Tasmania
DEPARTMENT *of*
HEALTH *and*
HUMAN SERVICES

Council of Obstetric & Paediatric Mortality & Morbidity

Tasmania

Combined Annual Reports for 1997 – 1999

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Introduction

The Council of Obstetric and Paediatric Mortality and Morbidity has pleasure in presenting this combined Annual Report for the years 1997, 1998 and 1999. The Report provides a wide range of information relating to all births occurring in Tasmania during that time period.

The information contained within this report has been sourced from the Tasmanian Perinatal Database, and from the activities of the Council in undertaking its function to review incidences of Congenital Abnormalities, Perinatal deaths (stillbirths), Neonatal, Maternal and Paediatric deaths. This report represents only a sub-set of the information contained within the Perinatal Database. Further information can be sourced from the Divisional Support Unit, Hospitals and Ambulance Service, Department of Health & Human Services.

The Council is most grateful to the many clinicians, midwives and other hospital staff who have assisted in the provision of data.

Professor Allan Carmichael
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.

Acknowledgements

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; and
- The Tasmanian Department of Health & Human Services.

Perinatal Registry Act 1994

The Perinatal Registry Act was given Royal Assent on the 10th 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 fetuses in Tasmania at any time before or during childbirth.

2. To maintain a perinatal data collection for the purposes of:
   - Collecting, studying, researching and interpreting information relating to maternal and perinatal deaths;
   - Collecting, studying, researching and interpreting information relating to births in Tasmania;
   - Identifying and monitoring trends in respect of perinatal health (including congenital abnormalities);
   - Providing information to the Secretary for Health & Human Services on the requirements for and the planning of obstetric and neonatal care;
   - Providing information to persons employed in health care and to researchers; and
   - Maintaining a register of congenital abnormalities.

3. To provide information for the education and instruction in medical theory and practice in obstetrics and paediatrics for legally qualified medical practitioners and nurses.

4. To investigate and report on any other matters relating to obstetric and paediatric mortality and morbidity referred to the Council by the Minister or the Secretary for Health & Human Services.

5. To perform any other functions imposed by the Perinatal Registry Act or any other Act or the regulations.

Definitions Prescribed under the Perinatal Registry Act

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

Low 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: A maternal death as defined by the World Health Organisation is the death of a woman during pregnancy, childbirth or in the 42 days of the puerperium, irrespective of the duration and site of the pregnancy from any cause related to or aggravated by the pregnancy or its management. This definition includes death from abortion and ectopic pregnancy, suicide, malignant tumours and so on.

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

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

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

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

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

[2] National Health Data Dictionary V10.0

Members of the Council of Obstetric & Paediatric Mortality & Morbidity

Nominees of the University of Tasmania:

Professor Allan Carmichael (Chair) (1997-1999)
Professor Don Marsden (1997-1998)
Vacant (1999)

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

Associate Professor Graham Bury (1997-1999)

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

Dr Lyn Cretan (1997)
Dr Jack Sparrow (1997- 1999)
Ms Mary Blackwood (1999)

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

Dr Tim Sutton (1997-1998)
Dr Jan Batt (1999)

Nominee of the Tasmanian Branch of the Australian College of Paediatrics:

Dr Chris Bailey (1997-1999)
Dr Elizabeth Hallam (1999)

Nominee of the Tasmanian branch of the Royal Australian College of General Practitioners:

Dr Thomas (Geoff) Shannon (1997-1999)

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

Ms Judy Parish (1997-1999)
Ms Alana Street (1999)

Additional Member Nominated by Council:

Ms Ros Escott (1999)

Members of Sub-Committees

Maternal Mortality & Morbidity Sub-Committee:

Professor D Marsden (1997-1998)
Dr Jan Batt (1999)
Dr Rob Kellsal (1999)
Ms Alana Street (1999)

Paediatric Mortality & Morbidity Sub-Committee:

Dr Chris Bailey (1997-1999)
Dr David Challis (1997 – 1999)
Dr Tim Sutton (1997- 1999)
Dr Anne-Louise Ponsonby (1997- 1999)
Dr Tim Lyons (1997 – 1999)
Dr Geoff Shannon (1997 –1999)

Perinatal Mortality & Morbidity Sub-Committee:

Associate Professor Graham Bury (1997-1999)
Dr David Challis (1997-1999)
Dr. Chris Bailey (1997-1999)

Data Management Sub-Committee

Dr Rupert Sherwood (1999)
Ms Mary Blackwood (1999)
Ms Alana Street (1999)
Professor Allan Carmichael (1999)

National Perinatal Collection Committee -Tasmanian Representative:

Ms Christine Douglas (1997-1999)

National Perinatal Data Development Committee – Tasmanian Representative:

Ms Christine Douglas (1997-1999)

Support Staff:

Ms Christine Douglas, Executive Officer (1997-1999)

Council Summary

In considering the 1997-1999 data and Sub-Committee reports, the Council wishes to stress the importance of the following:

1. The attention of all practicing obstetrician and paediatricians in Tasmania be drawn to the fact that autopsy rates have been steadily falling, and that these are considered important in clinical circumstances where death of an infant occurs during labour and following unexplained intrauterine death. The term 'unexplained', is a misnomer and invalid without findings from an autopsy. During 1997, 3 of 6 infants dying during labour had autopsies performed. Five of these 6 infants were born at full term and beyond with another being at 33 weeks gestation. Of 14 infants with "unexplained intrauterine death" only 4 autopsies were performed. Nine of these occurred at or close to full term.

2. Obstetricians be required to write notes in hospital medical record for all private patients. As mentioned in the report of 1996, there continues to be limited information taken to hospital by patients who have been seen in private obstetric consulting rooms. Examination of the clinical notes showed that, in general, these had been written in less frequently by doctors where private patients were concerned.

3. The planned single, hand held obstetric medical record should be proceeded with expeditiously.

4. That safe sleeping advice, the risks of SIDS and the dangers of infants bed sharing with their parents and parents smoking around infants be highlighted within the general community.

5. A protocol for identification and surveillance of infants at high risk of mortality and morbidity should be developed, especially when drug abuse and mental illness are significant risk factors. Outcomes should be closely monitored.

6. A formal process should be developed to investigate all paediatric deaths till age 14 years.

The Council also wishes to highlight that in preparing this report several data anomalies have been identified. For example the apparent number of infants discharged from hospital prior to their mother's discharge is higher than would be reasonably expected. These anomalies are being investigated, and strategies will be implemented to improve data accuracy and integrity.

Committee Reports

Maternal Mortality & Morbidity Sub-Committee

There were no maternal deaths reviewed by the Sub-Committee during the period 1997-1999. The Sub- Committee met on an ad-hoc basis during that time to consider issues such as the appropriateness of ultrasounds being performed by Rural General Practitioners.

Perinatal Mortality & Morbidity Sub-Committee

Perinatal Deaths for 1997

There were 59 Perinatal deaths reviewed during 1997. These were classified using the Amended Whitfield Classification, which is in general (although not universal) use in Australian States & Territories. The classification divides perinatal deaths into 12 categories, which results in the following findings for Perinatal deaths occurring in Tasmania during 1997:

1. Spontaneous Preterm

This group of eight deaths was attributed to immaturity (or its complications) of normally formed, appropriately grown babies born before 37 weeks gestation. One of these occurred in twins. All the infants involved in this group were born before 27 weeks gestation, ranging from 21 to 26 weeks.

2. Intrauterine Growth Restriction (previously described as retardation)

There were 3 infants dying whose weights were less than the tenth percentile of birth weight for gestational age and did not have significant congenital abnormalities. Two infants were fetal deaths in utero at 29 and 30 weeks gestation with another infant being born at 38 weeks gestation.

3. Unexplained Intrauterine Death

In 14 pregnancies, fetal death preceded labour in the absence of any other primary complication. Four of these pregnancies had not advanced beyond 26 weeks with one infant dying in utero at 32 weeks. The remainder were born at or post term. Two of the infants in this unexplained intrauterine death group had birthweights just above the tenth percentile for age. Four autopsies only were performed in this group.

4. Birth Trauma

This group only includes normally formed babies of at least 1500 grams birthweight with evidence of lethal trauma at autopsy, even when labour and delivery are not complicated by mechanical difficulties. There were no deaths in this group.

5. Intrapartum Asphyxia

This group is confined to normally formed infants of at least 1500 grams birthweight with evidence of intrapartum hypoxia. There were 6 infants in this group, one dying

in labour at 33 weeks gestation with all the others being at full term or beyond. Only 3 autopsies were performed in this group.

6. Antepartum Haemorrhage

There were 6 deaths in this group, 5 were attributed to placental abruption and in one case the cause of bleeding was undetermined. Only one infant reached term gestation. All other infants were preterm ranging from 22 weeks to 31 weeks in gestation.

7. Fetal Abnormality

There were 11 deaths in this group. Nine had proceeded to termination of pregnancy at or beyond 20 weeks gestation following prenatal diagnosis. The central nervous system abnormalities consisted of 2 infants with encephalocoele, and one with severe meningomyelocoele. There were three infants with chromosomal abnormalities, a translocation Down Syndrome, Turners Syndrome with hydropd fetalis and a further translocation 17/22. There was one infant with osteogenesis perfecta, one with myotonic dystrophy and one with renal agenesis. There were two infants with hypoplastic left heart syndrome.

8. Infection

There were three infants in this group, one dying as a result of florid chorioamniotitis and 2 neonatal deaths, at least one being proven fungal sepsis.

9. Other

This miscellaneous group consisted of eight infants. One infant died on day 2 of SIDS. One set of twins had cord entanglement in monochorionic and monoamnionic pregnancy. And there were 4 infants dying as a result of twin to twin syndrome. Another infant died in circumstances of severe oligohydramnios with no cause detected.

Other classifications include:
Hypertension;
Maternal Disease; and
Haemolytic disease.
There were no infant deaths that could be comfortably classified into these groups.

