

**CIRCULAR**

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**HOSPITAL PROCEDURES FOR REVIEW AND REPORTING  
OF PERINATAL DEATHS**

This Circular supercedes Circular 99/101, issued on 16 December 1999.

**1. Background**

- 1.1 Each year, there are about 800 perinatal deaths in NSW, of which about 700 occur among fetuses and infants of greater than 22 weeks gestation or 500 grams birth weight.<sup>1</sup>
- 1.2 The NHMRC Expert Panel on Perinatal Morbidity recommends that 'Each practitioner (of all disciplines) involved in a maternity service or care of the newborn should audit details of all morbidities in patients under their care and participate in a regular perinatal morbidity/mortality review with other practitioners as part of quality assurance'.<sup>2</sup>
- 1.3 Perinatal morbidity/mortality review meetings at hospital level provide a forum in which the cause of death, other adverse outcomes and their determinants are discussed. This has immediate benefits for participants in providing feedback, and enables identification of possible avoidable factors which may be used to improve local services. This process provides a mechanism for continuous improvement of services as described in A *Framework for Managing the Quality of Health Services in NSW*.<sup>3</sup>
- 1.4 Individual deaths are best reviewed by local hospital or regional committees which include members who have had contact with the case. Aggregation of information derived from these case reviews provides an important resource for planning of services and prevention programs at State level.

Distributed in accordance with circular list(s):

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In accordance with the provisions incorporated in the Accounts and Audit Determination, the Board of Directors, Chief Executive Officers and their equivalents, within a public health organisation, shall be held responsible for ensuring the observance of Departmental policy (including circulars and procedure manuals) as issued by the Minister and the Director-General of the Department of Health.

- 1.5 The format for reporting of perinatal deaths at a State level has been revised following amendments to the Australia and New Zealand Perinatal Mortality Classifications (ANZACPM). This circular contains guidelines for review of perinatal deaths at hospital level and revises the process of classifying perinatal deaths and statewide reporting to be implemented from 1 January 2002.
- 1.6 Under certain circumstances the death of a neonate may be reportable to the Coroner: for example, where the infant died a sudden death the cause of which is unknown, or the infant died under suspicious or unusual circumstances. Further information on requirements for reporting deaths to the Coroner is included in NSW Health Department Circular 99/57: *Coroners' cases and amendments to Coroners Act 1980*.

## **2. Perinatal death review committees**

- 2.1 Each maternity service will have a perinatal death review committee. The committee may function at hospital, regional or Area level. All perinatal deaths should be reviewed by the committee, including infants born within the service who died elsewhere. Maternity services may choose to combine the functions of the perinatal death review committee with a hospital or regional mortality review committee.
- 2.2 The review process should be multidisciplinary. Membership of the committee should be open to midwives and medical practitioners involved in the provision of the maternity service, an Aboriginal representative where appropriate, independent midwives accredited to the service and general practitioners with a shared antenatal care arrangement with the hospital.
- 2.3 The Committee will abide by principles of confidentiality and impartiality.
- 2.4 Clinicians should consider the value of an autopsy examination in every instance of perinatal death and discuss this with the parents. In some cases a limited post-mortem may be of assistance. Histopathological examination of the placenta is encouraged. If the death is a stillbirth, guidelines for investigation of a stillborn should be applied (NSW Health Circular No. 97/107).<sup>4</sup>
- 2.5 The cause of death should be confirmed/ascertained and avoidable or preventable factors assessed. The determination that avoidable factors were present does not imply that the death was certainly avoidable. Consideration should also be given to predisposing factors, including social and health service factors.
- 2.6 Information on avoidable or preventable factors which have implications for policy concerning local health service provision should be referred to the relevant hospital manager or manager of clinical services.
- 2.7 Participation in morbidity and mortality meetings is one activity that should be undertaken by clinicians to gather information about the quality of clinical care they provide to patients. Further information on morbidity and mortality meetings and other clinical quality activities is available in the publication *The Clinicians Toolkit for Improving Patient Care*, which is available from the Better Health Centre or from the Department of Health website at: [www.health.nsw.gov.au/health-public-affairs/publications/quality/toolkit.html](http://www.health.nsw.gov.au/health-public-affairs/publications/quality/toolkit.html).<sup>5</sup>

- 2.8 Committees may wish to apply for qualified privilege under the NSW Health Administration Act 1982, section 20E. This legislation protects the confidentiality of quality improvement committees, and provides protection from personal liability, while acting in good faith in the business of the approved committee (section 20J (2) of the Act).

NSW Health Department Circular No. 90/82 'Privilege for Quality Assurance Committees' states that: 'It is not mandatory for all Committees undertaking quality assurance activities (however entitled) to seek approval under the Act'. The Act is designed to facilitate the establishment of effective Committees where they currently do not exist. Potential applicants should carefully assess a Committee's need for privilege and be convinced that it is warranted before making an application for approval. In certain circumstances, eg where a Committee is already functioning effectively, it may be decided locally that the legal protection afforded by the Act would not enhance existing quality assurance practices, and therefore that approval, and the accompanying privilege is not required.

