Council of Obstetric & Paediatric Mortality & Morbidity

Annual Report 2012

Department of Health and Human Services

Tasmania
Explore the possibilities

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COPMM Key Recommendations

A list of key *Council of Obstetric and Paediatric Mortality and Morbidity* (COPMM) recommendations based on the data arising from the review of perinatal, paediatric and maternal death cases reported in 2012 are tabulated below. It is hoped that these will highlight those issues considered by Council to be important and in need of addressing and actioning in the future by relevant statewide organisations.

PAEDIATRIC	1. The *Paediatric Mortality & Morbidity Committee* strongly supports the recommendations previously made by Coroner McTaggart with regards to youth suicide. To young persons whose friends have told them they are thinking about suicide, the Coroner recommends that *(1) The statement is to be taken seriously; (2) Do not keep it a secret, even if your friend has asked you to; (3) tell a teacher or counsellor as soon as possible about what your friend has told you; and (4) encourage your friend to seek help from a trusted adult such as a counsellor or to call a helpline.* The Coroner offers two websites providing advice and important helpline numbers for young persons considering suicide as well as for young people whose friends have spoken to them about wanting to take their own lives. Websites are ***au.reachout.com*** (Reach Out Australia) and www.youthbeyondblue.com (Youth Beyond Blue). 2. That all health professionals should be advised to act appropriately by informing relevant family members of a child who may be at risk of suicide. 3. That the media follow stringent guidelines and clearly outline appropriate and available support helplines at the time of media releases reporting on paediatric death cases that have been related to suicidal behaviour. 4. That appropriate support is available to all young people engaged in the use of social media networks such as Facebook where the issue of youth suicide may be discussed. This is particularly important where a young person may have been known to have committed suicide. 5. That the community continue to be alerted to risks associated with unsatisfactory restraint of children as passengers in moving vehicles and encouraged to ensure that all children are safely restrained with seatbelts when travelling in motor vehicles and preferably seated in the rear of the car. 6. That age, height and weight restrictions for children sitting in the front of a motor vehicle should be better defined and that children should not ride in motor vehicles as front seat passengers based on height/weight guidelines as well as age restrictions. 7. That children should not wear lap belts whilst travelling as passengers in a motor vehicle. As reported in previous years, the benefits of young children wearing harnesses with and without booster seats have been highlighted. 8. That a clear and consistent message is used as part of the universal distribution of educational material concerning safe sleeping practices to all new parents. It is also recommended that further education packages are provided to parents highlighting the risks associated with parental use of illegal and prescribed drugs and co-sleeping. As highlighted in previous reports, it is also recommended that more effective death scene examinations be undertaken to establish whether the cause

	of death is due to overlying[1]. 9. That a classification system is introduced in Tasmania to sub-categorise suspected cases of youth suicide from other paediatric death cases where death has been a result of injury. Classification systems used nationally are being considered with a view to propose that jurisdictions consider using a consistent national classification system for review of paediatric death cases. 10. That children should wear helmets when cycling and it is ensured that their bicycles are properly maintained and serviced.
PERINATAL	**NEONATAL DEATHS:** 1. That close two-way communication must be maintained between obstetric and paediatric staff in the management of women threatening to deliver prematurely. *In utero* transfer to the tertiary centre at Royal Hobart Hospital is the preferred option for those <30 weeks gestation. 2. That all Tasmanian perinatal centres must be staffed by personnel capable of providing neonatal life support at a level appropriate for their patient population. 3. That inhaled nitric oxide should be made available during NETS transfer. 4. That vigilance for the onset of foetal compromise must be maintained in every pregnancy. 5. That pregnant women should be encouraged to stop smoking at every opportunity. 6. That obstetric and paediatric staff at all Tasmanian hospitals should complete the *National Perinatal Death Clinical Audit Tool* (NPDCAT) forms at the time of the hospital Mortality and Morbidity meetings. **STILLBIRTHS:** 1. That a senior member of the obstetric team counsel parents and encourage post-mortem examination and karyotyping of the infant after a perinatal death. 2. That molecular karyotyping be offered routinely following the diagnosis of a morphologically abnormal pregnancy to aid in appropriate counselling of the parents. 3. That development of risk factors in a previously low risk pregnancy such as antepartum haemorrhage and foetal growth restriction mandate a transfer of model of care from midwifery led or GP shared care to maternity team care involving Specialist Obstetric Services for the duration of the pregnancy and delivery. All maternity care providers must have well-established protocols in place and remain vigilant in the early detection and identification of growth restricted foetuses. 4. That the community is informed of the risks associated with pregnancy and maternal obesity. Obese pregnant women should not be classified as low risk for

