



Tasmania
DEPARTMENT *of*
HEALTH *and*
HUMAN SERVICES

**Council of Obstetric & Paediatric
Mortality & Morbidity**

Tasmania



**Annual Report for
2004**

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Introduction

The members of the Council of Obstetric & Paediatric Mortality & Morbidity are pleased to be able to present the Annual Report for 2004.

Simon Parsons
Chairperson
Council of Obstetric and Paediatric Mortality and Morbidity.

Disclaimer:

During the production of this report several issues of data accuracy and problems of database integrity were encountered. While not downgrading the value of the information contained within this report, the possibility that some inaccuracies exist in the data as presented should be noted.

Acknowledgments

The production of this Report relies on the assistance, willing co-operation and on-going support of numerous individuals and professional groups, which include:

- Members of the Council of Obstetric and Paediatric Mortality and Morbidity, and its sub-committees (Paediatric Mortality & Morbidity, Maternal Mortality & Morbidity, Perinatal Mortality & Morbidity and Data Management);
- Obstetricians, Paediatricians and Midwives working in all parts of Tasmania;
- The state Coroner's Office and staff;
- The Australian Bureau of Statistics;
- Births, Deaths and Marriages;
- The Tasmanian Department of Health & Human Services;
- Launceston General Hospital;
- Northwest Private Hospital;
- Mersey Community Hospital;
- North Eastern Soldiers Memorial Hospital (Scottsdale);
- Smithton District Hospital;
- Calvary Private Hospital;
- Royal Hobart Hospital; and
- The Hobart Private Hospital.

Perinatal Registry Act 1994

The *Perinatal Registry Act* was given Royal Assent on the 10th May, 1994. Under the Act the Council of Obstetric and Paediatric Mortality and Morbidity was established, and given the following functions:

1. To investigate the circumstances surrounding, and the conditions that may have caused:
 - Maternal and perinatal deaths in Tasmania;
 - Deaths of children in Tasmania in the age group from 29 days to 14 years;
 - Congenital abnormalities in children born in Tasmania; and
 - Injuries, illness or defects suffered by pregnant women or viable foetuses in Tasmania at any time before or during childbirth.
2. To maintain a perinatal data collection for the purposes of:
 - Collecting, studying, researching and interpreting information relating to maternal and perinatal deaths;
 - Collecting, studying, researching and interpreting information relating to births in Tasmania;
 - Identifying and monitoring trends in respect of perinatal health (including congenital abnormalities);
 - Providing information to the Secretary for Health & Human Services on the requirements for and the planning of obstetric and neonatal care;
 - Providing information to persons employed in health care and to researchers; and
 - Maintaining a register of congenital abnormalities.
3. To provide information for the education and instruction in medical theory and practice in obstetrics and paediatrics for legally qualified medical practitioners and nurses.
4. To investigate and report on any other matters relating to obstetric and paediatric mortality and morbidity referred to the Council by the Minister or the Secretary for Health & Human Services.
5. To perform any other functions imposed by the *Perinatal Registry Act* or any other Act or the regulations.

Definitions Prescribed under the Perinatal Registry Act

Abortion / Miscarriage: Spontaneous or medically induced termination of pregnancy before the foetus is viable (before 20 weeks gestation)

Low birthweight: An infant born weighing less than 2500 grams

Very low birthweight: An infant born weighing less than 1500 grams

Extremely low birthweight: An infant born weighing less than 1000 grams

Infant death: A death, occurring within 1 year of birth in a liveborn infant whose birthweight was at least 400 grams, or at least of 20 weeks gestation if the birthweight was not known.

Maternal death: means:

- (a) the death of a woman caused by, or that may have been caused by, her pregnancy or in which her pregnancy was, or may have been, a contributing factor; or
- (b) the death of a woman that occurs before the twenty-ninth day after the day on which the woman gave birth to a child; or
- (c) the death of a woman caused by, or that may have been caused by, her giving birth to a child, or in which her giving birth to a child was, or may have been, a contributing factor.

Neonatal death: A death occurring within 28 days of birth in an infant whose birthweight was at least 400 grams, or if the weight was not known, an infant born after at least 20 weeks of gestation.

Preterm: An infant with a gestational age of less than 37 completed weeks.

Sudden Infant Death Syndrome (SIDS): Sudden death of an infant under 1 year of age, which remains unexplained after a thorough case investigation including performance of a complete autopsy, examination of the death scene, and a review of the clinical history.¹

Stillbirth: A foetal death prior to the complete expulsion or extraction from its mother of a product of conception of 20 or more completed weeks of gestation or 400 grams or more birthweight; the death is indicated by the fact that after such separation the foetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles.²

¹ Willinger, M., James, L.S. & Catz, C. Defining the Sudden Infant death Syndrome (SIDS): Deliberations of an Expert Panel convened by the National Institute of Child Health & Human Development. *Paediatric Pathology* 11:667-684, 1991

² National Health Data Dictionary V10.0

Members of the Council of Obstetric & Paediatric Mortality & Morbidity

Organisation	Membership 2004	Current Membership as of October 2006
Nominees of the University of Tasmania (2)	Professor Allan Carmichael	Professor Allan Carmichael & Professor Michael Humphrey
Person nominated by the Secretary employed in delivery of Neonatal Services	Dr Simon Parsons	Dr Peter Dargaville
Person nominated by the Secretary employed in the Department of Health & Human Services	Ms Mary Blackwood	Mr Nick Goddard
Nominee of the Tasmanian Branch of the Royal Australian & NZ College of Obstetricians and Gynaecologists	Dr Melwyn D'Mello	Dr James Brodribb
Nominee of the Tasmanian Branch of the Paediatric and Child Health Division of the Royal Australian College of Physicians	Dr Elizabeth Hallam	Dr Simon Parsons
Nominee of the Tasmanian Branch of the Royal Australian College of General Practitioners	Dr Thomas (Geoff) Shannon	Dr Thomas (Geoff) Shannon
Nominee of the Tasmanian Branch of the Australian College of Midwives Inc.	Ms Ruth Forrest	Mr Peter Askey-Doran
Additional Member Nominated by Council to Represent community interests	Ms Ros Escott	Ms Ros Escott Mr David Fanning, Commissioner for Children

Members of Sub-Committees & Support Services

Name of Subcommittee	Membership in 2004	*Current Membership as of Oct 2006
Maternal Mortality & Morbidity Subcommittee	Dr Shelby Jarrell (Chair) Dr Melwyn D'Mello Ms Ruth Forrest	Professor Michael Humphrey (Chair) Dr James Brodribb Mr Peter Askey-Doran
Paediatric Mortality & Morbidity Subcommittee	Dr Elizabeth Hallam (Chair) Dr Thomas (Geoff) Shannon Dr Chris Lawrence	Dr Simon Parsons (Chair) Dr Elizabeth Hallam Dr Thomas (Geoff) Shannon Mr David Fanning Dr Chris Lawrence
Perinatal Mortality & Morbidity Subcommittee	Dr Simon Parsons (Chair) Dr Melwyn D'Mello	Dr Simon Parsons (Chair) Dr James Brodribb Dr Peter Dargaville
Data Management Subcommittee	Dr Rupert Sherwood (Chair) Dr Melwyn D'Mello Dr Michelle Williams Ms Fiona French	Vacant
National Perinatal Data Development Committee- Tasmanian Representative	Ms Karen Wheeler Mr Peter Mansfield	Mr Peter Mansfield
Executive	Ms Karen Wheeler Ms Jane Wood	Dr Jo Jordan
Support Staff	Ms Diane Hickie (Perinatal Data)	Ms Peggy Tsang (Planning & Performance Review) Ms Helen Galea (Clinical Data Services) Ms Diane Hickie (Perinatal Data)

** Due to the late release of this Report it was considered relevant to include current membership in view of their contribution to and preparation of this Report*

Council Summary

Perinatal Statistics at a Glance

- The birth rate in Tasmania is stable and is currently 11.5 per 1 000 head of population (Table 3).
- From 1999 the gap between the percentage of public and private maternity patients (Figure 2) had begun to close. During 2003 a reversal in this trend was observed and this continues with the proportion of private patients decreasing from 34.4% to 33.0%.
- The percentage of female infants remains at 48% (Table 7).
- The proportion of low birthweight infants is stable at 6.0% in 2004 (Table 8).
- The resuscitation rate remains low, with 4.4% of all births reported as requiring some resuscitative intervention (Table 12). Tasmania's reported resuscitation rate is significantly lower than all other States and Territories; however some states define "resuscitation" differently.
- The Perinatal Mortality Rate (Table 15) has fallen 30% from 13.2 per 1 000 births in 2003 to 9.2 per 1 000 in 2004. Tasmania's rate is now only slightly higher than the Australian average of 8 per 1 000 (Figure 7).
- The Stillbirth Rate is 6.9 per 1 000, a decline of 21% from 8.7 per 1 000 in 2003.
- The Neonatal Mortality Rate has declined 49% to 2.3 per 1 000 births from 4.5 per 1 000, mostly due to improved survival of infants < 1 000gms. (Table 17).
- Spontaneous pre-term births and foetal growth restriction are the greatest causes of perinatal mortality (Table 16). The previously high number of unexplained stillbirths has reduced due to improved investigation of cases and proper classification.
- The rate of autopsy has fallen to 2.0% from 7.8% in 2003 (Table 21).
- The teenage pregnancy rate remains steady at 7% (Table 22), which is slightly lower than the national average (Figure 9). The proportion of mothers aged 40 years or more has increased from 2% to 3 %.
- The caesarean section rate has increased from 22% in 2002 and 26% in 2003 to 27% in 2004 (Table 29). This is due to an increased C-section rate in the preterm group. The elective caesarean section rate has remained fairly constant at 49.1% (Table 32).

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- The rate of induction of labour was 27% of all births (Table 43), while the percentage of caesarean sections following induction of labour has increased from 13% in 2002 to 16% in 2003 to 19% in 2004.
 - Augmentation of labour rate is stable at 31.1% (Table 46).

