



**Tasmania**  
DEPARTMENT *of*  
HEALTH *and*  
HUMAN SERVICES

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

**Tasmania**

**Annual Report for  
2003**

Published July 2005

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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 2003.

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.

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## 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 Morbidity & Mortality, Maternal Morbidity & Mortality, Perinatal Morbidity & Mortality 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;
- Queenstown District Hospital;
- North Eastern Soldiers Memorial Hospital (Scottsdale);
- Smithton District Hospital;
- Calvary Private Hospital;
- Royal Hobart Hospital; and
- The Hobart Private Hospital.

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## Perinatal Registry Act 1994

The Perinatal Registry Act was given Royal Assent on the 10<sup>th</sup> May, 1994. Under this 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.

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## **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 birth weight:** An infant born weighing less than 2500 grams

**Very low birth weight:** An infant born weighing less than 1500 grams

**Extremely low birth weight:** 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.<sup>1</sup>

**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.<sup>2</sup>

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<sup>1</sup> 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

<sup>2</sup> National Health Data Dictionary V10.0

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## **Members of the Council of Obstetric & Paediatric Mortality & Morbidity**

### *Nominees of the University of Tasmania (2 nominees):*

Professor Allan Carmichael  
Professor Clement Chan (Chair) (July – October)

### *Person nominated by the Secretary employed in the delivery of Neonatal Services:*

Dr Simon Parsons (May – December 2003)

### *Person nominated by the Secretary employed in the Department of Health & Human Services:*

Ms Mary Blackwood

### *Nominee of the Tasmanian Branch of the Royal Australian and New Zealand College of Obstetricians and Gynaecologists:*

Dr Melwyn D'Mello

### *Nominee of the Tasmanian Branch of the Paediatric and Child Health Division of the Royal Australian College of Physicians:*

Dr Elizabeth Hallam

### *Nominee of the Tasmanian Branch of the Royal Australian College of General Practitioners:*

Dr Thomas (Geoff) Shannon

### *Nominee of the Tasmanian Branch of the Australian College of Midwives Inc.:*

Ms Ruth Forrest

### *Additional Member Nominated by Council to represent community interests:*

Ms Ros Escott

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## ***Members of Sub-Committees & Support Services***

### ***Maternal Mortality & Morbidity Sub-Committee:***

Dr Shelby Jarrell (Chair)  
Dr Melwyn D'Mello  
Ms Ruth Forrest

### ***Paediatric Mortality & Morbidity Sub-Committee:***

Dr Elizabeth Hallam (Chair)  
Dr Thomas (Geoff) Shannon  
Dr Chris Lawrence  
Dr Alfhild Larson

### ***Perinatal Mortality & Morbidity Sub-Committee:***

Dr Simon Parsons (Chair)  
Dr Melwyn D'Mello

### ***Data Management Sub-Committee***

Dr Rupert Sherwood (Chair)  
Dr Melwyn D'Mello  
Dr Michelle Williams  
Ms Elizabeth Hunn

### ***National Perinatal Collection Committee -Tasmanian Representative:***

Ms Karen Wheeler

### ***National Perinatal Data Development Committee – Tasmanian Representative:***

Ms Karen Wheeler

### ***Support Staff:***

Ms Diane Hickie

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## Council Summary

### *Perinatal Statistics at a Glance*

- The birth rate in Tasmania continues to decline and is currently 11.5 per 1000 head of population (Table 1).
- From 1999 the gap between the percentage of public and private maternity patients (Figure 2) began to close. During 2003 a reversal in this trend was observed with the proportion of private patients decreasing from 36.6% to 34.3% and the proportion of public patients increasing from 62.7 to 65.2.
- The percentage of female infants decreased from 49% to 48% (Table 5).
- The proportion of low birth weight infants has increased from 5.7% in 2002 to 6.4% in 2003 (Table 6).
- The resuscitation rate remains low, with 5.4% of all births reported as requiring some resuscitative intervention (Table 14). Tasmania's reported resuscitation rate is significantly lower than all other States and Territories. It is not possible to determine if this is a reflection of actual practice, or if resuscitation is under reported.
- The Perinatal Mortality Rate (Table 17) continues to increase with a rate of 13.2 per 1000 births in 2003. Tasmania's rate remains higher than the Australian average (Figure 7). Spontaneous pre-term births and unexplained intrauterine deaths remain the highest cause of mortality (Table 18).
- The neonatal mortality rate has decreased to 0.7 per 1000 births for infants over 28 weeks gestation. (Table 22).
- The rate of autopsy remains low at 7.8%. This is a slight increase on the 7.4% recorded in (Table 24).
- The teenage pregnancy rate remains steady at 8% (Table 25), but is now slightly lower than the national average (Figure 9). The proportion of mothers aged 40 years or more has decreased to 2 %.
- The caesarean section rate has increased from 22% in 2002 to 26% in 2003 (Table 32). The elective caesarean section rate has remained fairly constant at 51% (Table 37).
- The induction rate has increased to 32% of all deliveries (Table 43), while the percentage of caesarean sections following induction of labour has increased from 13% to 16%.
- Augmentation of labour has increased from 29.9% in 2002 to 33.6% in 2003 (Table 46).

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## **Recommendations**

The following recommendations have been made:

### From the Perinatal Mortality & Morbidity Sub-Committee:

1. 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. This should be funded by the DHHS.
2. The need for improved knowledge amongst medical staff of the diagnosis and management of myocarditis is noted, as well as a recommendation that input be available from trained neonatologists and paediatric intensivists in the treatment of critically ill infants and children in Tasmania. Implementation of this recommendation has been initiated already with a State-wide external review of neonatal and paediatric intensive care services in Tasmania occurring before the end of 2004.
3. That the Royal Hobart Hospital develop and implement a small infant protocol for viable infants born at < 27 weeks gestation. This protocol is currently under development. HFO is a part of this protocol. New humidified incubators should be purchased.
4. That there is improvement in the management of hypotension and lactic acidosis in sick neonates. The Neonatal Intensive Care Unit has recently added treatment with low dose hydrocortisone in this context and the results of its use are currently being reviewed.
5. That the Protocol for the review of stillbirths (Attachment A) be implemented in all maternity units to ensure that a comprehensive investigation of cause of death is undertaken

### From the Paediatric Mortality & Morbidity Sub-Committee:

1. The case of post-mortem diagnosed medium chain acyl-CoA Dehydrogenase deficiency highlights the prudence of checking blood glucose levels in any infant or child presenting with unexplained illness or depressed conscious state. This was a treatable condition, but the Council appreciates in this particular case there had been no clear indication of a need to check the blood glucose level until the final presentation.
2. The Council recommends that persons trained and credentialed in Advanced Paediatric Life Support staff all emergency departments in our four regional centres and that advice and treatment from qualified intensive care specialists be available and sort for sick children.
3. The case of death due to chronic renal failure and pneumonia will be further reviewed and any amendment will be placed in the 2004 report.
4. A protocol for the systematic review of all infants aged under 2 years presenting with injuries to Emergency Departments and medical practitioners should be developed and implemented across the State

### From the Maternal Mortality & Morbidity Sub-Committee:

- 
1. The Sub-Committee felt there was a need to reiterate to Psychiatrists and Obstetric Clinicians alike that there is no need to cease taking psychotropic drugs during pregnancy, with the exception of Lithium where an alternative drug should be sought. It would also be appropriate to make available to mothers attending antenatal care who have established diagnoses of schizophrenia information about psychotropic medications in pregnancy and during breastfeeding.
  2. Patients health and support needs are frequently more complex than traditional specialist services allow and there is a need for close working relationships between, for example, obstetric, psychiatric, primary care and social services. It is preferable for psychiatric assessment, where possible, to be embedded in routine antenatal services.
  3. Discharge planning should focus on the vulnerability of some patients if discharged late in the week or over the weekend when most community services are working on an on-call skeleton staff basis. In some instances discharge early the next week is judicious.

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## **Committee Reports**

### ***Maternal Mortality & Morbidity Sub-Committee***

#### **Maternal Deaths for 2003**

There were no maternal deaths in 2003 that occurred within 42 days of cessation of pregnancy. There was however one late maternal death, that occurred five months after delivery.

The cause of death in this case was suicide. The woman had a long history of psychiatric illness and had been diagnosed with schizophreniform psychosis. She had a history of non-compliance with treatment, including refusal to take medication and failing to maintain appointments for on-going psychiatric care. At the time of her death she was non-compliant with medication, stating that she would have to cease breast-feeding her baby if she was on psychotropic medication.

The Maternal Mortality & Morbidity Sub- Committee has classified this death as an incidental late maternal death, unrelated to the pregnancy. There were no avoidable obstetric factors, however it is recommended that Psychiatric and Obstetric clinicians be reminded that there is no clinical evidence of harm to the baby from breastfeeding while the mother is on psychotropic medication.

#### **Revised Maternal Mortality Report 2002**

Until recently the Council believed that only one maternal death occurred in 2002, however the occurrence of another maternal death has since been identified. This death is discussed in the 2003 Report for completeness, but it does not have any bearing on any of the statistical material provided later.