[1] Li, L., Zhang, Y., Zielke, R.R., Ping,Y., and Fowler, D.R. (2009). Observations on Increased Accidental Asphyxia Deaths in Infancy while Co-sleeping in the State of Maryland. *American Journal of Forensic Medical Pathology*. Vol.30, No.4, pp. 318-321.

pregnancy care.

5. That obese women (with a BMI of 30 or more) should have higher dose folate supplementation, namely 5 mg per day rather than 500 micrograms of folic acid from preconception to 12 weeks gestation, as maternal obesity is associated with a higher risk of neural tube defects.

6. That a morphology scan be performed at 19-20 weeks gestation in women with a BMI >40, rather than the usual 18 weeks for better visualisation, and clinicians should have a low threshold for repeating the scan at 24 weeks to obtain further views. (note: maternal obesity lowers the likelihood of detecting foetal anomalies at the time of morphology scan by at least 20 per cent).

7. That ultrasound/assessment monitoring should be used in the third trimester for women who are pregnant and obese to allow appropriate screening for foetal growth restriction and macrosomia.

8. That low dose aspirin (100mg orally/day), starting before 16 weeks gestation at the latest and continued to 36 weeks, be considered for women without contra-indications with:

    - a previous history of placental insufficiency syndromes (including pre-eclampsia and intrauterine growth restriction); and/or
    - two or more risk factors in the current pregnancy (e.g., pre-gestational hypertension, obesity, maternal age > 40 years, use of artificial reproductive technology, pre-gestational diabetes mellitus, multiple gestation, past history of placental abruption, past history of placental infarction, pregnancy associated plasma protein A (PAPP-A) < 0.4 MoM on first trimester serology, and abnormal uterine artery Doppler's in the first trimester or at the anatomy ultrasound),

9. That surveillance of monochorionic twins is undertaken with reference to the RANZCOG guideline recommending 2-3 weekly scanning until 18 weeks gestation and then two weekly scans. (Interstate tertiary units in Victoria, NSW and QLD which offer laser therapy for management of some complications of monochorionic twin pregnancies should also be considered).

10. That every maternity hospital, public and private, should have a designated perinatal mortality and morbidity committee to review all perinatal deaths and provide information to COPMM as gazetted under our legislation.

11. That any perinatal death that occurs outside a hospital should be brought to the attention of COPMM so that a review could be initiated, and any homebirths would be captured (Note: a neonatal death that occurs outside the hospital such as an early SIDS or *Sudden Unexpected Death in Infancy* (SUDI) type death would usually be investigated by the Coroner).

MATERNAL	1. That Perinatal Mental Health Services in Tasmania should have increased funding to improve the currently deficient services in view of its importance in relation to morbidity issues. COPMM should highlight issues of psychiatric or psychological morbidity in the perinatal period. 2. That asthma be regarded as a serious medical condition in the pregnant population. Women should not have preventers stopped upon diagnosis of pregnancy. They require careful assessment of ongoing respiratory status as some will deteriorate in pregnancy. All sufferers should have an asthma management plan and clinicians should not be hesitant in prescribing preventative inhaled steroids and short term oral and intravenous steroids for acute exacerbations. Pregnant women who present to hospital with asthma should be managed by senior medical staff with experience of severe asthma in pregnancy.

Executive Summary

The members of the *Council of Obstetric & Paediatric Mortality & Morbidity* (COPMM) are pleased to present the Annual Report for the calendar year 2012.

A key aim of the Council's Annual Report is to provide epidemiological information on the women who gave birth to liveborn or stillborn babies in 2012, and on their children. Data are derived from the Perinatal Data System with the source of data being the Perinatal Data Collection Form that is completed by all maternity service providers in Tasmania.

