



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

Tasmania



**Annual Report for
2005**

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Introduction

The members of the *Council of Obstetric & Paediatric Mortality & Morbidity* are pleased to present the Annual Report for 2005.

The aim of the Council's Annual Report is to provide Tasmania with epidemiological information on the women who gave birth to live born or stillborn babies in 2005, and on their children. The various subcommittees of the Council are the *Perinatal Mortality & Morbidity subcommittee*, *Paediatric Mortality & Morbidity subcommittee*, *Maternal Mortality & Morbidity subcommittees* of the Council which meet regularly to review perinatal and paediatric deaths as well as maternal deaths as they arise. The *Data Management subcommittee* has not formally met since 2003 and subsequently areas of interest have been discussed directly at Council level. Council has met on a quarterly basis to discuss relevant key areas and provide recommendations as appropriate.

The Annual Report has been structured to include separate reports submitted by each subcommittee detailing relevant key trends arising during this year and recommendations based upon findings. Trends in reported perinatal and maternal statistics have been reported for Tasmania and compared with latest available national findings.

Of note in 2005, the process of data collection had been refined with the Perinatal Data Collection Form having been modified. These changes unfortunately led to delays in subsequent data collection and processing and hence the final compilation and release of this Annual Report.

Overall the recorded number of children born in Tasmania in 2005 is up by 376 from 5540 in 2004 to 5916, an increase of 6.8%.

The *Perinatal Mortality & Morbidity subcommittee* reports that the number of perinatal deaths (live and stillborn infants who were greater than 20 weeks gestation, or weighed 400 grams or more at birth) has decreased to the lowest level since data has been reported in Tasmania (1992) at 8.1 per 1000 births. The 2005 stillbirth rate was 6.6 per 1000 births and the neonatal mortality rate was 1.5 per 1000 births. In comparison, the Victorian Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM)¹ for 2005 reports a Victorian stillbirth rate of 4.2 per 1000, a neonatal mortality rate of 2.4 per 1000, giving an overall perinatal mortality rate of 6.6 per 1000, probably the lowest reported in Australia. Thus Tasmania now has a stillbirth rate lower than most other States², but still higher than the stillbirth rate of Victoria. Tasmania's current neonatal mortality rate is the lowest that has ever been reported in Australia.³

¹ <http://www.health.vic.gov.au/perinatal/pubs/annualreps.htm>

² Australia's mothers and babies 2000, 2001, 2002, 2003, National Perinatal Statistics Unit

³ South Australia reported the previous lowest neonatal mortality rate of 2.1 per 1000 in 1998 and 1999 – see reference 2.

In 2005, the Perinatal Registry Amendment Bill 2005 (The Bill) amended the definition for a *maternal death* to include *deaths to 42 days post pregnancy* consistent with guidelines supported by the *World Health Organisation*. The Bill has also included the definition of a *late maternal death*. Details of these definition changes and additions have been included in the *Maternal Mortality & Morbidity Subcommittee* report section. No maternal deaths or late maternal deaths were reported in 2005.

Due to the new modified data collection form the Council is now able to produce data on self-reported smoking status of mothers during pregnancy in Tasmania for 2005. The 2005 rate of 27.6% is higher than the reported rates from other States in 2004 except the NT (28.6%). The review of the Tasmanian data by the *Smoking and Pregnancy Working Group* has shown that maternal smoking is most prevalent among younger women, particularly those aged less than 24 years (54% of pregnant women under age of 20 years). Of most concern is the fact that this number has not changed since the 1980's. The data have also confirmed the significant association between birth weight and smoking status during pregnancy where babies have been found to have lower birth weight in mothers who smoked (9.2%) compared to non-smoking mothers (3.5%). Given the clear association between IUGR and stillbirth, methods to reduce maternal smoking need to particularly target our youngest mothers and, if effective, may reduce the stillbirth rate.

The *Paediatric Mortality & Morbidity subcommittee* has found that the overall number of paediatric deaths in Tasmania was 25. This number has risen slightly since 2004 with most reported deaths attributed to conditions determined at birth (chromosomal and central nervous system abnormalities), acquired conditions (sepsis and central nervous system malignancies), injuries (mainly road related trauma and non-accidental injury) and unexplained infant death within an unsafe sleeping environment. In 2005, half of the paediatric deaths sustained from injuries were attributed to motor vehicle trauma either as passengers in a motor vehicle or pedestrians. The number of unexplained infant death cases reported remained steady compared to 2004. At the last 2005 Australian Bureau of Statistics census there were 96,500 children under the age of 15 years in Tasmania. Thus the State's non-neonatal paediatric mortality rate is 0.26 per 1000. In comparison, Victoria (CCOPMM) reports in 2005 a non-neonatal paediatric mortality of 257 out of 959,202 children < 15 years, a rate of 0.27 deaths per 1000. Thus Tasmania's rate is almost identical.

In view of the *Data Management subcommittee* having not met since 2003, no official report had been submitted. However, advances made in the area of data management in 2005 included the implementation of the revised Perinatal Data Collection Form which has enabled a review of trends for the effect of smoking on pregnancy in Tasmania. A new database has also been developed to support the collection of the new Perinatal Data Collection Form and for the management of perinatal statistics. It is envisaged that after an extensive trial of this database, it will be installed in maternity units throughout the state to enable direct data entry into the database providing clinicians with timely access to data and information pertaining to their site.

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.

Feedback:

A Feedback Form is provided at the end of this report inviting comments from readers on information presented. Please forward to the Executive, Acute Health Services, Acute Care Strategies & Reform, 2/10 Murray St. Hobart 7000. (ph: 62333551).

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;
- Clinical Data Unit, Acute Health Services;
- Launceston General Hospital;
- Northwest Private Hospital;
- North West Regional Hospital - Mersey Campus;
- North Eastern Soldiers Memorial Hospital (Scottsdale);
- Smithton District Hospital;
- Calvary Healthcare - Lenah Valley Campus;
- 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.

Perinatal Registry Amendment Bill 2005

The Perinatal Registry Amendment Bill 2005 (The Bill) brings Tasmanian legislation in line with that of other States and Territories and with the relevant definitions for 'child' according to the *Children, Young Persons and their Families Act 1977* and the definitions for 'maternal death' and 'late maternal death' as defined by the World Health Organisation.

The Bill makes three major changes to the current Act:

- it amends the definition for a 'maternal death' to include deaths to 42 days post pregnancy;
- it includes the definition of 'late maternal death'; and
- it expands the functions of the Council to include the investigation of late maternal deaths and deaths of children aged 15 to 17 years.

The Bill ensures that there is consistency in data collection and investigation of deaths of unborn children, mothers and children across the States and Territories and will result in the investigation of a wider range of maternal; and child deaths and may lead to measures to minimise risks and prevent unnecessary deaths.

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.

Late maternal death: means the death of a woman more than 42 days but less than one year after the cessation of pregnancy-

- (a) resulting from an obstetric cause or another cause aggravated by an obstetric cause; and
- (b) Irrespective of the duration of the pregnancy and the location of the foetus within the woman's body.

Maternal death: means the death of a woman while pregnant, or within 42 days after the cessation of pregnancy-

- (a) from any cause related to, or aggravated by, the pregnancy or its management; and
- (b) irrespective of the duration of the pregnancy and the location of the foetus within the woman's body.

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.⁴

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.⁵

Perinatal Death: A death fulfilling the definition of either a stillbirth or neonatal death.

Supplementary Definitions⁶

Direct maternal death: This includes death of the mother resulting from obstetrical complications of pregnancy, labour, or the puerperium, and from interventions, omissions, incorrect treatment, or a chain of events resulting from any of these factors. An example is maternal death from exsanguination resulting from rupture of the uterus.

Indirect maternal death: This includes a maternal death not directly due to obstetrical causes, but resulting from previously existing disease, or a disease that developed during pregnancy, labour, or the puerperium, but which was aggravated by maternal physiological adaptation to pregnancy. An example is maternal death from complications of mitral stenosis.

⁴ 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

⁵ National Health Data Dictionary V10.0

⁶ Definitions derived from 'Williams Obstetrics – 20th edition' by Cunningham MacDonald Gant Leveno Gilstrap Hankins Clark; Copyright 1997

Non maternal (incidental) death: Death of the mother resulting from accidental or incidental causes in no way related to the pregnancy may be classified as a non maternal death. An example is death from an automobile accident.

Members of the Council of Obstetric & Paediatric Mortality & Morbidity

Organisation	Membership 2005	Current Membership as of Oct. 2007
Nominees of the University of Tasmania (2)	Professor Allan Carmichael	Professor Allan Carmichael Associate Professor Bipin Gupta (tbc)
Person nominated by the Secretary employed in delivery of Neonatal Services	Dr Simon Parsons (Chair)	Dr Peter Dargaville
Person nominated by the Secretary employed in the Department of Health & Human Services	Mr Nick Goddard	Mr Tony Sansom (Tbc)
Nominee of the Tasmanian Regional Committee 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 Health Division of the Royal Australian College of Physicians	Dr Elizabeth Hallam	Dr Simon Parsons (Chair)
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 Mr David Fanning, Commissioner for Children	Ms Ros Escott Mr Paul Mason (Commissioner for Children)

Members of Sub-Committees & Support Services

Name of Subcommittee	Membership in 2005	Current Membership as of Oct. 2007
Maternal Mortality & Morbidity Subcommittee	Dr Shelby Jarrell (Chair) Dr Melwyn D'Mello Ms Ruth Forrest	Assoc. Professor Bipin Gupta (Chair-tbc) Dr James Brodribb Mr Peter Askey-Doran Dr Amanda Dennis (tbc)
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 Dr Chris Lawrence Mr Paul Mason
Perinatal Mortality & Morbidity Subcommittee	Dr Simon Parsons (Chair) Dr Melwyn D'Mello	Dr Simon Parsons (Chair) Dr James Brodribb Dr Amanda Dennis (tbc)
Data Management Subcommittee	Dr Rupert Sherwood (Chair) Dr Melwyn D'Mello Dr Michelle Williams Ms Fiona French	Remains inactive- Council to discuss issues directly
National Perinatal Data Development Committee- Tasmanian Representative	Mr Peter Mansfield	Mr Peter Mansfield
Executive	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)

Compilation of this 2005 Annual Report by:

Executive - Dr Jo Jordan
Support Staff - Ms Peggy Tsang (Planning & Performance Review)
Ms Helen Galea (Clinical Data Services)
Ms Diane Hickie (Perinatal Data)

Council Summary

Perinatal Statistics at a Glance

- **Perinatal deaths** – 48 out of 5 916 deliveries (8.1 per 1 000)
- **Stillbirths** – 39 out of 5 916 deliveries (6.6 per 1 000)
- **Neonatal deaths** – 9 out of 5 916 deliveries (1.5 per 1 000)

Recommendations

The following recommendations have been made:

From the Perinatal Mortality & Morbidity Sub-Committee

1. All stillbirths should be investigated according to previously distributed recommendations from the *Council of Obstetric and Paediatric Mortality and Morbidity*. It is the desire of the *Council* to provide feedback which might provide help in managing women with similar conditions. Reviews of information provided for individual cases have indicated incompletely investigated or documented information. Such information, systematically collected, allows better counselling of couples in the event of a stillbirth occurring. In spite of that it is gratifying to see that the autopsy rate has increased markedly, making classification easier.
2. Foetal growth restriction remains a significant and preventable cause of foetal loss. Antenatal care is now provided by many healthcare workers. As such, protocols should be developed in all units and by all practitioners in order to identify the 'at risk' foetus that has inadequate growth. Sufficient resources now exist, in the health system, to allow careful assessment of the at risk foetus by ultrasound, once identified by screening protocols.
3. A reminder that multiple pregnancies are over-represented in extremely early gestation losses compared to singleton pregnancies. Although it is questionable whether active intervention offers much in preventing this, active surveillance and early intervention might allow a delay in delivery, with appropriate foetal preparation, at a gestation where days or a week make a significant increase in the chance of survival (2-3% / day).
4. Paediatricians should avail themselves of updated guidelines for the management of severe sepsis. New evidence-based guidelines are now available and have been distributed by the Council.
5. Paediatricians need to maintain skills in neonatal resuscitation as occasional neonates still die of severe hypoxic ischaemic encephalopathy, although the Council acknowledges the difficulty in identifying all infants at risk during pregnancy and labour. The Tasmanian Neonatal and Paediatric Intensive Care Unit now (2007) routinely uses whole body cooling for all neonates and most children with significant hypoxic ischaemic injury, thus affected infants should be discussed with the Unit's consultant on-call.

-
6. Maternity Care Providers should now be aware of the RANZCOG Intrapartum Foetal Surveillance Clinical Guidelines - 2nd Edition, in an attempt to increase the detection of a foetus at risk of intrapartum hypoxia.
 7. Interventions to reduce smoking in pregnancy are important particularly in view of reducing the incidence of IUGR and hence stillbirth rate. Standard antenatal care should therefore incorporate smoking reduction advice for all women who smoke as provided by QUIT Tasmania.

From the Paediatric Mortality & Morbidity Sub-Committee

1. As recommended in 2004, all cases of children requiring palliative care and end of life decision making should involve the undertaking of detailed discussion 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.
2. In view of the sustained level of unexplained infant deaths reported in 2005, the issue of safe sleeping practices has been highlighted as an important issue. Council recommends that all family health care providers should be fully informed about safe sleeping. The Council views 'accidental suffocation' as currently holding more relevance in terms of risks associated with unsafe sleeping. An educational video is being produced by the DHHS.
3. The Council recognises that efforts to reduce road related trauma are required and are ongoing by the State government. The Council supports the view that a network of pedestrian and cycle pathways separate from our roads remains underdeveloped in Tasmanian rural and urban areas.
4. The one death from unavoidable complications of short gut syndrome provides the Council with the opportunity to inform readers that a small bowel transplant program has recently commenced at the Royal Children's Hospital in Melbourne.
5. The significant number of deaths from non-accidental injury is worrying and this information and the activities of the Council contributed to the establishment of a recent review of child protection services in Tasmania (Child Protection Review Report July 2007).

From the Maternal Mortality & Morbidity Sub-Committee

Nil

Committee Reports

Perinatal Mortality & Morbidity Sub-Committee

The ABS definition of perinatal deaths includes all infants (both live and stillborn) who had a birth weight of at least 400 grams or where birth weight is unknown, a gestational age of at least 20 weeks.

There were 48 perinatal deaths in Tasmania for 2005. Nine of these deaths were neonatal deaths (live born infants who did not live beyond 28 days of age) with 39 stillbirths. The overall perinatal mortality was 8.1 per 1 000 births. The neonatal mortality rate was 1.5 per 1 000 births, with a stillbirth rate of 6.6 per 1 000 births.

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

Table 1: Perinatal Deaths for 2005

Cause of Death	Number of deaths					
	2000	2001	2002	2003	2004	2005
Congenital Abnormality	9	16	12	15*	8	6
Perinatal Infection	1	1	0	2	3	1
Hypertension	1	2	2	0	0	0
Antepartum Haemorrhage	5	5	6	8	8	4
Maternal Conditions	2	3	2	4	5	1
Specific Perinatal Conditions	7	0	7	4	3	9
Hypoxic Peripartum Death	3	0	5	1	4	3
Foetal Growth Restriction	1	1	1	3	9	9
Spontaneous Pre-Term	15	8	19	19	10	10
Unexplained Antepartum Deaths	16	16	16	15	1	5
No Obstetric Antecedent	1	0	2	2	0	0
Birth Trauma	0	0	1	0	0	0
TOTALS	61	57	73	73	51	48

Basic Information on Stillbirths for 2005

There were 39 stillbirths.

Stillbirths by Gestation

Weeks	Number	%
20-24	19	48.8
25-29	3	7.7
30-34	7	17.9
35-39	7	17.9
40+	3	7.7

Classification of Stillbirths according to Perinatal Society of Australian and New Zealand

	Category	No. (2005)
1	Congenital anomalies	5
2	Perinatal infection	0
3	Hypertension	0
4	Antepartum haemorrhage	4
5	Maternal conditions	1
6	Specific perinatal conditions	8
7	Hypoxic peripartum death	1
8	Foetal growth restriction	9
9	Spontaneous preterm labour	6
10	Unexplained antepartum deaths	5
11	No obstetric antecedent	0
12	No obstetric antecedent	0
13	Birth trauma	0

There were no reported late terminations of pregnancy attributing to the stillbirth rate in 2005.

Classification by gestation period

20-24 weeks

- 5 congenital anomalies
- 1 antepartum haemorrhage
- 6 specific conditions – 2 sets of twins (both monochorionic/diamniotic twins with twin to twin transfusion syndrome), 3 cases of cervical incompetence, and two cord complications
- 1 intra-uterine growth retardation plus a foetal anomaly
- 6 preterm labour – three following preterm prolonged rupture of membranes, and 3 dichorionic/diamniotic twins (in one set one twin delivered at 18 weeks, second at 21 weeks)

25-29 weeks

- 1 placental abruption in association with essential hypertension
- 2 intra-uterine growth retardation, one with heterozygous hyperhomocysteinaemia, other not investigated

30-34 weeks

- 1 specific condition, a feto-maternal haemorrhage at 34 weeks gestation
- 1 hypoxic peri-partum death, cause unknown
- 4 intra-uterine growth retardation (no autopsies reported in this group)
- 1 unexplained death in a mother with a history of a recent viral illness

35-39 weeks

- 2 ante-partum haemorrhages, both were ruptured vasa praevia
- 1 infant of a diabetic mother weighing 5.76 kg at 37 weeks gestation
- 1 specific condition, a cord entanglement
- 1 intra-uterine growth retardation with chorioamnionitis
- 2 unexplained, one with maternal gestation diabetes

40 plus weeks

- 1 intra-uterine growth retardation
- 2 unexplained (no autopsy)

Issues

There are some notable findings from the stillbirth data for 2005:

- Autopsy rate is 36%, which is substantially up on previous years, returning to a rate similar to the past. However many still births did not have autopsies. Use of autopsy information aids in counselling couples, both in the instance of an unsuspected anomaly and also if anomalies are absent.
- The number of stillbirths attributable to congenital anomalies is down on previous years and might represent better assessment at ultrasound anomaly screening at 18-20 weeks gestation, with pregnancy termination earlier. Such information will not be available until, and if, Council initiates data collection regarding pregnancies deliberately terminated, at all gestations, for anomalies.
- Approximately half of the stillbirths occurred at less than 25 weeks gestation.

-
- Foetal growth restriction accounted for 23% of stillbirths, and all were at gestations at which good survival rates would be expected in the NICU unit in Hobart.
 - Twins accounted for 5/39 (12.8%) of losses. Note in 2004 3.7% of all births were twins. Twins accounted for 5/19 (26.3%) of foetal losses below 25 weeks gestation, and of these 40% were due to twin to twin transfusion syndrome. Twins are disproportionately represented in stillbirth date, especially at very pre-term gestations.

Recommendations:

1. All stillbirths should be investigated according to previously distributed recommendations from the *Council of Obstetric and Paediatric Mortality and Morbidity*. It is the desire of the *Council* to provide feedback that might provide help in managing women with similar conditions. Reviews of information provided for individual cases have indicated incompletely investigated or documented information. Such information, systematically collected, allows better counselling of couples in the event of a stillbirth occurring. In spite of that it is gratifying to see that the autopsy rate has increased markedly, making classification easier.
2. Foetal growth restriction remains a significant and preventable cause of foetal loss. Antenatal care is now provided by many healthcare workers. As such, protocols should be developed in all units and by all practitioners in order to identify the 'at risk' foetus which has inadequate growth. Sufficient resources now exist, in the health system, to allow careful assessment of the at risk foetus by ultrasound, once identified by screening protocols.
3. A reminder that multiple pregnancies are over-represented in extremely early gestation losses compared to singleton pregnancies. Although it is questionable whether active intervention offers much in preventing this, active surveillance and early intervention might allow a delay in delivery, with appropriate foetal preparation, at a gestation where days or a week make a significant increase in the chance of survival (2-3%/day).

Basic Information on Neonatal Deaths for 2005

There were only 9 neonatal deaths.

Classification of Neonatal Deaths according to Perinatal Society of Australian and New Zealand

	Category	No. (2005)
1	Congenital anomalies	1
2	Perinatal infection	1
3	Hypertension	0
4	Antepartum haemorrhage	0
5	Maternal conditions	0
6	Specific perinatal conditions	1
7	Hypoxic peripartum death	2
8	Foetal growth restriction	0
9	Spontaneous preterm labour	4
10	Unexplained antepartum deaths	0
11	No obstetric antecedent	0
12	Birth trauma	0

Congenital Abnormalities

There was 1 neonatal death in Tasmania associated with a congenital abnormality. This infant with an unbalanced chromosome 2 translocation died of respiratory compromise.