In this case the woman was a 28 year old G1P1 with a long term history of mental illness, which had required thirteen admissions to hospital, some of which were the result of failed suicide attempts. Throughout the last six months of her pregnancy the woman had been non-compliant with medical care and had refused all medication. She also had a history of domestic problems.

She suffered no obstetric complications and was delivered of a live healthy infant at term. The woman was discharged home at the insistence of her husband, and against the wishes of the hospital, on the day after delivery. Extended Midwifery Services were arranged, but no psychiatric follow-up was provided. Six days after delivery the woman died from shock and haemorrhage due to multiple injuries after being hit by a truck.

The Maternal Mortality & Morbidity Sub- Committee has classified this death as an indirect maternal death, unrelated to the pregnancy. There were no avoidable obstetric factors, but the lack of psychiatric follow-up care is noted as an important issue. Concern was expressed by committee members that recommendations for follow-up psychiatric care may be hampered by:

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- issues of inadequate identification of people in need with poor in-house evaluation prior to discharge;
  - unavailability of services during weekend discharge; and
  - non-compliance by patients.

**Recommendations:**

1. The Sub-Committee felt there was a need to reiterate to Psychiatrists and Obstetric Clinicians alike that there is no need to cease taking psychotropic drugs during pregnancy, with the exception of Lithium where an alternative drug should be sought. It would also be appropriate to make available to mothers attending antenatal care who have established diagnoses of schizophrenia information about psychotropic medications in pregnancy and during breastfeeding.
2. Patients health and support needs are frequently more complex than traditional specialist services allow and there is a need for close working relationships between, for example, obstetric, psychiatric, primary care and social services. It is preferable for psychiatric assessment, where possible, to be embedded in routine antenatal services.
3. Discharge planning should focus on the vulnerability of some patients if discharged late in the week or over the weekend when most community services are working on an on-call skeleton staff basis. In some instances discharge early the next week is judicious.

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## **Perinatal Mortality & Morbidity Sub-Committee**

### Perinatal Deaths for 2003

There were 73 perinatal deaths in Tasmania for 2003. This includes all infants (both live and stillborn) who were greater than 20 weeks gestation, or weighed 400 grams or more at birth. Twenty-five of these deaths were neonatal deaths (liveborn infants who did not live beyond 28 days of age) with 48 stillbirths. The overall perinatal mortality was 13.2 per 1000 births. The neonatal mortality rate was 4.5 per 1000 births, with a stillbirth rate of 8.7 per 1000 births.

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

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

\* 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 were three neonatal deaths in Tasmania associated with congenital abnormalities. Two infants had urinary tract abnormalities incompatible with life, which in one case was identified antenatally, while a third infant had spina bifida and was born extremely prematurely after TOP. The fourth neonatal death occurred at 14 days of age in an infant who had non-ketotic hyperglycaemia diagnosed in the first week of life and who was expected to die. Twelve stillbirths also resulted from congenital anomalies. Three infants had multiple anomalies, there was one infant with musculoskeletal and one with gastrointestinal anomalies. Of the three chromosomal anomalies, two were Trisomies. The two central nervous system anomalies were both myelomeningoceles. Two infants also had cardiovascular anomalies.

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## 2. Perinatal Infections

There were two neonatal deaths associated with infectious conditions. One infant died from Gram B Streptococcus (GBS) sepsis after being born at 32 weeks gestation. There was a history of premature rupture of membranes. Antibiotics were not administered in labour despite widespread recommendations that intrapartum penicillin prophylaxis be used in pre-term labour and PROM to reduce the incidence of GBS sepsis. It is therefore possible that this death might have been avoidable. The other death in this category occurred in a 17 day old infant who had been discharged home as a normal healthy newborn. The infant was re-admitted one week later with suspected sepsis. Severe heart failure was only recognised pre-terminally. Autopsy revealed evidence of myocarditis.

## 3. Hypertension

There were no perinatal deaths related to maternal hypertension.

## 4. Antepartum Haemorrhage

There was one neonatal death and seven stillbirths associated with antepartum haemorrhage. In the case of the neonatal death, the infant was only 20 weeks gestation and could not have survived such extreme prematurity. All haemorrhages were due to placental abruption. Of the seven stillbirths, four infants were of 26 weeks or less gestation, while the remaining three infants had a gestational age of greater than 37 weeks.

## 5. Maternal Conditions

There were four stillbirths associated with maternal conditions. One mother suffered from SLE, while another had a thrombophilic disorder. The third mother had pre-existing diabetes mellitus, which was poorly controlled. At the time of the infant's death the mother had severe diabetic ketoacidosis. The fourth mother was ANA +ve due to a suspected connective tissue disorder.

## 6. Specific Perinatal Conditions

There was one neonatal death associated with a specific perinatal condition. In this case the infant was born prematurely with a true knot in the umbilical cord. Resuscitation efforts were hampered by inexperience. There were three stillbirth classified as specific perinatal conditions. All conditions were cord related and included true knot in cord, cord torsion and umbilical vein thrombosis.

## 7. Hypoxic Peripartum Death

There was one neonatal death resulting from hypoxic injury in a full term infant. The infant was born in the north of the state and this case was compounded by intubation difficulties, possibly due to lack of experience.

## 8. Foetal Growth Restrictions

There were three stillbirths associated with intrauterine growth restriction. The deaths occurred at 27, 28 and 38 weeks gestation. In one case the mother was a confirmed heavy smoker.

## 9. Spontaneous Pre-Term

There were 15 neonatal deaths associated with extreme prematurity. Of these neonatal deaths, 2 infants were of 22 weeks or less gestation with the other 12 having

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a gestational age range of 22 – 27 weeks. Four of these infants had associated pulmonary hypoplasia due to prolonged premature rupture of membranes. One infant was born at 34 weeks gestation following 9 weeks with premature rupture of membranes. Four stillbirths have also been attributed to spontaneous preterm delivery, with deaths at 21, 23 (2 deaths) and 25 weeks gestation.

#### 10. Unexplained Antepartum Deaths

There were 15 stillbirths where the cause of death is unexplained. In one case the mother had received no antenatal care until her arrival at hospital in advanced labour. Two cases showed evidence of placental insufficiency, but the cause of this has not been identified. In the majority of unexplained antepartum deaths there was insufficient investigation to assign a cause of death.

#### 11. No Obstetric Antecedent

Two infants died a sudden infant death at home. Both were aged less than 28 days at the time of their death. Both infants were premature, male and of low birthweight, a combination of known high risk factors. Both infants were bed-sharing with their parents at the time of their death.

#### 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 from the north of the state due to the location of the aircraft in Launceston or on another job. This raises potentially avoidable mortality issues;
- Failure to implement GBS sepsis prophylaxis. It is possible that one death could have been avoided if a program of GBS sepsis prophylaxis had been implemented;
- It is possible that one or two deaths could have been avoided if regional practitioners had greater experience in paediatric resuscitation. We 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. We also recommend early contact with the neonatology consultant on-call in Hobart and detailed discussion and advice on management sort and provided.
- Four pre-term deaths due to pulmonary hypoplasia and two pre-term deaths from severe IVH possibly related to uncontrolled hypercarbia might have been prevented if high frequency oscillation had been available. This newer type of ventilation became available at the Royal Hobart Hospital Neonatal Intensive care Unit in March 2004.

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- There was one case of unrecognised heart failure in a 17 day old infant probably due to myocarditis. Recognition of the diagnosis occurred very late just prior to the infants death. The need for improved knowledge amongst medical staff of the diagnosis and management of myocarditis is noted, as well as a recommendation that input be available from trained neonatologists and paediatric intensivists in the treatment of critically ill infants and children in Tasmania. Implementation of this recommendation has been initiated already with a State-wide external review of neonatal and paediatric intensive care services in Tasmania occurring before the end of 2004.
  - The number of stillbirths (31% of all stillbirths) for which a cause of death was unable to be assigned due to insufficient investigations is of concern. Corresponding figures for unexplained stillbirths from Queensland, Victoria and South Australia are 19.1%, 23.8% and 24.6% respectively.

### **Recommendations:**

1. 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. This should be funded by the DHHS.
2. The need for improved knowledge amongst medical staff of the diagnosis and management of myocarditis is noted, as well as a recommendation that input be available from trained neonatologists and paediatric intensivists in the treatment of critically ill infants and children in Tasmania. Implementation of this recommendation has been initiated already with a State-wide external review of neonatal and paediatric intensive care services in Tasmania occurring before the end of 2004.
3. That the Royal Hobart Hospital develop and implement a small infant protocol for viable infants born at < 27 weeks gestation. This protocol is currently under development. HFO is a part of this protocol. New humidified incubators should be purchased.
4. That there is improvement in the management of hypotension and lactic acidosis in sick neonates. The Neonatal Intensive Care Unit has recently added treatment with low dose hydrocortisone in this context and the results of its use are currently being reviewed.
5. That the Protocol for the review of stillbirths (Attachment A) be implemented in all maternity units to ensure that a comprehensive investigation of cause of death is undertaken.

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## **Paediatric Mortality & Morbidity Sub-Committee**

### **Paediatric Deaths for 2003**

Council and Sub-Committee members wish to acknowledge the contribution of Dr Alfhild Larson to the Paediatric Mortality & Morbidity Sub-Committee. Dr Larson served on the sub-committee for a period of four years before returning to her native Canada.