Recommendations

The following recommendations have been made:

From the Perinatal Mortality & Morbidity Sub-Committee

1. Improved NETS/PETS Service with the aircraft (preferably helicopter) base location in Hobart (negotiations are underway but no progress has been made).
2. Improved regional paediatrician training in resuscitation.
3. In-house Obstetric registrar at all times at the RHH (in place).
4. There is emerging data to suggest that cervical hot loop excision (LLETZ) is not attended by a degree of risk of developing cervical incompetence.
5. Analysis of preterm surviving infants data suggests that PROM at gestations prior to or around 20 weeks is now associated with reasonable survival and should not be seen as indicating non-viability of the foetus.
6. Approximately 24% of stillbirths were associated with unrecognised foetal growth restriction. The Council recommends the development of a state-wide protocol to allow the early detection of foetal growth restriction.
7. The Council recommends a formal process to be developed for assessing pregnancies where late termination is being considered in relation to foetal abnormality. Legislative review is required in this area.

From the Paediatric Mortality & Morbidity Sub-Committee

1. The number of children dying in house fires was extraordinary and the Council recommends the causative factors be identified and prevention measures instigated.
2. Children with neuromuscular diseases and at risk of respiratory or cardiac compromise should be managed in conjunction with a home respiratory support program, such as the one now operating through the Department of Paediatrics at the Royal Hobart Hospital. Clinicians are happy to be referred any such patients for assessment and ongoing management in conjunction with local centres.
3. In all cases of children requiring palliative care and end of life decision making detailed discussion should be undertaken with the parents and

appropriate others. The outcomes of these discussions should be clearly documented in the child's medical records to provide a clear direction for the management of the case and assist in the review of such cases.

4. Road design/town planning improvements are required to establish pedestrian and bicycle trail systems separate from our roads.

From the Maternal Mortality & Morbidity Sub-Committee

Nil

Conclusion

The Council recognises that the State's Perinatal Mortality rate has been at similarly low levels in the 1990's, but believes that at least part of the more recent decline in Perinatal Mortality reflects the increased survival, when compared with 2003 data, of VLBW infants as a direct result of increased resources and skill levels of staff throughout Women's and Children's Services, but especially at the Royal Hobart Hospital. The Councils hopes that this decline can be sustained into the future. Preliminary figures from 2005 indicate only 5 neonatal deaths (as opposed to 14 in 2004) indicating the decline in neonatal mortality will continue.

Committee Reports

Maternal Mortality & Morbidity Sub-Committee

Maternal Deaths for 2004

One maternal death occurred in Tasmania in 2004. In this case a 28 year old, G2P2, woman with known polyhydramnios was admitted to hospital with possible pre term labour at 32 weeks gestation. She had a previous history of pre term delivery of a liveborn infant via caesarean section. The woman had suffered from pre-eclampsia during that pregnancy. She also had a history of epilepsy for which she was prescribed Tegretol.

Two weeks prior to this admission she had undergone drainage of 500 mls of amniotic fluid. In the early hours of the morning on the day after admission the woman notified staff that her waters had broken. The Registered Nurse on duty went to notify the delivery suite and on her return discovered the patient cyanosed and fitting with obvious respiratory distress. The Medical Emergency Team was called and the anaesthetist summoned. The patient was transferred to the delivery suite but went into cardiac arrest during transit. A code blue was called and active resuscitation commenced.

An emergency caesarean section was performed to aid resuscitation and the patient was subsequently transferred to the Intensive Care Unit. The woman's heart rate was unresponsive to increasing noradrenaline doses and satisfactory circulation was unable to be established. Further treatment efforts were ceased. The post mortem identified the cause of death as amniotic fluid embolism.

The Maternal Mortality & Morbidity Committee has classified this death as a direct maternal death. Polyhydramnios is a known associated factor in amniotic fluid embolism, however it is not predictive that such an event will occur. Amniotic fluid embolism occurs once in every 80 000 pregnancies, and there is an 80% mortality rate. There were no preventable factors in this case and consequently no recommendations to be made.

Recommendations:

Nil

Perinatal Mortality & Morbidity Sub-Committee

Perinatal Deaths for 2004

There were **51** perinatal deaths in Tasmania for 2004. This includes all infants (both live and stillborn) who were greater than 20 weeks gestation, or weighed 400 grams or more at birth. **14** of these deaths were neonatal deaths (liveborn infants who did not live beyond 28 days of age) with **37** stillbirths. The overall perinatal mortality was **9.2** per 1 000 births. The neonatal mortality rate was **2.3** per 1 000 births, with a stillbirth rate of **6.9** per 1 000 births.

The Australia and New Zealand Perinatal Mortality Classification was used to classify the Perinatal Deaths.

Table 1: Perinatal Deaths for 2004

Cause of Death	Number of deaths				
	2000	2001	2002	2003	2004
Congenital Abnormality	9	16	12	15*	8
Perinatal Infection	1	1	0	2	3
Hypertension	1	2	2	0	0
Antepartum Haemorrhage	5	5	6	8	8
Maternal Conditions	2	3	2	4	5
Specific Perinatal Conditions	7	0	7	4	3
Hypoxic Peripartum Death	3	0	5	1	4
Foetal Growth Restriction	1	1	1	3	9
Spontaneous Pre-Term	15	8	19	19	10
Unexplained Antepartum Deaths	16	16	16	15	1
No Obstetric Antecedent	1	0	2	2	0
Birth Trauma	0	0	1	0	0
	61	57	73	73	51

* Excludes two infants who was born in Tasmania but died interstate and therefore not included in the Tasmanian perinatal mortality rate. One had severe exophthalmos and Tetralogy of Fallot. The second had Smith-Lemi-Optiz syndrome and hypoplastic right ventricle.

1. Congenital Abnormalities

There was 1 neonatal death in Tasmania associated with a congenital abnormality. This infant with Trisomy 13 died of respiratory compromise.

Terminations for maternal health reasons explained the death of one foetus with Trisomy 21; one foetus with Trisomy 13; one foetus with cystic hygroma and suspected aneuploidy; one foetus with meningomyelocele; and one infant with anencephaly.

There were 2 FDIU due to congenital abnormalities; one with gastroschisis; and one with holoprosencephaly.

2. Perinatal Infections

There were 2 neonatal deaths associated with infectious conditions. A 25 week gestation infant died of gram negative sepsis and a 28 week gestation infant died of

sepsis of unknown aetiology with associated autopsy diagnosed mild coarctation of the aorta.

There was one stillbirth at 25 weeks from infection associated with PROM.

3. Hypertension

There were no perinatal deaths related to maternal hypertension.

4. Antepartum Haemorrhage

There were 8 stillbirths due to APH.

5. Maternal Conditions

One due to trauma; two due to a termination at 20-21 weeks due to PROM; two due to cervical incompetence secondary to cervical surgery for precancerous cervical conditions.

6. Specific Perinatal Conditions

One feto-maternal haemorrhage and two incidences of in-utero cord entanglements.

7. Hypoxic Peripartum Death

There were 2 neonatal deaths resulting from hypoxic injury. One infant died at term from severe HIE after emergency delivery in the presence of maternal cardiac arrest secondary to amniotic fluid embolus. The absence of an in-house Obstetric Registrar was identified as contributing to this death.

A third infant born at 33 weeks gestation died of HIE contributed to by placenta praevia and APH. Resuscitation of the infant was not ideal, but likely did not affect the outcome.

One umbilical cord haematoma led to a FDIU.

8. Foetal Growth Restrictions

In most cases of FDIUs associated with severe IUGR, the IUGR was unrecognised prior to the foetal death.

9. Spontaneous Pre-Term

There were 9 neonatal deaths associated with prematurity.

Of these neonatal deaths, 6 infants were 23 weeks or less gestation.

One infant of 29 weeks gestation had associated pulmonary hypoplasia due to prolonged premature rupture of membranes. This infant died awaiting NETS transfer to Melbourne due to lack of beds at the RHH.

One infant died at 29 weeks gestation with a massive unexpected intracerebral haemorrhage.

One infant born at 24 weeks gestation had treatment discontinued due to bilateral grade IV intracerebral haemorrhages.

There was 1 stillbirth associated with extreme prematurity at 22 weeks.

10. Unexplained Antepartum Deaths

One case was reported as shown in Table 1.

11. No Obstetric Antecedent

There were no unexplained neonatal deaths (i.e. from SIDS).

12. Birth Trauma

There were no perinatal deaths from birth trauma.

Issues:

The review of neonatal mortality identified the following issues:

- Transport delays in transferring critically ill infants to the Royal Hobart Hospital and lack of neonatal and paediatric intensive care beds remain an issue. A Hobart based (both team and helicopter) paediatric and neonatal transport service is strongly recommended, but negotiations with the government have stalled. A new and enlarged neonatal and paediatric intensive care unit is currently under construction in Hobart.
- A need for the introduction of an in-house Obstetric Registrar at the RHH (now in place).
- Regional practitioners require greater experience and training in paediatric resuscitation. We again recommend that credentialing in Paediatric Advanced Life Support (and the new Neonatal Resuscitation curriculum being developed in Australia) be compulsory for all paediatricians and paediatric registrars licensed in Tasmania. The experience level of regional practitioners will always be adversely affected by low patient volumes and as such the NW community will be better served if services are centralized.
- The fall in neonatal mortality has been contributed to by the improved survival of very low birthweight infants, because of improved services at the RHH NICU, particularly the introduction of sub-specialist Neonatologists/Intensivists and High Frequency Oscillatory Ventilation. This conclusion has been reached by the Council after a direct comparison of the causes of preterm deaths from 2003 and 2004.
- The number of unexplained stillbirths has also decreased, and is now in line with other states. This apparent reduction is due to better classification of stillbirths based on more rigorous investigation of the cases by the Council.

Recommendations:

1. Improved NETS Service with aircraft (preferably helicopter) location in Hobart (negotiations are underway).
2. Improved regional paediatrician training in resuscitation.

-
3. In-house Obstetric registrar at all times at the RHH (in place).
 4. There is emerging data to suggest that cervical hot loop excision (LLETZ) is not attended by a degree of risk of developing cervical incompetence.
 5. New survival data suggests that PROM at gestations prior to or around 20 weeks is now associated with reasonable survival and should not be seen as indicating non-viability of the foetus (reference).
 6. Approximately 24% of stillbirths were associated with unrecognised foetal growth restriction. The Council recommends the development of a state-wide protocol to allow the early detection of foetal growth restriction.
 7. The Council recommends a formal process to be developed for assessing pregnancies where late termination is being considered in relation to foetal abnormality. Legislative review is required in this area.