Information on the application process may be obtained from the publication *Qualified Privilege for Quality Improvement Committees and Programs in Health - Issues Paper for comment*, which may be obtained from the Better Health Centre or from the Department of Health website at: [www.health.nsw.gov.au/quality/qual\\_privilege.htm](http://www.health.nsw.gov.au/quality/qual_privilege.htm).<sup>6</sup>

Committees considering applying for qualified privilege may obtain more information by contacting:

Ms Maureen Robinson  
Director  
Quality and Clinical Policy Branch  
NSW Health Department  
Locked Bag 961  
North Sydney NSW 2059  
Telephone: (02) 9391 9944  
Facsimile: (02) 9391 9556

### **3. Reporting of perinatal deaths**

- 3.1 The NSW Maternal and Perinatal Committee is an expert committee appointed by the Minister of Health to review maternal and perinatal morbidity and mortality in the State and is privileged from subpoena under the Health Administration Act 1982 for its review of confidential medical information. Information gained by reviews is used to develop policies aimed at reducing maternal and perinatal mortality in NSW.
- 3.2 From 1 January 2000, after consideration by the local perinatal death review committee, the following information on perinatal deaths of at least 22 weeks gestation or, if gestational age is unknown, at least 500 grams birth weight should be forwarded to the secretary of the NSW Maternal and Perinatal Committee:
1. Copy of a completed Confidential Report Form (Appendix 1)
  2. Copy of the post mortem report and report of histopathological examination of the placenta, if applicable

3. Any other information which the local perinatal death review committee may wish to provide for consideration by the NSW Maternal and Perinatal Committee

at the following address:

The Secretary  
NSW Maternal and Perinatal Committee  
Epidemiology and Surveillance Branch  
Level 7  
NSW Health Department  
North Sydney NSW 2059  
Telephone: 9424 5703  
Facsimile: 9391 9556.

Copies of Confidential Report Forms may be obtained from the Secretary, are available from the Department's web site under this circular at:  
<http://internal.health.nsw.gov.au/policies/>, or a photocopy of the Confidential Report Form shown at Appendix 1 may be used. Hospitals wishing to submit data electronically should contact the Secretary.

Guidelines for use of the perinatal mortality classification systems are shown at Appendix 2.

#### References:

1. NSW Midwives Data Collection, Epidemiology and Surveillance Branch, NSW Health Department.
2. *Perinatal Morbidity: Report of the Health Care Committee Expert Panel on Perinatal Morbidity*. NHMRC. Canberra: Commonwealth of Australia, 1995. This report may be found at the NHMRC website at:  
[www.health.gov.au:80/hfs/nhmrc/publications/synopses/wh18syn.htm](http://www.health.gov.au:80/hfs/nhmrc/publications/synopses/wh18syn.htm).
3. *A Framework for Managing the Quality of Health Services in NSW*. NSW Health Department, January 1999.
4. NSW Health Circular No. 97/107: *Guidelines for Investigation of a Stillbirth*. Issued 27 October 1997.
5. *The Clinicians Toolkit for Improving Patient Care*. Sydney: NSW Department of Health, 2001. This publication is available on Department of Health website at:  
[www.health.nsw.gov.au/health-public-affairs/publications/quality/toolkit.html](http://www.health.nsw.gov.au/health-public-affairs/publications/quality/toolkit.html).
6. *Qualified Privilege for Quality Improvement Committees and Programs in Health - Issues Paper for comment*. Sydney: NSW Department of Health, 2001. This publication may be obtained from the Department of Health website at:  
[www.health.nsw.gov.au/quality/qual\\_privilege.htm](http://www.health.nsw.gov.au/quality/qual_privilege.htm).

Robert McGregor  
**Acting Director-General**

**APPENDIX 1**

**NSW MATERNAL AND PERINATAL COMMITTEE  
CONFIDENTIAL REPORT ON PERINATAL DEATH**

**HOSPITAL:** \_\_\_\_\_

*Office use:* Reference No.: \_\_\_\_\_

**MOTHER DETAILS:**

**BABY DETAILS:**

Mother's name: \_\_\_\_\_

Baby's name: \_\_\_\_\_

Address: \_\_\_\_\_

Type of perinatal death:

Stillbirth

Neonatal death

Date of birth/ stillbirth: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

If liveborn: Date of death: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

Age at death: \_\_\_\_\_ day(s) \_\_\_\_\_ hour(s)

Medical Record No.:

Medical Record No.:

**For STILLBIRTHS complete Part A and for NEONATAL DEATHS complete Parts A and B**

**PART A**

**1. Was a postmortem examination carried out?**

Yes  No  Unknown

If yes, please include a copy of the report.

**2. Was histopathological examination of the placenta carried out?**

Yes  No  Unknown

If yes, please include a copy of the report.

If no: Placental weight:    grams

Describe the placental appearance:

**3. Is this baby one of a multiple pregnancy (twin, triplet etc)?**

Yes  No  Unknown

If yes: Number of babies

Birth order

**4. Bleeding during pregnancy?**

Yes  No  Unknown

If yes: Threatened miscarriage

Placental abruption

Placenta praevia

Vasa praevia

Undetermined

Other

If other, specify:

**5. Was hypertension present?**

Yes  No  Unknown

If yes: Chronic hypertension:

Essential

Secondary eg renal disease

Unspecified

Gestational hypertension

Pre-eclampsia

Chronic + superimposed pre-eclampsia

Unspecified

**6. Any other maternal diseases present in pregnancy?**

Yes  No  Unknown

If yes: Maternal injury:

Accidental

Non-accidental

Diabetes/gestational diabetes

Sepsis

Other

If other, specify:

**7. Was the death an unexplained antepartum death?**

Yes  No  Unknown

**8. When did the death occur?**

Before the onset of labour

During labour

Before birth, unknown time

After birth

**9. Was there fetal growth restriction (weight less than 10th percentile)?**

Yes  No  Unknown

Note: for stillbirths who died before the onset of labour, serial U/S evidence of FGR is required.

**10. Was there spontaneous preterm delivery (less than 37 weeks)?**

Yes  No  Unknown

If yes, what was the duration of rupture of membranes prior to delivery?