#### **Amendment to the Report for 2002**

Subsequent to the production of the report on Paediatric deaths for 2002, another death by injury has been made known to the Paediatric Mortality & Morbidity Sub-Committee. The cause of death in this case was drowning, and this brings the number of deaths by injuries up to 12.

A further review of the management of care for the child with streptococcus pneumoniae septicaemia has identified that the child did not receive ideal pre-operative and anaesthetic care. It is felt that this point highlights a need for improved paediatric intensive services in Tasmania.

#### **Report for 2003**

The Council's Terms of Reference, as specified under the Perinatal Registry Act, 1994 in respect of paediatric mortality 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.

Given the small number of deaths each year, paediatric mortality is classified using a broad 4 category classifications system. Paediatric deaths for 2003 have been classified as follows:

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

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

There is a notable increase in the number of deaths from conditions determined at birth. Given that three of these deaths occurred in infants who have just passed the neonatal age range it is possible that this number has been inflated by advances in technology that enable clinicians to keep infants alive longer to give them a greater chance of surviving a poor birth condition.

The decrease in the number of sudden infant deaths over the past two years is pleasing to note. However, as per the analysis below, there were two neonatal sudden infant deaths which must be considered when looking at the rate of SIDS overall. It should also be noted that there were two neonatal deaths in this category in 2002 as well.

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

### 1. CONDITIONS DETERMINED AT BIRTH

There were seven paediatric deaths in this category. The age of the children at death ranged from 1 month (prolonged neonatal deaths) to 7 years. The following conditions have been attributed as the cause of death for each of the children:

- a. Medium chain acyl-CoA Dehydrogenase deficiency;
- b. Cerebral ischaemia from birth asphyxia;
- c. Cerebral haemorrhage from an AV malformation;
- d. Moebius syndrome and hydrocephalus;
- e. Pneumonia, chronic renal failure, and syringomelia;
- f. Ohtahara syndrome with intractable epilepsy; and
- g. Unbalanced chromosomal (13) translocation.

### 2. ACQUIRED CONDITIONS

There were five deaths in children ranging from the ages of 4 weeks to 12 years where the cause of deaths was an acquired condition. One child suffered from Niemann-Pick type C disease, while the remaining four children, including the infant, died from different types of leukaemia.

### 3. SUDDEN INFANT DEATH SYNDROME

There were two paediatric and two neonatal sudden infant deaths. The neonatal deaths have been included in the calculation of the perinatal mortality rate, but because these deaths are SIDS related they are included in this overall analysis of risk factors. All four infants were male. Multiple risk factors (at least 4) were noted in three of the four cases. There was only one case where only one risk factor, unsafe sleeping position, was present. The following risk factors were noted:

- a. Two of the infants, the neonatal deaths, were premature births;
- b. Three infants died while they were sleeping in the same bed as their parents;

- 
- c. In three cases there was a history of smoking in the household;
  - d. In two cases the parents had consumed alcohol on the night the infants died; and
  - e. Three of the infants had been placed in an unsafe sleeping position, either on their side or in the prone position.

#### 4. INJURY

Four children died as a result of injury in 2003. The age of the children ranged from five to eight years. Three children were killed in motor vehicle accidents, one involving an all terrain vehicle (ATV) and another where the child was a cyclist struck by a reversing utility truck. The fourth child died after being struck by a falling tree branch.

#### 5. CASES STILL UNDER INVESTIGATION

There are two paediatric deaths under investigation. In one case charges have been laid. There are some difficulties involved in the interpretation of injuries which may have been related to coagulation problems and insufficient clinical information.

#### 6. UNKNOWN/INDETERMINATE

There was one paediatric death, where despite intensive investigation the cause of death remains undetermined. In this case the child suffered a hypoxic brain injury from an unknown cause.

#### **Recommendations:**

1. The case of post-mortem diagnosed medium chain acyl-CoA Dehydrogenase deficiency highlights the prudence of checking blood glucose levels in any infant or child presenting with unexplained illness or depressed conscious state. This was a treatable condition, but the Council appreciates in this particular case there had been no clear indication of a need to check the blood glucose level until the final presentation.
2. The Council recommends that persons trained and credentialed in Advanced Paediatric Life Support staff all emergency departments in our four regional centres and that advice and treatment from qualified intensive care specialists be available and sort for sick children.
3. The case of death due to chronic renal failure and pneumonia will be further reviewed and any amendment will be placed in the 2004 report.
4. A protocol for the systematic review of all infants aged under 2 years presenting with injuries to Emergency Departments and medical practitioners should be developed and implemented across the State.

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## **Data Management Sub-Committee**

### Report for 2003

The Data Management Sub-Committee met several times throughout the year to progress the previously agreed actions. The following report provides an overview of progress and the status of these actions at the end of 2003.

#### 1. Redesign the data collection form:

In February a general meeting was held where a draft of the new perinatal data collection form was tabled and comment from interested obstetricians, paediatricians and midwives was invited. The meeting was not as well attended as had been hoped, but those present provided some very positive and useful input.

To help support consistent and meaningful data the committee also drafted data definitions. The definitions were circulated for comment, and amendments made in line with comments received.

By the end of this year the content of the Perinatal Data Collection Form had been agreed to. However work is still required on the Stillbirth Notification, Neonatal Death Review and Congenital Anomalies forms. It was agreed to progress this work during 2004, with a planned implementation date for the new form set for January 1, 2005.

#### 2. Re-design the database:

In 2002 the Department of Health & Human Services sought some additional resources under the Microsoft Agreement Fund to assist in the development of a new Perinatal database. While Microsoft were initially supportive of the proposal this option was unable to be progressed due to the Department's change in preferred information technology platforms. DHHS, therefore gave a commitment to develop in-house an oracle based perinatal database. Specifications for the new database have been completed.

#### 3. Establish a process whereby clinicians and midwives can have access to the data for ad-hoc and routine reports.

Individual hospital reports were again prepared covering the 2002 year. Sites/clinicians are reminded that ad-hoc requests for information can be made at any time.

#### 4. Update the Data Collection Guidelines and provide education to sites.

Work on the developing Data Collection Guidelines to support the new Perinatal Data Collection Form has commenced. Education sessions will be provided in late 2004 to support the introduction of the new form.

#### 5. Review the structure of the Annual Report

The 2002 report was the first to be produced in the new format. A Feedback form was included with the Report, and while only a handful of people opted to provide

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feedback, the few comments received were both positive and constructive. This 2003 report continues in the same format and comments are again invited.

Work on the Stillbirth Notification, Neonatal Death Review and Congenital Anomalies forms, supporting definitions and the Data Collection Guidelines will continue in 2004. The Sub-Committee will also continue to provide advice to DHHS to assist in the development of the new perinatal database.

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## Perinatal Statistics

### *Births and Birth Rates*

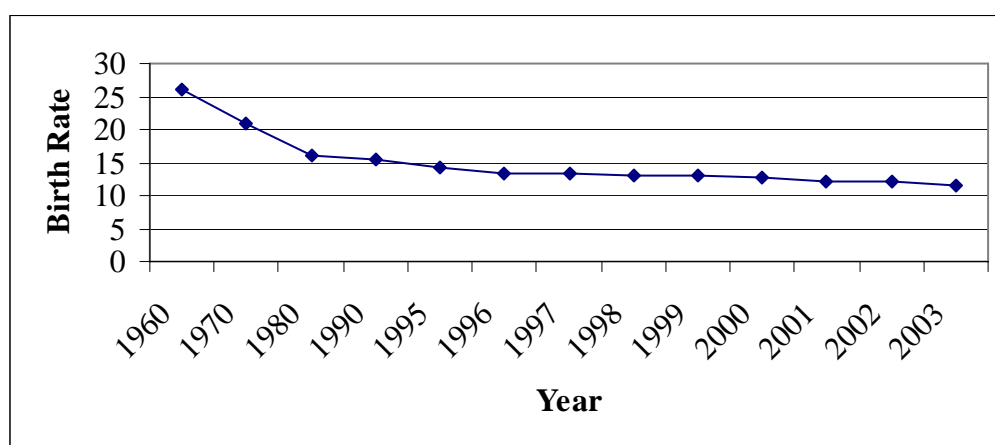
**Table 1: Births and Birth Rates for Tasmania 1992-2003**

Year	No. Births	Birth rate per 1000 population
1992	7025	14.9
1993	6861	14.5
1994	6845	14.5
1995	6817	14.4
1996	6331	13.4
1997	6309	13.4
1998	6171	13.1
1999	6145	13.1
2000	5975	12.7
2001	5726	12.1
2002	5714	12.0
2003	5545	11.5

NB: Australian Bureau of Statistics estimates Tasmania's population as 479 958 in 2003. Please note this estimation of population is a preliminary figure only and is subject to change.

Tasmania's birth rate continues to decline. In 2001 the national birth rate was 12.6 per 1000 head of population, indicating that Tasmania's rate is lower than that experienced nationally.