Paediatric Mortality & Morbidity Sub-Committee

Paediatric Deaths for 2004

The Council's Terms of Reference in relation to paediatric mortality and as specified under the *Perinatal Registry Act, 1994* are:

To investigate the circumstances surrounding, and the conditions that may have caused: deaths of children in Tasmania in the age group from 29 days to 14 years.

There were a total of **18** paediatric deaths in Tasmania during 2004. Due to the relatively small number of paediatric deaths, paediatric mortality is classified using a broad four category classification system. Paediatric deaths for the years 2001 to 2004 have been classified as follows:

Table 2: Paediatric Deaths for 2004

Cause of Death	2001	2002	2003	2004
Conditions determined at birth	3	3	7	1
Acquired conditions	8	8	5	3
Sudden Infant Death Syndrome	8	2	2	4
Injuries	4	12*	4	10
Cases still under investigation	1	1	2	0
Unknown/Indeterminate	2	1	1	0
TOTAL	26	27	21	18

* One infant died interstate, however the injury leading to the infant's death was sustained in Tasmania.

The number of paediatric deaths in Tasmania during 2004 is slightly lower than that recorded in 2003. Deaths according to injury accounted for 56% of all deaths in 2004 and are more than double the number of injury related deaths recorded for 2003.

Death by injury is not a predictable trend and the high number of injuries in 2002 (12) and 2004 (10) cannot be meaningfully compared with the low numbers in both 2001 and 2003 (4).

There is a slight increase in the number of SIDS deaths for 2004 in the paediatric age range compared to the previous two years, all with at least one significant risk factor present.

1. CONDITIONS DETERMINED AT BIRTH

There was only one paediatric death in this category for 2004 in relation to a 13 year old child due to cardiomyopathy and Duchenne's muscular dystrophy.

Several factors contributed to the death of this child occurring at a relatively young age. The average life expectancy for Duchenne's has increased in the last decade to 25 years if these children are provided with home overnight BIPAP or CPAP mask ventilation at the appropriate time. This requires routine screening for

the onset of significant respiratory compromise and access to sleep studies. Such children should also have regular cardiac ultrasound assessments to detect early cardiomyopathy and medical therapy to prolong life instigated. The case also highlighted a shortage of intensive care beds dedicated to children in Tasmania, a situation that is being rectified with the building of a new joint neonatal and paediatric intensive care unit in Hobart.

2. ACQUIRED CONDITIONS

There were three deaths in children ranging from the ages of 5 years to 13 years where the cause of death was an acquired condition in 2004. One child suffered from Ewings Sarcoma, another of Osteosarcoma and the third suffered hypoxic brain damage of uncertain aetiology.

3. SUDDEN INFANT DEATH SYNDROME

There were four paediatric sudden infant deaths in 2004 with infants aged 3 months to 7 months. Three of these infants were male and one was female. Two of the deaths were attributable to an unsafe sleeping position while the other two deaths had multiple risk factors (at least three) present. The following risk factors were noted for both of these cases:

- a. Both infants died while they were sleeping in the same bed as their parents and possibly other children;
- b. There was a history of smoking in the household;
- c. There was evidence of alcohol consumption; and
- d. Infants were in unsafe bedding environments including use of a doona, fold-up bed and an unsafe mattress.

The rate of deaths attributed to SIDS is probably high relative to our population. Recently South Australia reported only 1 death per annum from a population 3 times that of Tasmania, and Victoria reported 26 deaths from a population 10 times that of Tasmania.

4. INJURY

Ten children died as a result of injury in 2004. The age of the children ranged from two years to 15 years and involved seven females and three males. Six of the deaths were as a result of three separate house fires, one was a cyclist hit by a car, another drowned after going missing in the bush, one suffered a head injury from a tree felling incident and another died from an accidental hanging.

5. CASES STILL UNDER INVESTIGATION

There were no deaths in this category during 2004.

6. UNKNOWN/INDETERMINATE

There were no deaths during this category during 2004.

Recommendations:

1. The number of children dying in house fires was extraordinary and the Council recommends the causative factors be identified and prevention measures instigated.
2. Children with neuromuscular diseases and at risk of respiratory or cardiac compromise should be managed in conjunction with a home respiratory support program, such as the one now operating through the Department of Paediatrics at the Royal Hobart Hospital.
3. In all cases of children requiring palliative care and end of life decision making detailed discussion should be undertaken with the parents and appropriate others. The outcomes of these discussions should be clearly documented in the child's medical records to provide a clear direction for the management of the case and assist in the review of such cases.
4. Road design/town planning improvements to establish pedestrian and bicycle trail systems separate from our roads would likely reduce the small number of bicyclists' deaths.

Data Management Sub-Committee

The Data Management Sub-Committee has not met since February 2003. Subsequently no official report has been submitted from this subcommittee for this 2004 Report.

1. Data collection form:

The Perinatal Data Collection Form was revised during 2004, with a planned implementation date for the new form set for January 1, 2005.

National interest has been created in a database for Congenital Anomalies, but the Council has deferred taking on this task for now due to lack of resources.

2. Re-design the database:

Progress in relation to an improved database has slowed. Much work is yet required to achieve a workable database that is accessible on-line from all centres.

3. Review the structure of the Annual Report

The 2004 report format has again been improved, with many redundant tables deleted and new more relevant tables inserted. The report still requires further simplification and more relevant data presentation.

Perinatal Statistics

Births and Birth Rates

Table 3: Births and Birth Rates for Tasmania 1992-2004

Year	No. Births	Birth rate per 1000 population
1992	7 025	14.9
1993	6 861	14.5
1994	6 845	14.5
1995	6 817	14.4
1996	6 331	13.4
1997	6 309	13.4
1998	6 171	13.1
1999	6 145	13.1
2000	5 975	12.7
2001	5 726	12.1
2002	5 714	12.0
2003	5 545	11.5
2004	5 540	11.5

NB: Australian Bureau of Statistics estimates Tasmania's population as 484 027 in 2004 (ABS Cat no. 3101.0, March quarter 2006). Please note this estimation of population is a preliminary figure only and is subject to change.

The birth rate in Tasmania appears to be stabilising where figures are consistent between years 2003 and 2004. In 2003, the national crude birth rate was 12.6 live births per 1 000 head of population, indicating that Tasmania's rate is lower than that experienced nationally.

Figure 1: Birth Rate for Tasmania per 1,000 Head of Population 1992-2004

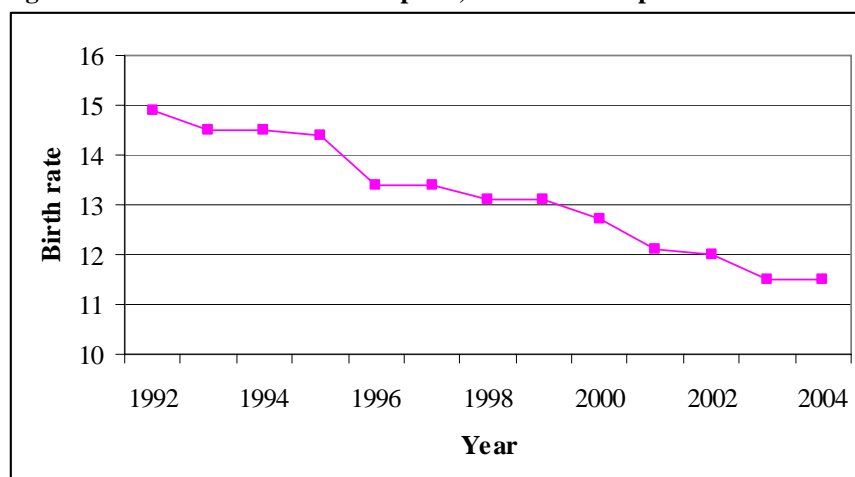


Table 4: Births by Region 1997-2004

Year	South	North	Northwest
1997	3 087	1 705	1 505
1998	3 028	1 699	1 509
1999	2 993	1 769	1 411
2000	2 922	1 692	1 357
2001	2 904	1 573	1 238
2002	2 873	1 600	1 230
2003	2 762	1 557	1 193
2004	2 753	1 567	1 161

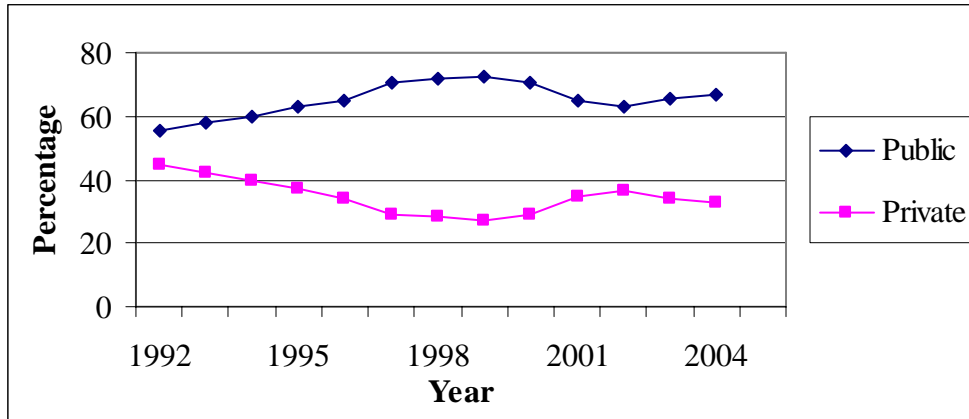
Table 5: Births by Hospital 1997-2004

Hospital	1997 No.	1998 No.	1999 No.	2000 No.	2001 No.	2002 No.	2003 No.	2004 No.
Royal Hobart Hospital (QAH)	2 049	2 050	2 084	2 007	1 823	1 831	1 633	1 688
Launceston General Hospital (QVH)	1 626	1 564	1 641	1 587	1 512	1 493	1 482	1 505
District Hospitals	180	151	159	119	101	78	61	60
Private Sector	2 401	2 349	2 195	2 216	2 250	2 230	2 284	2 193
Others (includes homebirths)	53	57	66	46	40	82	85	94
TOTAL	6 309	6 171	6 145	5 975	5 726	5 714	5 545	5 540

Table 6: Proportion of Public and Private Patients 1992-2004

Year	Public %	Private %
1992	55.5	44.5
1993	57.9	42.1
1994	60.0	40.0
1995	63.0	37.0
1996	64.8	34.2
1997	70.8	29.2
1998	71.5	28.5
1999	72.3	27.1
2000	70.6	28.8
2001	65.0	34.6
2002	62.7	36.6
2003	65.2	34.3
2004	66.9	33.0

Figure 2: Proportion of Public and Private Patients 1992-2004



There was a slight decline in the proportion of private patients for 2004. Nationally, for 2003, the proportion of public sector patients was 69.0%, with 31.0% from the private sector.