Perinatal Infections

There was 1 neonatal death associated with infectious conditions. A term infant died of Group B Streptococcal sepsis.

Specific Perinatal Conditions

One term infant undergoing home delivery died soon after birth. Post-mortem examination revealed a main pulmonary artery clot of considerable age.

Hypoxic Peripartum Death

There were 2 neonatal deaths resulting from hypoxic injury. One infant died at term of hypoxic ischaemic encephalopathy after a 'normal' vaginal delivery. A second infant delivered by emergency Caesarean section at 25 weeks gestation died of hypoxic brain injury.

Spontaneous Pre-Term

There were 4 neonatal deaths associated with extreme prematurity. Three died at the non-viable gestation of 22 weeks. One died at 25 weeks gestation when treatment was withdrawn due to a grade 4 intraventricular haemorrhage.

Issues:

The review of neonatal mortality identified the following issues:

- The neonatal mortality rate of 1.5 per 1000 represents a further reduction from 2004. Tasmania's current rate is now the lowest ever recorded in Australia. The low rate is due to a further fall in deaths due to extreme prematurity and congenital abnormalities. The former probably reflects better neonatal intensive care. The latter may represent better antenatal screening and the early termination of pregnancies with major foetal anomalies.
- The management of severe sepsis by Paediatricians can be optimised further.
- A reminder that occasional neonates still die of severe hypoxic ischaemic encephalopathy, although the Council acknowledges the difficulty in identifying all infants at risk during pregnancy and labour.

Recommendations:

1. Paediatricians should avail themselves of updated guidelines for the management of severe sepsis. New evidence-based guidelines are now available and have been distributed by the Council.
2. Paediatricians need to maintain skills in neonatal resuscitation as occasional neonates still die of severe hypoxic ischaemic encephalopathy, although the Council acknowledges the difficulty in identifying all infants at risk during pregnancy and labour. The Tasmanian Neonatal and Paediatric Intensive Care Unit now (2007) routinely uses whole body cooling for all neonates and most children with significant hypoxic ischaemic injury, thus affected infants should be discussed with the Unit's consultant on-call.
3. Maternity Care Providers should now be aware of RANZCOG Intrapartum Foetal Surveillance Clinical Guidelines - 2nd Edition, in an attempt to increase the detection of a foetus at risk of intrapartum hypoxia.

Paediatric Mortality & Morbidity Sub-Committee

Paediatric Deaths for 2005

The Council's Terms of Reference in relation to paediatric mortality and as specified under the *Perinatal Registry Act, 1994* and the *Perinatal Registry Amendment Bill 2005* (The Bill) 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 17 years.

The total number of paediatric deaths in Tasmania during 2005 was **25**. 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 2005 have been classified below.

Table 2: Paediatric Deaths for 2005

Cause of Death	2001	2002	2003	2004	2005
Conditions determined at birth	3	3	7	1	5
Acquired conditions	8	8	5	3	7
Unexplained Infant Deaths	8	2	2	4	4
Injuries	4	12*	4	10	8
Cases still under investigation	1	1	2	0	0
Unknown/Indeterminate	2	1	1	0	1
TOTAL	26	27	21	18	25

* Two infants died interstate as a result of an acquired condition and these deaths had not been reported to the Coroner. One had a condition of mitochondrial respiratory chain disorder involving Complex 1; the other had Trisomy 21, hypothyroidism, and severe sepsis.

Table 3: Breakdown of Sudden Infant Deaths and Deaths related to Injury for year 2005

Year	Unexplained Infant Deaths no risk factors	Unexplained Infant Deaths with risk factors	Injury	Injury with suspected child abuse
2005	0	4	5	3

The number of paediatric deaths in Tasmania reported for 2005 was slightly higher than the total reported in 2004. It is evident that in 2005, the number of paediatric deaths related to injury was less (32%) than the number reported for 2004 (56%). In 2005, half of the paediatric deaths sustained from injuries were attributed to motor vehicle trauma either as pedestrians or passengers in a motor vehicle. Clearly, consideration of measures that would improve road and traffic safety would be worthwhile to help overcome unnecessary paediatric deaths in Tasmania through road/traffic trauma.

No paediatric deaths reported in 2005 had been attributed to drowning incidents.

The number of unexplained infant deaths reported in 2005 remained steady compared to cases reported in 2004. Closer investigation of these cases showed that at least one

significant risk factor was present which provided an important contributor to the severity of cases. Primary risk factors identified in unexplained infant death cases reported in Tasmania included unsafe sleeping environments where infants had shared a bed with parents; alcohol, smoking and other drug use by parents.

1. CONDITIONS DETERMINED AT BIRTH

The number of paediatric death cases in this category increased to 5 in 2005 from the one case reported in 2004. The paediatric death cases reported in this category in 2005 were all under the age of 10 years. The conditions comprised of congenital central hypoventilation syndrome, hydrancephaly, a mitochondrial disorder and chromosomal abnormalities.

2. ACQUIRED CONDITIONS

There was an increase in the number of deaths reported in 2005 where the cause of death was due to an acquired condition. In 2005, there were seven deaths in children ranging from the ages of 5 months to 11 years.

Acquired conditions included midbrain glioblastoma, brainstem glioma, medulloblastoma, hypoxic brain damage due to choking and association with resolving croup, respiratory failure associated with pre-existing severe brain injury, bacterial sepsis associated with chicken pox; and liver failure complicating long term parental nutrition for small gut syndrome.

3. UNEXPLAINED INFANT DEATH

In 2005, four paediatric sudden infant deaths were reported for infants aged between 1.5 months to 8 months. Gender distribution was equally distributed amongst these infants with two male and two female paediatric death cases through unexplained infant death being reported. All unexplained infant death cases reported in 2005 were found to be attributable to an unsafe sleeping environment where either bed-sharing or unsafe sleeping positions were noted. Multiple risk factors were also found in all of the cases reported including:

- Unexplained infant death in an unsafe sleeping environment where one infant had been placed on a couch with cushions and under an adult feather doona and another infant had been placed on a makeshift bed.
- Unexplained infant death in an unsafe sleeping environment where bed sharing with overlying with associated parent substance abuse.

In view of the cases reported in 2005, it is evident that the nature of unexplained infant deaths may have changed over the years and nearly all cases now appear to relate to infants *bed sharing* or *co-sleeping* with parents combined with other risk factors such as substance abuse by parents.

4. INJURY

In 2005, eight children died as a result of injury comprising two females and six males ranging in age from 9 months to 12 years. No paediatric deaths reported in 2005 had been attributed to drowning incidents.

Three of the deaths reported in 2005 were a result of suspected or proven child abuse.

The five remaining paediatric deaths reported in 2005 for Tasmania were a result of injuries sustained as a result of traffic/road trauma; e.g., two pedestrians (aged 4 and 7 years respectively) injured as a result of being hit by a bus in unrelated circumstances; a cyclist (aged 12 years) hit by a car; and two passengers (aged 8 and 12 years) died as a result of injuries sustained from separate motor vehicle accidents.

5. CASES STILL UNDER INVESTIGATION

There were no deaths in this category during 2005.

6. UNKNOWN/INDETERMINATE

In 2005, one paediatric death case was reported within this category. This case was that of a young 11 year old male who suffered from severe ADHD and noted chromosomal abnormality. This child had experienced an unexplained death while sleeping, perhaps due to a cardiac arrhythmia.

Recommendations:

1. As recommended in 2004, all cases of children requiring palliative care and end of life decision making should involve the undertaking of detailed discussion 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.
2. In view of the sustained level of unexplained infant deaths reported in 2005, the issue of safe sleeping practices has been highlighted as an important factor contributing to paediatric deaths within Tasmania. The Council recommends that all family health care providers should be fully informed about concerns so as to maximise their understanding of the context of the problem. Council views 'accidental suffocation' as currently holding more relevance in terms of risks associated with unsafe sleeping. The Council is aware of an ongoing DHHS initiative to produce a safe sleeping educational video for all new parents.
3. The Council recognises that efforts to reduce road related trauma are required and are ongoing by the State government. The Council supports the view that a network of pedestrian and cycle pathways separate from our roads remains under developed in Tasmanian rural and urban areas.
4. The one death from unavoidable complications of short gut syndrome provides the Council with the opportunity to inform readers that a small bowel transplant program has recently commenced at the Royal Children's Hospital in Melbourne.
5. The significant number of deaths from non-accidental injury is worrying and this information and the activities of the Council contributed to the establishment of a recent review of child protection services in Tasmania.⁷

⁷ Child Death Review Report July 2007

Maternal Mortality & Morbidity Sub-Committee

Maternal Deaths for 2005

It is noted that the Perinatal Registry Amendment Bill 2005 (The Bill) brings Tasmanian legislation in line with that of other States and Territories and with the relevant definitions for 'maternal death' and 'late maternal death' as defined by the World Health Organisation. It amends the definition for a **maternal death** to include *deaths to 42 days post pregnancy* and it includes the definition of **late maternal death**.

Late maternal death: means the death of a woman more than 42 days but less than one year after the cessation of pregnancy-

- (a) resulting from an obstetric cause or another cause aggravated by an obstetric cause; and
- (b) Irrespective of the duration of the pregnancy and the location of the foetus within the woman's body.

Maternal death: means the death of a woman while pregnant, or within 42 days after the cessation of pregnancy-

- (a) from any cause related to, or aggravated by, the pregnancy or its management; and
- (b) Irrespective of the duration of the pregnancy and the location of the foetus within the woman's body.

In terms of classification of maternal deaths there are three distinct classifications utilised and recognised by WHO. These include **direct**, **indirect** and **non-maternal (incidental) death**. These classifications have been specified earlier in the Report.

No maternal or late maternal deaths were reported for Tasmania in 2005.

Recommendations:

Nil

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 2005 Report.

Of note during 2005 the following advances have been established:

1. Data collection form:

The revised Perinatal Data Collection Form was implemented in 2005 and data has been collated. Of interest, new data being collected includes the smoking status of mothers during pregnancy. Self-reported use of drugs and alcohol by mothers during pregnancy has also been included for data collection.