**Figure 1: Birth Rate for Tasmania per 1000 Head of Population 1960 – 2003**



**Table 2: Births by Region 1997 – 2003**

Year	South	North	Northwest
1997	3087	1705	1505
1998	3028	1699	1509
1999	2993	1769	1411
2000	2922	1692	1357
2001	2904	1573	1238
2002	2873	1600	1230
2003	2762	1557	1193

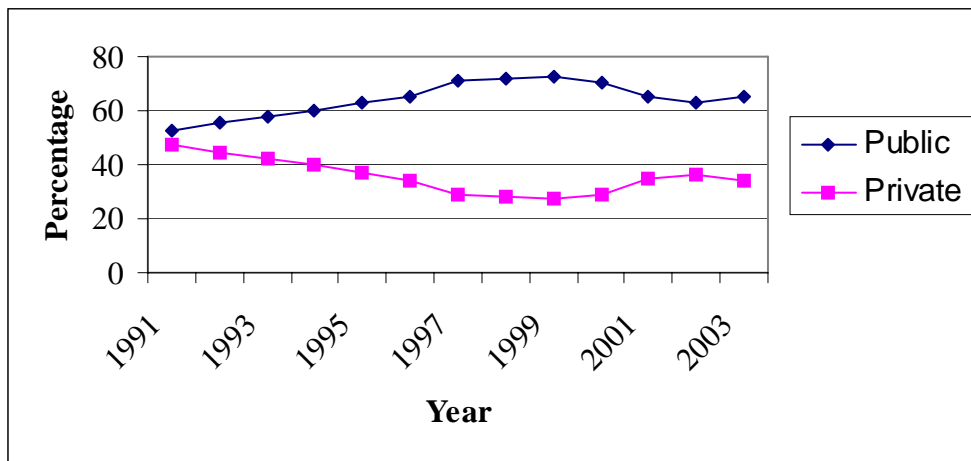
**Table 3: Births By Hospital 1997 - 2003**

Hospital	1997 No.	1998 No.	1999 No.	2000 No.	2001 No.	2002 No.	2003 No.
Royal Hobart Hospital (QAH)	2049	2050	2084	2007	1823	1831	1633
Launceston General Hospital (QVH)	1626	1564	1641	1587	1512	1493	1482
District Hospitals	180	151	159	119	101	78	61
Private Sector	2401	2349	2195	2216	2250	2230	2284
Others (includes homebirths)	53	57	66	46	40	82	85
TOTAL	6309	6171	6145	5975	5726	5714	5545

**Table 4: Proportion of Public and Private Patients 1992 - 2003**

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

**Figure 2: Proportion of Public and Private Patients 1992 - 2003**



There was a slight decline in the proportion of private patients for 2003. Nationally, for 2002, the proportion of public sector patients was 68.9%, with 31.1% from the private sector. In Tasmania 41% of deliveries occurred in the private sector. This is higher than the national rate due to contracting of public obstetric care to the private sector.

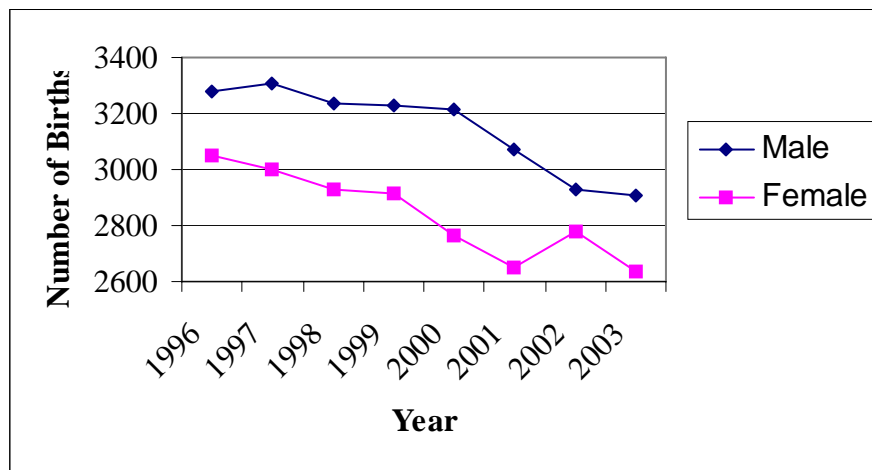
Sex of Infants

**Table 5: Sex of all Infants born in Tasmania 1997 – 2003**

Year	Male		Female		Indeterminate		Total
	No.	%	No.	%	No.	%	
1997	3307	52	3001	48	1	^	6309
1998	3237	52	2932	48	2	^	6171
1999	3232	53	2912	47	1	^	6145
2000	3211	54	2762	46	2	^	5975
2001	3073	54	2650	46	3	^	5726
2002	2930	51	2782	49	2	^	5714
2003	2909	52	2635	48	1	^	5545

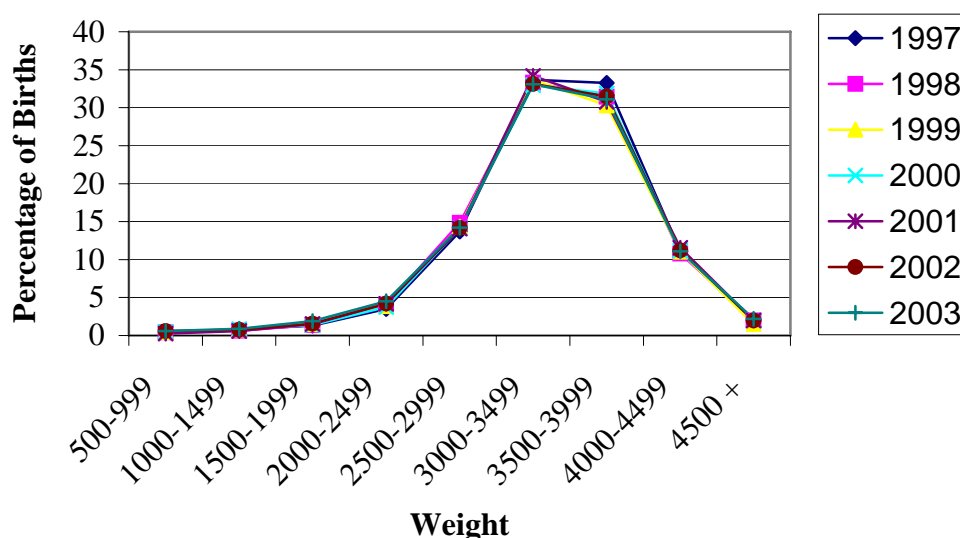
^ Less than 0.1%

**Figure 3: Sex of all Infants 1996 - 2003**



## Birthweight

**Figure 4: Percentage of all Births by Birth Weight Groups 1997 - 2003**



### 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 6a: Incidence of Low and Very Low Birth Weight 1992 - 2003**

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

The percentage of low and very low birth weight infants increased again slightly in Tasmania in 2003. Nationally the percentage of very low birth weight infants was 1.1% in 2001 and 2003. Low birth weight infants accounted for 6.2% of births nationally in 2001 and 6.5% in 2002.

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**Table 6b: Outcome of Very Low Birth Weight (less than 1500g), 1999 - 2003**

Year	Stillbirths	Live Births			Total
		Discharged	Transferred	Neonatal Deaths	
1999	7	3	10	8	28
2000	10	16	8	6	40
2001	9	4	1	3	17
2002	18	5	7	11	41
2003	16	4	5	13	38

### **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.

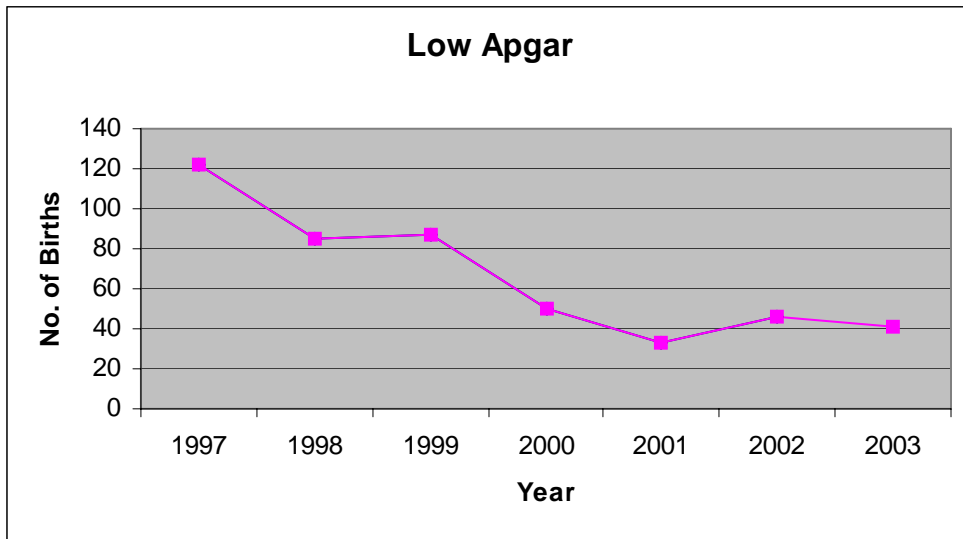
In 2003 there were 41 infants (0.73%) with an Apgar score less than 6 at five minutes. This compares with 122 (1.9%) in 1997, 85 (1.3%) in 1998, 87 (1.4%) in 1999, 50 (0.8%) in 2000, 33 (0.6%) in 2001 and 46 (0.87%) in 2002.