Less than 24 hours

24 hours or more

Unknown

**11. Was there intrapartum asphyxia?**

Yes  No  Unknown

**12. Gestational age:**   weeks

**13. Birthweight:**     grams

**14. Sex:** Male

Female

Indeterminate

**15. Onset of labour:**

Spontaneous

Induced

No labour

**16. Type of delivery:**

Normal vaginal delivery

Breech delivery

Caesarean section

Forceps delivery

Ventouse delivery

Other delivery

If other delivery, specify:

PART A (continued)	PART B (Neonatal deaths only)	MAIN CAUSE OF DEATH AND RELEVANT FACTORS																																																																										
<p><b>17. Were there cord complications?</b>            Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>            If yes, describe:            _____</p> <p><b>18. Was a major fetal abnormality present?</b>            Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>            If yes, describe            _____</p> <p><b>19. Was chorioamnionitis present?</b>            Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>            If yes, diagnosis was:                Pathological <input type="checkbox"/>                Clinical <input type="checkbox"/>            If yes, specify organism:            _____</p> <p><b>20. Infant/ fetal infection?</b>            Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>            If yes: Streptococcus Group B <input type="checkbox"/>                    E Coli <input type="checkbox"/>                    Listeria monocytogenes <input type="checkbox"/>                    Cytomegalovirus <input type="checkbox"/>                    Parvovirus <input type="checkbox"/>                    Herpes simplex virus <input type="checkbox"/>                    Rubella virus <input type="checkbox"/>                    Toxoplasma <input type="checkbox"/>                    Syphilis <input type="checkbox"/>                    Other <input type="checkbox"/>            If other, specify: <input type="checkbox"/></p> <p><b>21. Other conditions?</b>            Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/>            If yes: Twin-to-twin transfusion <input type="checkbox"/>                    Fetomaternal haemorrhage <input type="checkbox"/>                    Uterine abnormality <input type="checkbox"/>                    Birth trauma <input type="checkbox"/>                    Haemolytic disease <input type="checkbox"/>                    Idiopathic hydrops <input type="checkbox"/>                    Drug dependence/abuse <input type="checkbox"/>                    Termination of pregnancy <input type="checkbox"/>                    Other <input type="checkbox"/>            If other, specify: _____</p> <p><b>22. Classification of obstetric cause of death (see Attachment)</b>  <input style="width:100%; height:20px;" type="text"/></p>	<p><b>THE MAIN CAUSE OF DEATH (tick one):</b></p> <p><b>1. Congenital abnormality</b> <input type="checkbox"/>  <b>2. Extreme prematurity</b> <input type="checkbox"/>            If yes, was resuscitation carried out?            Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown <input type="checkbox"/></p> <p><b>3. Cardio-respiratory</b>            Hyaline membrane disease <input type="checkbox"/>            Meconium aspiration syndrome <input type="checkbox"/>            Primary persistent pulmonary hypertension <input type="checkbox"/>            Pulmonary hypoplasia <input type="checkbox"/>            Chronic neonatal lung disease <input type="checkbox"/>            Other <input type="checkbox"/>            If other, specify: _____</p> <p><b>4. Infection</b>            Congenital bacterial <input type="checkbox"/>            Acquired bacterial <input type="checkbox"/>            Congenital viral <input type="checkbox"/>            Acquired viral <input type="checkbox"/>            Protozoal eg Toxoplasma <input type="checkbox"/>            Spirochaetal eg Syphilis <input type="checkbox"/>            Fungal <input type="checkbox"/>            Other <input type="checkbox"/>            If other, specify: _____</p> <p><b>5. Neurological</b>            Hypoxic ischaemic encephalopathy/ perinatal asphyxia <input type="checkbox"/>            Intracranial haemorrhage <input type="checkbox"/>            Other <input type="checkbox"/>            If other, specify: _____</p> <p><b>6. Gastrointestinal</b>            Necrotising enterocolitis <input type="checkbox"/>            Other <input type="checkbox"/>            If other, specify: _____</p> <p><b>7. Other</b>            SIDS: <input type="checkbox"/>                Consistent with SIDS <input type="checkbox"/>                Possible SIDS <input type="checkbox"/>            Multisystem failure (only if unknown primary cause or trigger event) <input type="checkbox"/>            Trauma <input type="checkbox"/>            Undetermined <input type="checkbox"/>            Other <input type="checkbox"/>            If other, specify: _____</p>	<p><b>Main cause of death as determined by hospital perinatal death review committee</b>            _____            _____</p> <p><b>Relevant factors:</b>  <i>Antenatal:</i>            _____            _____</p> <p><i>Intrapartum:</i>            _____            _____</p> <p><i>Postpartum:</i>            _____            _____</p> <p><b>Form completed by:</b>            Name: _____            Date:                   /       /</p> <hr/> <p><b>DEFINITION: FETAL GROWTH RESTRICTION</b>            Less than the 10th percentile for gestation.</p> <table border="1" style="width:100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th rowspan="2">Gestation (weeks)</th> <th colspan="2">Weight (grams) 10th percentile</th> </tr> <tr> <th>Male</th> <th>Female</th> </tr> </thead> <tbody> <tr><td>22</td><td>400</td><td>400</td></tr> <tr><td>23</td><td>500</td><td>470</td></tr> <tr><td>24</td><td>520</td><td>540</td></tr> <tr><td>25</td><td>620</td><td>620</td></tr> <tr><td>26</td><td>720</td><td>680</td></tr> <tr><td>27</td><td>740</td><td>730</td></tr> <tr><td>28</td><td>850</td><td>760</td></tr> <tr><td>29</td><td>950</td><td>890</td></tr> <tr><td>30</td><td>1080</td><td>1045</td></tr> <tr><td>31</td><td>1310</td><td>1140</td></tr> <tr><td>32</td><td>1400</td><td>1340</td></tr> <tr><td>33</td><td>1640</td><td>1520</td></tr> <tr><td>34</td><td>1840</td><td>1760</td></tr> <tr><td>35</td><td>2110</td><td>2030</td></tr> <tr><td>36</td><td>2320</td><td>2220</td></tr> <tr><td>37</td><td>2550</td><td>2430</td></tr> <tr><td>38</td><td>2780</td><td>2660</td></tr> <tr><td>39</td><td>2940</td><td>2820</td></tr> <tr><td>40</td><td>3070</td><td>2950</td></tr> <tr><td>41</td><td>3180</td><td>3050</td></tr> <tr><td>42</td><td>3210</td><td>3080</td></tr> <tr><td>43</td><td>3080</td><td>2950</td></tr> <tr><td>44</td><td>3050</td><td>2930</td></tr> </tbody> </table> <p>Source: Roberts CL, Lancaster PAL. Australian national birthweight percentiles by gestational age. <i>Med J Aust</i> 1999; 170: 114-118.</p>	Gestation (weeks)	Weight (grams) 10th percentile		Male	Female	22	400	400	23	500	470	24	520	540	25	620	620	26	720	680	27	740	730	28	850	760	29	950	890	30	1080	1045	31	1310	1140	32	1400	1340	33	1640	1520	34	1840	1760	35	2110	2030	36	2320	2220	37	2550	2430	38	2780	2660	39	2940	2820	40	3070	2950	41	3180	3050	42	3210	3080	43	3080	2950	44	3050	2930
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## Australia and New Zealand Antecedent Classification of Perinatal Mortality