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. Progress in database:

A new database has been developed to support the collection of the new perinatal data collection form and for the management of perinatal statistics. It is envisaged that after an extensive trial of this database, it will be installed in maternity units throughout the state to enable direct data entry into the database providing clinicians with timely access to data and information pertaining to their site.

3. Review the structure of the Annual Report

The 2005 report format has primarily adopted the improved format developed in 2004 with further simplification and improved formatting for better presentation of data. Further improvements will be possible in view of additional data being collected by the revised perinatal data collection form (eg. trends for effect of smoking on pregnancy etc.).

Perinatal Statistics

Births and Birth Rates

Table 3: Births and Birth Rates for Tasmania 1992-2005

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
2005	5 916	12.1

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.

It appears that the stabilisation of birth rate between years 2003 and 2004 was only a transient trend with the number of births recorded in 2005 showing a significant increase to a level similar to that recorded in year 2000.

It is noted that 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. In 2004, the national crude birth rate was not available at the time of writing this report so an updated comparison could not be achieved.

Figure 1: Birth Rate for Tasmania per 1 000 Head of Population 1992-2005

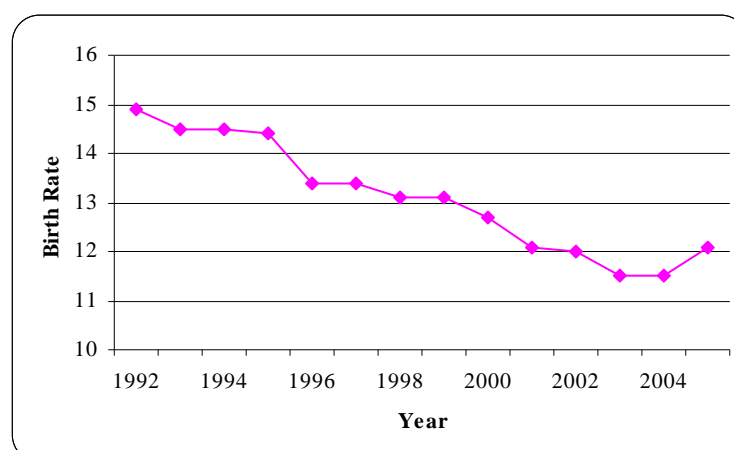


Table 4: Births by Region 1997-2005

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
2005	2 983	1 638	1 295

The increase in the number of births in Tasmania reported in 2005 is consistent across Tasmania with the Southern region reporting a 3.9% increase since 2004 followed by 2.3% in the Northwest and 1.2% increase in the Northern region.

Table 5: Births by Hospital 1999-2005

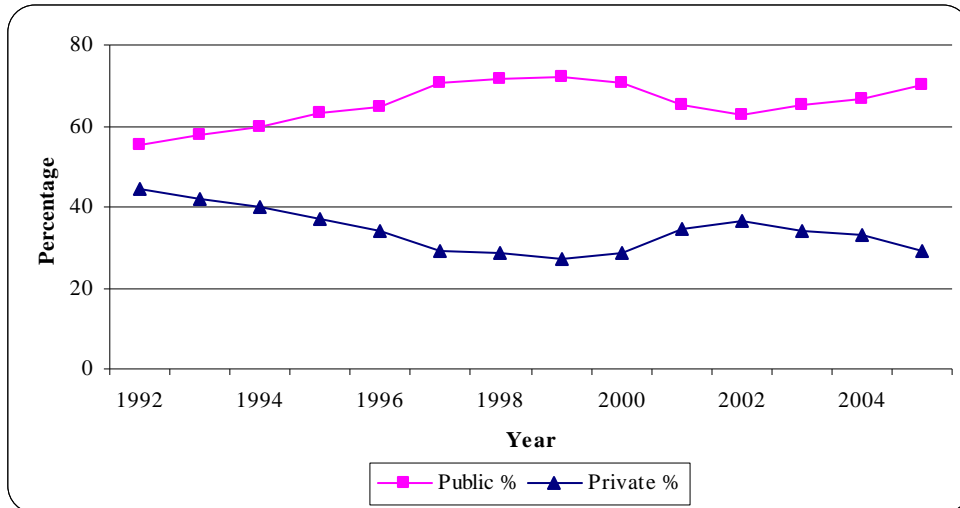
Hospital	1999 No.	2000 No.	2001 No.	2002 No.	2003 No.	2004 No.	2005 No.
Royal Hobart Hospital (QAH)	2 084	2 007	1 823	1 831	1 633	1 688	1 836
Launceston General Hospital (QVH)	1 641	1 587	1 512	1 493	1 482	1 505	1 583
District Hospitals	159	119	101	78	61	60	37
Mersey Hospital	NA*	NA	NA	NA	NA	NA	492
Private Sector	2 195	2 216	2 250	2 230	2 284	2 193	1901
Others (includes homebirths)	66	46	40	82	85	94	67
TOTAL	6 145	5 975	5 726	5 714	5 545	5 540	5 916

*Not available

Table 6: Proportion of Public and Private Patients 1992-2005

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
2005	70.2	29.3

Figure 2: Proportion of Admitted Patient Elected Accommodation Status 1992-2005



Note: "Public" and "Private" is classified by the mother's elected accommodation chargeable status upon admission to hospital- thus a patient in a public hospital can elect to be treated as a private patient

The proportion of private patients continued to decline in 2005. Nationally, for 2004, the proportion of public patients was 63.9% and 34.1% for private patients.

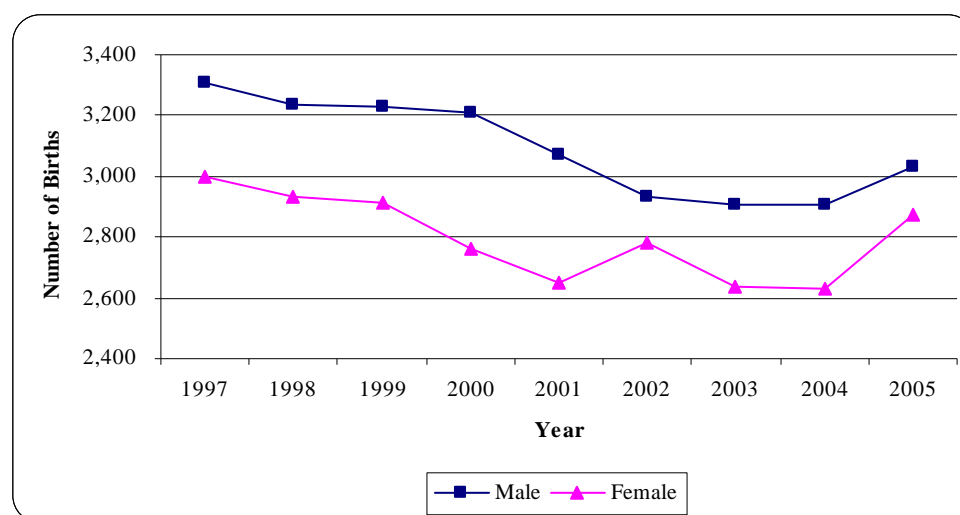
Sex of Infants

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
2005	3 036	51	2 880	49	0	^	5 916

^ Less than 0.1%

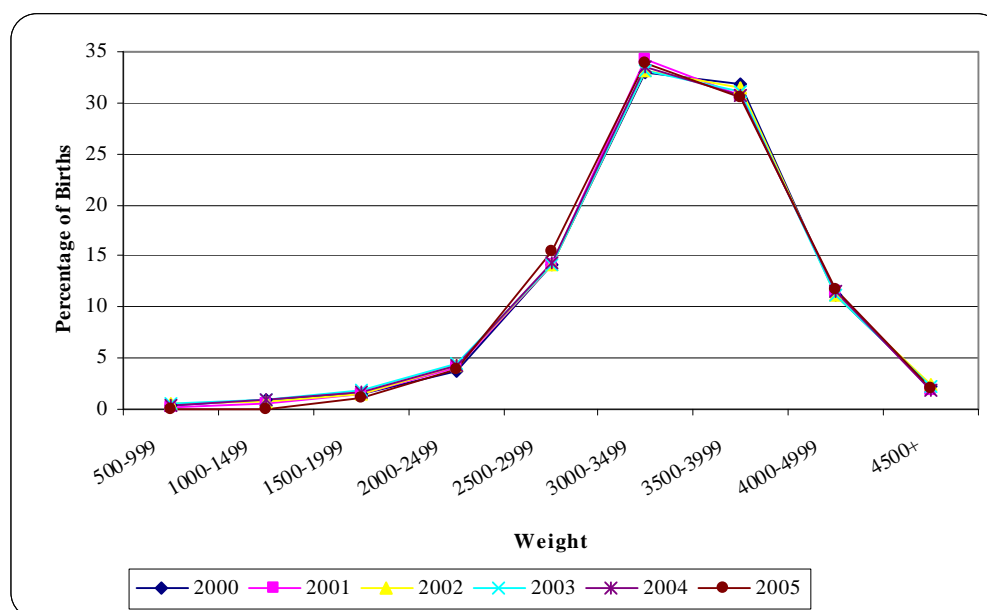
Figure 3: Sex of all Infants 1997-2005



Male births have exceeded female births accounting for 51% of all Tasmanian births in 2005. This is comparable to national trends reported in 2004 with male births reported as higher (51.4%) than female births with the national sex ratio being reported as 106.0 male live births per 100 female live births.

Birthweight

Figure 4: Percentage of all Births by Birthweight Groups 2000-2005



Low Birthweight

Low birthweight is defined as less than 2 500 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 1 500 grams.

Table 8: Incidence of Low and Very Low Birthweight 1992-2005

Year	Number – Very Low Birthweight (<1 500gms)	% Proportion of all births	Number - Low Birthweight (<2 500gms)	% 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
2005	76	1.3	313	5.3

There appears to be a decrease in the percentage of low and very low birthweight infants reported in Tasmania for 2005 compared to years 2003 and 2004. In 2004, the percentage of very low birthweight infants was 1.1% of all livebirths and the percentage of low birthweight infants accounted for 6.4% of liveborn babies nationally.

Table 9: Outcome by Gestation 1996-2005

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
2005	5 916	5 912	39	0	33	83	100	100	100	100	100

The improved survival data reflects the ongoing improvement in neonatal intensive care facilities and staff at the Royal Hobart Hospital.