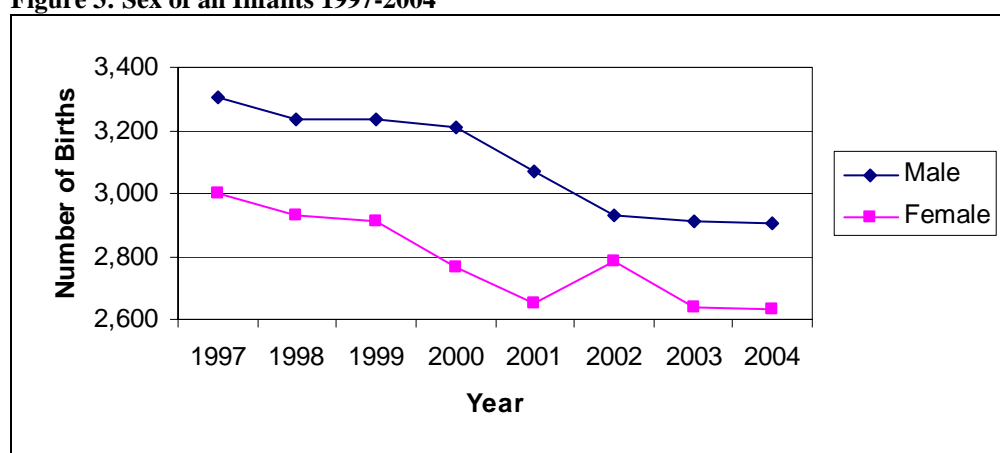
Sex of Infants

Table 7: Sex of all Infants Born in Tasmania 1997-2004

Year	Male		Female		Indeterminate		Total No.
	No.	%	No.	%	No.	%	
1997	3 307	52	3 001	48	1	^	6 309
1998	3 237	52	2 932	48	2	^	6 171
1999	3 232	53	2 912	47	1	^	6 145
2000	3 211	54	2 762	46	2	^	5 975
2001	3 073	54	2 650	46	3	^	5 726
2002	2 930	51	2 782	49	2	^	5 714
2003	2 909	52	2 635	48	1	^	5 545
2004	2 904	52	2 632	48	0	^	5 540

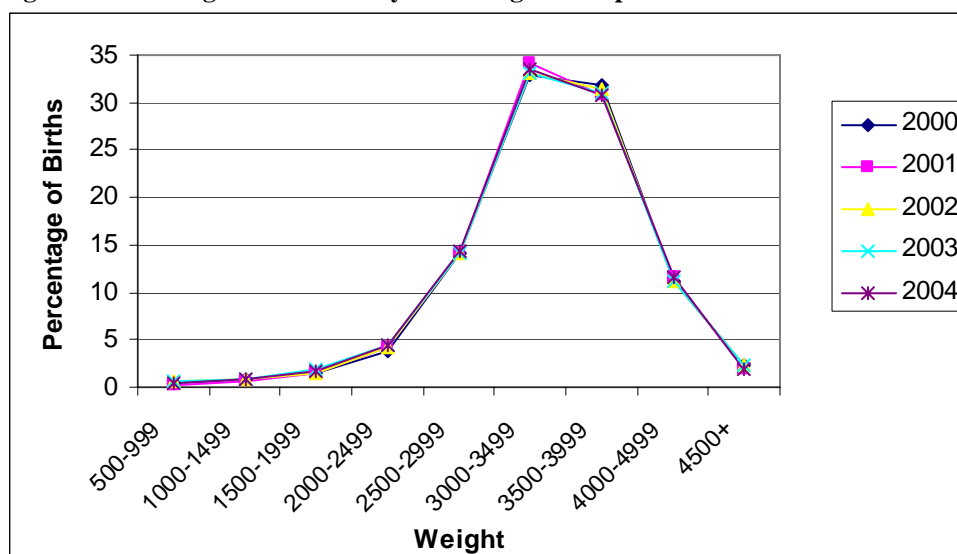
^ Less than 0.1%

Figure 3: Sex of all Infants 1997-2004



Birthweight

Figure 4 Percentage of all Births by Birthweight Groups 2000-2004



Low Birthweight

Low birthweight is defined as less than 2500 grams and will include babies that are small for gestational age as well as those which are premature. Very low birthweight is defined as less than 1500 grams.

Table 8: Incidence of Low and Very Low Birthweight 1992-2004

Year	Number – Very Low Birthweight	% Proportion of all births	Number - Low Birthweight	% Proportion of all births
1992	114	1.6	325	4.6
1993	86	1.3	300	4.4
1994	83	1.2	306	4.5
1995	111	1.6	321	4.7
1996	66	1.1	345	5.5
1997	90	1.4	303	4.8
1998	89	1.4	335	5.4
1999	98	1.6	320	5.2
2000	104	1.7	309	5.2
2001	74	1.3	325	5.7
2002	102	1.8	328	5.7
2003	104	1.9	356	6.4
2004	91	1.6	334	6.0

The percentage of low and very low birthweight infants in Tasmania for 2004 is stable compared to 2003. Nationally the percentage of very low birthweight infants was 1.1% of all live births and low birthweight infants accounted for 6.3% of births nationally in 2003.

Table 9: Outcome by Gestation 1996-2004

Year	No. total births	>20 wks	Still births	% Survival							
				23 wks	24 wks	25 wks	26 wks	27 wks	28 wks	29 wks	30 wks
1996	6 333	6 323	46	0	100	n/a	62	54	78	75	87
1997	6 309	6 297	57	33	0	36	45	100	67	78	90
1998	6 171	6 228	54	33	0	0	100	28	62	100	93
1999	6 145	6 118	64	9	100	56	67	67	100	94	100
2000	5 975	5 949	51	0	50	100	78	85	90	82	92
2001	5 726	5 717	52	0	33	50	40	100	83	92	91
2002	5 714	5 710	53	0	17	17	60	71	90	73	69
2003	5 545	5 546	49	0	14	20	33	66	75	100	92
2004	5 540	5 517	37	0	25	60	50	83	88	87	100

Apgar Scores

The Apgar score is routinely recorded shortly after birth, (usually at one minute and again at five minutes after birth) for all infants and is a general measure of an infant's condition immediately after birth. An Apgar score at five minutes is a good indication of the infant's overall health and wellbeing. An Apgar score of less than 6 at five minutes is indicative of an unwell infant.

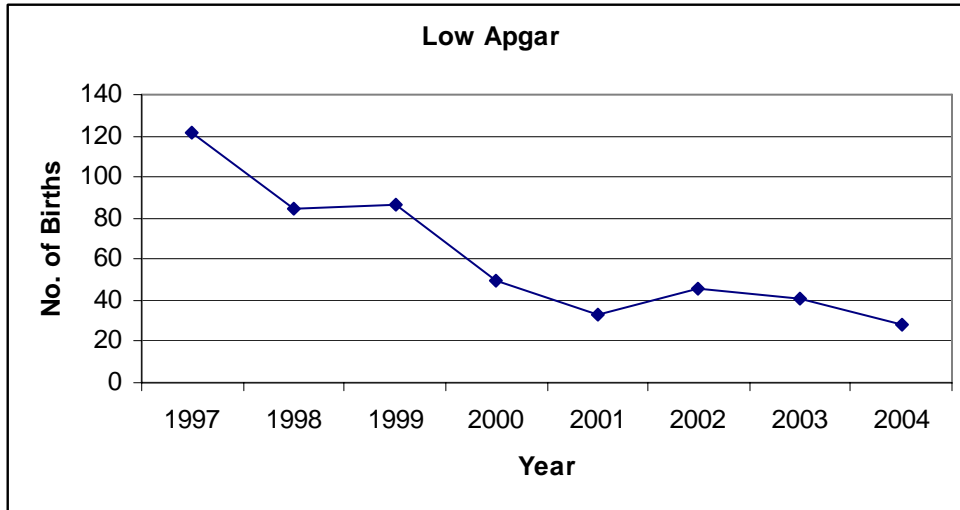
In 2004 there were 41 infants (0.40%) with an Apgar score less than 6 at five minutes.

Table 10: Apgar Score for all Births at Five Minutes 1997-2004

Apgar Score	1997 %	1998 %	1999 %	2000 %	2001 %	2002 %	2003 %	2004 %
1	0.1	^	0.2	0.1	^	0.1	^	^
2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	^
3	0.1	0.1	0.2	0.2	0.1	0.1	^	^
4	0.1	0.2	0.3	0.2	0.2	0.2	0.2	0.1
5	0.4	0.4	0.3	0.3	0.2	0.5	0.3	0.3
6	0.7	0.9	0.9	0.5	0.7	0.8	0.8	0.8
7	1.8	1.8	2.0	1.8	1.8	2.0	1.6	1.3
8	4.5	4.2	4.2	5.0	4.2	4.4	4.3	3.9
9	53.2	56.8	58.9	60.0	60.0	58.7	58.7	59.3
10	37.7	33.8	31.3	30.7	31.0	31.9	32.4	32.8

^ Less than 0.1%

Figure 5: Number of Births with a Low Apgar Score at Five Minutes 1997-2004



Resuscitation

The following table shows all intubations, including those done in conjunction with other methods of resuscitation.