Comments:

The total number of perinatal deaths in Tasmanian in 1997 was 59. The number of infants born was 6314 which gives a perinatal mortality rate of 9.3 per thousand. The total number of autopsies performed was 21 out of 59 deaths, providing an autopsy rate of 35%.

Recommendations:

1. The attention of all practicing obstetrician and paediatricians in Tasmania be drawn to the fact that autopsy rates have been steadily falling, and that these are considered important in clinical circumstances where death of an infant occurs during labour and following unexplained intrauterine death. The term ‘unexplained’, is a misnomer and invalid without findings from an autopsy. During 1997, 3 of 6 infants dying during labour had autopsies performed. Five of these 6 infants were born at full term and beyond with one being at 33 weeks

gestation. Of 14 infants with unexplained intrauterine death only 4 autopsies were performed. Nine of these fetal deaths occurred at or close to full term.

2. Private Obstetricians be required to write notes in hospital medical record for all private patients. As mentioned in the report of 1996, there continues to be limited information taken to hospital by patients who have been seen in private obstetric consulting rooms. Examination of the clinical notes showed that these had been written in less frequently by doctors where private patients were concerned. There were a few individual exception to this observation.

Perinatal Deaths for 1998

There was no Statewide review of Perinatal deaths conducted for 1998. The following information was taken from the Royal Hobart Hospital Women's & Children's Services Annual Report for 1998, where there was a total of 30 Perinatal deaths, 22 stillbirths and 8 neonatal deaths.

The causes of death included four stillbirths due to fetal abnormality. Two infants were born at 21 weeks gestation, and two at 28 weeks. Three of the infants weighed less than 800 grams (one less than 400), with the weight of the fourth baby being unknown.

There were seven deaths of normally formed infants who weighed less than 700 grams: two neonatal deaths and five stillbirths. Both neonatal deaths occurred when the infants were five days old, one resulting from extreme prematurity (23 weeks gestation) and one from gross intrauterine growth retardation. All five stillbirths were unexplained fetal death in-utero, although one infant was noted to have oligohydramnios, and another was small for gestational age. The gestational period for these infants ranged from 21 to 28 weeks.

There were 19 deaths in normally formed infants who weighed greater than 700 grams. Of the 13 stillbirths, eight were unexplained fetal death in-utero. The remaining five deaths were attributed to: Chorioamnionitis; Asphyxia during labour; twin to twin transfusion (probable); placental abruption; and maternal diabetes mellitus. The gestational age range was from 26 to 41 weeks, with four infants at 40 weeks and above. Birthweight ranged from 805 grams (27 weeks gestation) to 3590 grams (41 weeks gestation).

The six Neonatal deaths were all in infants who had been born prematurely (25 to 33 weeks), weighing between 740 grams to 2180 grams. Death was attributed to the following causes: Disseminated Fungal Sepsis; Pulmonary haemorrhage; Severe hyaline membrane disease; Intrauterine pneumonia; Chorioamnionitis; and a subdural haemorrhage combined with intraventricular haemorrhage.

There were an additional four deaths in the Neonatal Intensive Care Unit (NICU) of infants dying after 28 days. Two infants died following operations to repair gastroschisis. One infant died on day 111 and the other on day 35, both of these infants were unable to be fed successfully enterally and died of bacterial septicaemia. One full term neonate died of the complications of Hirschprungs disease on day 42

and another infant died shortly after admission to NICU at the age of 8 weeks from complications related to surgical correction of transposition of the great arteries.

Perinatal deaths for 1999

There were 63 Perinatal deaths recorded in 1999. This consisted of 46 stillbirths and 17 neonatal deaths. All of these deaths were reviewed usually at the Hospital of birth, as well as by the Perinatal Mortality & Morbidity Sub-Committee.

The Perinatal Mortality rate (death of an infant who weighed at least 400 grams or had reached 20 weeks gestation) was 1%. The main causes of Perinatal death were Congenital anomalies 19 infants (30%), unexplained stillbirth 16 infants (25%), spontaneous preterm labour 12 infants (19%) and one death due to intrapartum asphyxia.

Still-births, at 46, compromise 73% of the total perinatal mortality. Only 4 out of 46 were greater than 2.25 kilograms, although of the 17 neonatal deaths 4 infants (24%) weighed greater than 2.5 kilograms, while I infants weighed 4.12 kilograms at 32 weeks and had severe hydrops. Another infant of normal birthweight died following meconium inhalation, 1 from diaphragmatic hernia and one from hypoplastic left heart syndrome.

The Perinatal deaths were all classified according to the amended Whitfield classification now used by most Australian States.

1. Spontaneous Preterm

There were 12 deaths of infants attributed to prematurity or its complications, these infants being normally formed, appropriately grown but born before the 37th week of gestation. The majority of these deaths were in pregnancies where preterm labour occurred or spontaneous membrane rupture eventuated. Three infants were from multiple pregnancies, 1 from a triplet pregnancy and two from twins.

2. Intrauterine Growth Restriction

There were 2 infants in this category. These being still born infants that were less than the tenth percentile for birthweight for their gestational age and who did not have significant congenital abnormalities. One infant was born at term when the mother went into spontaneous labour three days beyond full term with no fetal heart being heard at the beginning of labour. The second infant was born to a mother who had a previous stillbirth and presented at 31 weeks gestation with a still born infant with the mother not having attended for any antenatal visits at the hospital.

3. Unexplained Intrauterine Death

In 16 mothers fetal death preceded labour in the absence of any other major complications. Only 4 of these infants were greater that 2.25 kilograms. Eight infants died for unexplained causes between the gestational ages of 31-35 weeks and there was 1 set of twins born at the age of 24 weeks.

4. Birth Trauma

This group includes normally formed infants of at least 1500 grams birth weight with evidence of lethal trauma at autopsy, even when labour and delivery are not apparently complicated by mechanical difficulties. There were no deaths in this group.

5. Intrapartum Asphyxia

This group includes normally formed babies f at least 1500 grams birth weight with evidence of intrapartum hypoxia, confirmed by hypoxic changes at autopsy. There was 1 death in this group. In a primigravid mother who laboured spontaneously at full term.

6. Hypertension

There was one death in this group. This was a mother in her third pregnancy who developed severe pre-eclamptic toxemia at 32 weeks gestation. A stillborn infant eventuated.

7. Maternal Disease

In this situation perinatal deaths is attributed to other maternal disorders than those associated with the pregnancy. There was one death in this group, with an infant dying at 21 weeks gestation in-utero four days after the mother had been involved in a serious motor vehicle accident.

8. Antepartum Haemorrhage

There were three deaths in this group, attributed to placental abruption. Placental abruption was considered to have caused stillborn infants at 21 weeks, 31 weeks and 23 weeks gestation.

9. Fetal Abnormality

There were 19 deaths in this group. The substantial majority of these were Terminations of Pregnancy at 20 weeks gestation or shortly after that time. The types of abnormalities were as follows: central nervous system (CNS) 6; cardiovascular system 3; chromosomal anomalies 5; and other 5. The CNS anomalies involved were anencephaly, encephaloccoele or spina bifida; and menigomyelocoele. The cardiovascular anomalies were all infants with hypoplastic left heart syndrome. There was a variety of infants in the five with chromosomal anomalies. In the 'other' group, one infant had a very large sacrococcygeal teratoma, this infant died in utero at 31 weeks gestation. Another infant had severe anthrogrythosis, another infant had severe hydrox vitalus and another with diaphragmatic hernia.

10. Haemolytic Disease

There were no deaths in this group.

11. Infection

There were three deaths in this group, in which there was pathological evidence of infection to which death could be attributed. One infant died in-utero at 23 weeks gestation, with the mother having ruptured membranes at 21 weeks with clinical evidence of severe chorio-amionitis. There were two neonates, one born at 27 weeks gestation and the other at 31 weeks gestation. One infant could not be resuscitated and severe intrauterine pneumonia due to Klebsiella was the cause, the other infant

dying of Klebsiella Pneumonia Septicaemia on day 7 of life having been born at 31 weeks gestation.

12. Others

There were five infants in this group. One infant died of severe meconium inhalation syndrome. A second was stillborn at 20 weeks gestation, with a cervical suture having been placed and mother rupturing membranes the following day. Another infant was a fetal death in-utero at 23 weeks gestation having hydrops fetalis and cystic-hygroma. The heart also showed a single atrium. Another mother in her first IVF pregnancy had cervical cerclage performed at about 20 weeks gestation with spontaneous rupture of the membranes 12 days later delivering a stillborn infant at 21 weeks.

Recommendations:

1. There is a continuing need to encourage detailed autopsy examinations, limited in scope where necessary, to clarify the cause of death, particularly where unexpected stillbirth occurs during pregnancy.

2. The planned single, hand held obstetric medical record should be proceeded with expeditiously.

Paediatric Mortality & Morbidity Sub-Committee

Paediatric Deaths for 1997

The Paediatric Mortality & Morbidity Sub-Committee reviewed four Paediatric deaths in 1997. All deaths were referred from the Coroner's Office. The age of the children ranged from one week to just under three years of age. In three of the four cases the Sub-Committee determined that the circumstances leading up to the death, in conjunction with the post mortem findings, were in keeping with Sudden Infant Death Syndrome (SIDS). In the fourth case the diagnosis was in keeping with bronchopneumonia and atypical SIDS.

The risk factors associated with the deaths of these infants included: prematurity or small for gestational age; parents who were heavy smokers; and infants co-sleeping with their parents.

Recommendations:

1. That further community education on the above mentioned risk areas is undertaken.

Paediatric Deaths for 1998

The deaths of three infants; and one teenager were investigated during 1998. For the three infants, death was attributed to Sudden Infant Death Syndrome in each case. In one case the history of the infant co-sleeping with the parents was noted as a high risk factor.

The fourth case investigated by the Sub-Committee was a case of teenage suicide. The Sub-Committee was of the opinion that the child suffered from undiagnosed Aspergers Disorder and was already suffering from mental health problems.