Apgar Scores

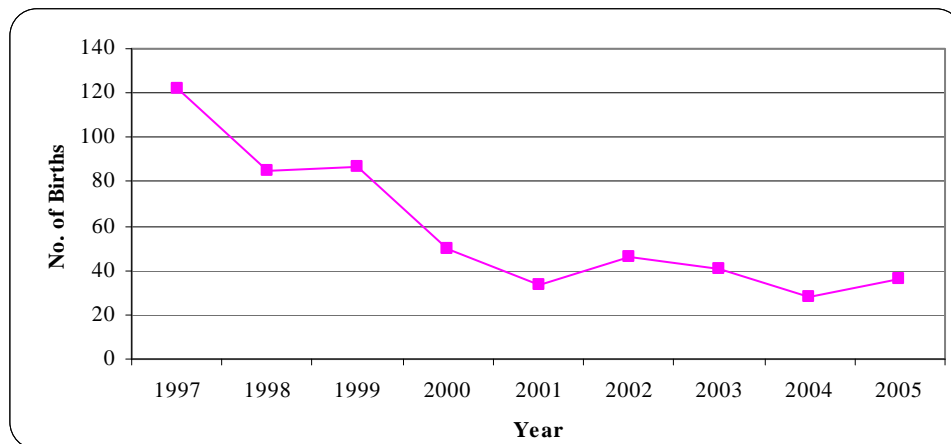
The Apgar score is routinely recorded shortly after birth, (usually at one minute and again at five minutes after birth) for all infants. It is a general measure of an infant's condition immediately after birth based on assessment of the heart rate, breathing, colour, muscle tone and reflex irritability. 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.

Table 10: Apgar Score for all Births at Five Minutes 1997-2005

Apgar Score	1997 %	1998 %	1999 %	2000 %	2001 %	2002 %	2003 %	2004 %	2005 %
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	0.2
5	0.4	0.4	0.3	0.3	0.2	0.5	0.3	0.3	0.3
6	0.7	0.9	0.9	0.5	0.7	0.8	0.8	0.8	0.5
7	1.8	1.8	2.0	1.8	1.8	2.0	1.6	1.3	1.2
8	4.5	4.2	4.2	5.0	4.2	4.4	4.3	3.9	4.3
9	53.2	56.8	58.9	60.0	60.0	58.7	58.7	59.3	63.6
10	37.7	33.8	31.3	30.7	31.0	31.9	32.4	32.8	28.9

^ Less than 0.1%

Figure 5: Number of Births with a Low Apgar Score at Five Minutes 1997-2005



Resuscitation

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

Table 11: Intubation Rate 1992-2005

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
2005	33	5 916	0.5

Table 12: Resuscitation Rate 1997-2005

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
2005	379	5 916	6.4

Presentation at Delivery

Table 13: Presentation at Delivery for all Births 1997-2005

Year	Vertex n (%)	Face & Brow n (%)	Breech n (%)	Other n (%)	Not Stated n (%)
1997	5 881 (93)	17 (^)	286 (5)	34 (1)	91 (1)
1998	5 635 (90)	26 (^)	221 (4)	65 (1)	314 (5)
1999	5 516 (89)	25 (^)	250 (4)	87 (1)	317 (5)
2000	5 388 (90)	21 (^)	256 (4)	66 (1)	243 (4)
2001	5 340 (93)	22 (^)	225 (4)	78 (1)	67 (1)
2002	5 374 (94)	23 (^)	250 (4)	61 (1)	8 (^)
2003	5 219 (94)	24 (^)	246 (4)	50 (1)	6 (^)
2004	5 204 (94)	18 (^)	256 (5)	57 (1)	5 (^)
2005	4 305 (73)	12 (^)	79 (1)	13 (^)	1 505 (25)

^ Less than 1%

Currently in Tasmania, if a baby is found to be in a breech position and a C-Section is performed, presentation at delivery is not recorded in the Perinatal Data Collection Form (i.e., *not stated*). Only vaginal breech presentations are recorded on the Perinatal Data Collection Form. In 2005, it is evident that the number of cases *not stated* was significantly increased.

Perinatal Mortality

The Tasmanian Perinatal Mortality rate per 1 000 births in 2005 was found to be the lowest reported since 1992 (8.1 deaths per 1 000 births). This rate was also lower than the national figure reported in 2004 of 10.5 deaths per 1 000 births. Causes of Perinatal Mortality are outlined in Table 1.

Table 14: Perinatal Outcome 1997-2005

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
2005	5 868	39	9	0	5 916

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

Figure 6: Stillbirths & Neonatal Deaths 1997-2005

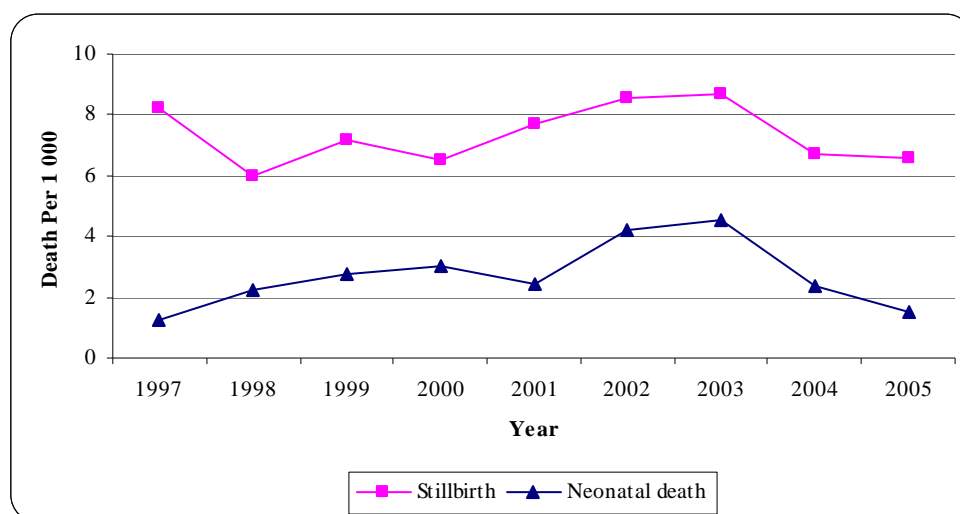


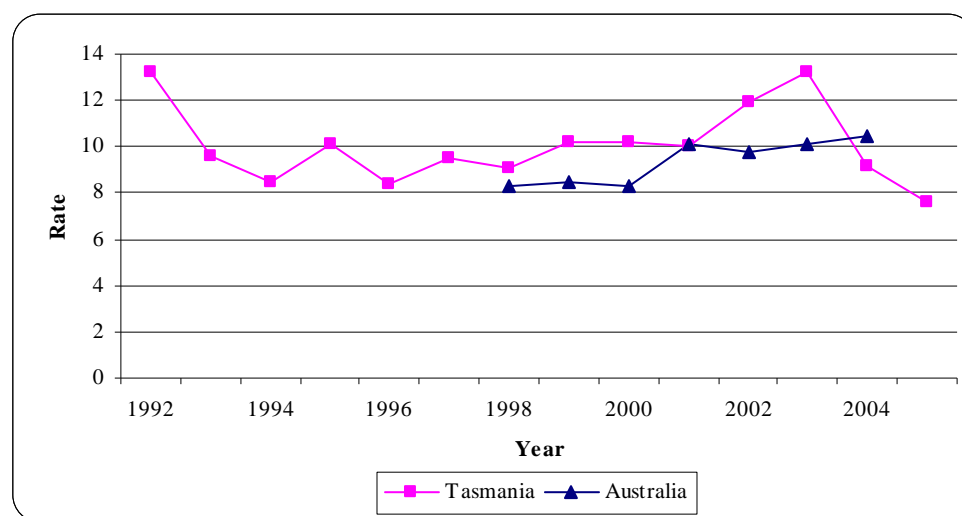
Table 15: Perinatal Mortality Rates 1992-2005

Year	Number of Perinatal deaths*	Number of Births	Rate of Perinatal Mortality per 1 000 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
2005	48	5 916	8.1

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

In the period between 1995 and 2004, the national perinatal death rate declined from 9.4 per 1 000 births to 8.0 per 1 000 births (ABS 2001; ABS 2006). In 2004, perinatal death rates were lowest in South Australia and Tasmania (both 6.9 per 1 000 births) and relatively higher in the Australian Capital Territory (11.0 per 1 000 births) and the Northern Territory (11.2 per 1 000 births) (ABS 2006). Of note is that the ABS perinatal statistics differ slightly from those produced by individual State bodies similar to the Council.

Figure 7: Perinatal Mortality Rate per 1 000 Births in Tasmania 1992-2005 and Australia 1998-2004



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

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 16: Neonatal Mortality per 1 000 Births 1992-2005

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
2005	9	1.5

Table 17: Neonatal Mortality, per 1 000 Births, in Infants over 28 weeks Gestation 1992-2005

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
2005	3	0.5

Table 18: Neonatal Mortality, per 1 000 Births, in Infants over 1 000 Grams Birthweight 1992-2005

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
2005	4	0.7

^ Less than 0.1%

The neonatal mortality rate per 1000 births reported for Tasmania in 2005 is the lowest recorded since 1997 (1.5 deaths per 1 000 births), with the majority of the improvement being for infants < 1 000 grams or < 28 weeks gestation. Nationally, the neonatal mortality rate was reported as 3.1 per 1 000 live births in 2004, higher than that reported in Tasmania.

Table 19: Foetal, Neonatal and Perinatal Death Rate per 1 000 Births by State and Territory 1998-2004

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
2004	7.5	6.7	6.3	6.7	6.6	9.7	6.8	6.4	7.4
<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
2004	3.1	2.2	5.5	4.7	2.5	3.3	3.9	2.9	2.4
<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
2004	10.5	8.9	11.8	11.4	9.0	13.0	10.7	9.4	9.8

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

Autopsy Rates

In view of the 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, it is positive to find that figures in 2005 show that the rate of autopsy has increased since 2004.

Table 20: Rate of Autopsies on Perinatal Deaths 1992-2005

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
2005	33.0

The Perinatal autopsy rate in Tasmania in 2005 (33.0%) is comparable to the 2004 stillbirth autopsy rate reported in South Australia, Victoria and Queensland with rates of 61.2%, 35.1% and 24.3% respectively.