The Annual Report includes the reports submitted by each committee of COPMM detailing relevant key trends arising during this year and recommendations based upon committee investigations and findings. Trends in reported perinatal and maternal statistics have been reported in Tasmania and compared with latest available national findings.

Key findings in the Annual Report for 2012 include:

Babies in 2012

- The number of livebirths recorded on the Perinatal Data System in 2012 was **5 895**, a decrease of 394 (6.3 per cent) since 2011 (6 289). The total number of births including stillbirths was **5 940.**
- Males accounted for 50.9 per cent of births and females 49.1 per cent.
- There were 77 episodes of multiple births, including 77 sets of twins and no sets of triplets.
- The proportion of low birth weight babies (less than 2 500 grams) in Tasmania was 7.8 per cent**,** which is higher than national figures reported in 2011 (i.e., 6.8 per cent).
- 10.4 per cent of deliveries were preterm (less than 37 weeks gestation) compared to national figures reported in 2011 of 8.3 per cent.

Mothers in 2012

- 72.4 per cent of mothers were public patients and 27.0 per cent were private patients.
- 46.9 per cent of mothers were aged over 30 years; 6.1 per cent of mothers were under the age of 20 years, a higher proportion than the national average of 3.7 per cent in 2011.
- 40.4 per cent of mothers had their first baby and 34.0 per cent had their second baby.
- 5.1 per cent of mothers were identified as Aboriginal, Torres Strait Islands and Aboriginal & Torres Strait Islanders in Tasmania compared to 3.9 per cent nationally in 2011.
- 58.0 per cent of mothers had an unassisted vaginal delivery and 11.1 per cent had an instrumental delivery.
- 30.9 per cent of mothers gave birth by caesarean section (compared to 27.3 per cent in 2006).
- Of all women who gave birth and had caesarean section, 50.8 per cent were elective and 49.2 per cent were emergencies.
- 74.3 per cent of mothers were breastfeeding at maternal discharge.

- 16.3 per cent of mothers reported smoking during pregnancy with the smoking rate for teenage mothers having reduced from previous years to 35.6 per cent.
- 9.1 per cent of mothers reported that they had consumed alcohol during pregnancy with the rate being greatest for older mothers aged between 35-39 years (11.9 per cent), but there was a continued reduction in proportion of pregnant women aged 40 years and over who reported to have consumed alcohol during their pregnancy in this year (8.1 per cent) compared to the previous year (8.4 per cent). For 2012, the proportion of mothers reporting consumption of alcohol during pregnancy was significantly higher for mothers who were reported as public patients (10.8 per cent) compared with private patients (4.8 per cent) with both groups showing a slight, but not statistically significant, reduction in reported alcohol consumption during pregnancy compared with 2011.

Perinatal and paediatric deaths at a glance

Table 1: Perinatal and paediatric deaths at a glance

Classification	Total number for 2012 (5 940)	Rate per 1 000 all births
Perinatal mortality	64	10.8
Stillbirths	45	7.6
Neonatal deaths	19	3.2
Total infant mortality (from 20 weeks gestation to 1 year)	25	4.2
Non-neonatal infant mortality (>28 days post delivery to 1 year)	6	1.0
Paediatric mortality	21	0.18*

** ABS figure for total no. of children <18 years for 2012 in Tasmania is estimated at 115 377 (ABS Cat no. 3101.0 Australian Demographic Statistics, Table 56, Estimated Resident Population by Single Year of Age, Tasmania, June 2012). Thus Paediatric Mortality is calculated by total deaths (>28 days and <18 years) divided by estimated total no. of children in Tasmania under 18 years of age.*

Perinatal deaths

The *Perinatal Mortality and Morbidity Committee* reviewed 64 deaths in 2012. Nineteen of these deaths were neonatal deaths (live born infants who did not live beyond 28 days of age) and forty-five were stillbirths. The overall perinatal mortality rate was 10.8 per 1 000 births. The neonatal mortality rate was 3.2 per 1 000 births, with a stillbirth rate of 7.6 per 1 000 births.