<p><b>1. Congenital abnormality</b> (including termination of pregnancy for congenital abnormality)</p> <p>1.1 Central nervous system</p> <p>1.2 Cardiovascular system</p> <p>1.3 Urinary tract</p> <p>1.4 Gastrointestinal tract</p> <p>1.5 Chromosomal</p> <p>1.6 Metabolic</p> <p>1.7 Multiple</p> <p>1.8 Other</p> <p>1.9 Unspecified</p> <p><b>2. Perinatal infection</b></p> <p>2.1 Bacterial</p> <p>2.11 Group B Streptococcus</p> <p>2.12 E Coli</p> <p>2.13 Listeria Monocytogenes</p> <p>2.18 Other bacterial</p> <p>2.19 Unspecified bacterial</p> <p>2.2 Viral</p> <p>2.21 Cytomegalovirus</p> <p>2.22 Parvovirus</p> <p>2.23 Herpes simplex virus</p> <p>2.24 Rubella virus</p> <p>2.28 Other viral</p> <p>2.29 Unspecified viral</p> <p>2.3 Protozoal eg Toxoplasma</p> <p>2.4 Spirochaetal eg Syphilis</p> <p>2.5 Fungal</p> <p>2.6 Other</p> <p>2.7 Unspecified organism</p> <p><b>3. Hypertension</b></p> <p>3.1 Chronic hypertension: essential</p> <p>3.2 Chronic hypertension: secondary eg renal disease</p> <p>3.3 Chronic hypertension: unspecified</p> <p>3.4 Gestational hypertension</p> <p>3.5 Pre-eclampsia</p> <p>3.6 Pre-eclampsia superimposed on pre-existing hypertension</p> <p>3.7 Unspecified hypertension</p> <p><b>4. Antepartum haemorrhage</b></p> <p>4.1 Placental abruption</p> <p>4.2 Placenta praevia</p> <p>4.3 Vasa praevia</p> <p>4.8 Other APH</p> <p>4.9 APH of undertermined origin</p> <p><b>5. Maternal disease</b></p> <p>5.1 Termination of pregnancy (other than for fetal abnormality)</p> <p>5.2 Diabetes / gestational diabetes</p> <p>5.3 Maternal injury</p> <p>5.31 Accidental</p> <p>5.32 Non-accidental</p> <p>5.4 Maternal sepsis</p> <p>5.5 Other maternal conditions eg Lupus obstetric syndrome</p> <p><b>6. Specific perinatal conditions</b></p> <p>6.1 Twin-to-twin transfusion</p> <p>6.2 Fetomaternal haemorrhage</p> <p>6.3 Antepartum cord complications</p> <p>6.4 Uterine abnormality</p> <p>6.5 Birth trauma (typically &gt;24 weeks or &gt; 600 grams)</p> <p>6.6 Haemolytic disease</p> <p>6.7 Idiopathic hydrops</p> <p>6.8 Other</p>	<p><b>7. Hypoxic peripartum death (typically &gt; 24 weeks or &gt; 600 grams)</b></p> <p>7.1 With intrapartum complications</p> <p>7.11 Uterine rupture</p> <p>7.12 Cord prolapse</p> <p>7.13 Shoulder dystocia</p> <p>7.18 Other</p> <p>7.2 No intrapartum complications</p> <p>7.9 Unspecified hypoxic peripartum death</p> <p><b>8. Fetal growth restriction (FGR)</b></p> <p>8.1 With evidence of uteroplacental insufficiency eg significant infarction, acute atherosclerosis, maternal vascular thrombosis or maternal floor infarction</p> <p>8.2 With chronic villitis</p> <p>8.3 Without the above placental pathology</p> <p>8.4 No examination of placenta</p> <p>8.9 Unspecified FGR or not known whether placenta examined</p> <p><b>9. Spontaneous preterm</b></p> <p>9.1 Spontaneous preterm with intact membranes, or membrane rupture less than 24 hours before delivery,</p> <p>9.11 with chorioamnionitis</p> <p>9.12 without chorioamnionitis</p> <p>9.13 no examination of the placenta</p> <p>9.19 unspecified or not known whether placenta examined</p> <p>9.2 Spontaneous preterm with membrane rupture <math>\geq</math> 24 hours before delivery,</p> <p>9.21 with chorioamnionitis</p> <p>9.22 without chorioamnionitis</p> <p>9.23 no examination of the placenta</p> <p>9.29 unspecified or not known whether placenta examined</p> <p>9.3 Spontaneous preterm with membrane rupture of unknown duration before delivery,</p> <p>9.31 with chorioamnionitis</p> <p>9.32 without chorioamnionitis</p> <p>9.33 no examination of the placenta</p> <p>9.39 unspecified or not known whether placenta examined</p> <p><b>10. Unexplained antepartum death</b></p> <p>10.1 With evidence of uteroplacental insufficiency eg significant infarction, acute atherosclerosis, maternal vascular thrombosis or maternal floor infarction.</p> <p>10.2 With chronic villitis</p> <p>10.3 Without the above placental pathology</p> <p>10.4 No examination of placenta</p> <p>10.9 Unspecified unexplained antepartum death or not known whether placenta examined.</p> <p><b>11. No obstetric antecedent</b></p> <p>11.1 SIDS</p> <p>11.11 Consistent with SIDS</p> <p>11.12 Possible SIDS</p> <p>11.2 Postnatally acquired infection</p> <p>11.3 Accidental asphyxiation</p> <p>11.4 Other accident, poisoning or violence (postnatal)</p> <p>11.8 Other</p> <p>11.9 Unknown / Unexplained</p>
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## **Appendix 2**