Age of Mothers

Table 21: Age of Mothers 1992-2005

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
2005	7	20	27	30	14	2

In Tasmania, the percentage of mothers aged in the 30-34 year age group was higher than any of the other age groups assessed in 2005. Nationally, in 2004 the median age of women who gave birth was 30.0 years, continuing the upward trend seen in maternal age in recent years.

In 2004, the national average age of Aboriginal or Torres Strait Islander mothers who gave birth was 24.8 years, compared with 29.9 years for non-Indigenous mothers.

Figure 8: Proportion of Births by Maternal Age Groups 1992-2005

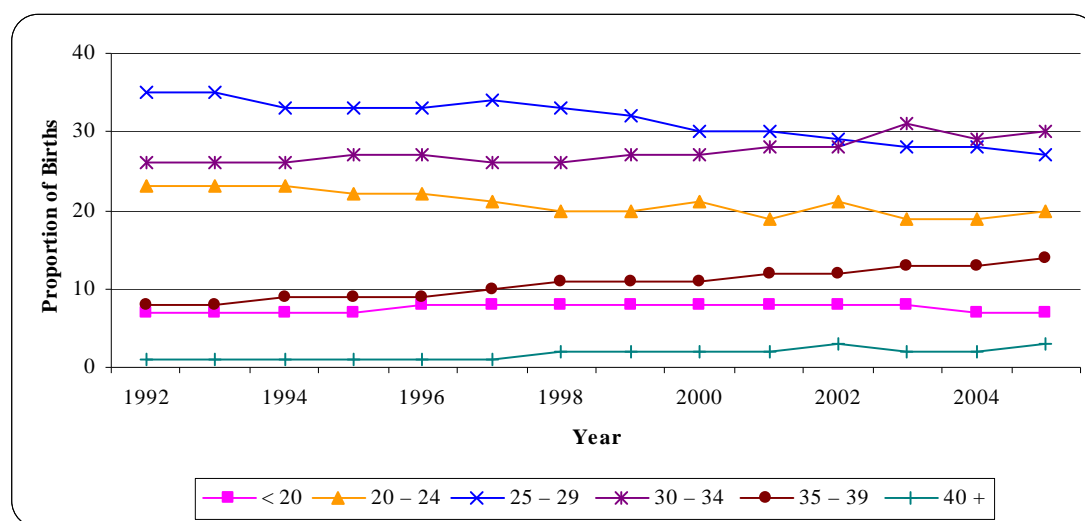


Figure 9: Maternal Age in Tasmania 2005 and Australia 2004

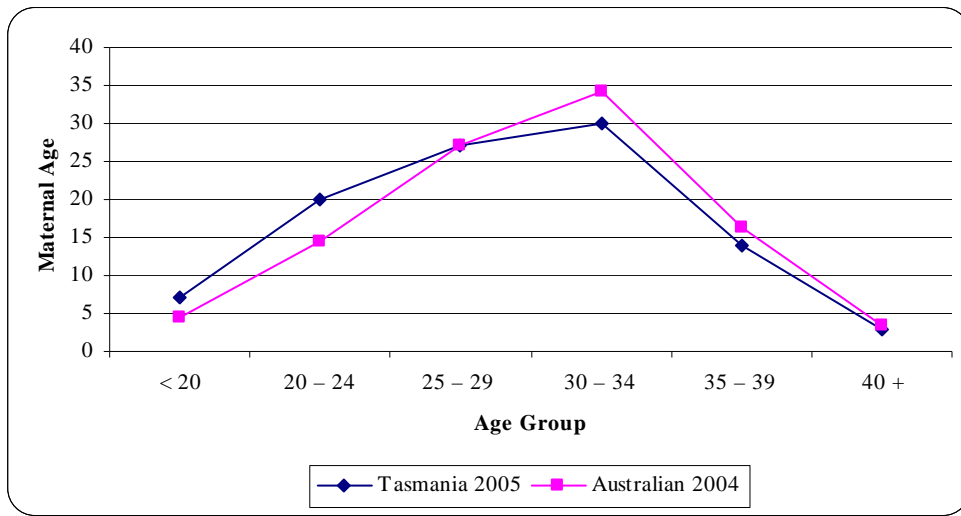


Table 22: Rates of Birth per 1 000 Female Population by Maternal Age 1998-2005

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
	2005	16 557	26.1
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
	2005	14 905	77.9
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
	2005	13 406	118.6
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
	2005	15 842	110.7
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
	2005	16 575	49.5
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
	2005	18 533	7.6
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
	2005	18 297	0.4

*Australian Bureau of Statistics Demography – Tasmania 3311.6 2000, 2001, ABS Population by Age & Sex 3201.0 June 2002, 2003, 2004 and 2005

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 23: Percentage of Births by Parity 1992-2005

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
2005	41	34	15	6	4

Nationally in 2004, 42.2% of mothers had their first baby and 33.8% had their second baby. One in six mothers (15.0%) had given birth twice previously and 9.0% had given birth three or more times.

Indigenous Status

Reporting of Indigenous Status is by self-identification and patients are asked if they are of Aboriginal or Torres Strait Island origin when commencing antenatal care. 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 2004, and remains elevated in 2005. It is also noticeable in 2005 that there were no cases where origin was not stated further highlighting improvement in the data collection process.

Nationally in 2004, there were 8904 Aboriginal or Torres Strait Islander women who gave birth, making up 3.6% of all mothers in Australia, in 2004.

Table 24: Mother's Indigenous Status 1999-2005

Status	1999	2000	2001	2002	2003	2004	2005
Aboriginal	13	11	15	12	122	118	183
Torres Strait Islander	4	1	3	3	4	7	15
Aboriginal & Torres Strait Islander	47	46	30	25	22	7	24
Neither	1 450	1 444	1 081	756	2 980	5 368	5694
Not Stated	4 631	4 473	4 597	4 918	2 417	36	0

Breastfeeding**Table 25: All Births by Breastfeeding at Discharge 1997-2005**

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
2005	4 789	1 127	81.0

Table 26: Breastfeeding at Discharge by Public/Private Hospital 2000-2005

Year	Public % Yes	Private % Yes
2000	71	78
2001	68	84
2002	71	73
2003	73	82
2004	73	80
2005	77	91

Table 27: Breastfeeding at Discharge by Parity 2000-2005

Year	Primiparae % Yes	Multiparae % Yes
2000	76	73
2001	78	73
2002	79	74
2003	81	74
2004	77	75
2005	83	80

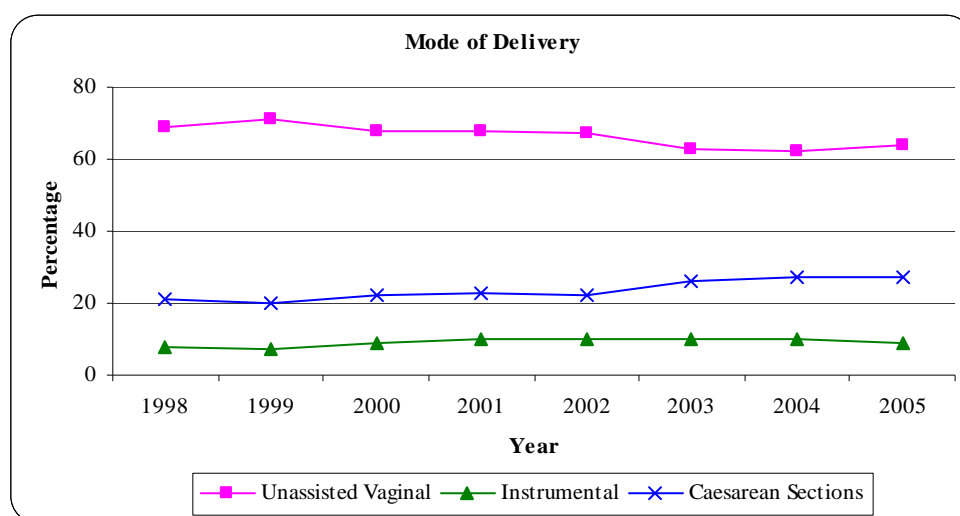
Mode of Delivery

Table 28: Mode of Delivery 1998-2005

Year	Total Births	Unassisted Vaginal	Unassisted Vaginal	Instrumental*	Instrumental*	Caesarean Sections	Caesarean Sections
		Number	%	Number	%	Number	%
1998	6 261	4 348	69	489	8	1 335	21
1999	6 192	4 392	71	443	7	1 263	20
2000	5 970	4 038	68	564	9	1 322	22
2001	5 735	3 797	68	571	10	1 335	23
2002	5 718	3 849	67	583	10	1 249	22
2003	5 552	3 507	63	573	10	1 449	26
2004	5 531	3 412	62	582	10	1 508	27
2005	5 916	3 815	64	520	9	1 581	27

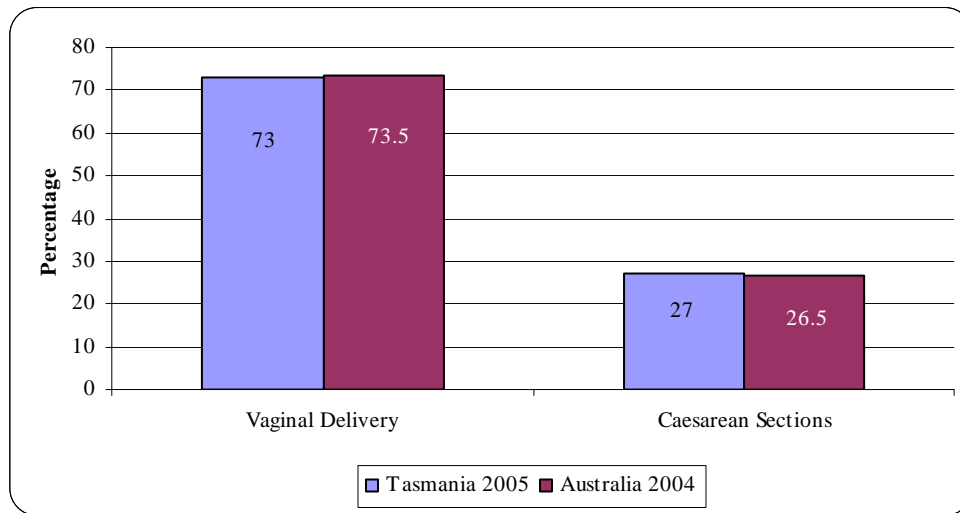
* Instrumental Deliveries includes forceps, forceps rotation & vacuum extraction. Vaginal Breech deliveries were less than 0.1% in 2005 (not included here).