Table 11: Intubation Rate 1992-2004

Year	Number of Intubations	Number of Births	Percentage of all Births requiring Intubation
1992	40	6 392	0.6
1993	50	6 795	0.7
1994	36	6 787	0.5
1995	44	6 748	0.6
1996	50	6 331	0.8
1997	58	6 309	0.9
1998	38	6 171	0.6
1999	42	6 145	0.7
2000	42	5 975	0.7
2001	19	5 726	0.3
2002	30	5 714	0.5
2003	22	5 545	0.4
2004	14	5 540	0.3

Table 12: Resuscitation Rate 1997-2004

Year	Number of Resuscitations	Number of Births	Percentage of all Births requiring Resuscitations
1997	884	6 309	14.0
1998	799	6 171	12.9
1999	794	6 145	12.9
2000	662	5 975	11.0
2001	568	5 726	9.9
2002	339	5 714	5.9
2003	297	5 545	5.4
2004	243	5 540	4.4

Presentation at Delivery

Table 13: Presentation at Deliver for all Births 1997-2004

Year	Vertex n (%)	Face & Brow n (%)	Breech n (%)	Other n (%)	Not Stated n (%)
1997	5881 (93)	17 (^)	286 (5)	34 (1)	91 (1)
1998	5635 (90)	26 (^)	221 (4)	65 (1)	314 (5)
1999	5516 (89)	25 (^)	250 (4)	87 (1)	317 (5)
2000	5388 (90)	21 (^)	256 (4)	66 (1)	243 (4)
2001	5340 (93)	22 (^)	225 (4)	78 (1)	67 (1)
2002	5374 (94)	23 (^)	250 (4)	61 (1)	8 (^)
2003	5219 (94)	24 (^)	246 (4)	50 (1)	6 (^)
2004	5204 (94)	18 (^)	256 (5)	57 (1)	5 (^)

^ Less than 1%

Perinatal Mortality

Table 14: Perinatal Outcome 1997-2004

Outcome	Livebirth*	Stillbirth	Neonatal death	Unknown	Total
1997	6 249	52	8	0	6 309
1998	6 115	37	14	5	6 171
1999	6 082	44	17	2	6 145
2000	5 914	39	18	4	5 975
2001	5 666	44	14	2	5 726
2002	5 641	49	24	0	5 714
2003	5 472	48	25	0	5 545
2004	5 490	37	13	0	5 540

* Refers to Livebirth without subsequent neonatal death during the admission episode in which the birth occurs.

Figure 6: Stillbirths & Neonatal Deaths 1997-2004

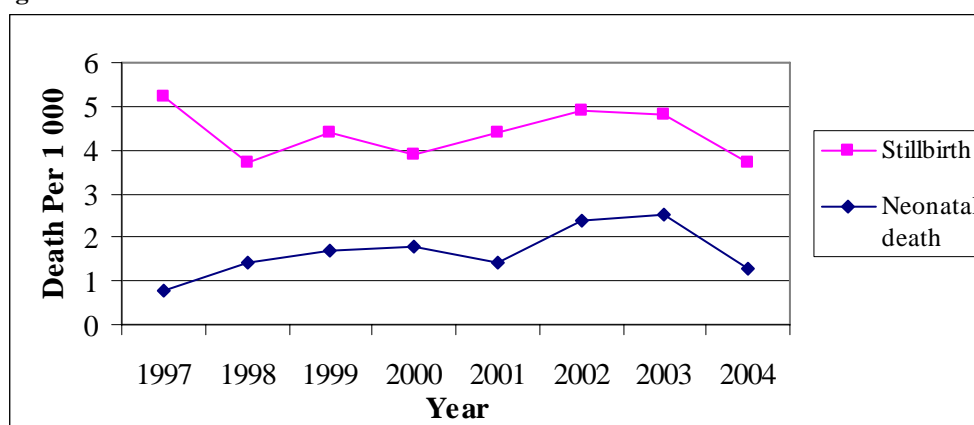
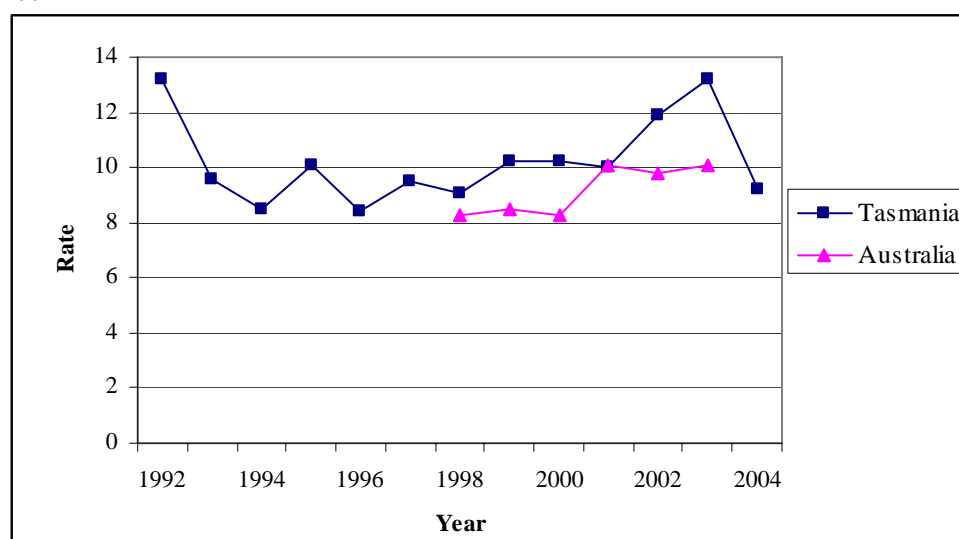


Table 15: Perinatal Mortality Rates 1992-2004

Year	Number of Perinatal deaths*	Number of Births	Rate of Perinatal Mortality per 1000 births
1992	93	7 025	13.2
1993	66	6 861	9.6
1994	58	6 845	8.5
1995	69	6 817	10.1
1996	53	6 331	8.4
1997	60	6 309	9.5
1998	56	6 171	9.1
1999	63	6 145	10.2
2000	61	5 975	10.2
2001	57	5 726	10.0
2002	68	5 714	11.9
2003	73	5 545	13.2
2004	51	5 540	9.2

* Includes neonatal deaths occurring following discharge from hospital for the birth episode admission.

Figure 7: Perinatal Mortality Rate per 1 000 Births in Tasmania 1992-2004 and Australia 1998-2002



Source of Australian Perinatal Mortality Rate: *Australia's mothers & babies*, published annually by the Australian Institute of Health & Welfare.

Table 16: Causes of Perinatal Mortality 1996-2004

Cause	1996	1997	1999	2000	2001	2002	2003	2004
Spontaneous Pre-term	6	7	12	15	8	19	19	10
Intrauterine growth retardation	4	3	2	1	1	1	3	9
Unexplained Intrauterine death	21	14	16	16	16	16	15	1
Birth Trauma	0	0	0	0	0	1	0	0
Intrapartum asphyxia	5	6	1	3	0	5	1	4
Hypertension	0	0	1	1	2	2	0	0
Maternal Disease	0	0	1	2	3	2	4	5
Antepartum Haemorrhage	3	6	3	5	5	6	8	8
Foetal abnormality	5	11	19	9	16	12	15	8
Haemolytic disease	0	0	0	0	0	0	0	0
Infection	3	3	3	1	1	0	2	3
Other	6	8	5	8	5	9	6	1
Total	53	60	63	61	57	73	73	51

Note: A comprehensive review of Perinatal Mortality was not undertaken in 1998.

Neonatal Mortality

Neonatal mortality includes all deaths of liveborn babies born after 20 weeks gestation or with a birthweight greater than 400 grams, and the rate is expressed as deaths per 1 000 births.

Table 17: Neonatal Mortality 1992-2004

Year	Number of Neonatal Deaths	Neonatal Mortality Rate
1992	42	6.0
1993	19	3.0
1994	10	1.5
1995	20	3.0
1996	12	2.0
1997	8	1.3
1998	14	2.3
1999	17	2.8
2000	16	2.7
2001	14	2.4
2002	24	4.2
2003	24	4.5
2004	13	2.3

Table 18: Neonatal Mortality, per 1000 Births, in Infants over 28 weeks Gestation 1992-2004

Year	Number	Neonatal Mortality Rate
1992	21	3.0
1993	9	1.3
1994	5	0.7
1995	14	2.0
1996	3	0.5
1997	3	0.5
1998	5	0.8
1999	7	1.2
2000	6	1.0
2001	6	1.1
2002	6	1.1
2003	4	0.7
2004	6	1.1

Table 19: Neonatal Mortality, per 1 000 Births, in Infants over 1 000 Grams Birthweight 1992-2004

Year	Number	Neonatal Mortality Rate
1992	22	3.1
1993	13	1.9
1994	7	0.8
1995	6	0.8
1996	3	0.5
1997	2	0.3
1998	3	0.5
1999	2	^
2000	7	1.2
2001	6	1.1
2002	3	0.5
2003	4	0.7
2004	5	0.9

^ Less than 0.1%

Table 20: Foetal, Neonatal and Perinatal Death Rate per 1 000 Births by State and Territory 1998-2003

Year	Aus	TAS	NT	ACT	NSW	VIC	QLD	SA	WA
<i>Foetal</i>									
1998	5.3	6.5	6.8	7.7	5.4	7.9	5.5	5.1	5.1
1999	5.1	5.8	8.6	7.2	4.4	5.8	5.2	4.5	5.5
2000	5.2	7.0	8.1	5.4	4.6	5.3	5.1	5.3	6.2
2001	6.9	8.2	6.9	7.8	6.3	7.4	7.3	6.8	6.7
2002	6.7	8.6	8.1	7.3	6.0	7.2	6.7	6.9	7.1
2003	7.1	8.7	11.2	11.3	6.1	8.4	6.1	7.5	7.5
<i>Neonatal</i>									
1998	3.0	3.3	6.3	4.5	2.7	2.9	4.0	2.1	2.4
1999	3.4	5.0	7.6	4.5	3.7	3.4	3.1	2.1	2.9
2000	3.1	3.7	6.5	3.0	3.2	2.6	3.7	2.9	2.2
2001	3.2	2.5	n.a.	4.4	2.9	3.3	4.0	3.6	2.9
2002	3.1	3.2	n.a.	5.2	2.7	3.6	3.6	3.1	2.2
2003	3.0	3.8	n.a.	5.4	2.6	3.8	3.5	2.4	2.2
<i>Perinatal</i>									
1998	8.3	9.8	13.1	12.2	8.1	7.7	9.6	7.2	7.5
1999	8.5	10.7	16.1	11.7	8.1	9.2	8.2	6.6	8.3
2000	8.3	10.6	14.5	8.3	7.7	7.9	8.9	8.2	8.4
2001	10.1	10.7	n.a.	12.2	9.2	10.7	11.3	10.4	9.6
2002	9.8	11.7	n.a.	12.5	8.7	10.7	10.3	9.9	9.2
2003	10.1	12.5	n.a.	16.6	8.6	12.1	9.6	9.9	9.6

Source: *Australia's mothers and babies 2000, 2001, 2002, 2003, National Perinatal Statistics Unit*

Autopsy Rates

Despite repeated recommendation from the Council of Obstetric & Paediatric Mortality & Morbidity on the value of autopsy as an investigation tool in cases of perinatal death, especially in cases of unexplained intrauterine death, the rate of autopsy remains low.