### **Guidelines for use of classifications**

#### **Australia and New Zealand Antecedent Classification of Perinatal Mortality (ANZACPM)**

**1. CONGENITAL ABNORMALITY (including terminations of pregnancy for congenital abnormalities)**

- 1.1 Central nervous system
- 1.2 Cardiovascular system
- 1.3 Urinary tract
- 1.4 Gastrointestinal tract
- 1.5 Chromosomal
- 1.6 Metabolic
- 1.7 Multiple
- 1.8 Other
- 1.9 Unspecified

This category includes deaths in which a congenital abnormality, whether structural, functional or chromosomal, is considered to have made a major contribution, even though the abnormality may not always be lethal. It includes terminations of pregnancy  $\geq 20$  weeks undertaken because of congenital abnormalities, even if they are not considered to be lethal abnormalities.

If fetal hydrops is associated with congenital abnormalities, eg with pulmonary hypoplasia or multiple abnormalities, it is classified here under Congenital abnormality, Category 1.7 Multiple. If fetal hydrops is the result of cardiac failure from congenital heart disease, it is classified here under Category 1.2 Cardiovascular system. If it occurs in isolation and the cause is unknown, classify under Specific Perinatal Conditions, Category 6.7 Idiopathic hydrops.

**2. PERINATAL INFECTION**

- 2.1 Bacterial
  - 2.11 Group B Streptococcus
  - 2.12 E coli
  - 2.13 Listeria monocytogenes
  - 2.18 Other bacterial
  - 2.19 Unspecified bacterial
- 2.2 Viral
  - 2.21 Cytomegalovirus
  - 2.22 Parvovirus
  - 2.23 Herpes simplex virus
  - 2.24 Rubella virus
  - 2.28 Other viral
  - 2.29 Unspecified viral
- 2.3 Protozoal eg Toxoplasma
- 2.4 Spirochaetal eg Syphilis
- 2.5 Fungal
- 2.8 Other
- 2.9 Unspecified organism

This category includes (i) primary infections occurring in term and preterm neonatal and fetal deaths and (ii) secondary infections eg following  $\geq 24$  hours of membrane rupture before delivery, resulting in neonatal early onset infection (within 48 hours of birth) in term infants. Deaths in preterm infants from such secondary infection would be classified under the Spontaneous Preterm group, Category 9.2.

In order to qualify for this category, there must be evidence of fetal or neonatal infection as described below ('Determination of Perinatal Infection').

**Examples:**

**Classify here:** Term prelabour rupture of the membranes, delivery following  $\geq 24$  hours of membrane rupture, neonatal pneumonia identified within 48 hours of birth, subsequent neonatal death, Group B Streptococcus identified on vaginal culture and in gastric aspirate. Classify as Category 2.11.

**Do not classify here:** Neonatal death from late onset ( $\geq 48$  hrs of age) Group B Streptococcal disease. Classify under No Obstetric Antecedent (Category 11.2).

**Determination of Perinatal Infection**

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Death type	Criteria of Infection
Fetal	1. Histological confirmation of infection in cord (funisitis) or fetus (pneumonitis or pneumonia) with or without microbiological evidence of infection. OR 2a. <i>Convincing clinical evidence of primary maternal infection</i> AND 2b. <i>Positive culture of a pathogen from mother or placenta</i>
Neonatal	Congenital infection Early onset infection (within 48 hours of birth), defined as: 1. Clinical signs in neonate consistent with sepsis AND 2. Haematological changes consistent with sepsis AND ONE OR MORE OF 3a – 3d 3a. <i>Positive culture of a pathogen (bacterial or viral) from the neonate</i> OR 3b. <i>Pathological evidence at autopsy</i> OR 3c. <i>Positive serology</i> OR 3d. <i>Positive culture of a pathogen from the mother or the placenta.</i>

NB: Some congenital viral infections may have onset later than 48 hours after birth.  
*For neonatal deaths occurring within a few hours of birth, especially those for which resuscitation was not attempted, where infection is presumed to be the cause of death, the infection criteria for fetal death may be used.*

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**3. HYPERTENSION**

- 3.1 Chronic hypertension: essential
- 3.2 Chronic hypertension: secondary, eg renal disease
- 3.3 Chronic hypertension: unspecified
- 3.4 Gestational hypertension
- 3.5 Pre-eclampsia
- 3.6 Pre-eclampsia superimposed on chronic hypertension
- 3.9 Unspecified hypertension

This category includes deaths where the hypertensive disorder is considered the factor initiating the chain of events leading to the death. If placental abruption complicates a hypertensive disorder, the death is classified here, as the abruption is attributed to the hypertensive disorder.

This category excludes the circumstance when the hypertension is secondary to an underlying systemic disorder, eg. diabetes, where this is severe and uncontrolled (in which case, classify as 5.2 Diabetes, under Maternal Conditions). However, if the systemic disorder such as diabetes or gestational diabetes is mild or well controlled, and the death appeared to be due to hypertension or its complications, code in this category. This category also includes hypertension secondary to renal disease as this often presents first with hypertension.