Paediatric Deaths for 1999

In 1999 the Sub-Committee reviewed five paediatric deaths. In two cases the cause of death was found to be in keeping with Sudden Infant Death Syndrome (SIDS).

In a further two cases the Sub-Committee requested that the Coroner record the cause of death as 'Unascertained". In both cases the infants had been co-sleeping with the parents in the parent's bed, and the possibility that the deaths had been caused by overlaying could not be excluded.

In the fifth case the Sub-Committee were of the opinion that the cause of death was exposure secondary to neglect from child abuse. The infant showed signs of being grossly undernourished and was felt to be underdressed for the temperature of the day. There was a family history of both drug and alcohol abuse, and the mother had been

diagnosed with post-natal depression, although no follow-up care or treatment had been provided. Child Protection Services had been notified of concerns.

Recommendations:

1. That the dangers of infants co-sleeping with their parents be highlighted with the general community.

2. A protocol for identification and surveillance of infants at high risk of mortality and morbidity should be developed, especially when drug abuse and mental illness are significant risk factors. Outcomes should be closely monitored.

3. A formal process should be developed to investigate all paediatric deaths till age 14 years.

Data Management Sub-Committee

The Data Management Sub-Committee was formed late in 1999, with the following Terms of Reference:

Purpose:

To oversight all aspects of the data collection processes of the Council of Obstetric and Paediatric Mortality & Morbidity

Functions:

1. To advise the Council on the presentation and content of reports based on current data;
2. To advise the Council on issues of collection and reporting, in particular
   - Improvement in and monitoring of compliance
   - The development of capacity for electronic collection and transfer by 2002
   - The need to review of data based on assessment every two years
   - Other issues affecting reporting compliance; and
3. To advise the Council on the process for data access for research and audit purposes.

The first action the Sub-Committee undertook was to commence a review of the Combined Perinatal Data Collection Form.

Perinatal Statistics

Births and Birth Rates

Total births registered by Births, Deaths and Marriages during the 1997-1999 period and then reported to the Australian Bureau of Statistics (ABS), as opposed to those recorded on the Perinatal Database is as follows:

Table 1: Comparison of Birth Notifications 1997 - 1999

Year	Australian Bureau of Statistics*	Perinatal Data Collection
1997	6007	6309
1998	5978	6171
1999	6032	6145

NB. Includes both livebirths and stillbirths
*Source: ABS Catalogue of Births Australia 3301.0

The apparent discrepancy in numbers reported above is most probably associated with a failure to register some births with Births, Deaths and Marriages.

The following table depicts the number of births and the birth rate in Tasmania on an annual basis since 1991.

Table 2: Births and Birth Rates for Tasmania 1991-1999

Year	No. Births	Birth rate per 1000 population
1991	6957	15.36
1992	7025	14.95
1993	6861	14.54
1994	6845	14.47
1995	6817	14.38
1996	6331	13.40
1997	6309	13.35
1998	6171	13.09
1999	6145	13.05

NB: Australian Bureau of Statistics estimates Tasmania's population as 472618 in 1997, 471552 in 1998 and 470797 in 1999.

Figure 1: Birthrate for Tasmania per 1000 head of population 1960-1999

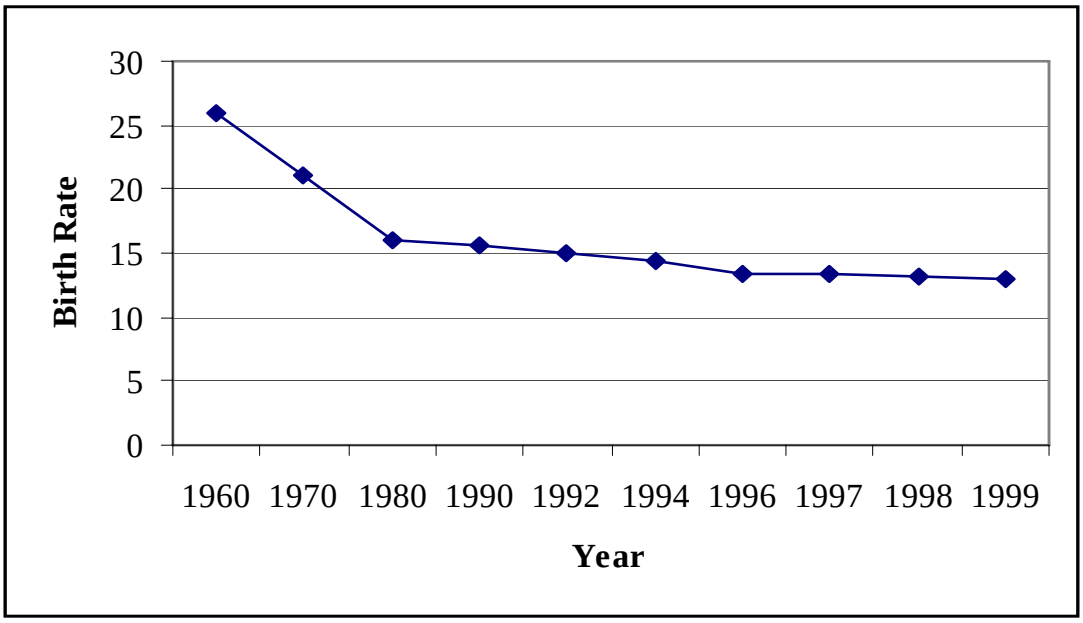


Table 3: Sex of all infants born in Tasmania 1997 - 1999

	1997		1998		1999	
Sex	No.	%	No.	%	No.	%
Male	3307	52	3237	52	3232	53
Female	3001	48	2932	48	2912	47
Indeterminate	1	0	2	0	1	0
Total	6309		6171		6145	

Figure 2: Sex of all Infants 1996 - 1999

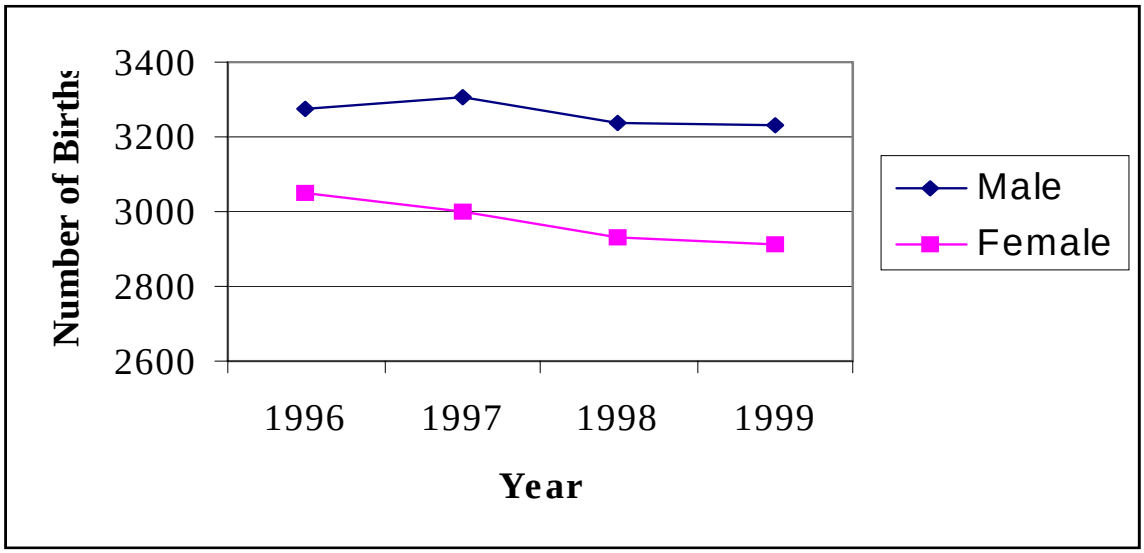


Table 4: Length of Hospital Stay as a Percentage of Births – Baby 1991 - 1999

Year	1-4 days %	5 days %	6 days %	7 days %	8-14 days %	15 + days %
1991	23	15	22	17	21	3
1992	24	18	22	15	19	3
1993	27	18	22	14	17	3
1994	31	19	20	13	15	2
1995	35	18	18	11	14	2
1996	56	17	10	6	9	2
1997	62	15	9	4	5	5
1998	78	8	4	2	3	5
1999	80	6	3	2	2	5

Table 5: Length of Hospital Stay as a Percentage of Births – Mother 1991 - 1999

Year	1-4 days %	5 days %	6 days %	7 days %	8-14 days %	15 + days %
1991	23	15	23	17	22	0.9
1992	25	18	23	15	20	0.8
1993	27	19	22	14	17	0.9
1994	32	19	21	14	15	0.6
1995	35	19	19	12	14	1
1996	49	17	13	8	10	1.3
1997	55	15	11	7	10	2
1998	58	14	10	6	8	4
1999	62	13	8	5	6	4

The significant increase in discharge from hospital prior to day four, for both mother and baby warrants closer evaluation. Table 6 Separations for mothers & Babies Days 1- 4 1997 –99 provides a day by day breakdown of the figures contained in the first column of the above two tables. The introduction of the Extended Midwifery Services (i.e. visits by midwives to support mothers at home in the first week following birth) would contribute to the increasing rate of early discharge.