In Tasmania, the perinatal mortality rate in 2012 increased from the previous year to a similar rate reported in 2010 (p=0.206) and was also slightly higher than the 2011 national rate of perinatal deaths (9.9 rate per 1 000 births). In 2011, the national stillbirth rate was 7.4 per 1 000 births; the neonatal death rate was 2.6 per 1 000 live births; and the perinatal death rate was 9.9 per 1 000 births.

The neonatal mortality rate of 3.2 per 1 000 births reported in Tasmania in 2012 remained steady compared to the rate reported for Tasmania in 2011, but was slightly higher than reported nationally in 2011 (i.e., 2.6 per 1 000 births).

The stillbirth rate of 7.6 per 1 000 births reported in Tasmania in 2012 was similar to (p=0.129) to the rate reported for Tasmania in 2011 (5.4 per 1 000 births) and also similar to (p=0.859) the reported 2011 national rate (7.4 per 1 000 births). It has been recently highlighted that there is compelling evidence to suggest that low dose aspirin is beneficial in reducing the incidence of preeclampsia and intrauterine growth restriction and in turn, in reducing perinatal death. Recommendations around the use of low dose aspirin are highlighted within the COPMM Key Recommendations.

As previously reported, Council urges senior obstetric staff to complete the National Perinatal Death Clinical Audit (NPDCA) tool when detailing circumstances around reported perinatal deaths and that all practitioners investigating the aetiology of perinatal deaths refer to the Perinatal Society of Australia and New Zealand (PSANZ) guidelines. Full recommendations arising from the review of perinatal deaths from this year are listed under the *COPMM Key Recommendations* provided at the start of the report.

Maternal deaths

There were two maternal deaths (including any late maternal deaths) reported in Tasmania in 2012. One death was a likely homicide (fatal domestic violence) which represented a '*non-maternal incidental death'*. The second death was an' *indirect maternal death'* with the teenage mother suffering a fatal asthma attack leading to her dying during her pregnancy.

The *Maternal Mortality & Morbidity Committee* continues to believe that cases of "near misses" are important to consider especially in terms of maternal morbidity issues and the need to manage such cases appropriately. The *Australian Maternity Outcomes Surveillance System (AMOSS): Improving the Safety and Quality of Maternity Care in Australia* continues to monitor serious maternal morbidity events. In view of the NH&MRC supporting this project for the first five years only, it is hoped that hospitals/states will, in the future, continue to support this system as part of their normal risk management framework.

Council recommendations based on reported maternal death cases are listed under the *COPMM Key Recommendations* as outlined earlier within the report.

Paediatric deaths

The *Paediatric Mortality and Morbidity Committee* noted that the number of paediatric deaths in Tasmania in 2012 was 21 (with an estimated paediatric mortality rate of 0.18 per 1 000 persons aged 0-17 years). This rate was statistically significantly lower (p<0.001) than the 2011 national paediatric mortality rate (estimated to be 0.38 per 1 000 persons aged 0-17 years).

The number of paediatric deaths in Tasmania reported in 2012 was slightly higher than the previous year but still generally lower than figures reported in recent years. In particular, while it is heartening to note a decreased number of sudden unexplained infant deaths in 2012, the two cases reported were found to be associated with clear risk factors including co-sleeping with parents. This finding again highlights the continued need to ensure that there is a consistent message about safe sleeping practices being conveyed to parents and the community. Council recommendations based on the reported paediatric death cases in 2012 are highlighted within the *COPMM Key Recommendations.*

Smoking and pregnancy

The overall proportion of mothers smoking during pregnancy in 2012 in Tasmania was 16.3 per cent which is similar to (p=0.234) the 2011 reported Tasmania proportion (17.1 per cent), and becoming more comparable to rates in other States reported in 2012. While maternal smoking continues to be more prevalent among younger women; particularly those aged less than 20 years (35.6 per cent) and between 20-24 years (26.9 per cent), it is very encouraging to find that there is a statistically significant reduction (p=0.043) in mothers smoking during pregnancy in the latter age group. In fact, maternal smoking amongst women aged 20-24 years has continued to steadily decline, with a statistically significant reduction over the 5 period since 2008 (p<0.001). In all other groups, the proportion of mothers who smoked during pregnancy in 2012 remained steady except for the 40 years and over age group which showed a slight increase (p=0.397) from the previous year. It is also encouraging to find that for both public and private patients, the proportion reporting to smoke during pregnancy has steadily declined over the last 5 years; however, the reductions in both groups since 2011 were not statistically significant (p=0.310 (public); p=0.119 (private)).