**Table 7: Apgar Score for all Births at five minute 1997 - 2003**

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

^ Less than 0.1%

**Figure 5: Number of Births with a Low Apgar Score at five minutes 1997 – 2003**



**Table 8: Proportion of Liveborn Infants by Type of Anaesthetic with an Apgar Score of less than 6 at five minutes 1997 - 2003**

Year	No Anaesthetic %	General Anaesthetic only %	Epidural only %	Other Anaesthetic %
1997	0.8	0.2	0.1	^
1998	0.5	0.1	0.1	0.1
1999	0.7	0.1	0.1	0.1
2000	0.4	0.1	0.1	0.1
2001	0.3	0.1	^	^
2002	0.4	0.1	0.1	0.2
2003	0.4	^	^	^

^ Less than 0.1%

**Table 9: Proportion of all Liveborn Infants by Sex with an Apgar Scores less than 6 at five minutes 1997 - 2003**

Year	Male %	Female %
1997	1.0	1.2
1998	0.1	0.6
1999	1.1	0.9
2000	0.8	0.5
2001	0.6	0.3
2002	0.4	0.4
2003	0.4	0.2

**Table 10: Proportion of all Births by Mode of Delivery with an Apgar Score less than 6 at five minutes 1997 - 2003**

Year	Vaginal Delivery %	Caesarean Section %
1997	1.8	2.3
1998	1.2	1.9
1999	1.5	1.3
2000	0.8	0.9
2001	0.6	0.5
2002	0.6	0.3
2003	0.6	0.1

**Table 11: Proportion of Liveborn Infants by Gestation with an Apgar Score less than 6 at five minutes 1997 - 2003**

Year	Gestation in Weeks				
	20 – 24 %	25 – 29 %	30 – 34 %	35 – 39 %	40 + %
1997	50.0	17.1	0	1.3	0.8
1998	25.0	8.1	1.4	0.8	0.7
1999	73.3	8.3	2.7	0.7	0.8
2000	0	7.3	1.4	0.7	0.5
2001	50.0	5	2.2	0.5	0.3
2002	0	3.1	2.3	0.9	0.6
2003	0	10	1.4	0.5	0.6

**Table 12: Proportion of Liveborn Infants by Birth Weight with an Apgar Score less than 6 at five minutes 1997 - 2003**

Year	Birthweight in Grams					
	500 – 999 %	1000 – 1499 %	1500 – 2499 %	2500 – 3499 %	3500 – 4499 %	4500 + %
1997	44.0	23.4	4.6	1.4	1.0	0.8
1998	44.0	10.3	4.1	1.0	0.6	0
1999	44.0	8.2	2.4	0.9	0.7	0
2000	21.7	4.4	0.3	0.8	0.6	0
2001	11.1	3.6	0.6	0.5	0.3	2.0
2002	13.6	0	2.5	0.9	0.5	0.8
2003	14.7	2.0	1.4	0.5	0.6	0

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## **Resuscitation**

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

**Table 13: Intubation Rate 1992 - 2003**

Year	Number of Intubations	Number of Births	Percentage of all Births requiring Intubation
1992	40	6392	0.6
1993	50	6795	0.7
1994	36	6787	0.5
1995	44	6748	0.6
1996	50	6331	0.8
1997	58	6309	0.9
1998	38	6171	0.6
1999	42	6145	0.7
2000	42	5975	0.7
2001	19	5726	0.3
2002	30	5714	0.5
2003	22	5545	0.4

Nationally, 7.2% of infants born in 2003 were intubated, making Tasmania's rate at 0.4% well below the national average. This is also reflected in the resuscitation rate, where nationally 49.1% of infants received some form of resuscitation, compared with 5.4% in Tasmania.

**Table 14: Resuscitation Rate 1997 – 2003**

Year	Number of Resuscitations	Number of Births	Percentage of all Births requiring Resuscitations
1997	884	6309	14.0
1998	799	6171	12.9
1999	794	6145	12.9
2000	662	5975	11.0
2001	568	5726	9.9
2002	339	5714	5.9
2003	297	5545	5.4

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## **Presentation at Delivery**

**Table 15: Presentation at Delivery for all Births 1997 –2003**

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 (^)

^ Less than 1%

Presentation at delivery in Tasmania is consistent with national figures, where 94.5% were vertex presentation and 4.5% breech in 2002.

## Perinatal Mortality

**Table 16: Perinatal Outcome 1997 – 2003**

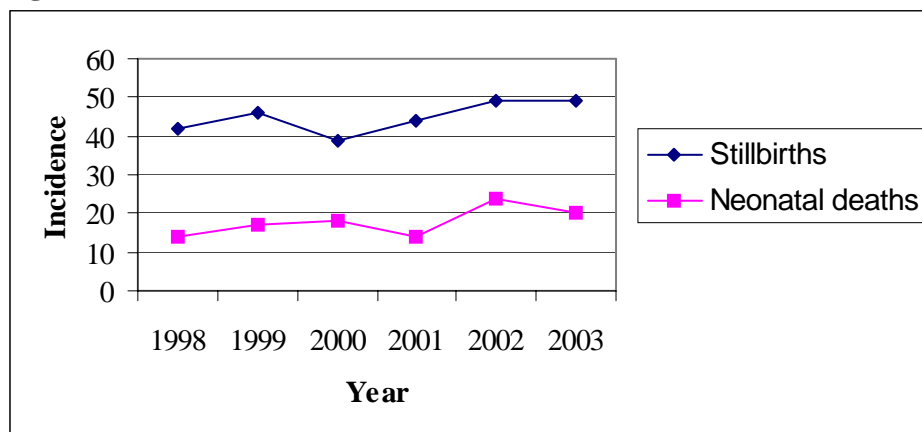
Outcome	Livebirth*	Stillbirth	Neonatal death	Unknown	TOTAL
1997	6249	52	8	0	6309
1998	6115	37	14	5	6171
1999	6082	44	17	2	6145
2000	5914	39	18	4	5975
2001	5666	44	14	2	5726
2002	5641	49	24	0	5714
2003	5472	48	25	0	5545

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

The neonatal death rate (livebirth with subsequent neonatal death during the admission episode) for Tasmania was 3.6 per 1000 livebirths in 2003. Nationally in 2002 the rate was 3.1. The Tasmanian rate increases to 4.5 when infants who have been discharged from their birth episode admission are included in the calculation.

The stillbirth rate for Tasmania was 8.6 per 1000 births in 2003, compared with a national rate of 4.9 in 2002. Overall the Tasmanian perinatal mortality rate for infants still in hospital for their birth episode admission was 12.4 per 1000 births in 2003 compared to a national rate of 8.0 in 2002. The total perinatal mortality rate (including deaths of infants who have been discharged from the birth episode admission) for Tasmania was 13.2 per 1000 births in 2003.

**Figure 6: Stillbirths & Neonatal Deaths 1997 - 2003**



**Table 17: Perinatal Mortality Rates 1992 - 2003**

Year	Number of Perinatal deaths*	Number of Births	Rate of Perinatal Mortality per 1000 births
1992	93	7025	13.2
1993	66	6861	9.6
1994	58	6845	8.5
1995	69	6817	10.1
1996	53	6331	8.4
1997	60	6309	9.5
1998	56	6171	9.1
1999	63	6145	10.2
2000	61	5975	10.2
2001	57	5726	10.0
2002	68	5714	11.9
2003	73	5545	13.2

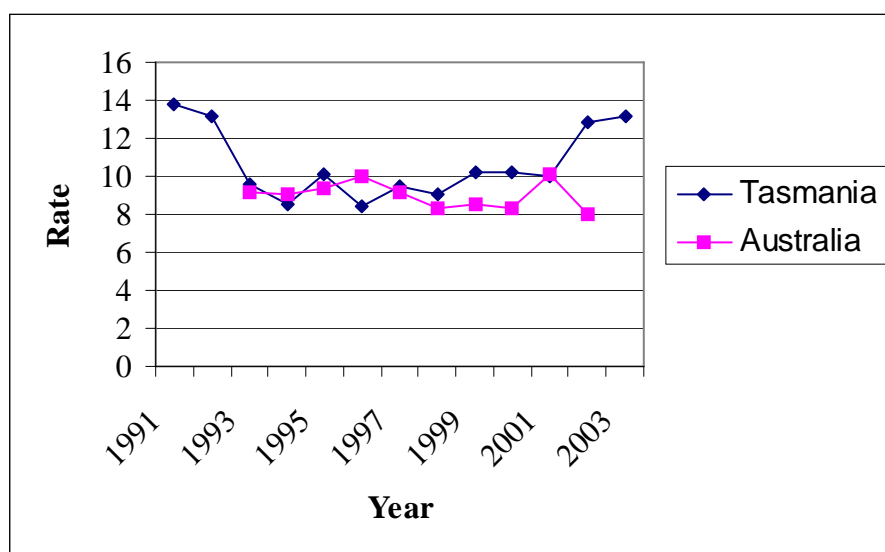
- Includes neonatal deaths occurring following discharge from hospital for the birth episode admission.