Table 6: Separations for Mothers and Babies Days 1 – 4 as a Percentage of all Births 1997-99

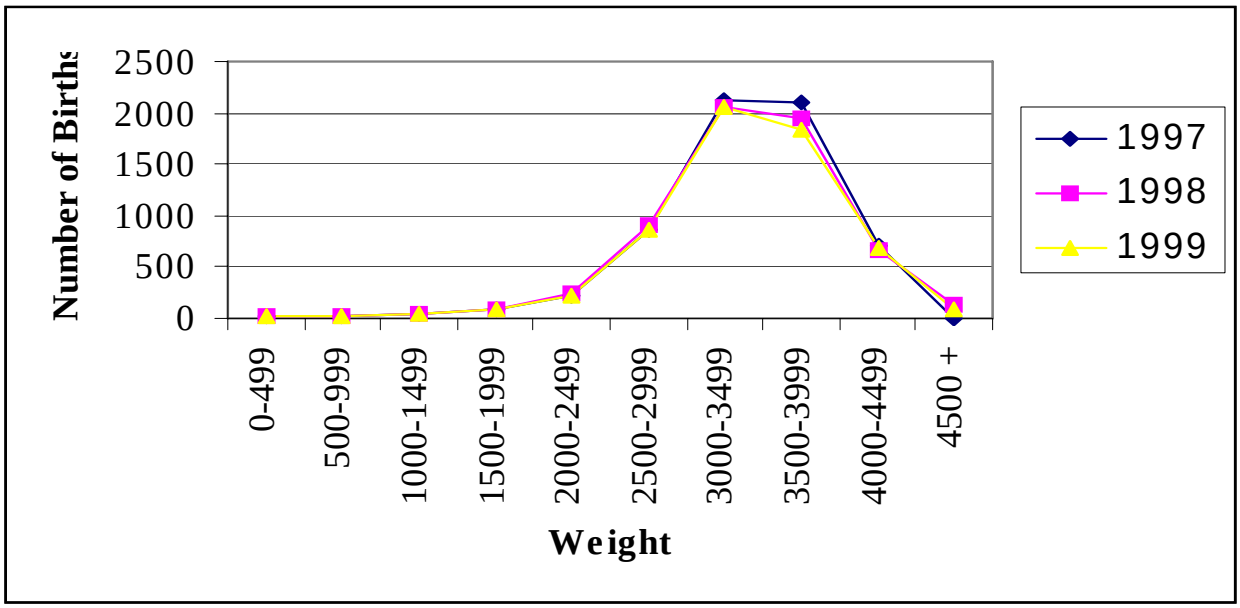
Year	Day 1		Day 2		Day 3		Day 4	
	Mother %	Baby %	Mother %	Baby %	Mother %	Baby %	Mother %	Baby %
1997	12	16	12	13	14	16	17	18
1998	14	31	12	16	14	17	17	15
1999	13	32	14	20	18	16	17	13

The following table shows births by hospital for the years 1996 – 99. Due to the commercially sensitive nature of private hospital data, this information is not able to be broken down into individual hospitals. In 1996, 40% of all births occurred in the private sector. This has decreased to 38% in both 1997 and 1998, with a further decrease to 36% in1999. It should, however, be noted that in Tasmania's Northwest, public hospital maternity services are contracted to the Private Sector, and are therefore included in the figures for births in private hospitals. Table 37 provides a breakdown of the public/private election status of all mothers.

Table 7: Births By Hospital 1996 - 1999

Hospital	1996 Number	1997 Number	1998 Number	1999 Number
Royal Hobart Hospital (QAH)	1781	2049	2050	2084
Launceston General Hospital (QVH)	1834	1626	1564	1641
District Hospitals	187	180	151	159
Private Sector	2464	2401	2349	2195
Others (includes homebirths)	65	53	57	66
TOTAL	6331	6309	6171	6145

Figure 3: Birthweight Groups for all Births 1997 - 1999



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 8: Neonatal Mortality 1991- 1999

Year	Number of Neonatal Deaths	Neonatal Mortality Rate
1991	41	6
1992	42	6
1993	19	3
1994	10	1.5
1995	20	3
1996	12	2
1997	8	1.3
1998	14	2.3
1999	17	2.8

Table 9: Neonatal Mortality in Infants over 28 weeks Gestation 1991 - 1999

Year	Number	Neonatal Mortality Rate
1991	18	2.6
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	0.1

Table 10: Neonatal Mortality in Infants over 1000 grams Birthweight 1991 - 1999

Year	Number	Neonatal Mortality Rate
1991	21	3.0
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	0.03

Congenital Abnormalities

The following table details the number of reported congenital abnormalities as reported to the Perinatal Data Collection. It should be noted that some congenital abnormalities may not be diagnosed until after the infant has been discharged from hospital and are, therefore, not included in the figures provided in the Table below. It should also be noted that an infant may have had more than one type of abnormality.

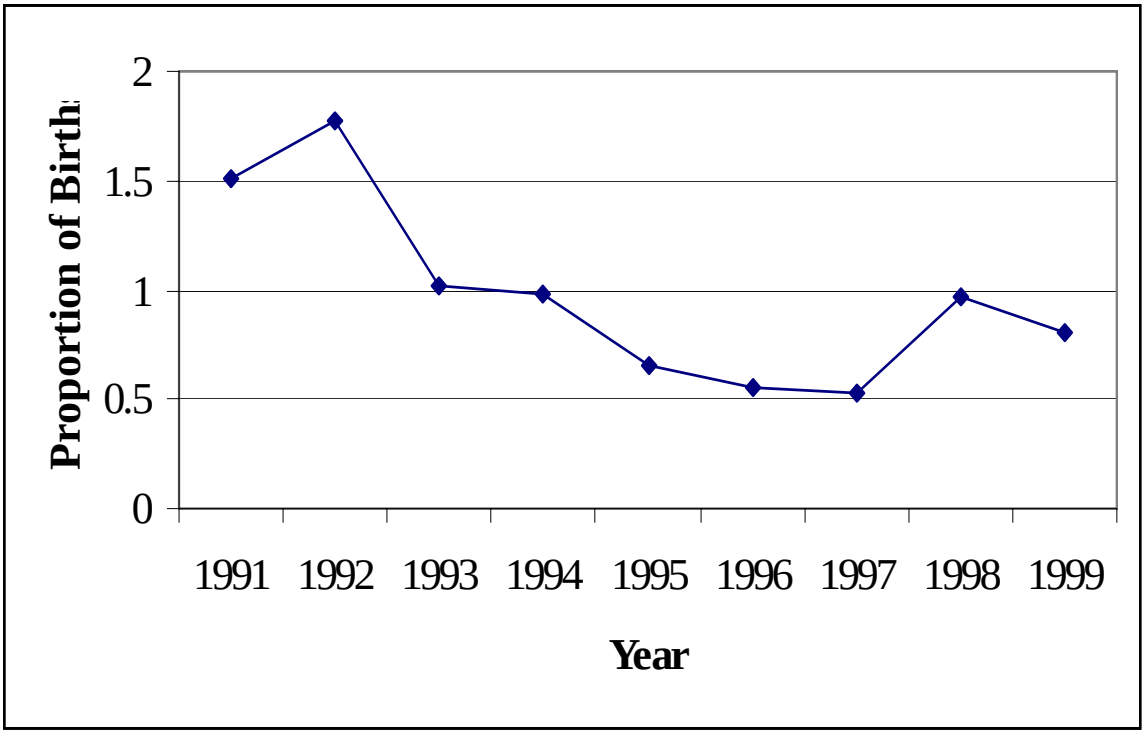
Table 11: Types of Congenital Abnormalities as reported to the Perinatal Data Collection 1994 - 1999

Anomaly Group	1994	1995	1996	1997	1998	1999
Alimentary	4	2	2	2	2	5
Cardiovascular	8	5	6	5	12	2
Chromosomal	10	6	2	4	3	6
Cleft lip/palate	9	8	3	3	4	7
Ear/face/neck	1	0	1	3	1	3
Genital	11	3	4	0	5	0
Integument	1	2	0	4	7	2
Limb Defect	1	4	1	1	8	7
Musculoskeletal	14	7	8	3	2	3
CNS*	3	4	5	0	4	8
Respiratory	1	1	0	0	3	1
Urinary	4	3	2	5	6	5
Other unspecified	0	0	1	2	3	1
TOTAL	67	45	35	32	60	50

* Central Nervous System (CNS)

An ascertainment study has not yet been performed for congenital abnormalities.

Figure 4: Rate of Congenital Abnormalities 1991 - 1999



The apparent decrease in the rate of infants born with congenital abnormalities since 1992, may be more reflective of improvements in foetal screening which enable early detection of anomalies giving parents the opportunity to abort a pregnancy where the infant is unlikely to survive.

It should also be noted that only congenital anomalies diagnosed in hospital during birth episode are reported to the Perinatal database. Given the decreasing length of stay, it is possible that some, less serious or later presenting, congenital anomalies are not diagnosed until after discharge from hospital.

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 12: Incidence of Low and Very Low Birthweight 1991 - 1999

Year	Number – Very Low Birthweight	% Proportion of all births	Number - Low Birthweight	% Proportion of all births
1991	84	1.2	360	5.2
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

Table 13: Incidence of Low and Very Low Birthweight by Maternal Age 1997 - 1999

Maternal Age	Year	Percentage of all Very Low Birthweight	Percentage of all births for that age range	Percentage of all Low Birthweight	Percentage of all births for that age range
Under 20	1997	11.1	1.9	8.25	4.8
	1998	9.0	1.6	5.67	3.8
	1999	12.2	2.3	11.2	7.0
20 - 24	1997	22.2	1.5	21.4	4.9
	1998	19.1	1.4	21.8	5.9
	1999	22.4	0.2	22.2	0.6
25 – 29	1997	33.3	1.4	33.0	4.7
	1998	28.0	1.2	34.6	5.7
	1999	31.6	1.6	28.4	4.6
30 – 34	1997	20.0	1.1	23.4	4.4
	1998	22.5	1.2	26.0	5.4
	1999	19.4	1.2	21.9	4.3
35 – 39	1997	12.2	1.8	11.9	5.9
	1998	18.0	2.4	10.1	5.1
	1999	13.3	1.9	14.4	6.8
40 and over	1997	1.11	1.1	1.65	5.4
	1998	3.37	2.6	1.79	5.2
	1999	1.02	1.0	1.87	6.2