The data have also confirmed the statistically significant (p<0.001) association between birth weight and smoking status during pregnancy, with a higher proportion of low birth weight babies born to mothers who smoked (11.9 per cent) compared to non-smoking mothers (5.0 per cent). Given the association between intrauterine growth restriction and stillbirth, methods to reduce maternal smoking need to particularly target our youngest mothers and, if effective, may reduce the stillbirth rate.

Alcohol consumption and pregnancy

The electronic perinatal data collection system (*ObstetrixTas*) collects data regarding alcohol consumption during pregnancy. From the data available in 2012, the overall proportion of mothers consuming alcohol during pregnancy in Tasmania was 9.1 per cent, which was comparable to proportions reported in 2011 (9.5 per cent). Maternal alcohol consumption continues to appear to be more prevalent among older women aged between 35-39 years (11.9 per cent). It is encouraging though, to note that the proportion of women aged 40 years and over who reported consuming alcohol during pregnancy has significantly dropped since 2010 (p=0.009), and since 2011 is no longer amongst the highest of all the age groups. It also appeared that alcohol consumption during pregnancy was reported by a significantly lower (p<0.001) proportion of mothers who were private patients (4.8 per cent) compared with public patients (10.8 per cent). Alcohol consumption amongst private patients was slightly lower (p=0.161) than the reported figure for the previous year, in keeping with a sustained and statistically significant (p<0.001) decrease over the last 5 years since 2008.

The data showed that 8.2 per cent of babies born to mothers who consumed alcohol during pregnancy were of low birth weight, compared to 6.1 per cent for mothers who did not consume alcohol during pregnancy. This difference was not statistically significant (p=0.059). NH&MRC has recently recommended that women should not consume alcohol during pregnancy, as there has been no safe level of alcohol consumption identified. Alcohol has been associated with intrauterine growth restriction, stillbirth and the foetus is susceptible to Foetal Alcohol Spectrum Disorders (FASD)[2]. In particular, Foetal Alcohol Syndrome (FAS) is known to produce deleterious effects during foetal development resulting in characteristic facial abnormalities, impaired growth and abnormal function or structure of the central nervous system. High level and/or frequent intake of alcohol in pregnancy increases the risk of miscarriage, stillbirth and premature birth.

Data Collection and Reporting

ObstetrixTas continues to provide users from all public maternity hospitals throughout Tasmania with an electronic system for perinatal data entry and extraction. Council continues to also encourage the refinement of this system to better assist its data extraction for review and classification processes. The *National Perinatal Death Clinical Audit Tool* (NPDCAT) and its ability to be completed electronically has provided a useful form to allow clinicians to complete comprehensive details for respective cases online. Council is aware that its request to ensure the incorporation of this NPDCAT into the *ObstetrixTas* system continues to be elevated to a priority issue for progression by the Systems Owners Group. Similarly, the move to incorporate a more comprehensive Congenital Abnormality Register for Tasmania based on national developments is understood and will be implemented in due course.

The Committee also continues to discuss key issues regarding the preparation and structure of this and future Annual Reports. Membership on this committee includes representatives from the areas of obstetrics, paediatrics, midwifery, Chair of COPMM and representatives from DHHS Health Statistics and Epidemiology Unit, Population Health Services.

Dr Michelle Williams

Chairperson – Council of Obstetric and Paediatric Mortality and Morbidity

[2] National Health and Medical Research Council (NHMRC) (2009), *Australian Guidelines to Reduce Health Risks from Drinking Alcohol*, Canberra.

Disclaimer:

During the production of this report data anomalies may have arisen, however processes such as the undertaking of regular data audits have been established to minimise these anomalies.

Feedback:

A Feedback Form is provided at the end of this report inviting comments from readers on information presented. Please forward to the Executive, Services Quality and Improvement Unit, System Purchasing and Performance Group, 5th Floor, 24 Davey St. Hobart 7000. (Phone: 6166 1052).