**Table 18: Fetal, Neonatal and Perinatal death rate per 1000 births by State and Territory 1998-2002**

Year	Aus	TAS	NT	ACT	NSW	VIC	QLD	SA	WA
<b><i>Fetal</i></b>									
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
<b><i>Neonatal</i></b>									
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
<b><i>Perinatal</i></b>									
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

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

**Figure 7: Perinatal Mortality Rate per 1000 Births in Tasmania 1991 - 2003 and Australia 1993 – 2002**



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

**Table 19: Causes of Perinatal Mortality 1996 - 2003**

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

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

**Table 20: Incidence of Perinatal Deaths with Antepartum Haemorrhage (APH) 1992 - 2003**

Year	APH of Unknown Origin		Placenta Previa		Abruptio Placentae	
	Deaths	Cases	Deaths	Cases	Deaths	Cases
1992	5	59	0	25	1	24
1993	7	82	1	19	7	21
1994	2	32	1	21	6	14
1995	3	33	1	18	2	14
1996	3	171	0	21	1	27
1997	0	139	0	16	8	21
1998	5	155	0	11	2	6
1999	2	88	1	24	1	10
2000	1	3	0	22	4	37
2001	0	2	0	26	6	36
2002	1*	0	0	21	5	28
2003	0	0	0	16	8	27

\* On the Perinatal Data Collection Form this death was reported in conjunction with a “probable abruption”. However, the independent review of perinatal mortality conducted by the Perinatal Mortality & Morbidity Sub-Committee was unable to confirm the origin of the haemorrhage. Therefore there are two pieces of conflicting information from two different sources.

### 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 1000 births.

**Table 21: Neonatal Mortality 1992- 2003**

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

**Table 22: Neonatal Mortality, per 1000 births, in Infants over 28 weeks Gestation 1992 - 2003**

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

**Table 23: Neonatal Mortality, per 1000 births, in Infants over 1000 grams Birth Weight 1992 - 2003**

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

^ Less than 0.1%

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## 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 has continued to decline markedly.

**Table 24: Rate of Autopsies on Perinatal Deaths 1992 - 2003**

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

The Perinatal autopsy rate in Tasmania in 2003 (7.8%) is well below the stillbirth autopsy rate in South Australia, Victoria and Queensland with rates of 61.2%, 35.1% and 24.3% respectively.

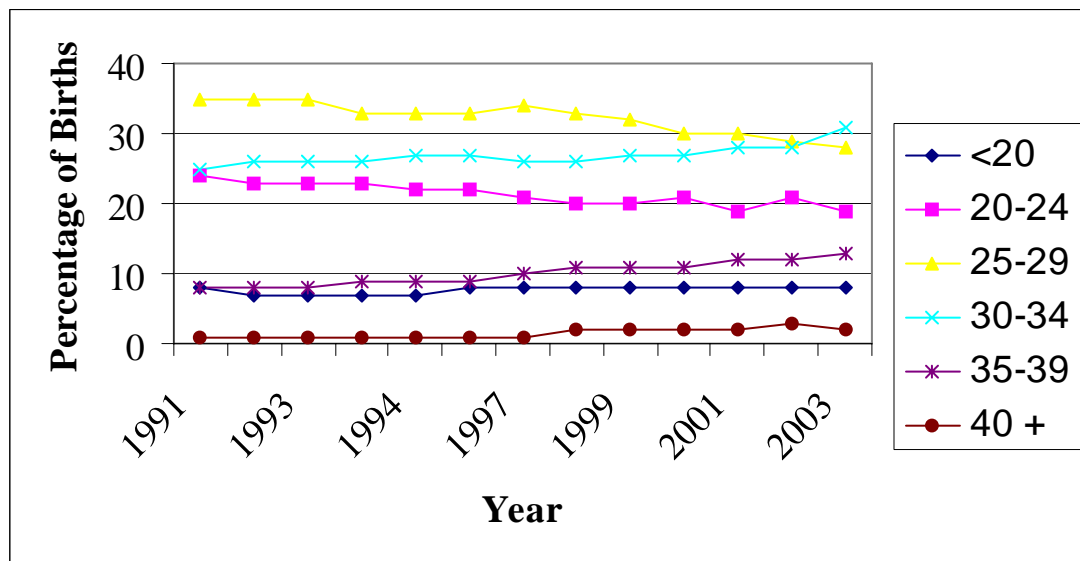
## Mothers

### Age of Mothers

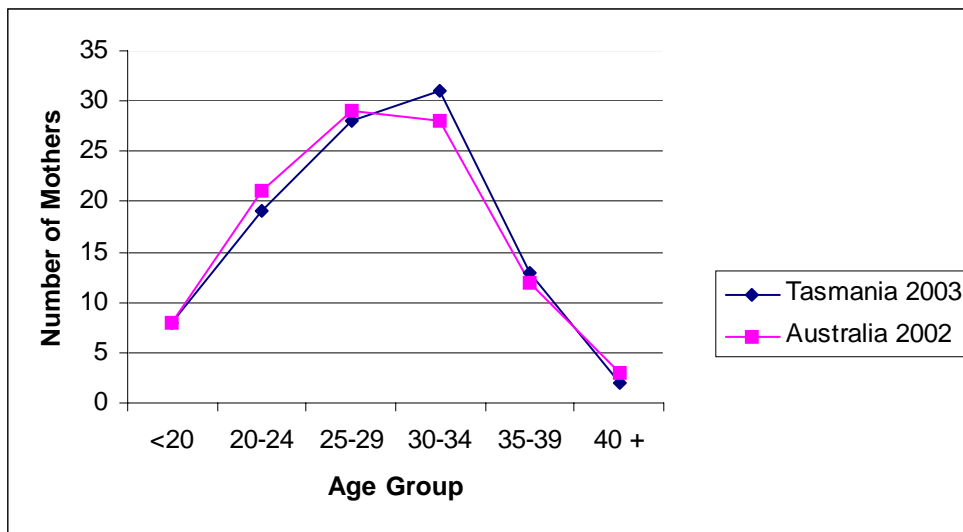
**Table 25: Age of Mothers 1992 - 2003**

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

**Figure 8: Proportion of Births by Maternal Age Groups 1992 - 2003**



**Figure 9: Maternal Age in Tasmania 2003 and Australia 2002**



**Table 26: Rates of Birth per 1000 Female Population by Maternal Age 1998 - 2003**

Maternal age In years	Year	Estimated Tasmanian Female Population *	Rate of Births per 1000
15 – 19	1998	16804	29.6
	1999	16951	30.6
	2000	17112	29.3
	2001	16626	28.7
	2002	16591	27.9
	2003	16639	26.3
20 – 24	1998	15037	82.6
	1999	14750	83.5
	2000	14484	86.0
	2001	14022	78.2
	2002	14175	84.1
	2003	14105	73.0
25 – 29	1998	16466	125.9
	1999	16005	124.3
	2000	15619	114.2
	2001	14712	115.9
	2002	14028	116.2
	2003	13970	109.6
30 – 34	1998	16601	97.8
	1999	16123	102.7
	2000	16058	99.6
	2001	16390	98.4
	2002	16304	96.9
	2003	16314	104.4
35 – 39	1998	18924	36.2
	1999	18625	36.7
	2000	18059	37.6
	2001	17620	38.9
	2002	16987	40.1
	2003	16992	41.0
40 – 44	1998	17901	6.3
	1999	17940	5.3
	2000	18108	6.9
	2001	18511	7.0
	2002	18589	9.1
	2003	18600	6.5
45 -49	1998	16475	0.3
	1999	16750	0.2
	2000	16915	0.3
	2001	17135	0.1
	2002	17282	0.3
	2003	17258	0.6

\*Australian Bureau of Statistics Demography – Tasmania 3311.6 1997, 1998, 1999, 2000, 2001, Census Edition 3201.0 March 2003 & ABS Population by Age & Sex 3201.0 June 2003

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## 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 27: Percentage of Births by Parity 1992 - 2003**

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

## 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.

**Table 28: Mother's Indigenous Status 1997 - 2003**

Status	1997	1998	1999	2000	2001	2002	2003
Aboriginal	6	62	13	11	15	12	122
Torres Strait Islander	3	15	4	1	3	3	4
Aboriginal & Torres Strait Islander	198	54	47	46	30	25	22
Neither	5640	4311	1450	1444	1081	756	2980
Not Stated	462	1729	4631	4473	4597	4918	2417

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Breastfeeding

**Table 29: All births by Breastfeeding at Discharge 1997 - 2003**

Year	Yes	No	% Yes
1997	4908	1401	77.8
1998	4715	1546	75.3
1999	4607	1590	74.3
2000	4430	1545	74.1
2001	4281	1445	74.8
2002	4346	1368	76.1
2003	4257	1288	76.8