Table 14: Incidence of Low and Very Low Birthweight by Parity 1997 - 1999

Parity	Year	Percentage of all Very Low Birthweights	Percentage of all births from that parity	Percentage of all Low Birthweights	Percentage of all births from that parity
Para 1	1997	54.4	1.2	50.8	6.0
	1998	69.7	2.5	49.8	6.8
	1999	60.2	2.4	50.9	6.6
Para 2	1997	17.8	0.7	25.1	3.6
	1998	14.6	0.6	26.9	4.3
	1999	20.4	1.0	25.3	3.9
Para 3	1997	14.4	1.3	15.2	4.7
	1998	5.6	0.5	12.8	4.4
	1999	9.2	0.9	15.6	5.0
Para 4	1997	5.6	1.2	3.3	2.5
	1998	5.6	1.3	6.0	5.1
	1999	5.1	1.4	5.3	4.7
Para 5 & Over	1997	7.8	3.2	5.6	7.8
	1998	4.5	1.6	4.5	6.0
	1999	5.1	2.1	2.8	3.8

Table 15: Incidence of Births with Very Low and Low birthweight by Marital Status 1997 - 1999

Marital Status	Year	Percentage of all Very Low Birthweights	Percentage of all births with that Marital Status	Percentage of all Low Birthweights	Percentage of all births with that Marital Status
Never Married/Single	1997	17.8	1.8	16.0	5.3
	1998	12.5	1.2	19.4	7.1
	1999	19.4	2.0	17.8	5.9
Divorced	1997	1.1	2.7	0.3	2.7
	1998	1.1	2.9	0.9	8.8
	1999	0	0	0.3	3.7
Separated	1997	7.8	9.2	2.0	7.9
	1998	0	0	2.4	14.8
	1999	2.0	3.2	2.2	11.3
Married/Defacto	1997	73.3	1.3	81.7	4.8
	1998	86.4	1.5	77.3	5.0
	1999	75.5	1.5	79.1	5.0

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 below 6 at one minute may indicate the need for some assistance with resuscitation during the transition period.

Table 16: Apgar Score for all Births at one minute 1997 - 1999

Apgar Score	1997		1998		1999	
	Number	%	Number	%	Number	%
0	24	0.4	6	0.1	9	0.1
1	30	0.5	32	0.5	25	0.4
2	48	0.8	41	0.7	48	0.8
3	62	1.0	68	1.1	90	1.5
4	115	1.8	115	1.9	122	2.0
5	203	3.2	161	2.6	193	3.1
6	311	4.9	338	5.5	305	5.0
7	619	9.8	533	8.6	554	9.0
8	1328	21.0	1246	20.1	1195	19.4
9	3368	53.4	3444	55.6	3406	55.4
10	138	2.2	97	1.6	93	1.5

The total number of infants with an apgar score of less than six at one minute was 482 (7 %) in 1997, 423 (7%) in 1998 and 487 (8%) in 1999.

Table 17: Apgar Score for all Births at five minutes 1997 - 1999

Apgar Score	1997		1998		1999	
	Number	%	Number	%	Number	%
0	24	0.4	3	0	3	0
1	2	0	0	0	9	0.2
2	5	0.1	3	0	6	0.1
3	7	0.1	5	0.1	9	0.2
4	9	0.2	14	0.2	16	0.2
5	23	0.4	24	0.4	20	0.3
6	43	0.7	53	0.8	58	1
7	112	2	111	2	123	2
8	281	5	264	4	257	4
9	3358	53	3538	57	3626	59
10	2378	37	2091	34	1925	31

Table 18: Proportion of Liveborn Infants by Type of Anaesthetic with an Apgar Score of less than 6 at one minute 1997 - 1999

Year	No Anaesthetic %	General Anaesthetic only %	Epidural only %	Other Anaesthetic %
1997	7	25	8	7
1998	6	18	8	7
1999	7	23	10	8

Table 19: Proportion of all Liveborn Infants by sex with an Apgar Scores less than 6 at one minute 1991 - 1999

Year	Male %	Female %
1991	4.8	3.8
1992	4.9	4.3
1993	4.9	3.7
1994	4.7	3.8
1995	4.3	3.7
1996	5.0	4.0
1997	8.5	6.9
1998	8.5	5.9
1999	9.5	6.2

Table 20: Proportion of all Liveborn Infants by Mode of Delivery with an Apgar Score less than 6 at one minute 1997 - 1999

Year	Vaginal Delivery %	Caesarean Section %
1997	7	11
1998	6	9
1999	7	11

Table 21: Proportion of Liveborn Infants by Gestation with an Apgar Score less than 6 at one minute 1991 - 1999

	Gestation in Weeks				
Year	20 – 24 %	25 – 29 %	30 – 34 %	35 – 39 %	40 + %
1991	50	40	15	16.	9
1992	40	32	23	13.	10
1993	67	12	21	13	9
1994	48	27	22	12	9
1995	45	30	19	13	8
1996	92	67	23	8	8
1997	83	42	23	7	7
1998	100	44	17	7	6
1999	93	34	22	7	7

Table 22: Proportion of Liveborn Infants by Birthweight with an Apgar Score less than 6 at one minute 1997 - 1999

	Birthweight in Grams					
Year	500 – 999 %	1000 – 1499 %	1500 – 2499 %	2500 – 3499 %	3500 – 4499 %	4500 + %
1997	72	42	20	7	7	0
1998	62	39	16	7	6	11
1999	61	36	13	7	7	13

Resuscitation

The following methods of infant resuscitation are predominantly used: oxygen; intermittent positive pressure respiration via bag and mask; or intermittent positive pressure respiration via intubation. Combinations of any or all of these resuscitation methods can be used.

In 1997, 884 infants were recorded as requiring some type of resuscitation with the most common method used being intermittent positive pressure respiration via bag and mask (764 infants). In 1998, 799 infants required resuscitation and 794 in 1999. For both years the most common method was again intermittent positive pressure respiration via bag and mask (628 infants in 1998 and 609 in 1999).

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

Table 23: Intubation Rate 1991 - 1999

Year	Number of Intubations	Number of Births	Percentage of all Births requiring Intubation
1991	59	6861	0.9
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

Table 24: Resuscitation Rate for Liveborn Infants with an Apgar Score less than 6 at one minute 1997 - 1999

Year	Resuscitation required	As a Percentage of all births with Apgar score less than 6 at 1 minute
1997	357	74.2
1998	318	75.4
1999	339	69.6

Table 25: Resuscitation Rate for Liveborn Infants by Birthweight 1997 - 1999

Birthweight	Year	Resuscitation required (n)	Percentage of infants with that birthweight requiring resuscitation
500 – 999 grams	1997	15	60.0
	1998	7	26.9
	1999	14	66.7
1000 – 1499 grams	1997	21	42.0
	1998	23	56.1
	1999	28	58.3
1500 – 1999 grams	1997	34	41.0
	1998	32	36.4
	1999	35	41.7
2000 – 2499 grams	1997	70	31.8
	1998	75	30.4
	1999	57	24.6
2500 – 2999 grams	1997	114	13.2
	1998	131	14.2
	1999	106	11.8
3000 – 3499 grams	1997	254	11.9
	1998	237	11.4
	1999	216	10.5
3500 – 3999 grams	1997	234	11.2
	1998	199	10.2
	1999	196	10.6
4000 – 4499 grams	1997	118	16.9
	1998	78	11.8
	1999	96	14.2
4500 – 4999 grams	1997	24	18.9
	1998	12	9.7
	1999	18	20.0
5000 grams +	1997	0	0
	1998	0	0
	1999	1	12.5

Table 26: Resuscitation by Mode of Delivery 1997 - 1999

Year	Vaginal Delivery - Number requiring resuscitation	Percentage of all Vaginal Deliveries	Caesarean Section – Number requiring resuscitation	Percentage of all Caesarean Sections
1997	572	11.3	309	24.5
1998	529	10.9	236	17.9
1999	536	11.1	254	20.3

Autopsy Rates

Autopsy is a very valuable investigation tool in cases of Perinatal Death, especially in cases of unexplained intrauterine death (see Council Summary).

Table 27: Rate of Autopsies on Perinatal deaths 1991 - 1999

Year	Autopsy Rate %
1991	38.5
1992	43.0
1993	47.0
1994	48.0
1995	47.5
1996	66.0
1997	35.0
1998	Unknown
1999	37.0

Perinatal Mortality

Table 28: Perinatal Outcome 1997 - 1999

Outcome	1997	1998	1999
Livebirth	6249	6115	6082
Stillbirth (before Labour)	21	31	22
Stillbirth (after labour)	0	3	3
Stillbirth (time unknown)	31	3	19
Neonatal death	8	14	17
Unknown	0	5	2
TOTAL	6309	6171	6145

Figure 5: Stillbirths & Neonatal Deaths 1997 - 1999

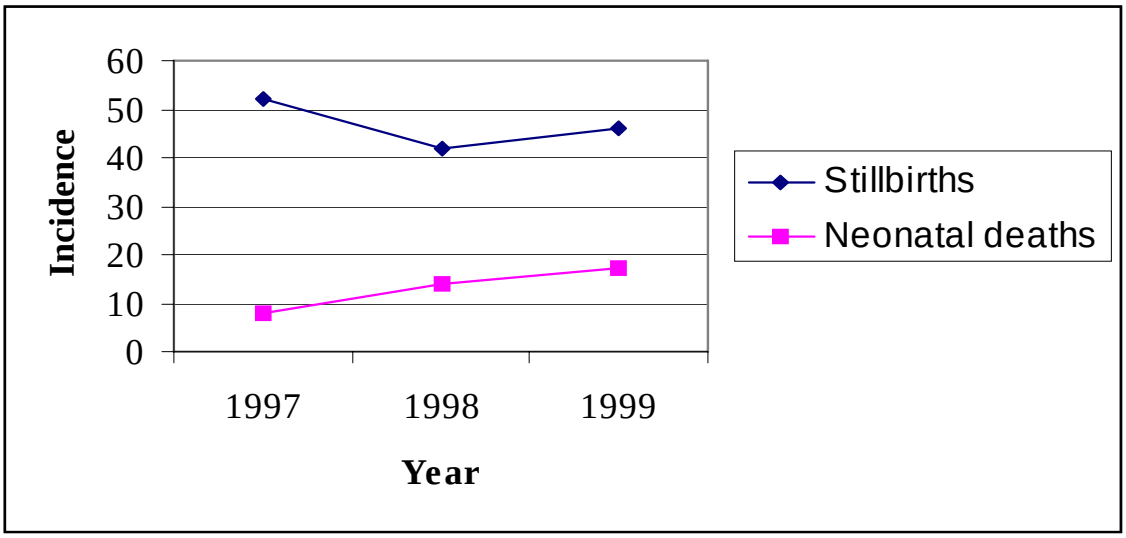


Table 29: Perinatal Mortality Rates 1991 - 1999

Year	Number of Perinatal deaths	Number of Births	Rate of Perinatal Mortality per 1000 births
1991	96	6957	13.8
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