Figure 10: Mode of Delivery in Tasmania (1998-2005)



Instrumental Delivery includes Forceps, Forceps Rotation & Vacuum Extraction. Vaginal Breech Deliveries were very limited in previous Years and less than 0.1% in 2005 and subsequently not graphed.

Figure 11: Mode of Delivery in Public Hospitals in Tasmania 2005 and Australia 2004



The rate of vaginal deliveries in Tasmanian public hospitals in 2005 remains steady with data reported in 2004 although higher than reported nationally. Caesarean section rates in Tasmanian public hospitals are comparable to national findings. National figures reported in 2004 including data from both public and private hospitals has shown an overall increase in caesarean sections with 29.4% of mothers having caesarean section deliveries compared with only 19.3% in 1995. Private hospitals were shown to have higher caesarean section deliveries nationally (38.4%) compared to public hospitals (26.5%) in 2004. Of the vaginal deliveries nationally reported in public hospitals in 2004, 63.5% were spontaneous, 3.2% forceps deliveries, 6.3% vacuum extraction and 0.5% vaginal breech. Of the vaginal deliveries nationally reported in private hospitals in 2004, 46.1% were spontaneous, 5.7% forceps deliveries, 9.5% vacuum extraction and 0.2% vaginal breech.

Table 29: Mode of Delivery by Gestation 1997-2005

Gestation in weeks	Year	Vaginal Delivery	Caesarean Section	Total
		No. (%)	No. (%)	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
	2005	23 (96)	1 (4)	24
	25 – 29	1997	23 (48)	25 (52)
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
2005		17 (59)	12 (41)	29
30 - 34		1997	70 (53)	62 (47)
	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
	2005	60 (50)	60 (50)	120
	35 - 39	1997	1 775 (72)	690 (28)
1998		1 850 (71)	763 (29)	2 613
1999		1 955 (72)	754 (28)	2 709
2000		1 898 (70)	794 (30)	2 629
2001		1 819 (68)	853 (32)	2 672
2002		1 816 (70)	767 (30)	2 583
2003		1 760 (65)	937 (35)	2 697
2004		1 754 (64)	969 (36)	2 723
2005		1 898 (65)	1 038 (35)	2 936
40 and over		1997	3 130 (87)	473 (13)
	1998	2 839 (86)	459 (14)	3 298
	1999	2 673 (88)	379 (12)	3 052
	2000	2 590 (86)	429 (14)	3 019
	2001	2 426 (86)	389 (14)	2 815
	2002	2 521 (87)	376 (13)	2 897
	2003	2 197 (84)	414 (16)	2 611
	2004	2 157 (83)	428 (17)	2 585
	2005	2 337 (83)	470 (17)	2 807

Caesarean Section

Table 30: Emergency / Elective Caesarean Section Proportion 1997-2005

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
2005	766	48.4	816	51.6

Table 31: Emergency/Elective Caesarean Section Proportion by Public/Private Hospitals 2000-2005

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
2005	51	45	49	55

Table 32: Primary/Repeat Caesarean Section Proportion 1998-2005

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
2005	971	61.3	611	38.6

Table 33: Primary/Repeat Caesarean Section Proportion by Public/Private Hospitals 2000-2005

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
2005	61	62	39	38

Figure 12: Caesarean Section Rates 1992-2005

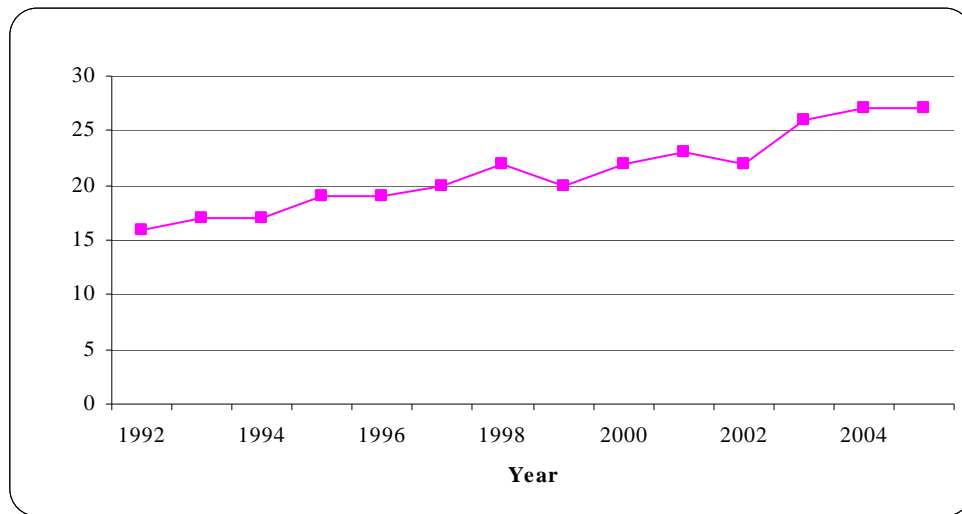


Table 34: All births by Caesarean Section following Augmentation of Labour 1998 – 2005

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
	2005	73	6	10.2
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
	2005	82	3	23.2
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
	2005	66	5	20.7
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
	2005	0	0	0

* ARM = Artificial Rupture of Membranes

Induction of Labour

Table 35: Induction Rate 1996 – 2005

Deliveries following Induction of Labour				
Year	Vaginal deliveries Number (%)	Caesarean Section deliveries Number (%)	Total Number	Induction Rate %
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
2005	1 433 (80)	349 (20)	1 782	30

Tasmania's induction rate appears to be continuing at a level above the national average where the national induction rate for 2004 was 25.3% of all deliveries which was less than reported nationally in previous years since 2001.

Table 36: Induction Rate by Public/Private Hospitals 2000 – 2005

Year	Deliveries following Induction of Labour					
	Vaginal deliveries Number (%)		Caesarean Section Number (%)		Induction Rate %	
	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
2005	915 (81)	518 (79)	215 (19)	134 (21)	27.1	37.6

Nationally in 2004, of women who gave birth, 59.2% had a spontaneous vaginal birth and 0.4% had a vaginal breech birth. Deliveries using forceps accounted for 3.9% and vacuum extractions for 7.1% nationally.

The increase in caesarean sections reported nationally in 2004 continued with 29.4% of mothers having caesarean section deliveries in 2004, compared with 19.3% in 1995. Over the same period, instrumental deliveries have remained stable at around 11%. In 2004, national data has shown that caesarean section rates were higher among older mothers and those who gave birth in private hospitals.

Table 37: Percentage of Caesarean Sections following Induction of Labour 1996 – 2005

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
2005	1 582	349	22

*Augmentation of labour***Table 38: Augmentation of Labour 1997 – 2005**

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
2005	772	366	343	4 435	25.0

In 57.6% of cases nationally for 2004 there was augmentation of spontaneous labour, compared to only 25.0% in Tasmania (2005).

Multiple Pregnancy

Table 39: All Births by Multiple Pregnancies 1997 – 2005

Year	Number of infants born from a Twin pregnancy	Number of infants born from a Triplet* 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
2005	176	3

*All birth orders >1 are multiple.

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, multiple pregnancies in 2004 accounted for 1.7% of all pregnancies: 4,175 twin pregnancies, 75 triplet pregnancies and three quadruplet and quintuplet pregnancies. There were 3.7% of births from a multiple pregnancy (2004) compared to 3.0% in Tasmania (2005).

Table 40: Perinatal Mortality in Multiple Pregnancies 1997 – 2005

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
2005	5	2.8	0	0

* 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 41: Prevalence (Number) of cases of Maternal Hypertension for all Births 1996 – 2005

Type of Hypertension	Pre-Existing	Hyper-tension 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
2005	91	350	0	5 475	5 916

* 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.

The number of cases of maternal hypertension reported in 2005 was higher than any other year reported over a ten year period.

Table 42: Prevalence (Percentage) of cases of Maternal Hypertension for all births 1996 – 2005

Type of Hypertension	Pre-Existing %	Hyper-tension 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
2005	1.5	5.9	0	92.5