The classification of hypertension follows that of the Australasian Society for the Study of Hypertension in Pregnancy<sup>2</sup>, with the exceptions that unspecified subcategories have been included. The definitions also follow those in the consensus statement, which should be referred to whenever any classification difficulties arise:

Hypertension is diagnosed when the systolic blood pressure is  $\geq 140$  mm Hg and /or diastolic blood pressure (Korotkoff V) is  $\geq 90$  mm Hg. These blood pressures should be confirmed by repeated readings over several hours in a clinic or day assessment unit or after rest in hospital.

Gestational hypertension is defined as hypertension arising in pregnancy after 20 weeks gestation without any other feature of the multisystem disorder preeclampsia and which resolves within 3 months postpartum.

Preeclampsia may be defined as hypertension arising after 20 weeks gestation and the onset after 20 weeks gestation of one or more of: proteinuria, renal insufficiency, liver disease, neurological problems, haematological disturbances, fetal growth restriction. The hypertension will have returned to normal within 3 months postpartum.

#### **4. ANTEPARTUM HAEMORRHAGE (APH)**

- 4.1 Placental abruption
- 4.2 Placenta praevia
- 4.3 Vasa praevia
- 4.8 Other APH
- 4.9 APH of undetermined origin

This category includes all perinatal deaths where the primary factor leading to the death was an APH. If abruption occurs as a complication of a hypertensive disorder, the death is attributed to the hypertensive disorder (Category 3).

#### **5. MATERNAL CONDITIONS**

- 5.1 Termination of pregnancy (other than for congenital ( fetal) abnormality)
- 5.2 Diabetes / Gestational diabetes
- 5.3 Maternal injury
  - 5.31 Accidental
  - 5.32 Non-Accidental
- 5.4 Maternal sepsis
- 5.8 Other maternal conditions, eg. Lupus obstetric syndrome

Deaths attributed to any medical or surgical disorder in the mother, or to its complications or treatment, excluding hypertensive disorders. This category includes terminations of pregnancy (Category 5.1) undertaken for any other indication than congenital abnormality; a termination of pregnancy undertaken because of congenital abnormality would be classified under Congenital Abnormality, Category 1.

Renal disease is not included as a separate sub-category here, but under Hypertension, Category 3.2, as it usually presents first as hypertension.

Maternal conditions should only be attributed here if there is a high probability that they were the cause of death, eg a well-documented history of lupus obstetric syndrome with a previous stillbirth. Substance abuse may also be included under Other maternal conditions (5.8) if there is a significant history of abuse and the fetal or neonatal death is believed to have been caused by the abuse.

#### **Example:**

**Classify here:** Fetal death as a result of severe uncontrolled Type I Diabetes with mild pre-eclampsia Classify as Category 5.2, rather than Hypertension (Category 3).

## 6. SPECIFIC PERINATAL CONDITIONS

- 6.1 Twin-to-twin transfusion
- 6.2 Fetomaternal haemorrhage
- 6.3 Antepartum cord complications (eg cord haemorrhage; true knot with evidence of occlusion)
- 6.4 Uterine abnormalities, eg bicornuate uterus, cervical incompetence
- 6.5 Birth trauma (typically infants of >24 weeks gestation or >600g birthweight)
- 6.6 Haemolytic disease
- 6.7 Idiopathic hydrops
- 6.8 Other specific perinatal conditions (includes iatrogenic conditions such as rupture of membranes after amniocentesis, *termination of pregnancy for suspected but unconfirmed congenital abnormality.*)

This category includes deaths of normally formed, appropriately grown babies in which the specific perinatal condition made a major contribution.

Cord complications during labour should be categorised under Hypoxic Peripartum Death, Category 7.1

As preterm rupture of the membranes and preterm labour are often preceded by premature cervical dilatation as a result of subclinical infection, the subcategory of cervical incompetence should be reserved for those rare circumstances where the clinical history unequivocally points to pre-existing damage to the cervix from a surgical procedure or to congenital structural abnormality (as in some cases of DES exposure). Thus, there should be convincing evidence from the previous obstetric history and/or the state of the cervix, whether or not a cervical suture has been inserted.

Birth trauma: infants with evidence of significant trauma at autopsy (eg tentorial tears, skull fracture), typically those of >24 weeks gestation or >600g birthweight.

### Example:

**Do not classify here:** Spontaneous prelabour rupture of membranes (ROM) at 33 weeks, with immediate cord prolapse and fetal death. Categorise as Spontaneous Preterm (Category 9) as the cord complication occurred as a result of the preterm ROM.

## 7. HYPOXIC PERIPARTUM DEATH (typically infants of >24 weeks gestation or >600g birthweight)

- 7.1 With intrapartum complications
  - 7.11 *Uterine rupture*
  - 7.12 *Cord prolapse*
  - 7.13 *Shoulder dystocia*
  - 7.18 *Other*
- 7.2 No intrapartum complications
- 7.9 Unspecified hypoxic peripartum death

This category includes deaths from acute or chronic hypoxia of normally formed babies, typically of >24 weeks gestation or >600g birthweight, alive at the onset of labour, with or without intrapartum complications. A specific intrapartum complication, such as *uterine rupture*, cord prolapse or shoulder dystocia, is required for inclusion as 7.1; the presence of signs of 'non-reassuring fetal status' alone, without a specific intrapartum complication, would not qualify for classification as 7.1, and such cases should be classified as 7.2. The term 'non-reassuring fetal status' has been used in preference to the term 'fetal distress' as 'clinical signs often poorly predict a compromised fetus and continued use of this latter term may encourage wrong assumptions or inappropriate management'.<sup>3,4</sup> Neonatal deaths as a result of hypoxic ischaemic encephalopathy and otherwise unexplained severe cardiorespiratory depression at birth are included here. Where possible, evidence for intrapartum hypoxia should include fetal, umbilical artery or early neonatal (within one hour) blood gases showing evidence of a severe metabolic acidosis. Otherwise peripartum death might also be due to non-hypoxic causes, eg infection or chronic ischaemia but wrongly assumed to be due to acute hypoxia.