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 committees (*Paediatric Mortality & Morbidity, Maternal Mortality & Morbidity, Perinatal Mortality & Morbidity and Data Management*);
- The Department of Health and Human Services Tasmania (DHHS) for its commitment to and funding of COPMM and its activities;
- System Purchasing and Performance, Service Quality and Improvement Unit, DHHS;
- Tasmania Epidemiology Unit, Population Health, DHHS;
- Obstetricians, Paediatricians and Midwives working in all parts of Tasmania;
- The State Coroner's Office and Staff;
- Statewide Forensic Medical Services;
- Office of Tasmanian Commissioner for Children;
- The Australian Bureau of Statistics;
- Births, Deaths and Marriages;
- Health Statistics, Service Purchasing and Performance Group, DHHS
- Legislative Review and Legal Support, DHHS;
- Media Unit, DHHS;
- Neonatal Services;
- Medical Record Departments and staff in all Tasmanian hospitals;
- Launceston General Hospital;
- North West Private Hospital;
- Mersey Community Hospital;
- North Eastern Soldiers Memorial Hospital (Scottsdale);
- Smithton District Hospital;
- Calvary Healthcare - Lenah Valley Campus;
- Royal Hobart Hospital;
- Hobart Private Hospital;
- Australian and New Zealand Child Death Review and Prevention Group; and
- Royal Automobile Club of Tasmania (RACT).

Obstetric and Paediatric Mortality and Morbidity Act 1994

The *Obstetric and Paediatric Mortality and Morbidity Act 1994* (the Act) establishes the Council of Obstetric & Paediatric Mortality & Morbidity (the Council). The functions of the Council include the maintenance of a perinatal data collection system, investigating the circumstances surrounding maternal deaths, perinatal deaths and the deaths of children up to 17 years; and investigating and reporting on matters relating to obstetric and paediatric mortality and morbidity referred to it by the Minister or Secretary.

The Act contains very strict confidentiality provisions such that the Council and its members are precluded from providing information to other persons except in very limited circumstances. Following its recent Amendment, the Act also enables the Council to:

- communicate to a coroner information relevant to a coronial inquiry or possible coronial inquiry into the death of a child or woman, of its own motion or at the request of the coroner;
- investigate and report to the Secretary or Minister (or any other relevant Minister) on any matter relating to obstetric and paediatric mortality and morbidity of its own motion without a reference from the Secretary or Minister;
- communicate information regarding identified deaths or morbidities to the Secretary, a relevant Minister or a prescribed body;
- have the power to place a restriction upon the subsequent use of any information or reports provided by the Council to a coroner, the Secretary, a Minister or a prescribed body;
- communicate information that comes into its possession to the Secretary where there is a belief or suspicion, on reasonable grounds, that a child has been or is being abused or neglected or is at risk of being abused or neglected;
- allow the Council to report information about possible criminal offences to the Commissioner of Police; and
- clarify the annual reporting requirements of the Council.

Definitions used by the Council

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

Low birthweight: An infant born weighing less than 2 500 grams

Very low birthweight: An infant born weighing less than 1 500 grams

Extremely low birthweight: An infant born weighing less than 1 000 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.

Paediatric death: A death, occurring in the age group from 29 days to 17 years (inclusive).

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

(a) resulting from an obstetric cause or another cause aggravated by an obstetric cause; and

(b) irrespective of the duration of the pregnancy and the location of the foetus within the woman's body.

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

(a) from any cause related to, or aggravated by, the pregnancy or its management; and

(b) irrespective of the duration of the pregnancy and the location of the foetus within the woman's body.

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

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

Sudden Infant Death Syndrome (SIDS): Sudden death of an infant under 1 year of age, which remains unexplained after a thorough case investigation including performance of a complete autopsy, examination of the death scene, and a review of the clinical history.[3] The term *Sudden Unexplained Death of an Infant* (SUDI) is now often used instead of *Sudden Infant Death Syndrome* (SIDS) because some coroners prefer to use the term 'undetermined' for a death previously considered to be SIDS.