Table 21: Rate of Autopsies on Perinatal Deaths 1992-2004

Year	Autopsy Rate %
1992	43.0
1993	47.0
1994	48.0
1995	47.5
1996	66.0
1997	35.0
1998	Unknown
1999	37.0
2000	46.0
2001	23.0
2002	7.4
2003	7.8
2004	2.0

The Perinatal autopsy rate in Tasmania in 2004 (2.0%) is well below the stillbirth autopsy rate in South Australia, Victoria and Queensland with rates of 61.2%, 35.1% and 24.3% respectively.

Mothers

Age of Mothers

Table 22: Age of Mothers 1992-2004

Year	Under 20 years of age %	20 – 24 years of age %	25 – 29 years of age %	30 – 34 years of age %	35 – 39 years of age %	Over 40 years of age %
1992	7	23	35	26	8	1
1993	7	23	35	26	8	1
1994	7	23	33	26	9	1
1995	7	22	33	27	9	1
1996	8	22	33	27	9	1
1997	8	21	34	26	10	1
1998	8	20	33	26	11	2
1999	8	20	32	27	11	2
2000	8	21	30	27	11	2
2001	8	19	30	28	12	2
2002	8	21	29	28	12	3
2003	8	19	28	31	13	2
2004	7	19	28	29	13	2

Figure 8: Proportion of Births by Maternal Age Groups 1992-2004

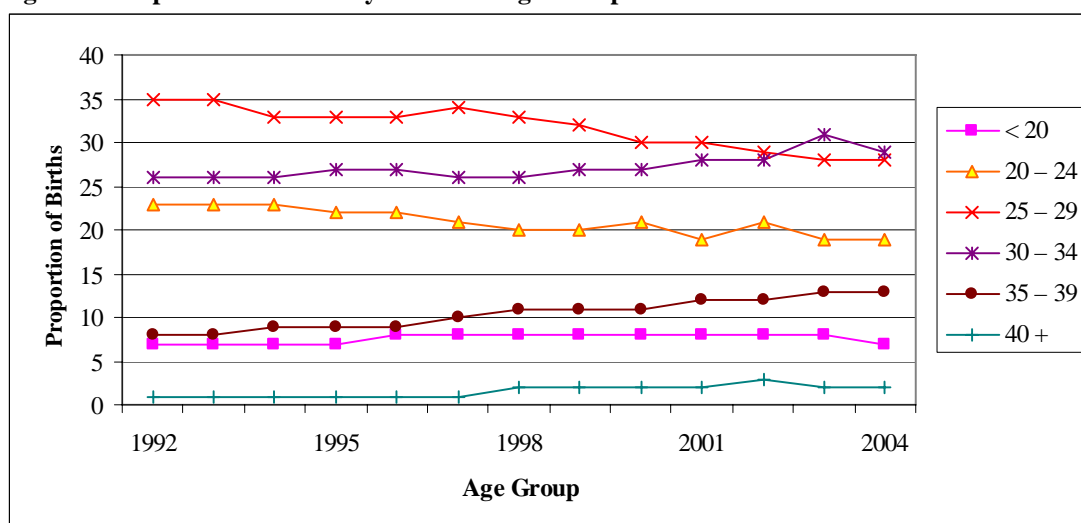


Figure 9: Maternal Age in Tasmania 2004 and Australia 2003

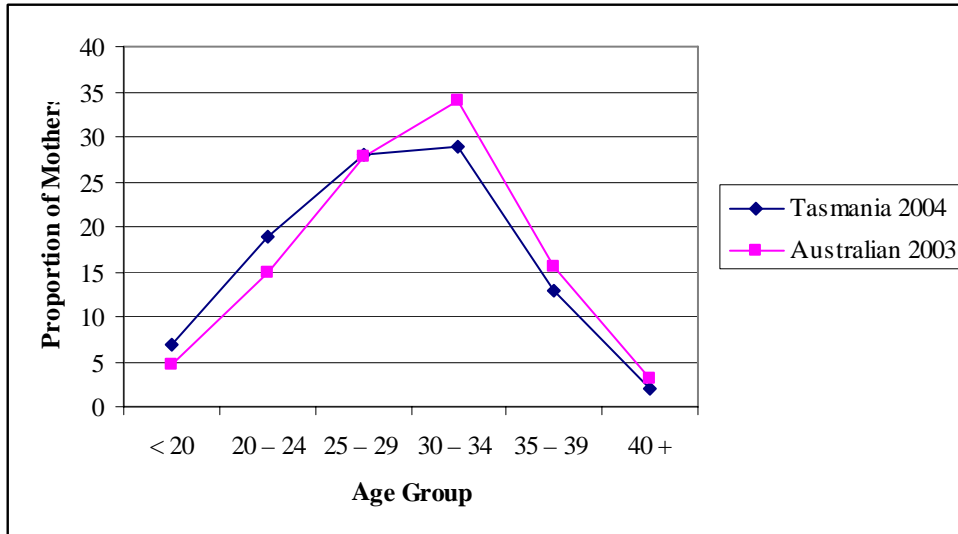


Table 23: Rates of Birth per 1 000 Female Population by Maternal Age 1998-2004

Maternal age In years	Year	Estimated Tasmanian Female Population *	Rate of Births per 1 000
15 – 19	2000	17 112	29.3
	2001	16 626	28.7
	2002	16 591	27.9
	2003	16 639	26.3
	2004	16 689	24.5
20 – 24	2000	14 484	86.0
	2001	14 022	78.2
	2002	14 175	84.1
	2003	14 105	73.0
	2004	14 287	73.9
25 – 29	2000	15 619	114.2
	2001	14 712	115.9
	2002	14 028	116.2
	2003	13 970	109.6
	2004	13 568	114.7
30 – 34	2000	16 058	99.6
	2001	16 390	98.4
	2002	16 304	96.9
	2003	16 314	104.4
	2004	16 393	97.6
35 – 39	2000	18 059	37.6
	2001	17 620	38.9
	2002	16 987	40.1
	2003	16 992	41.0
	2004	16 690	44.0
40 – 44	2000	18 108	6.9
	2001	18 511	7.0
	2002	18 589	9.1
	2003	18 600	6.5
	2004	18 820	7.2
45 -49	2000	16 915	0.3
	2001	17 135	0.1
	2002	17 282	0.3
	2003	17 258	0.6
	2004	17 568	0.2

*Australian Bureau of Statistics Demography – Tasmania 3311.6 2000, 2001, ABS Population by Age & Sex 3201.0 June 2002, 2003 and 2004

Parity

Parity refers to the condition of having given birth to an infant or infants, alive or dead. A multiple birth is considered as a single parous experience.

Table 24: Percentage of Births by Parity 1992-2004

Year	Para 1 %	Para 2 %	Para 3 %	Para 4 %	Para 5 and over %
1992	39	33	18	7	3
1993	39	33	16	7	4
1994	39	34	20	6	3
1995	40	33	17	6	4
1996	40	34	16	6	4
1997	41	34	15	6	3
1998	39	34	16	6	4
1999	40	34	16	6	4
2000	39	33	17	6	4
2001	39	33	17	6	4
2002	40	33	17	6	4
2003	41	33	16	6	4
2004	42	33	15	6	5

Indigenous Status

Reporting of Indigenous Status is by self-identification. Upon admission to hospital, patients are asked if they are of Aboriginal or Torres Strait Island origin. Low community acceptance of the need to ask the question, and a lack of confidence in how an affirmative response will be treated has possibly resulted in some under reporting of Indigenous Status. As a result of a targeted project to improve the quality of indigenous status data, the number of mothers identifying as aboriginal has increased markedly in 2003, and remains elevated in 2004.

Table 25: Mother's Indigenous Status 1997-2004

Status	1997	1998	1999	2000	2001	2002	2003	2004
Aboriginal	6	62	13	11	15	12	122	118
Torres Strait Islander	3	15	4	1	3	3	4	7
Aboriginal & Torres Strait Islander	198	54	47	46	30	25	22	7
Neither	5 640	4 311	1 450	1 444	1 081	756	2 980	5 368
Not Stated	462	1 729	4 631	4 473	4 597	4 918	2 417	36

Breastfeeding

Table 26: All Births by Breastfeeding at Discharge 1997-2004

Year	Yes	No	% Yes
1997	4 908	1 401	77.8
1998	4 715	1 546	75.3
1999	4 607	1 590	74.3
2000	4 430	1 545	74.1
2001	4 281	1 445	74.8
2002	4 346	1 368	76.1
2003	4 257	1 288	76.8
2004	4 209	1 331	76.0

Table 27: Breastfeeding at Discharge by Public/Private Hospital 2000-2004

Year	Public % Yes	Private % Yes
2000	71	78
2001	68	84
2002	71	73
2003	73	82
2004	73	80

Table 28: Breastfeeding at Discharge by Parity 2000-2004

Year	Primiparae % Yes	Multiparae % Yes
2000	76	73
2001	78	73
2002	79	74
2003	81	74
2004	77	75

Mode of Delivery

Table 29: Mode of Delivery 1992-2004

Year	Vaginal Delivery Number	Vaginal Delivery %	Caesarean Sections Number	Caesarean Sections %
1992	5 881	84	1 144	16
1993	5 704	83	1 157	17
1994	5 688	83	1 157	17
1995	5 504	81	1 313	19
1996	5 140	81	1 191	19
1997	5 046	80	1 263	20
1998	4 856	78	1 315	22
1999	4 838	79	1 252	20
2000	4 640	78	1 324	22
2001	4 380	77	1 334	23
2002	4 465	78	1 246	22
2003	4 092	74	1 451	26
2004	4 030	73	1 510	27