However, if there were no intrapartum complications, signs of non-reassuring fetal status in labour or reasons for severe cardiorespiratory depression at birth, but there was fetal growth restriction (FGR), then the death should be attributed to FGR, Category 8.

**Examples:**

**Classify here:** No known problems prior to labour at gestation 38 weeks. Severe fetal heart rate decelerations in second stage of labour. Baby is born with no signs of life. Classify as Category 7.2.

**Classify here:** No known problems prior to labour at 36 weeks. No FGR. No evidence of intrapartum fetal distress. At delivery, the baby shows signs of severe respiratory depression and hypoxia. Subsequently develops encephalopathy and multiorgan failure. Classify as 7.2.

## **8. FETAL GROWTH RESTRICTION (FGR)**

- 8.1 With evidence of uteroplacental insufficiency eg significant infarction, acute atherosclerosis, maternal vascular thrombosis or maternal floor infarction
- 8.2 With chronic villitis
- 8.3 Without the above placental pathology
- 8.4 No examination of placenta
- 8.9 Unspecified FGR or not known whether placenta examined

This category includes deaths of babies with birthweight <10th percentile for gestational age using the Australian national birthweight percentiles by gestational age<sup>6</sup> or in whom repeated ultrasound measurements have already shown growth restriction or growth arrest before death.

Suspected 'SGA' macerated fetus without prior ultrasound evidence of FGR should be classified as Unexplained Antepartum Death (Category 10), as the weight discrepancy is probably a post mortem effect.

## **9. SPONTANEOUS PRETERM (<37 weeks gestation)**

- 9.1 Spontaneous preterm with intact membranes, or membrane rupture <24 hours before delivery,
  - 9.11 with chorioamnionitis,
  - 9.12 without chorioamnionitis,
  - 9.13 no examination of placenta
  - 9.19 unspecified or not known whether placenta examined
- 9.2 Spontaneous preterm with membrane rupture ≥24 hours before delivery,
  - 9.21 with chorioamnionitis,
  - 9.22 without chorioamnionitis,
  - 9.23 no examination of placenta
  - 9.29 unspecified or not known whether placenta examined
- 9.3 Spontaneous preterm with membrane rupture of unknown duration before delivery,
  - 9.31 with chorioamnionitis,
  - 9.32 without chorioamnionitis,
  - 9.33 no examination of placenta
  - 9.39 unspecified or not known whether placenta examined.

Deaths of normally formed, appropriately grown preterm babies following spontaneous onset of preterm labour or spontaneous rupture of membranes, irrespective of mode of delivery. There should be no evidence of fetal or neonatal infection (see 'Determination of Perinatal Infection' above) among those with membranes ruptured less than 24 hours, otherwise classify under Category 2, Perinatal Infection. Careful examination of the placenta macroscopically and microscopically is recommended. The diagnosis of chorioamnionitis should only be made when there is histological or microbiological evidence of inflammation or infection of the placenta and membranes.

There may be some bleeding at the time of onset of labour, or earlier in pregnancy, but not in amounts to warrant the antecedent cause being attributed to Antepartum haemorrhage.

**Examples:**

**Classify here:** Spontaneous labour at 26 weeks, no apparent explanation, and membranes intact. Vaginal delivery after 6 hours of membrane rupture, no evidence of intrapartum hypoxia or chorioamnionitis; subsequent early neonatal death from respiratory distress syndrome. Classify here as Category 9.12.

**Classify here:** Spontaneous onset of labour at 28 weeks with intact membranes. No cause identified for preterm labour. Delivery following 24 hours of membrane rupture. Maternal intrapartum pyrexia. Chorioamnionitis on placental histology, no organism identified. Classify here as Category 9.21.

## 10. UNEXPLAINED ANTEPARTUM DEATH

- 10.1 With evidence of uteroplacental insufficiency, eg significant infarction, acute atherosclerosis, maternal vascular thrombosis or maternal floor infarction.
- 10.2 With chronic villitis
- 10.3 Without the above placental pathology
- 10.4 No examination of placenta
- 10.9 Unspecified unexplained antepartum death or not known whether placenta examined

This category includes deaths of normally formed fetuses prior to the onset of labour where no predisposing factors are considered likely to have caused the death eg FGR or any other primary complication such as spontaneous preterm ROM.

**Examples:**

**Classify here:** Intrauterine Fetal Death (IUFD) at 27 weeks, with membranes intact, before onset of labour, no explanation. No autopsy or examination of placenta. Classify as Unexplained Antepartum Death, Category 10.4.

**Do not classify here:** Spontaneous ROM at 27 weeks, no significant maternal conditions present, subsequent IUFD prior to onset of labour. No chorioamnionitis. Classify as Spontaneous Preterm (Category 9.32).

## 11. NO OBSTETRIC ANTECEDENT

- 11.1 SIDS
  - 11.11 Consistent with SIDS
  - 11.12 Possible SIDS
- 11.2 Postnatally acquired infection
- 11.3 Accidental asphyxiation
- 11.4 Other accident, poisoning or violence (postnatal)
- 11.8 Other
- 11.9 Unknown / Unexplained

SIDS is defined as 'the sudden death of an infant under one year of age which remains unexplained after a thorough case investigation including performance of a complete autopsy, examination of the death scene, and review of the clinical history'.<sup>7</sup>

Where all these criteria are not met, eg there is no death scene examination, but the death is otherwise consistent with SIDS, it may be coded as Possible SIDS (Subcategory 11.12).

