural / caudal 5 <input type="checkbox"/> spinal 6 <input type="checkbox"/> general 8 <input type="checkbox"/> other Complications of Labour and Delivery: (include reason stated for operative delivery) 1 <input type="checkbox"/> precipitate delivery 2 <input type="checkbox"/> fetal distress 3 <input type="checkbox"/> prolapsed cord 4 <input type="checkbox"/> cord tight around neck 5 <input type="checkbox"/> cephalopelvic disproportion 6 <input type="checkbox"/> PPH (>500mls) 7 <input type="checkbox"/> retained placenta - manual removal 8 <input type="checkbox"/> persistent occipito posterior 9 <input type="checkbox"/> shoulder dystocia 10 <input type="checkbox"/> failure to progress <=3cms 11 <input type="checkbox"/> failure to progress > 3cms 12 <input type="checkbox"/> previous caesarean section 13 <input type="checkbox"/> other (specify)..... _____ Perineal Status: 1=intact 2=1st degree tear <input type="checkbox"/> 3=2nd degree tear 4=3rd degree tear <input type="checkbox"/> 5=episiotomy 6=episiotomy plus tear 8=other		(NB. separate form for each baby) Adoption: 1=yes 2=no _____ Born Before Arrival: 1=yes 2=no _____ Birth Date _____ 2 0 _____ Birth Time (24 hr clock) _____ Plurality: number of babies this birth _____ if multiple specify this baby number _____ Presentation: 1=vertex 2=breech 3=face 4=brow 8=other <input type="checkbox"/> Method of Birth: 1 <input type="checkbox"/> spontaneous 2 <input type="checkbox"/> vacuum successful 3 <input type="checkbox"/> vacuum unsuccessful 4 <input type="checkbox"/> forceps successful 5 <input type="checkbox"/> forceps unsuccessful 6 <input type="checkbox"/> breech (vaginal) 7 <input type="checkbox"/> elective caesarean 8 <input type="checkbox"/> emergency caesarean Accoucheur(s): 1 <input type="checkbox"/> obstetrician 2 <input type="checkbox"/> other medical officer 3 <input type="checkbox"/> midwife 4 <input type="checkbox"/> student 5 <input type="checkbox"/> self / no attendant 8 <input type="checkbox"/> other Gender: 1=male 2=female <input type="checkbox"/> Status of Baby at Birth: 1=liveborn 2=stillborn <input type="checkbox"/> Infant Weight (grams): _____ Length (cms): _____ Head Circumference (cms): _____ Time to establish unassisted regular breathing (mins): _____ Resuscitation: 1=none 2=suction only 3=oxygen therapy 4=bag & mask 5=endotracheal intubation 6=ext.cardiac massage & vent. 8=other <input type="checkbox"/> Apgar Score: 1 minute _____ 5 minutes _____ Estimated Gestation (weeks): _____ Birth Defects (specify): _____ Birth Trauma (specify): _____ Baby Separation Details: Sep. Date _____ 2 0 _____ Mode of separation: 1=transferred 8=died 9=disch. home <input type="checkbox"/> transferred to: _____ Special care (wholedays only): _____	
MIDWIFE: Name..... Signature..... date...../...../..... Reg.No. _____ Coder ID _____		Please complete then forward this copy WITHIN 48 HOURS OF BIRTH TO: Health Information Centre Health Dept of Western Australia. PO Box 8172 Stirling Street, Perth 6849. The mother is not obliged to supply any information for the purposes of this form.			

APPENDIX B

BDM201

Western Australia
Births, Deaths and Marriages Registration Act 1998



MEDICAL CERTIFICATE OF CAUSE OF STILLBIRTH OR NEONATAL DEATH

To be completed in respect of –

- i). A child not born alive, of at least 20 weeks gestation or if the period of gestation cannot be reliably established, a weight of 400 grams
- ii). A live born child who dies within twenty-eight days after birth

Note: Where appropriate please tick relevant boxes If details are unknown, write "Unknown".