Figure 10: Mode of Delivery in Tasmania 2004 and Australia 2003

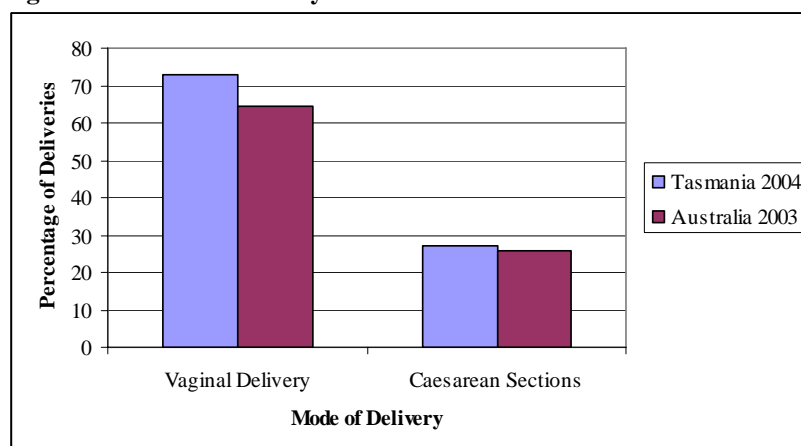


Table 30: Mode of Delivery for Vaginal Births 2000-2004

	2000		2001		2002		2003		2004	
	No.	%	No.	%	No.	%	No.	%	No.	%
Unassisted Vaginal	4 041	87	3 789	86	3 498	85	3 823	86	3 415	84
Forceps	277	6	249	6	155	4	234	5	166	4
Forceps Rotation	35	1	16	^	10	^	17	^	10	0.2
Vacuum Extraction	252	5	306	7	408	10	331	7	406	10
Vaginal Breech	35	1	20	^	21	1	35	1	27	0.6
Total	4 640		4 380		4 092		4 465		4 028	

^ Less than 0.1%

The rate of vaginal deliveries continues to decline slightly. However, nationally for 2003 the caesarean section rate was 28.5%, well below the rate in Tasmania. Of the vaginal deliveries nationally in 2003, 60.3% were spontaneous, 3.9% forceps deliveries, 6.8% vacuum extraction and 0.4% vaginal breech.

Table 31: Mode of Delivery by Gestation 1997-2004

Gestation in weeks	Year	Vaginal Delivery No. (%)	Caesarean Section No. (%)	Total Number
20 - 24	1997	24 (96)	1 (4)	25
	1998	15 (94)	1 (6)	16
	1999	26 (96)	1 (4)	27
	2000	25 (89)	3 (11)	28
	2001	23 (100)	0	23
	2002	20 (87)	3 (13)	23
	2003	26 (87)	4 (13)	30
	2004	24 (89)	3 (11)	27
25 - 29	1997	23 (48)	25 (52)	48
	1998	16 (38)	26 (62)	42
	1999	19 (51)	18 (49)	37
	2000	20 (43)	27 (57)	47
	2001	13 (48)	14 (52)	27
	2002	25 (53)	22 (47)	47
	2003	24 (55)	20 (45)	44
	2004	13 (36)	23 (64)	36
30 - 34	1997	70 (53)	62 (47)	132
	1998	85 (75)	28 (25)	113
	1999	100 (54)	86 (46)	186
	2000	88 (57)	66 (43)	154
	2001	81 (54)	70 (46)	151
	2002	72 (48)	77 (52)	149
	2003	80 (52)	74 (48)	154
	2004	73 (46)	84 (54)	157
35 - 39	1997	1775 (72)	690 (28)	2465
	1998	1850 (71)	763 (29)	2613
	1999	1955 (72)	754 (28)	2709
	2000	1898 (70)	794 (30)	2629
	2001	1819 (68)	853 (32)	2672
	2002	1816 (70)	767 (30)	2583
	2003	1760 (65)	937 (35)	2697
	2004	1754 (64)	969 (36)	2723
40 and over	1997	3130 (87)	473 (13)	3603
	1998	2839 (86)	459 (14)	3298
	1999	2673 (88)	379 (12)	3052
	2000	2590 (86)	429 (14)	3019
	2001	2426 (86)	389 (14)	2815
	2002	2521 (87)	376 (13)	2897
	2003	2197 (84)	414 (16)	2611
	2004	2157 (83)	428 (17)	2585

Caesarean Section

Table 32: Emergency / Elective Caesarean Section Proportion 1997-2004

Year	Emergency Number	Emergency %	Elective Number	Elective %
1997	659	52.5	597	47.5
1998	561	54.0	478	46.0
1999	637	53.3	559	46.7
2000	649	50.3	642	49.7
2001	675	51.1	645	48.9
2002	600	48.2	646	51.8
2003	707	48.7	733	51.0
2004	754	49.9	741	49.1

Table 33: Emergency/Elective Caesarean Section Proportion by Public/Private Hospitals 2000-2004

Year	Emergency %		Elective %	
	Public	Private	Public	Private
2000	56	41	44	59
2001	57	45	43	55
2002	54	41	46	59
2003	49	47	51	53
2004	56	42	44	58

Table 34: Primary/Repeat Caesarean Section Proportion 1998-2004

Year	Primary Number	Primary %	Repeat Number	Repeat %
1998	772	57.7	565	42.3
1999	764	60.5	499	39.5
2000	832	62.8	492	37.2
2001	811	60.8	523	39.2
2002	754	60.5	492	39.5
2003	912	62.9	539	37.1
2004	951	63.0	559	37.0

Table 35: Primary/Repeat Caesarean Section Proportion by Public/Private Hospitals 2000-2004

Year	Primary %		Repeat %	
	Public	Private	Public	Private
2000	66	59	34	41
2001	64	57	36	43
2002	61	60	39	40
2003	62	64	38	36
2004	65	60	35	40

Figure 11: Caesarean Section Rates 1992-2004

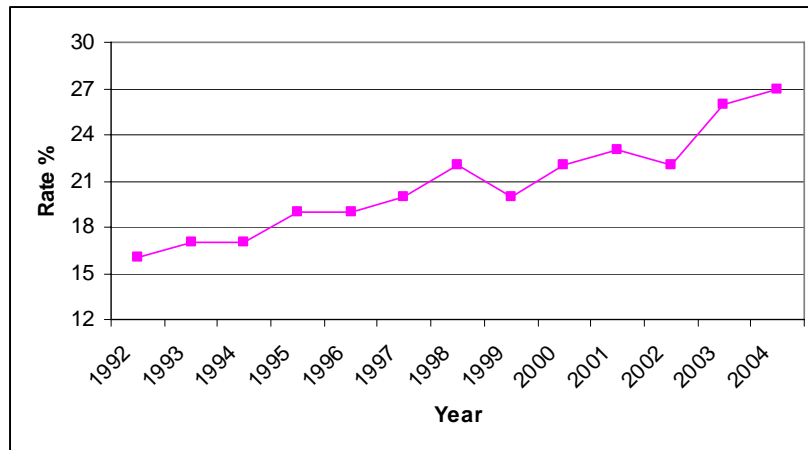


Table 36: All births by Caesarean Section following Augmentation of Labour 1998 – 2004

Type of Augmentation	Year	Primary	Repeat	% of all Augmentations
ARM* only	1998	15	7	5.2
	1999	15	3	3.7
	2000	25	5	5.4
	2001	35	2	6.5
	2002	34	5	5.8
	2003	37	7	6.6
	2004	44	9	8.6
Oxytocin only	1998	24	6	16.3
	1999	12	4	9.7
	2000	34	3	19.1
	2001	35	0	17.6
	2002	38	1	18.5
	2003	57	1	22.6
	2004	60	5	26.5
Oxytocin & ARM*	1998	14	2	16.7
	1999	23	0	17.0
	2000	18	1	16.2
	2001	22	3	17.1
	2002	19	2	16.0
	2003	25	1	19.7
	2004	24	4	21.0
Other	1998	3	0	27.3
	1999	2	2	36.4
	2000	0	0	0
	2001	0	0	0
	2002	1	0	25.0
	2003	1	0	33.3
	2004	0	0	0

* ARM = Artificial Rupture of Membranes

Induction and Augmentation

Induction

Table 37: Induction Rate 1996 – 2004

Year	Deliveries following Induction of Labour			Induction Rate %
	Vaginal deliveries	Caesarean Section deliveries	Total	
	Number (%)	Number (%)	Number	
1996	1 120 (85)	202 (15)	1 322	21
1997	1 113 (86)	181 (14)	1 294	21
1998	1 253 (84)	245 (16)	1 498	24
1999	1 282 (86)	210 (14)	1 492	24
2000	1 159 (85)	211 (15)	1 370	23
2001	1 157 (83)	235 (17)	1 392	24
2002	1 267 (87)	189 (13)	1 456	25
2003	1 192 (84)	235 (16)	1 427	32
2004	1 195 (81)	279 (19)	1 474	27

The national induction rate for 2003 was 26.1% of all deliveries.

Table 38: Induction Rate by Public/Private Hospitals 2000 – 2004

Year	Deliveries following Induction of Labour				Induction Rate	
	Vaginal deliveries		Caesarean Section		%	
	Public	Private	Public	Private	Public	Private
2000	593 (81)	503 (88)	139 (19)	66 (12)	20.4	25.7
2001	608 (83)	502 (83)	127 (17)	103 (17)	22.0	26.9
2002	669 (87)	563 (86)	99 (13)	90 (14)	23.9	29.3
2003	670 (84)	558 (81)	125 (16)	133 (19)	26.5	30.3
2004	634 (80)	540 (82)	158 (20)	118 (18)	24.4	30.1

Table 39: Percentage of Caesarean Sections following Induction of Labour 1996 - 2004

Year	Total number of Caesarean Sections	Number of Inductions of Labour with Caesarean Section Delivery	Percentage of Caesarean Sections following Induction of Labour %
1996	1 191	202	17
1997	1 263	181	14
1998	1 315	245	19
1999	1 252	210	17
2000	1 324	211	16
2001	1 334	235	18
2002	1 246	189	15
2003	1 451	235	16
2004	1 510	279	18

Augmentation

Table 40: Augmentation of Labour 1997 – 2004

Year	Artificial Rupture of Membranes	Oxytocin	Other	None	Augmentation Rate
1997	373	116	106	3 415	14.8
1998	406	180	98	3 155	17.8
1999	441	150	130	3 026	19.2
2000	498	165	64	2 958	20.4
2001	541	179	133	2 559	25.0
2002	667	210	136	2 377	29.9
2003	671	257	135	2 104	33.6
2004	618	245	138	2 217	31.1

In 62.8% of cases nationally for 2003 there was augmentation of spontaneous labour, compared to only 31.1% in Tasmania (2004).