Figure 6: Perinatal Mortality Rate per 1000 Births Tasmania 1991 - 1999 and Australia 1993 - 1998

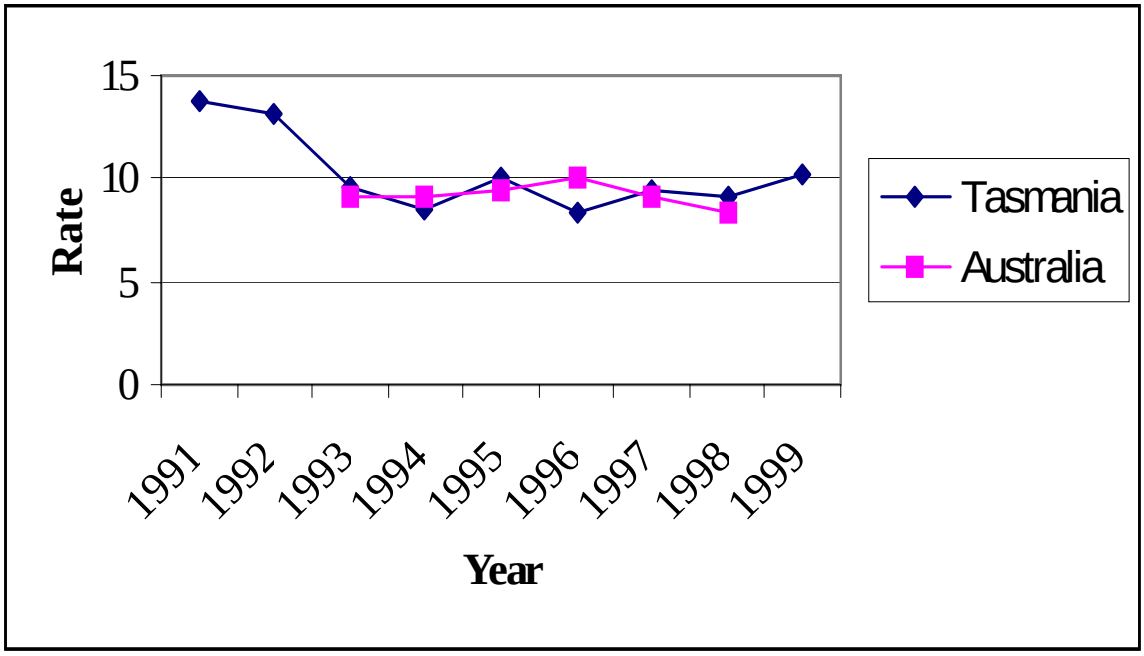


Table 30: Causes of Perinatal Mortality 1996 - 1999

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

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

Table 31: Perinatal Deaths and Maternal Disease 1997 - 1999 with Totals for 1991 -1999

Condition	1996 Perinatal deaths/ Incidence of Maternal Disease	1997 Perinatal deaths/ Incidence of Maternal Disease	1998 Perinatal deaths/ Incidence of Maternal Disease	1999 Perinatal deaths/ Incidence of Maternal Disease	Total 1991-1999 Perinatal deaths/ Incidence of Maternal Disease
Epilepsy	0 / 44	1 / 44	0 / 45	0 / 45	1 / 178
Diabetes Mellitus	0 / 26	0 / 24	1 / 18	0 / 43	1 / 111
Heart Disease	No cases reported	No cases reported	0 / 1	0 / 2	0 / 3
Asthma	0 / 223	1 / 235	4 / 383	3 / 562	8 / 1403
Hepatitis B & C Carrier	0 / 15	0 / 22	0 / 34	1 / 34	1 / 105
Drug Dependence	0 / 2	0 / 3	0 / 1	No cases reported	0 / 6
Mental Disorders	0 / 10	1 / 9	No cases reported	No cases reported	1 / 19
Genital Herpes	0 / 9	0 / 7	0 / 2	No cases reported	0 / 18
Other	0 / 138	0 / 62	6 / 118*	0 / 77	6 / 395

* 4 perinatal deaths occurred in cases where the mother suffered Hypertension and in 2 cases where the mother suffered pre-eclampsia

Table 32: Incidence of Perinatal Deaths with Antepartum Haemorrhage (APH) 1991 - 1999

Year	APH of Unknown Origin		Placenta Previa		Abruptio Placentae	
	Deaths	Cases	Deaths	Cases	Deaths	Cases
1991	11	89	0	28	8	18
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

Mothers

Table 33: Mother's Country of Birth 1997 - 1999

Country	1997	1998	1999
Africa (excludes North Africa)	11	10	10
Europe & Former USSR	212	173	151
Northeast Asia	15	8	16
North America	21	15	13
Oceania & Antarctica *	5959	5832	5856
South & Central America & the Caribbean	6	6	6
Southeast Asia	49	45	47
Southern Asia	10	12	8
Middle East & North Africa	16	14	17
Not Stated	10	56	21

* Australia, New Zealand and South Pacific Islands

Table 34: Births by Marital Status 1991 - 1999

Year	Single %	Married/ Defacto %	Widow %	Divorced %	Separated %
1991	23	75	0.1	1	1
1992	24	75	0.1	1	1
1993	26	73	0.1	1	1
1994	24	73	0.2	1	1
1995	24	71	0.1	1	1
1996	16	81	0.1	1	1
1997	14	81	0.1	0.5	1
1998	15	83	0.0	0.5	1
1999	16	82	0.1	0.4	1

Table 35: Age of Mothers 1991 - 1999

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 %
1991	8	24	35	25	8	1
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

The data in Table 34 and in Figure 7 (below) clearly shows that the number of births in women aged 35 years and over is increasing. This is in keeping with the National trend.

Figure 7: Proportion of Births by Maternal Age Groups 1991 - 1999

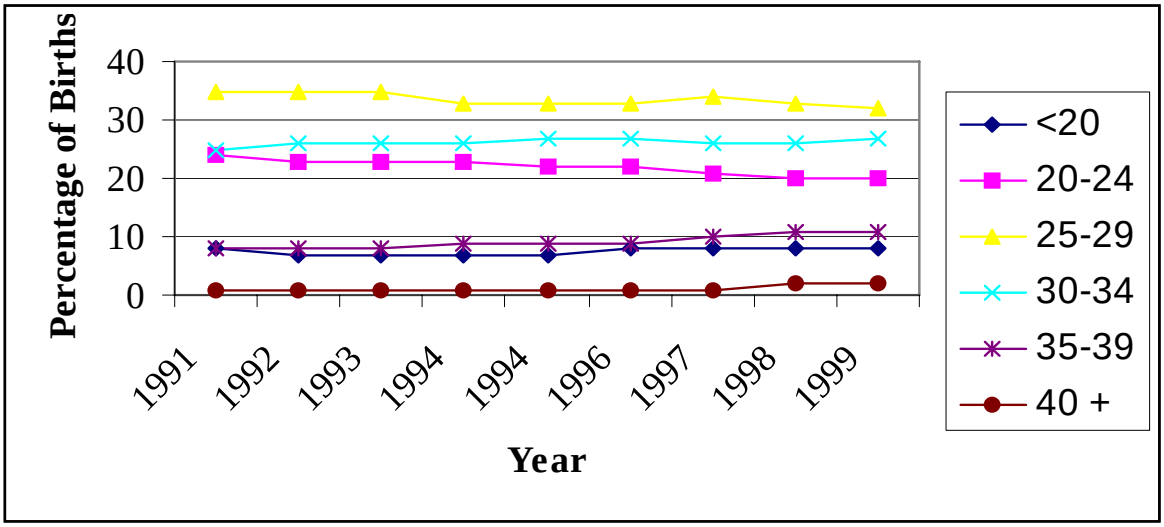


Table 36: Rates of Birth per 1000 Female Population by Maternal Age 1996 - 1999

Maternal age In years	Year	Estimated Tasmanian Female Population *	Rate of Births per 1000
13 – 18	1996	24483	13.0
	1997	20709	15.8
	1998	20817	15.4
	1999	20935	15.4
19 - 24	1996	16689	92.0
	1997	18414	82.6
	1998	18176	77.7
	1999	17803	79.4
25 – 29	1996	16271	127.0
	1997	16493	129.4
	1998	16466	124.4
	1999	16005	123.5
30 – 35	1996	21019	91.0
	1997	21005	87.1
	1998	20278	90.2
	1999	19719	93.8
36 – 40	1996	18370	25.0
	1997	19059	22.5
	1998	18913	26.5
	1999	18755	27.0
41 - 45	1996	17274	4.0
	1997	17474	3.5
	1998	17668	3.7
	1999	17774	3.0

*Australian Bureau of Statistics Demography – Tasmania 3311.6 1996, 1997, 1998, 1999

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.