MOTHER'S DETAILS

Given names			
Surname			
DOB	Day	Month	Year Parity
Usual Residence			

CHILD'S DETAILS

Name (if given)
Place of death (Hospital name or other address)
Place of birth (if different to place of death)

Sex: Male Female
Plurality: Single Twin Triplet Other

Date of birth or delivery _____ / _____ / _____

1. Time of birth or delivery _____ (24 hour clock)
2. Weight at birth _____ grams
3. Period of gestation _____ completed weeks from first day of last menstrual period to date of delivery
4. When did heartbeat cease?
 - (a) Before labour commenced.....
 - (b) During labour but before delivery.....
 - (c) Before delivery but not known whether before or during labour.....
 - (d) After delivery.....
 - (e) Not known whether before or after delivery
5. If heartbeat ceased **prior** to delivery, estimate how long before _____ hours _____ days
6. If heartbeat ceased **after** delivery, enter the time _____ (24 hour clock)
7. If heartbeat ceased **after** delivery, enter the date _____
8. Did the child breathe after complete expulsion or extraction from the mother? Yes No

CAUSE OF DEATH (Print clearly. Do not abbreviate)

➤ **Post mortem:**
Carried out To be carried out: Yes No

➤ **Is cause of death shown below based on post mortem?** Yes No

➤ Causes in child or foetus

Disease or condition directly leading to death	Approx. interval between onset & death
Due to †	

Maternal or other conditions or causes giving rise to the underlying cause above	Approx. interval between onset & death
Due to †	

† Morbid conditions, if any, giving rise to the above cause, stating the underlying condition last.

Other significant conditions in child, foetus or mother contributing to the death, but not related to the disease or condition causing it	Approx. interval between onset & death

I hereby certify that the particulars shown above are true to the best of my knowledge.

Signature _____
Name _____
Address _____
_____ Date _____

APPENDIX C

BDM 202

Registry of Births, Deaths & Marriages Western Australia

MEDICAL CERTIFICATE OF CAUSE OF DEATH

Details of Deceased

(PLEASE PRINT CLEARLY IN BLOCK LETTERS)

Surname			
Given names (in full)			
Sex	Male <input type="checkbox"/>	Female <input type="checkbox"/>	Date of death / /
Place of death (in full)			
Age at death	(show age in completed units - Y= years or M = months)		
Aboriginal or Torres Strait Islander origin?	(If of both Aboriginal and Torres Strait Islander origin, cross both "Yes" boxes)		
	No <input type="checkbox"/>	Yes, Aboriginal origin <input type="checkbox"/>	Yes, Torres Strait Islander origin <input type="checkbox"/>
Date last seen alive by me	/ /		
Coroner	Is this death being, or has it been, reported to the Coroner? No <input type="checkbox"/> Yes <input type="checkbox"/>		
Post mortem status	Not to be conducted <input type="checkbox"/> Has been conducted <input type="checkbox"/> Yet to be conducted <input type="checkbox"/>		

Cause of Death Details

Cause

Approximate interval between onset & death

Part I	(a)		
Disease or condition directly leading to death*		due to	
*This means the disease, injury or complication which caused death – not only the mode of dying, such as heart failure, respiratory failure etc.			
Antecedent causes (b) - (e)	(b)		
		due to	
Morbid conditions, if any, giving rise to the above cause (a), stating the underlying condition last	(c)		
		due to	
	(d)		
		due to	
	(e)		
Part II			
Other significant conditions contributing to death but not related to the disease or condition causing it			

Other Details

Operations	Was an operation performed on the deceased within 4 weeks of death?	No <input type="checkbox"/>	Yes <input type="checkbox"/> (if "Yes" specify below)
Type of operation			
Disease/condition			
Pregnancy	Was the deceased pregnant within 6 weeks of death?	No <input type="checkbox"/>	Yes <input type="checkbox"/>
	Was the deceased pregnant between 6 weeks and 12 months of death?	No <input type="checkbox"/>	Yes <input type="checkbox"/>
Injury	Was an injury/external cause involved in the death?	No <input type="checkbox"/>	Yes <input type="checkbox"/> (if "Yes" specify below)
<i>Only complete if death is not reportable to the Coroner</i>			

Certification

I hereby certify that I am a currently registered medical practitioner and that:

- I was responsible for the medical care of the abovenamed deceased immediately before death AND/OR
- I examined the body of the abovenamed deceased after death

and that the particulars and cause of death above written are true to the best of my knowledge and belief. This certificate is signed pursuant to Section 44 (1) of the Births, Deaths and Marriages Registration Act 1998.

Full name	Phone
Address	
Signature	Date / /