**Table 30: Breastfeeding at Discharge by Public/Private Hospital 2000 - 2003**

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

**Table 31: Breastfeeding at Discharge by Parity 2000 – 2003**

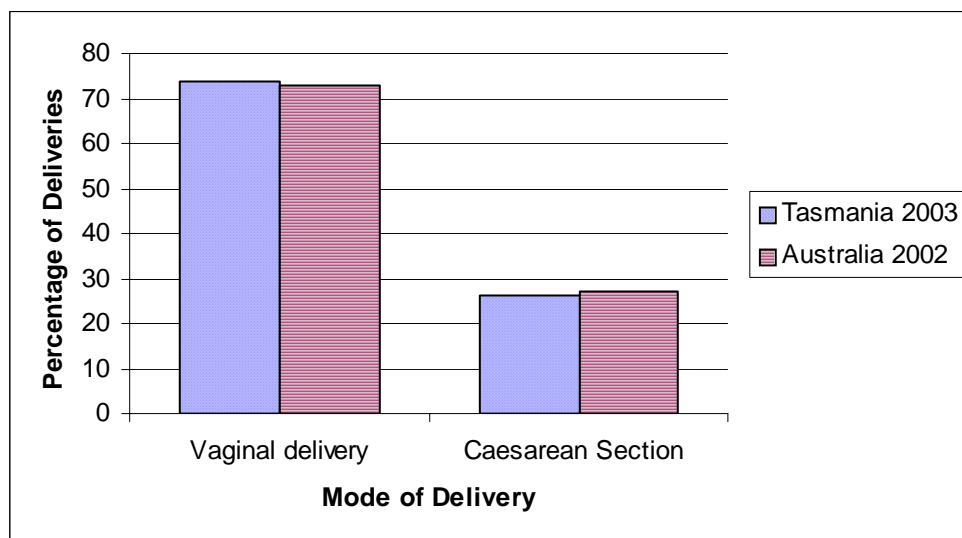
Year	Primiparae % Yes	Multiparae % Yes
2000	76	73
2001	78	73
2002	79	74
2003	81	74

## Mode of Delivery

**Table 32: Mode of Delivery 1992 - 2003**

Year	Vaginal Delivery Number	Vaginal Delivery %	Caesarean Sections Number	Caesarean Sections %
1992	5881	84	1144	16
1993	5704	83	1157	17
1994	5688	83	1157	17
1995	5504	81	1313	19
1996	5140	81	1191	19
1997	5046	80	1263	20
1998	4856	78	1315	22
1999	4838	79	1252	20
2000	4640	78	1324	22
2001	4380	77	1334	23
2002	4465	78	1246	22
2003	4092	74	1451	26

**Figure 10: Mode of Delivery in Tasmania 2003 and Australia 2002**



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**Table 33: Mode of Delivery for Vaginal Births 2000 – 2003**

	2000		2001		2002		2003	
	No.	%	No.	%	No.	%	No.	%
Unassisted Vaginal	4041	87	3789	86	3823	86	3498	85
Forceps	277	6	249	6	234	5	155	4
Forceps Rotation	35	1	16	^	17	^	10	^
Vacuum Extraction	252	5	306	7	331	7	408	10
Vaginal Breech	35	1	20	^	35	1	21	1
Total	4640		4380		4465		4092	

^ Less than 0.1%

The rate of vaginal deliveries continues to decline slightly. However, Nationally for 2002 the caesarean section rate was 27.0%, with 73% vaginal deliveries, well below the rate in Tasmania. Of the vaginal deliveries nationally 61.7% were spontaneous, 4.2% forceps deliveries, 6.6% vacuum extraction and 0.4% vaginal breech.

**Table 34: Mode of Delivery by Gestation 1997 - 2003**

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
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
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
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
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

**Table 35: Mode of Delivery by Maternal Age 1998 - 2003**

Maternal age in years	Year	Vaginal Delivery No. (%)	Caesarean Section No. (%)	Total Number
Less than 14	1998	6 (100)	0	6
	1999	1 (100)	0	1
	2000	4 (100)	0	4
	2001	0	0	0
	2002	2 (100)	0	2
	2003	1 (33)	2 (67)	3
15 - 19	1998	427 (87)	62 (13)	489
	1999	440 (87)	68 (13)	508
	2000	439 (88)	61 (12)	500
	2001	399 (84)	77 (16)	476
	2002	389 (84)	73 (16)	462
	2003	372 (86)	60 (14)	432
20 - 24	1998	987 (81)	227 (19)	1214
	1999	1006 (84)	198 (16)	1204
	2000	1004 (81)	239 (19)	1243
	2001	921 (84)	174 (16)	1095
	2002	1010 (85)	181 (15)	1191
	2003	828 (80)	202 (20)	1030
25 - 29	1998	1596 (78)	443 (22)	2039
	1999	1563 (80)	397 (20)	1960
	2000	1431 (80)	360(20)	1791
	2001	1322 (78)	382 (22)	1704
	2002	1291 (79)	337 (21)	1628
	2003	1146 (75)	385 (25)	1531
30 - 34	1998	1235 (77)	363 (23)	1598
	1999	1252 (77)	378 (23)	1630
	2000	1184 (74)	412 (26)	1596
	2001	1180 (73)	427 (27)	1607
	2002	1166 (74)	413 (26)	1579
	2003	1194 (70)	508 (30)	1702
35 - 39	1998	490 (73)	181 (27)	671
	1999	482 (72)	186 (28)	668
	2000	467 (69)	210 (31)	677
	2001	456 (67)	226 (33)	682
	2002	492 (72)	188 (28)	680
	2003	455 (65)	241 (35)	696
40+	1998	82 (66)	41 (34)	123
	1999	74 (75)	24 (25)	98
	2000	94 (72)	36 (28)	130
	2001	87 (67)	43 (33)	130
	2002	98 (66)	50 (34)	148
	2003	83 (62)	50 (38)	133

**Table 36: Percentage of all births by Parity by Mode of Delivery 1997-2003**

Parity	Year	Vaginal No. (%)	Caesarean Section No. (%)	Total
1	1997	1981 (78)	567 (22)	2548
	1998	1815 (75)	606 (25)	2421
	1999	1887 (78)	545 (22)	2432
	2000	1787 (76)	560(24)	2347
	2001	1693 (75)	558 (25)	2251
	2002	1788 (78)	517 (22)	2305
	2003	1629 (71)	660 (29)	2289
2	1997	1718 (80)	410 (20)	2128
	1998	1705 (80)	426 (20)	2131
	1999	1658 (79)	426 (21)	2084
	2000	1543 (78)	445 (22)	1988
	2001	1442 (76)	454 (24)	1896
	2002	1463 (78)	423 (22)	1886
	2003	1375 (75)	453 (25)	1828
3	1997	797 (82)	172 (18)	969
	1998	798 (80)	193 (20)	991
	1999	815 (82)	184 (18)	999
	2000	820 (81)	186 (19)	1006
	2001	752 (79)	197 (21)	949
	2002	769 (80)	196 (20)	965
	2003	634 (72)	250 (28)	884
4	1997	330 (83)	68 (17)	398
	1998	331 (85)	59 (15)	390
	1999	298 (81)	68 (19)	366
	2000	291 (78)	80 (22)	371
	2001	281 (77)	86 (23)	367
	2002	269 (82)	59 (18)	328
	2003	261 (85)	45 (15)	306
5+	1997	174 (80)	41 (20)	215
	1998	205 (83)	43 (17)	248
	1999	197 (84)	37 (16)	234
	2000	182 (79)	48 (21)	230
	2001	191 (84)	37 (16)	228
	2002	176 (78)	51 (22)	227
	2003	173 (81)	41 (19)	214

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**Caesarean Section**

**Table 37: Emergency/Elective Caesarean Section Proportion 1997 - 2003**

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

**Table 38: Emergency/Elective Caesarean Section Proportion by Public/Private Hospitals 2000 - 2003**

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

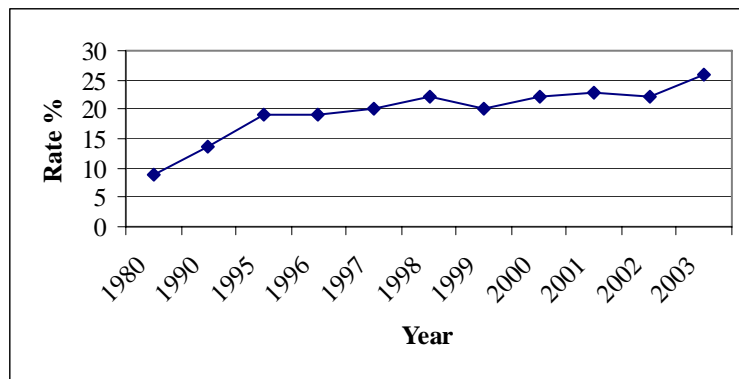
**Table 39: Primary/Repeat Caesarean Section Proportion 1998 - 2003**

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

**Table 40: Primary/Repeat Caesarean Section Proportion by Public/Private Hospitals 2000 - 2003**

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

**Figure 11: Caesarean Section Rates 1980 - 2003**



**Table 41: All births by Caesarean Section following Augmentation of Labour 1998 – 2003**

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
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
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
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