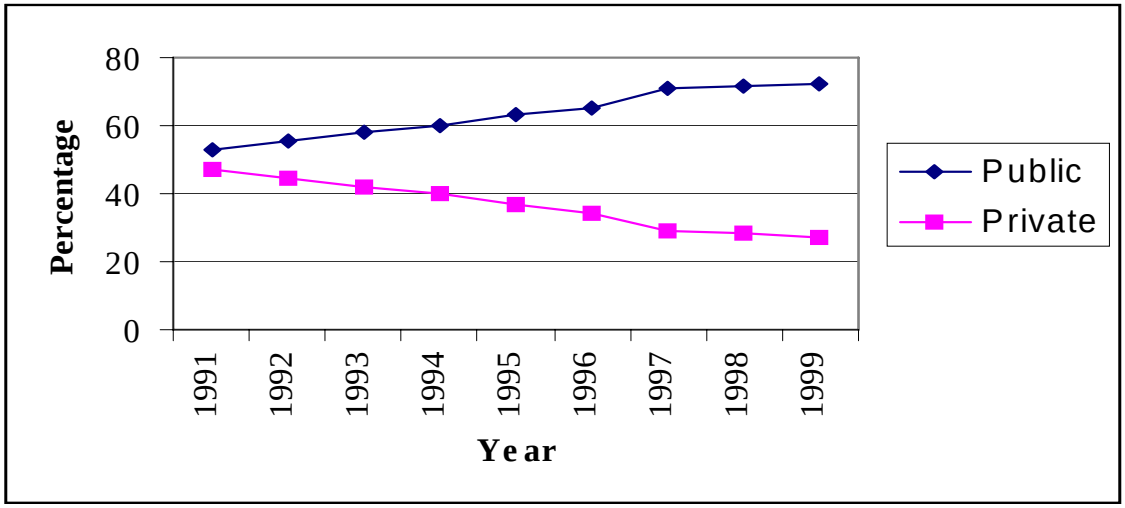
Table 37: Percentage of Births by Parity 1991 - 1999

Year	Para 1 %	Para 2 %	Para 3 %	Para 4 %	Para 5 and over %
1991	39	33	18	7	4
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

Table 38: Proportion of Public and Private Patients 1991 - 1999

Year	Public %	Private %
1991	52.7	47.3
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	70.78	29.22
1998	71.5	28.5
1999	72.33	27.11

Figure 8: Proportion of Public and Private Patients 1991 - 1999



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. The extreme variation across three years makes comparisons meaningless.

Table 39: Mother's Indigenous Status 1997 - 1999

Status	1997	1998	1999
Aboriginal	6	62	13
Torres Strait Islander	3	15	4
Aboriginal & Torres Strait Islander	198	54	47
Neither	5640	4311	1450
Not Stated	462	1729	4631

Mode of Delivery

This information had previously been reported by the categories of : Normal Vaginal Delivery, Ventouse, Forceps, Breech Vaginal and Caesarean Section. However as these categories are not mutually exclusive (e.g. a vaginal breech can still require forceps delivery), and because the major area of interest is the rate of caesarean sections this data is now reported simply as the number of vaginal deliveries and the number of caesarean sections.

Table 40: Mode of delivery 1991 - 1999

Year	Vaginal Delivery Number	Vaginal Delivery %	Caesarean Sections Number	Caesarean Sections %
1991	5780	83	1179	17
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

Table 41: Mode of Delivery by Type of Anaesthetic 1992 - 1999

Type of Anaesthetic	Year	Vaginal Delivery number	Caesarean Section Number #
No anaesthetic	1992	3025	0
	1993	2923	0
	1994	3365	0
	1995	3129	0
	1996	4756	41
	1997	4798	53
	1998	4508	69
	1999	4337	104
General	1992	70	505
	1993	53	458
	1994	39	450
	1995	57	451
	1996	65	287
	1997	65	242
	1998	56	176
	1999	58	158

Type of Anaesthetic	Year	Vaginal Delivery number	Caesarean Section Number #
Epidural only	1992	402	639
	1993	471	699
	1994	426	743
	1995	538	862
	1996	106	495
	1997	104	404
	1998	143	350
	1999	179	277
Spinal only *	1996	15	309
	1997	12	527
	1998	21	683
	1999	30	682
Epidural & Spinal*	1996	0	39
	1997	1	26
	1998	0	11
	1999	4	11
Epidural & General*	1996	3	13
	1997	0	2
	1998	0	14
	1999	1	7
Spinal & General *	1996	0	6
	1997	0	6
	1998	0	9
	1999	1	4
Other *	1996	172	0
	1997	43	1
	1998	101	0
	1999	228	8

* Information on combination of anesthetics was only collected in detail from 1996.

Table 40 depicts a few scenarios which are evidence of possible and/or definite data collection anomalies. The data as collected and reported here indicates that from 1996 onwards and increasing number of women are undergoing caesarean sections without the benefit of any type of anesthetics. This is known not to be the case, and these figures are, therefore, reflective of erroneous data collection.

The number of women reported as undergoing a general anesthetic or an epidural anaesthetic for a vaginal delivery has also caused some concern. While the administration of general and/or epidural anaesthetic for vaginal deliveries does occur, the numbers as reported were felt to be higher than was occurring in actual practice. Again these are areas of reporting that may reflect erroneous data collection.

Table 42: Mode of Delivery by Gestation 1996 - 1999

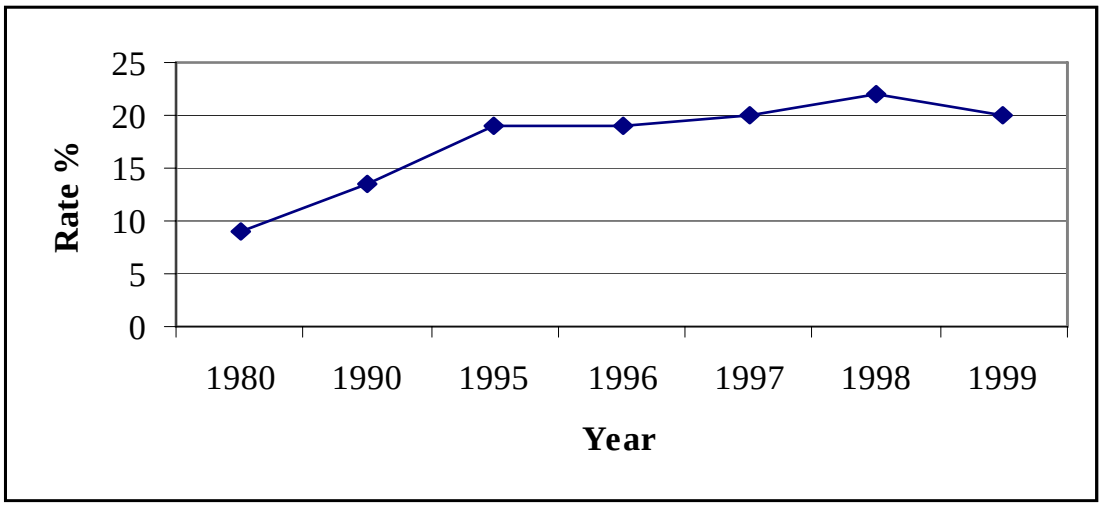
Gestation in weeks	Year	Vaginal Delivery number	Caesarean Section number
20 - 24	1997	24	1
	1998	15	1
	1999	26	1
25 - 29	1997	23	25
	1998	16	26
	1999	19	18
30 - 34	1997	70	62
	1998	85	28
	1999	100	86
35 - 39	1997	1775	690
	1998	1850	763
	1999	1955	754
40 and over	1997	3130	473
	1998	2839	459
	1999	2673	379

Table 43: Mode of Delivery by Maternal Age 1996 - 1999

Maternal age in years	Year	Vaginal Delivery number	Caesarean Section number
Less than 14	1997	4	0
	1998	6	0
	1999	1	0
15 - 19	1997	450	68
	1998	427	62
	1999	440	68
20 - 24	1997	1097	223
	1998	987	227
	1999	1006	198
25 - 29	1997	1707	418
	1998	1596	443
	1999	1563	397
30 - 34	1997	1230	389
	1998	1235	363
	1999	1252	378
35 - 39	1997	461	141
	1998	490	181
	1999	482	186
40+	1997	69	24
	1998	82	41
	1999	74	24

Table 42 highlights the increased likelihood of women undergoing a delivery by caesarean section as their maternal age increases. On average 20% of all deliveries will be via caesarean section for women aged between 20 – 29. This increases to 36% for women aged 35 and over.

Figure 9: Caesarean Section Rates 1980 - 1999



Multiple Pregnancy

Table 44: All Births by Multiple Pregnancy 1996 - 1999

Year	Number of infants born from a Twin pregnancy	Number of infants born from a Multiple* pregnancy
1996	176	13
1997	149	1
1998	183	3
1999	158	3

*Multiple equal 3 babies or more.
Please note that infants who do not survive beyond 20 weeks of gestation, or who do not weight more than 400 grams are not recorded as a birth, hence some odd numbers in the figures above.