Multiple Pregnancy

Table 41: All Births by Multiple Pregnancies 1997 - 2004

Year	Number of infants born from a Twin pregnancy	Number of infants born from a Multiple* pregnancy
1997	152	0
1998	185	3
1999	162	3
2000	180	3
2001	180	3
2002	164	3
2003	184	3
2004	197	9

*Multiple equal 3 babies or more.

Please note that infants who do not survive beyond 20 weeks of gestation, or who do not weigh more than 400 grams are not recorded as a birth, hence some odd numbers in the figures above.

The proportion of multiple births in Tasmania is higher than the national average. Nationally 1.7% of births are from a multiple pregnancy (2003) compared to 3.7% in Tasmania (2004).

Table 42: Perinatal Mortality in Multiple Pregnancies 1997 – 2004

Year	Twin Deaths		Triplet Deaths	
	No.	%	No.	%
1997	5	3.3	0	0
1998	7	3.8	0	0
1999	6	3.7	0	0
2000	10	5.5	1	33.3
2001	4	2.2	0	0
2002	9	5.5	0*	0
2003	9	4.9	0	0
2004	6	2.9	2	18

* One triplet died aged 51 days from complications associated with prematurity and has, therefore, been included in the paediatric mortality statistics. However, this death could equally be considered a prolonged neonatal death.

Maternal Hypertension

Table 43: Prevalence (Number) of cases of Maternal Hypertension for all Births 1996 – 2004

Type of Hypertension	Pre-Existing	Hypertension in Pregnancy *	Eclampsia	Nil	Total
1996	82	301	2	5 946	6 331
1997	36	293	6	5 974	6 309
1998	69	317	2	5 783	6 171
1999	66	342	0	5 737	6 145
2000	122	315	0	5 538	5 975
2001	101	283	0	5 342	5 726
2002	103	252	0	5 359	5 714
2003	81	249	0	5 215	5 545
2004	83	245	0	5 212	5 540

* Due to data accuracy concerns in relation to the recording of pregnancy induced hypertension and Pre-Eclampsia, these figures have been combined as Hypertension in Pregnancy.

Table 44: Prevalence (Percentage) of cases of Maternal Hypertension for all births 1996 – 2004

Type of Hypertension	Pre-Existing %	Hypertension in Pregnancy * %	Eclampsia %	Nil %
1996	1.3	4.8	^	93.9
1997	0.6	4.6	0.1	94.7
1998	1.1	5.1	^	93.7
1999	1.1	5.6	0	93.4
2000	2.0	5.3	0	92.7
2001	1.8	4.9	0	93.3
2002	1.8	4.4	0	93.8
2003	1.5	4.5	0	94.0
2004	1.5	4.4	0	94.1

^ Less than 0.1%

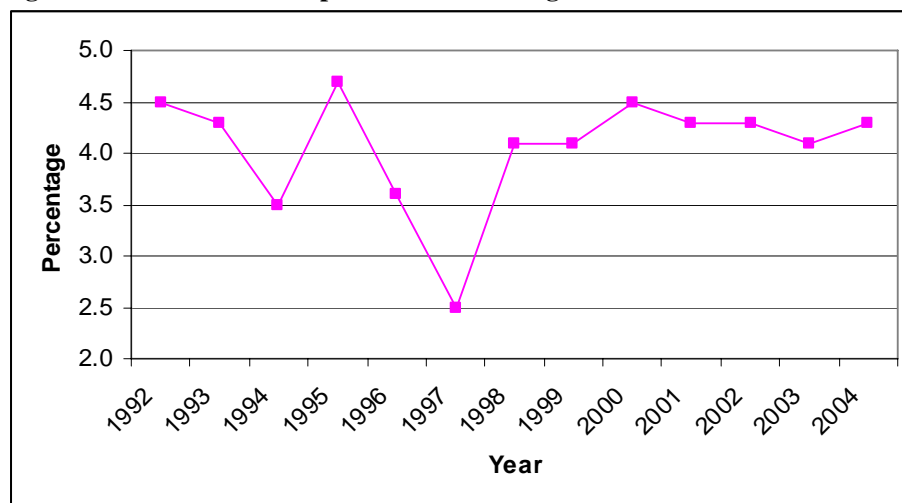
Haemorrhage

Postpartum Haemorrhage

Table 45: Incidence of Postpartum Haemorrhage 1992 - 2004

Year	Number	Incidence %
1992	316	4.5
1993	295	4.3
1994	239	3.5
1995	320	4.7
1996	228	3.6
1997	160	2.5
1998	251	4.1
1999	252	4.1
2000	245	4.5
2001	244	4.3
2002	246	4.3
2003	227	4.1
2004	238	4.3

Figure 12: Incidence of Postpartum Haemorrhage 1992 – 2004



Antepartum Haemorrhage

Table 46: Incidence of Antepartum Haemorrhage 1992 - 2004

Year	Number	Incidence %
1992	105	1.5
1993	123	1.8
1994	68	1.0
1995	68	1.0
1996	221	3.5
1997	113	1.8
1998	173	2.8
1999	123	2.0
2000	59	1.0
2001	63	1.1
2002	49	0.8
2003	43	0.8
2004	43	1.2

Figure 13: Incidence of Antepartum Haemorrhage 1992 – 2004

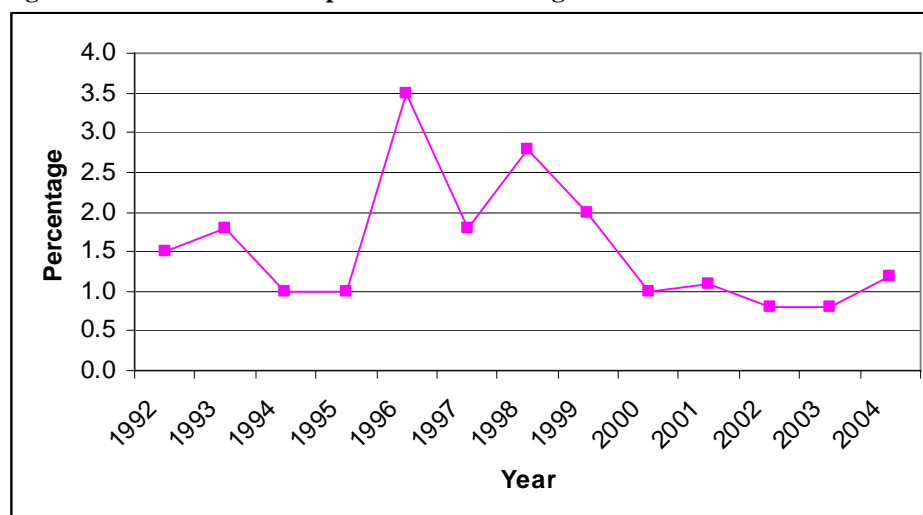


Table 47: Type of Antepartum Haemorrhage 1997 – 2004

Type	Placenta Previa	Abruptio Placenta	Antepartum Haemorrhage (unclassified)	Total
1997	16	21	139	176
1998	11	6	154	171
1999	24	10	88	122
2000	22	37	3	62
2001	26	36	2	64
2002	21	28	0	49
2003	16	27	0	43
2004	18	25	0	43

ATTACHMENT A: GUIDELINES FOR INVESTIGATION OF “UNEXPLAINED” STILLBIRTHS

Introduction

For stillbirths where the cause is obvious, investigations should be targeted towards the cause. In all other cases where no cause is determined, the following guideline should be used.

A thorough and systematic approach will result in the likelihood of a cause being found and would help in counselling patients and might help prevent recurrences. While the list below is not meant to be comprehensive, it should serve as a guideline for investigation of stillbirths. All hospitals within the state are encouraged to implement the guideline.

Guideline

1. Detailed medical and social history of the mother.

A possible cause for the stillbirth like intercurrent infection, cholestasis of pregnancy or drug use may be elicited by careful history taking and examination of the antenatal record.

2. Histopathology of placenta.

Whether or not an autopsy is performed, all placentas should be sent for examination. The placenta should be placed in a dry sterile container (no formalin or saline), and sent for histopathological examination.

3. External examination of the baby

In cases where parental consent for autopsy cannot be obtained, external examination of the baby should be performed preferably by a perinatal pathologist or an experienced neonatologist. In addition, **clinical photographs, X-rays** and if possible **MRI** scans should be done.

4. Autopsy of the baby

After informed parental consent, an autopsy should be conducted by an experienced perinatal pathologist. One of the senior clinicians involved with the care of the patient should counsel the couple and explain the need for autopsy. Where consent for a full autopsy cannot be obtained from the parents, efforts should be made to at least obtain consent for limited autopsy including needle biopsies of appropriate organs.

5. Karyotype

Ideally obtained by amniocentesis prior to delivery, but if consent not obtained then placental biopsy and/or cord blood (if obtainable) or foetal skin should be

sent for chromosomal analysis. Chromosomal analysis is still possible in macerated foetuses.

6. Maternal Investigations

Where there is no obvious cause for death, the following investigations should also be performed:

- a) Full Blood Count
- b) Maternal antibody screen.
- c) Kleihauer Test (blood should be obtained prior to delivery)
- d) HbA1c (GTT if indicated)
- e) Liver function tests including serum bile acids
- f) Renal function tests including uric acid
- g) Thrombophilia screen including Anticardiolipin antibodies, Lupus anticoagulant and Activated protein C resistance
- h) Maternal serology – CMV, Toxoplasmosis and Parvovirus (Rubella and syphilis if not already done antenatally)
- i) Microbiology – foetal ear and throat swab, placental swab.
- j) Drug history and urine drug screen if indicated

Feedback Form

The Council of Obstetric & Paediatric Mortality & Morbidity is committed to ensuring that the Annual Report is a useful tool for Obstetricians, Paediatricians and Midwives in monitoring the care and outcomes for Mothers and Babies. To this end we would welcome your feedback. Please complete the following form and return it to:

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