\* ARM = Artificial Rupture of Membranes

## Induction and Augmentation

### Induction

**Table 42: Percentage of Births by Mode of Delivery by Method of Induction 1999 - 2003**

Induction	Year	Vaginal Delivery %	Caesarean Section %	Total Number
Artificial Rupture of Membranes only	1999	94	6	115
	2000	93	7	134
	2001	98	2	123
	2002	90	10	145
	2003	95	5	128
Prostaglandin only	1999	84	16	533
	2000	83	17	570
	2001	81	19	451
	2002	88	12	421
	2003	84	16	424
Artificial Rupture of Membranes & Prostaglandin	1999	86	14	140
	2000	91	9	146
	2001	88	12	153
	2002	91	9	201
	2003	88	12	211
Oxytocin only	1999	83	17	121
	2000	82	18	98
	2001	79	21	114
	2002	84	16	83
	2003	83	17	77
Oxytocin & Artificial Rupture of Membranes	1999	91	9	356
	2000	85	15	253
	2001	87	13	327
	2002	92	8	360
	2003	88	12	279
Oxytocin & Prostaglandin	1999	94	6	52
	2000	60	40	42
	2001	73	27	44
	2002	57	43	42
	2003	70	30	57
Oxytocin, Artificial Rupture of Membranes & Prostaglandin	1999	80	20	151
	2000	82	18	120
	2001	74	26	136
	2002	80	20	157
	2003	74	26	156
Other	1999	79	21	14
	2000	100	0	7
	2001	64	36	44
	2002	77	23	47
	2003	68	32	95

**Table 43: Induction Rate 1996 – 2003**

Year	Deliveries following Induction of Labour			Induction Rate %
	Vaginal deliveries Number (%)	Caesarean Section deliveries Number (%)	Total Number	
1996	1120 (85)	202 (15)	1322	21
1997	1113 (86)	181 (14)	1294	21
1998	1253 (84)	245 (16)	1498	24
1999	1282 (86)	210 (14)	1492	24
2000	1159 (85)	211 (15)	1370	23
2001	1157 (83)	235 (17)	1392	24
2002	1267 (87)	189 (13)	1456	25
2003	1192 (84)	235 (16)	1427	32

The national induction rate for 2002 was 26.6% of all deliveries.

**Table 44: Induction Rate by Public/Private Hospitals 2000 – 2003**

Year	Deliveries following Induction of Labour				Induction Rate %	
	Vaginal deliveries Number (%)		Caesarean Section Number (%)		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

**Table 45: Percentage of Caesarean Sections following Induction of Labour 1996 - 2003**

Year	Total number of Caesarean Sections	Number of Inductions of Labour with Caesarean Section Delivery	Percentage of Caesarean Sections following Induction of Labour %
1996	1191	202	17
1997	1263	181	14
1998	1315	245	19
1999	1252	210	17
2000	1324	211	16
2001	1334	235	18
2002	1246	189	15
2003	1451	235	16

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## Augmentation

**Table 46: Augmentation of Labour 1997 – 2003**

Year	Artificial Rupture of Membranes	Oxytocin	Other	None	Augmentation Rate
1997	373	116	106	3415	14.8
1998	406	180	98	3155	17.8
1999	441	150	130	3026	19.2
2000	498	165	64	2958	20.4
2001	541	179	133	2559	25.0
2002	667	210	136	2377	29.9
2003	671	257	135	2104	33.6

In 62.8% of cases nationally for 2002 there was augmentation of spontaneous labour, compared to only 33.6% in Tasmania (2003).

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## Multiple Pregnancy

**Table 47: All Births by Multiple Pregnancies 1997 - 2003**

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

\*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 (2001) compared to 3.4% in Tasmania (2003).

**Table 48: Perinatal Mortality in Multiple Pregnancies 1997 – 2003**

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

\* 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.

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**Table 49: Number of Mothers with Maternal Hypertension in Multiple Pregnancy 1996 – 2003**

Hypertension Category	Pre-existing	Pregnancy Induced Hypertension	Eclampsia
1996	4	20	0
1997	0	17	2
1998	6	21	0
1999	4	22	0
2000	10	25	0
2001	8	16	0
2002	0	22	0
2003	4	0	0

**Table 50: Number of Antepartum Haemorrhages in Multiple Pregnancy 1996 – 2003**

	Antepartum Haemorrhage of unknown origin	Placenta Previa	Abruptio Placentae
1996	0	2	4
1997	7	0	0
1998	0	0	0
1999	0	2	0
2000	0	2	2
2001	0	1	2
2002	0	2	0
2003	0	2	0

## Maternal Hypertension

**Table 51a: Prevalence (Number) of cases of Maternal Hypertension for all Births 1996 – 2003**

Type of Hypertension	Pre-Existing	Hypertension in Pregnancy *	Eclampsia	Nil	Total
1996	82	301	2	5946	6331
1997	36	293	6	5974	6309
1998	69	317	2	5783	6171
1999	66	342	0	5737	6145
2000	122	315	0	5538	5975
2001	101	283	0	5342	5726
2002	103	252	0	5359	5714
2003	81	249	0	5215	5545

\*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 51b: Prevalence (Percentage) of cases of Maternal Hypertension for all births 1996 – 2003**

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

^ Less than 0.1%

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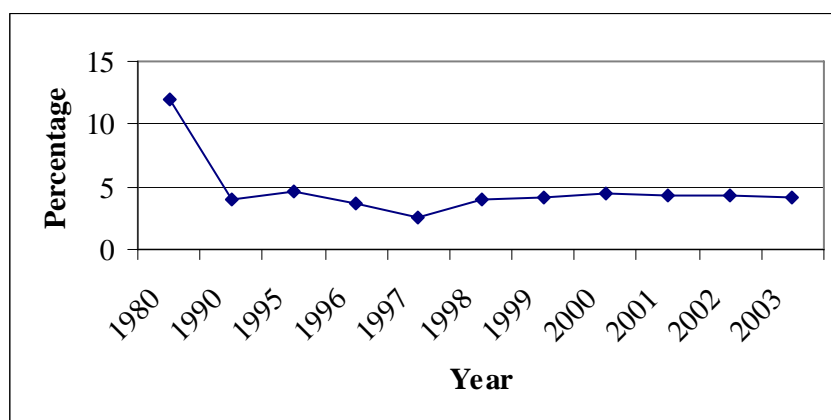
## Haemorrhage

### Postpartum Haemorrhage

**Table 52: Incidence of Postpartum Haemorrhage 1992 - 2003**

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

**Figure 12: Incidence of Postpartum Haemorrhage 1980 – 2003**



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## Antepartum Haemorrhage

**Table 53: Incidence of Antepartum Haemorrhage 1992 - 2003**

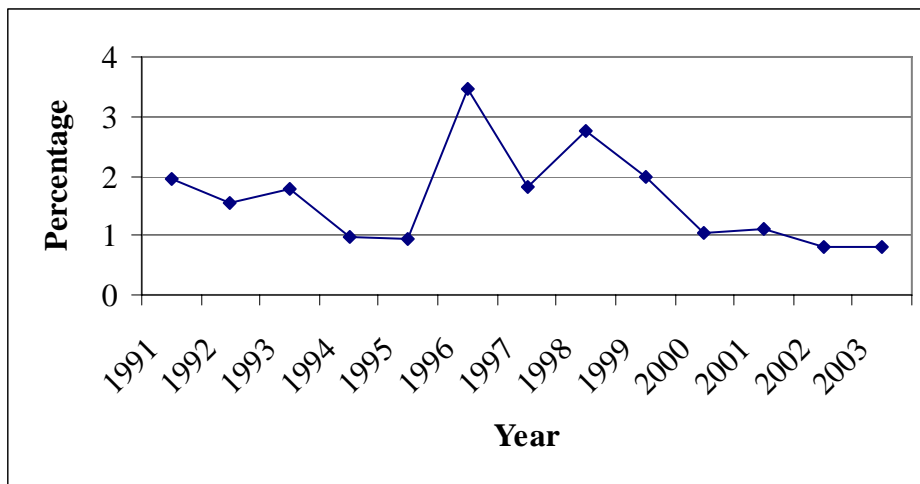
Year	Number	Incidence %
1992	105	1.5
1993	123	1.8
1994	68	1.0
1995	68	1.0
1996	221	3.5
1997	113	1.8
1998	173	2.8
1999	123	2.0
2000	59	1.0
2001	63	1.1
2002	49	0.8
2003	43	0.8

**Table 54: Type of Antepartum Haemorrhage 1997 – 2003**

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

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**Figure 13: Incidence of Antepartum Haemorrhage 1991 – 2003**



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## **ATTACHMENT A: GUIDELINES FOR INVESTIGATION OF “UNEXPLAINED” STILLBIRTHS**

### **Introduction**

A large number of stillbirths have no cause identified. This has been primarily due to the lack of a systematic approach and investigations, which are often patchy and incomplete. Additionally, the autopsy rate in Tasmania has been dismally low at less than 10% in the last 2 years, which is the lowest in the country. In contrast states like South Australia have an autopsy rate of around 67%.

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

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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 fetal skin should be sent for chromosomal analysis. Chromosomal analysis is still possible in macerated fetuses.

**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 – fetal ear and throat swab, placental swab.
- j) Drug history and urine drug screen if indicated

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## 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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Hospitals & Ambulance Service Division  
Department of Health & Human Services  
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HOBART TAS 7000

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

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2. Is there additional information you would like to routinely see Yes No  
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If you require further information please contact Manager, Clinical Data Services Unit  
on 62334016