Table 45: Incidence of Hypertension in Multiple Pregnancy 1996 - 1999

Hypertension Category	Year	Singleton	Twin	Multiple
Pre-existing	1996	78	4	0
	1997	36	0	0
	1998	61	6	0
	1999	62	4	0
Pregnancy induced	1996	22	2	0
	1997	0	0	0
	1998	2	0	0
	1999	1	0	0
Pre-eclampsia	1996	253	18	6
	1997	276	17	0
	1998	294	21	0
	1999	319	22	0
Eclampsia	1996	2	0	0
	1997	4	2	0
	1998	2	0	0
	1999	0	0	0

Table 46: Incidence of Antepartum Haemorrhage in Multiple Pregnancy 1996 - 1999

	Year	Singleton	Twin	Multiple
Antepartum Haemorrhage	1996	164	0	0
	1997	132	7	0
	1998	155	0	0
	1999	86	0	0
Placenta Previa	1996	19	2	0
	1997	16	0	0
	1998	11	0	0
	1999	22	2	0
Abruptio Placentae	1996	23	4	0
	1997	21	0	0
	1998	6	0	0
	1999	10	0	0

Induction

Table 47: Induction of Labour for all Births by Mode of Delivery 1996 - 1999

Induction	Year	Vaginal Delivery number	Caesarean Section number
ARM* only	1996	163	13
	1997	145	19
	1998	123	7
	1999	108	7
Prostaglandin only	1996	327	47
	1997	394	73
	1998	450	103
	1999	448	85
ARM* & Prostaglandin	1996	105	11
	1997	92	7
	1998	122	20
	1999	120	20
Oxytocin only	1996	120	17
	1997	79	17
	1998	120	19
	1999	101	20
Oxytocin & ARM*	1996	286	51
	1997	278	36
	1998	311	58
	1999	324	32
Oxytocin & Prostaglandin	1996	31	12
	1997	31	5
	1998	34	13
	1999	49	13
Oxytocin, ARM* & Prostaglandin	1996	86	25
	1997	94	24
	1998	93	24
	1999	121	30
Other	1996	2	1
	1997	0	0
	1998	0	1
	1999	11	3

* Artificial Rupture of the Membranes (ARM)

The high proportion of women, as reported in Table 46, who undergo induction by Oxytocin, ARM and Prostaglandin and then proceed to caesarean section should be noted. These women are evidence of failed induction and/or women who were not favourable for induction in the first place.

Table 48: Induction Rate 1996 – 1999

Year	Total number of Vaginal deliveries following Induction of Labour	Total number of Caesarean Section deliveries following Induction of Labour	Total number of deliveries following Induction of labour	Induction Rate %
1996	1120	202	1322	21
1997	1113	181	1294	21
1998	1253	245	1498	24
1999	1282	210	1492	24

Hypertension

Table 49: Prevalence of Hypertension for all births 1996 - 1999

Type of Hypertension	1996	1997	1998	1999
Pre-Existing	82	36	69	66
Hypertension in Pregnancy *	301	293	317	342
Eclampsia	2	6	2	0
Nil	5946	5974	5783	5737
Total	6331	6309	6171	6145

*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.

Figure 10: Incidence of Pre-Existing Hypertension in Pregnancy 1996 - 1999

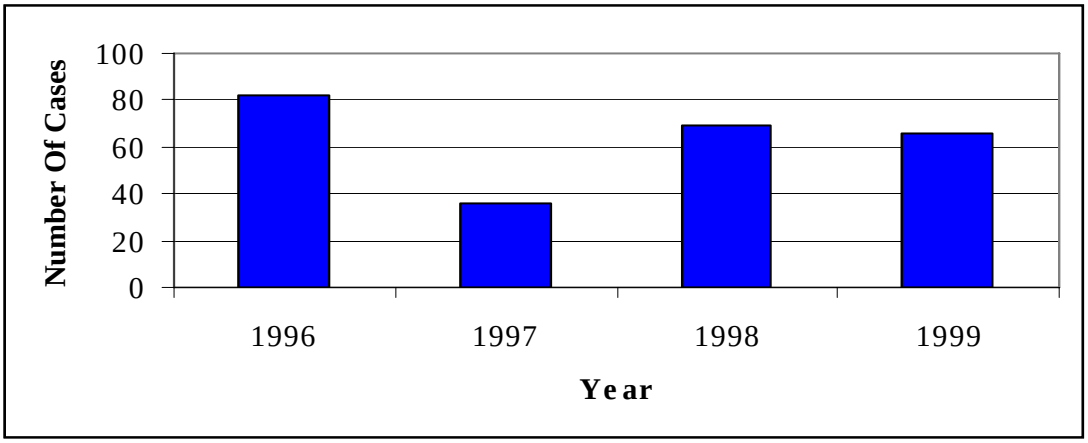


Figure 11: Incidence of Hypertension in Pregnancy 1996 - 1999

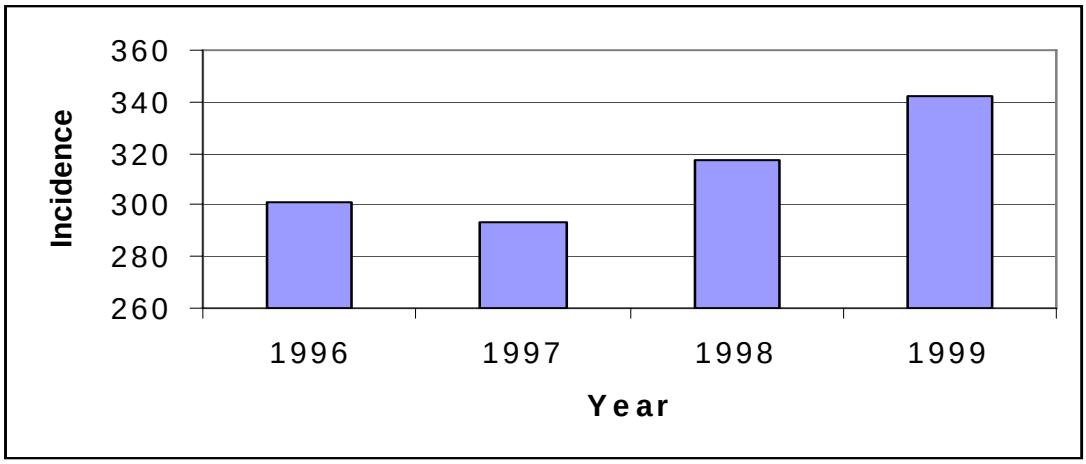
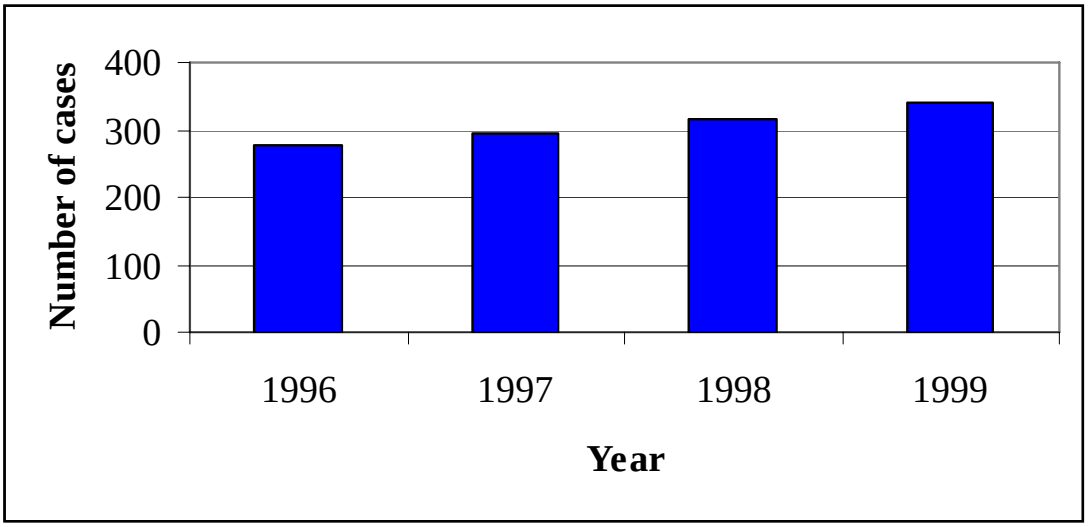


Figure 12 Incidence of Pre-Eclampsia 1996 - 1999



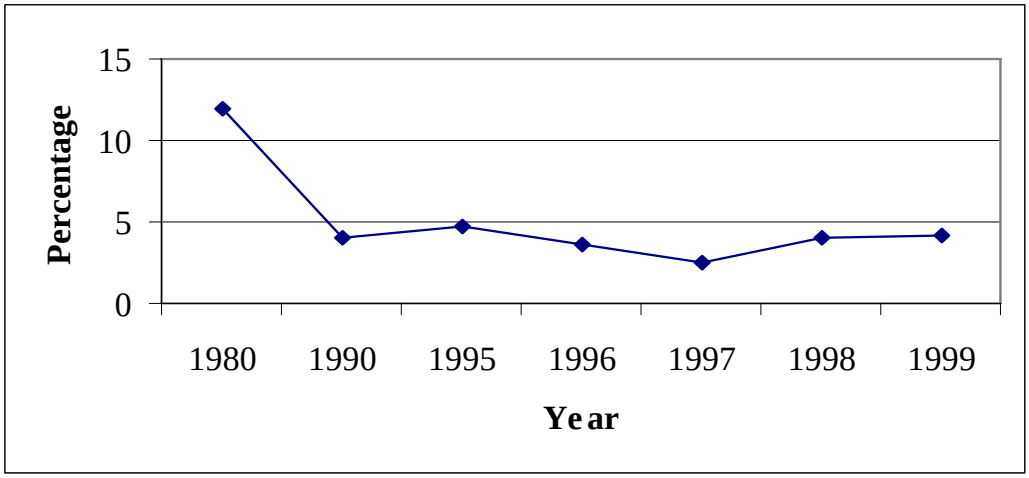
Haemorrhage

Postpartum Haemorrhage

Table 50: Incidence of Postpartum Haemorrhage 1991 - 1999

Year	Incidence %
1991	3.5
1992	4.5
1993	4.3
1994	3.5
1995	4.7
1996	3.6
1997	2.54
1998	4.07
1999	4.10

Figure 13: Incidence of Postpartum Haemorrhage 1980 – 1999



Antepartum Haemorrhage

Table 51: Incidence of Antepartum Haemorrhage 1991 - 1999

Year	Incidence %
1991	1.9
1992	1.5
1993	1.8
1994	1.0
1995	1.0
1996	3.5
1997	1.8
1998	2.8
1999	2.0

Table 52: Type of Antepartum Haemorrhage 1997 - 1999

Type	1997	1998	1999
Placenta Previa	16	11	24
Abruptio Placenta	21	6	10
Antepartum Haemorrhage (unclassified)	139	154	88
Total	176	171	122

Figure 14: Incidence of Antepartum haemorrhage 1991 - 1999