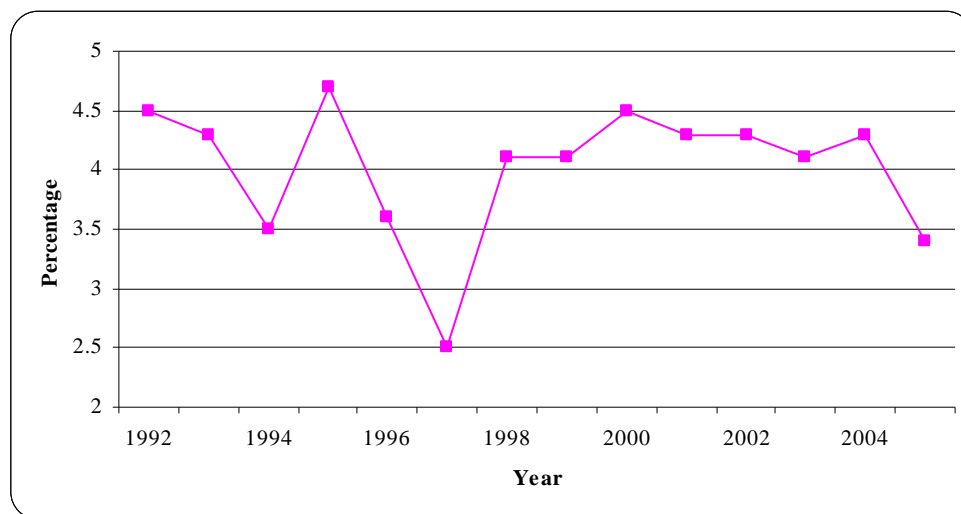
^ Less than 0.1%

Postpartum Haemorrhage

Table 43: Incidence of Postpartum Haemorrhage 1992 – 2005

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
2005	202	3.4

Figure 13: Incidence of Postpartum Haemorrhage 1992 – 2005



Antepartum Haemorrhage

Table 44: Incidence of Antepartum Haemorrhage 1992 – 2005

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
2005	109	1.8

Figure 14: Incidence of Antepartum Haemorrhage 1992 – 2005

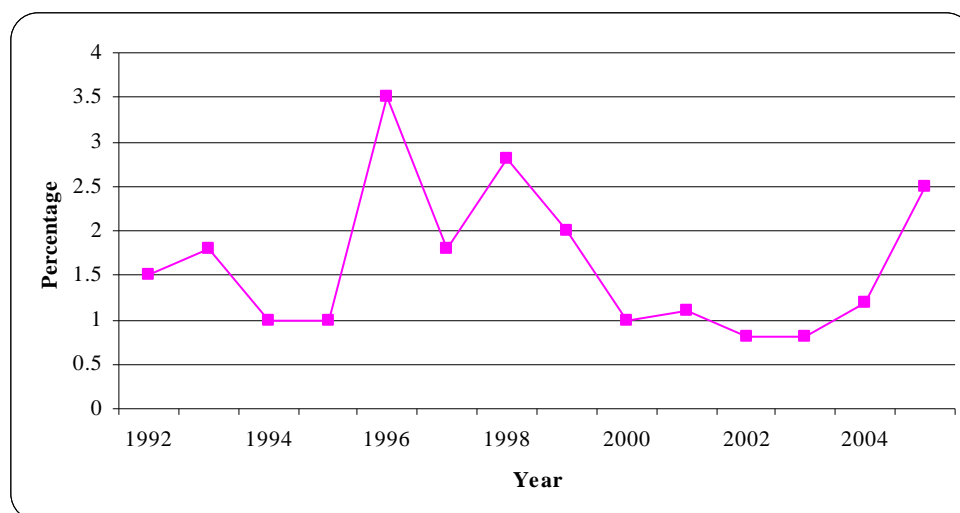


Table 45: Type of Antepartum Haemorrhage 1997 – 2005

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
2005	22	21	109	152

Smoking and Pregnancy

Following a revision and update of the Perinatal Data Collection Form in 2005, data exploring the smoking status of Tasmanian women during pregnancy has become available for review in 2005. This review will supplement previous work such as that conducted in the 1980's by the late Professor Joe Correy (Obstetric and Neonatal Report-Tasmania 1981) and Dr Neville Newman.

Table 46: Smoking Comparison 2005 and 1982*

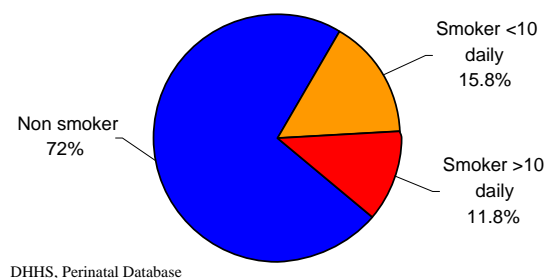
Age	1982* (%)	Age	2005 (%)
Overall	35.3		27.6
<20	55.2	<20	5.4
21-25	46.0	20-24	43.8
26-30	30.2	25-29	26.4
>30	21.2	30-34	17.5
		35-39	17.1
		40+	13.5
Public	Not reported		35.7
Private	Not reported		8.3

* *Obstetric and neonatal Report – Tasmania 1982*

The data from 2005 has been based on information obtained from the mother by her clinician and recorded on the Perinatal Data Collection Form. This information is particularly relevant in view of the impact of smoking during pregnancy which has been linked with low birth weight (less than 2 500gms) and pre-term birth. Low birth weight babies have been reported to be more likely to die in the first year of life and are more susceptible to chronic illness later in life such as heart and kidney disease and diabetes.

In 2005, 27.6% of Tasmanian women indicated that they had smoked tobacco during their pregnancy, with 15.8% reporting to have smoked less than 10 cigarettes per day and 11.8% reporting to have smoked more than 10 cigarettes per day.

Figure 15: Self-reported Tobacco Smoking Status during Pregnancy in Tasmania 2005



Data available in 2004 (see table 47 below) for other jurisdictions indicate that the Northern Territory and South Australia had a high proportion of women who smoked tobacco during pregnancy. Nationally, women who reported smoking at all during pregnancy accounted for 16.7% of women who gave birth in the five jurisdictions for which data were available. This represents a decrease nationally since 2001.

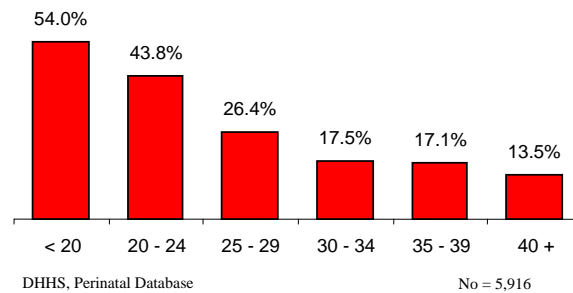
Table 47: Proportion of Women Smoking Tobacco during Pregnancy by State and Territory, 2004

NT	28.6%
SA	23.6%
WA	17.2%
ACT	15.6%
NSW	14.8%

AIHW, National Perinatal Statistics Unit, Australia's Mothers and Babies 2004, Sydney, 2006; data not available for other jurisdictions

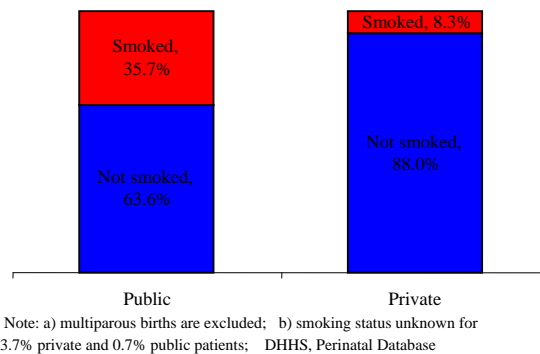
Figure 16 on the next page shows that in Tasmania maternal smoking is more prevalent among younger women, particularly those aged less than 24 years. The proportion of women smoking during pregnancy declines significantly for women aged 30 years and over.

Figure 16: Self-Reported Tobacco Smoking Status during Pregnancy by Age in Tasmania for 2005



Smoking during pregnancy was more prevalent for public patients (35.7%) compared to private patients (8.3%) (Figure 17). This finding is consistent with trends showing the prevalence of smoking to be higher among lower socio-economic groups.

Figure 17: Self-Reported Smoking Status by Public/Private Patients, Tasmania 2005



Smoking during pregnancy was reported most frequently by patients at the Royal Hobart Hospital (38.2%), and the least often (26.2%) reported by patients at the Launceston General Hospital. These differences are due to differences in the patient mix at the three hospitals.

Table 48: Self-Reported Tobacco Smoking Status during Pregnancy by Hospital, Tasmania 2005

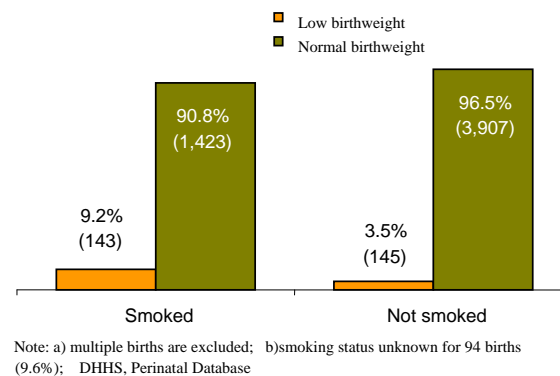
	Not Smoked	Smoked
RHH	61.8	38.2
LGH	73.8	26.2
Mersey	69.1	30.9

DHHS, Perinatal Database

Low birthweight is defined as a weight of less than 2 500 grams and includes babies that are small for gestational age as well as those which are premature.

Excluding multiple births, a total of 293 babies (5.1%) had a birthweight of less than 2500 grams. Of these, 17.1% had a birthweight of less than 1 500 grams (very low birthweight). A total of 9.2% of women who smoked in pregnancy had a low birth weight baby compared to 3.5% of women who reported not to have smoked.

Figure 18: Self-Reported Smoking Status during Pregnancy by Birthweight, Tasmania 2005



The relative risk of having a low birth weight baby was 2.55 (95% 2.02-3.19) in women who smoked in pregnancy compared with those who did not smoke.

A number of sources of error may influence the strength of this association. Women may report that they had not smoked in pregnancy when, in fact, they had but were uncomfortable disclosing their smoking status. Also, maternal smokers may have other risk factors associated with low birth weight babies including younger maternal age, poorer prenatal care, inadequate maternal weight gain or other substance abuse. These factors were not adjusted for in the analyses.

If one or more of them is positively associated with low birth weight, they would be responsible for some of the excess risk that is attributed to maternal smoking. That is, the relative risk estimate of $RR = 2.55$ may be an overestimate due to confounding (Population Health, DHHS, 2007).

Smoking in pregnancy: Comments from Council

Council notes that the prevalence of smoking has remained unchanged in the under 25 year age group since 1982, in spite of a general community response to smoking cessation strategies. Older age groups have, however, shown a reduction in smoking. Overall smoking in pregnancy has fallen since 1982 from 35.3% to 27.6% - a reduction of 21.8%. It is clear that strategies aimed at reduction in smoking have worked, but only for those over 25 years.

There is evidence that smoking cessation strategies do result in a reduction in the frequency of smoking, but only in the order of 6%. $RR = 0.94$, 95% CI 0.93-0.95. (Cochrane database 2004. J Lumley et al). Low cost/intensity strategies, utilising maternity care providers at antenatal visits have been found to be as effective as high

intensity strategies. Thus standard antenatal care should incorporate smoking reduction advice for all women who smoke. QUIT Tasmania has developed a package specifically for use in pregnancy and can be contacted to provide the packages.

As noted in the stillbirth discussion, IUGR is a significant contributor to perinatal mortality. So any strategy that may reduce the incidence of IUGR may correspondingly reduce the stillbirth rate. Thus interventions to reduce smoking in pregnancy are important.

Recommendations:

Interventions to reduce smoking in pregnancy are important particularly in view of reducing the incidence of IUGR and hence stillbirth rate. Standard antenatal care should therefore incorporate smoking reduction advice for all women who smoke as provided by QUIT Tasmania.

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:

Executive
Acute Health Services Group
Acute Care Strategies and Reform
Level 2, 10 Murray Street
HOBART TAS 7000

1. Did you find the information contained within this Report useful? Please circle
one option
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If no, please specify what was lacking:
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-

2. Is there additional information you would like to routinely see included in the Report? Yes No
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-
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3. Are there any other suggestions you would make to assist in improving the usefulness of this Report? Yes No
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If you require further information please contact Executive, Acute care Strategies and Reform on 62333551.