# Australia and New Zealand Neonatal Death Classification

The Neonatal Death Classification has been developed for use in conjunction with the ANZ Antecedent Classification of Perinatal Mortality in order to provide more comprehensive information on the factors in the neonatal period associated with neonatal deaths.

For example, a mother who has an antepartum haemorrhage at 32 weeks gestation delivers a 1500g infant which thrives in the neonatal nursery but subsequently acquires a lethal nosocomial infection: the obstetric antecedent is antepartum haemorrhage, but neonatal death classification is Acquired Bacterial (Category 4.12). Neonatal nosocomial infection is an important potentially preventable factor and its contribution to perinatal deaths may not be identified by applying the antecedent classification alone.

## 1. CONGENITAL ABNORMALITY

This classification should be used in conjunction with the ANZACPM Category 1-Congenital Abnormality, in order to identify the type of abnormality.

- 1.1 Central nervous system
- 1.2 Cardiovascular system
- 1.3 Urinary tract
- 1.4 Gastrointestinal tract
- 1.5 Chromosomal
- 1.6 Metabolic
- 1.7 Multiple
- 1.8 Other congenital abnormality
- 1.9 Unspecified congenital abnormality

## 2. EXTREME PREMATUREITY (typically infants of $\leq 24$ weeks gestation or $\leq 600$ g birthweight)

This group includes infants deemed too immature for resuscitation or continued life support beyond the delivery room, typically infants of gestational age  $\leq 24$  weeks or birthweight  $\leq 600$ g. Resuscitation in this context means the use of positive pressure ventilation.

- 2.1 Not resuscitated
- 2.2 Unsuccessful resuscitation
- 2.9 Unspecified or unknown whether resuscitation attempted

## 3. CARDIO-RESPIRATORY DISORDERS

- 3.1 Hyaline membrane disease / Respiratory distress syndrome (RDS)
- 3.2 Meconium aspiration syndrome
- 3.3 Primary persistent pulmonary hypertension
- 3.4 Pulmonary hypoplasia
- 3.5 Chronic neonatal lung disease (typically, bronchopulmonary dysplasia)
- 3.8 Other

Subcategory 3.1 Hyaline membrane disease / Respiratory Distress Syndrome (RDS) is used for deaths of infants who were receiving mechanical ventilation for RDS at the time of death or at the time of the complication which led to the death.

Neonates with resolving RDS, ie who are past the acute phase of the disease and are stable or improving, but who are still on low rate ventilation for immature lungs, extreme prematurity or apnoea,

or who no longer require mechanical ventilation, and who developed a complication which led to the death should be classified according to that particular complication. For example, a non-ventilated neonate who dies of sepsis, is classified as Infection, Category 4.

Categorisation as chronic neonatal lung disease (Subcategory 3.5) should be reserved for infants with deteriorating lung function and major chest Xray changes consistent with bronchopulmonary dysplasia.

#### **4. INFECTION**

- 4.1 Bacterial
  - 4.11 Congenital bacterial
  - 4.12 Acquired bacterial
- 4.2 Viral
  - 4.21 Congenital viral
  - 4.22 Acquired viral
- 4.3 Protozoal eg Toxoplasma
- 4.4 Spirochaetal eg Syphilis
- 4.5 Fungal
- 4.8 Other
- 4.9 Unspecified organism

#### **Determination of Infection**

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##### **A. Congenital**

Early onset infection (within 48 hours of birth), defined as:

1. Clinical signs in neonate consistent with sepsis  
AND
2. Haematological changes consistent with sepsis  
AND
- 3a. Positive culture of a pathogen (bacterial or viral) from the neonate  
OR
- 3b. Pathological evidence at autopsy  
OR
- 3c. Positive serology  
OR
- 3d. Positive culture of a pathogen from the mother or the placenta.

NB: Some congenital viral infections may have onset later than 48 hours after birth.

##### **B. Acquired**

Onset of infection at 48 hours or later, with criteria as above, but excluding 3d.

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#### **5. NEUROLOGICAL**

- 5.1 Hypoxic ischaemic encephalopathy / Perinatal asphyxia (typically infants of >24 weeks gestation or >600g birthweight)
- 5.2 Intracranial haemorrhage
- 5.8 Other

Inclusion as hypoxic ischaemic encephalopathy or perinatal asphyxia usually requires a sentinel asphyxial event +/- evidence of severe non-reassuring fetal status or early onset encephalopathy. Examples of sentinel events:

- Massive antepartum haemorrhage from abruption, placenta praevia or ruptured vasa praevia
- Breech presentation or delivery with complications, eg cervical constriction ring or difficult delivery
- Feto-maternal haemorrhage
- Twin-to-twin transfusion

This would apply to infants typically of > 24 weeks gestation or of > 600g birthweight.

Where possible, evidence for perinatal asphyxia should include fetal, umbilical artery or early neonatal (within one hour) blood gases showing evidence of a severe metabolic acidosis. Otherwise peripartum death might also be due to non-hypoxic causes, eg infection or chronic ischaemia but wrongly assumed to be due to acute hypoxia.

## **6. GASTROINTESTINAL**

- 6.1 Necrotising enterocolitis
- 6.8 Other

## **7. OTHER**

- 7.1 SIDS
- 7.2 Multisystem failure-only if unknown primary cause or trigger event
- 7.3 Trauma
- 7.8 Other
- 7.9 Undetermined / Unknown
- 7.11 Consistent with SIDS
- 7.12 Possible SIDS

SIDS is defined as 'the sudden death of an infant under one year of age which remains unexplained after a thorough case investigation including performance of a complete autopsy, examination of the death scene, and review of the clinical history'.<sup>7</sup> Where all these criteria are not met, eg there is no death scene examination, but the death is otherwise consistent with SIDS, it may be coded as Possible SIDS (Subcategory 7.12).

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