[3] Willinger, M., James, L.S. & Catz, C (1991), 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 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.[4]

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

Supplementary Definitions[5]

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

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

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

Maternal hypertension: Maternal blood pressure of > 140/90 mmHg.

Postpartum haemorrhage (PPH): Estimated blood loss of ≥ 500 ml after vaginal birth or ≥1 000 ml after caesarean delivery.

Antepartum haemorrhage (APH): Refers to uterine bleeding after 20 weeks of gestation unrelated to labour and delivery.

[4] Australian Institute of Health and Welfare (2005), Stillbirth (fetal death), Canberra, viewed August 2008, <http://meteor.aihw.gov.au/content/index.phtml/itemId/327266>.

[5] Definitions derived from 'Williams Obstetrics – 20th edition' by Cunningham MacDonald Gant Leveno Gilstrap Hankins Clark; Copyright 1997 & www.uptodate.com, viewed August 2008.

Members of the Council of Obstetric & Paediatric Mortality & Morbidity

Organisation	Membership as of June 2013	Current Membership as of April 2014
Person nominated by the Secretary employed in delivery of Neonatal Services	Assoc Prof Peter Dargaville	Prof Peter Dargaville
Nominee of the Paediatrics and Child Health Division of the Royal Australasian College of Physicians nominated by the Tasmanian State Committee of that College	Dr Michelle Williams (Chair)	Dr Michelle Williams (Chair)
Nominees of the University of Tasmania (2)	Assoc Prof Amanda Dennis Dr Anagha Jayakar	Assoc Prof Amanda Dennis Dr Anagha Jayakar
Nominee of the Tasmanian Regional Committee of the Royal Australian and NZ College of Obstetricians and Gynaecologists	Dr James Brodribb (resigned November 2013)	Dr Tania Hingston
Person nominated by the Secretary employed in the Department of Health and Human Services	Dr Roscoe Taylor	Dr Roscoe Taylor
Nominee of the Tasmanian Branch of the Royal Australian College of General Practitioners	Dr Jillian Camier	Dr Jillian Camier
Nominee of the Tasmanian Branch of the Australian College of Midwives Inc.	Ms Sue McBeath	Ms Sue McBeath
Additional member nominated by Council to represent community interests	Ms Kate Cuthbertson Commissioner for Children- tba	Ms Kate Cuthbertson Commissioner for Children- tba

* **Please note that the new 3-year term (2012-2015) commenced on 22 November 2012 with new membership reflected under "current membership".**

Members of Committees and support services

Name of Committee	Membership as of June 2013	Current Membership as of April 2014
Maternal Mortality & Morbidity Committee	Assoc Prof Amanda Dennis (Chair) Dr James Brodribb (resigned November 2013) Ms Sue McBeath Dr Jill Camier Dr Jo Jordan (Manager, COPMM)	Assoc Prof Amanda Dennis (Chair) Assoc Prof Boon Lim Dr Tania Hingston Ms Sue McBeath Dr Jill Camier Dr Jo Jordan (Manager, COPMM)
Paediatric Mortality & Morbidity Committee	Dr Michelle Williams (Chair) Dr Chris Lawrence Dr Jillian Camier Dr Chris Williams CfC- (Interim) Mrs Elizabeth Daly Dr Jo Jordan (Manager, COPMM)	Dr Michelle Williams (Chair) Dr Chris Lawrence Dr Jillian Camier Dr Chris Williams CfC- To be advised Dr Jo Jordan (Manager, COPMM)
Perinatal Mortality & Morbidity Committee	Prof Peter Dargaville (Chair) Dr Tony De Paoli Dr James Brodribb (resigned November 2013) Assoc Prof Amanda Dennis Ms Sue McBeath Dr Jillian Camier Dr Jo Jordan (Manager, COPMM)	Prof Peter Dargaville (Chair) Dr Tony De Paoli Dr Tania Hingston Assoc Prof Amanda Dennis Ms Sue McBeath Dr Jillian Camier Assoc Prof Boon Lim Dr Jo Jordan (Manager, COPMM)
Data Management Committee	Prof Peter Dargaville (Chair) Dr Jamie Brodribb (RANZCOG rep)- (resigned November 2013) Dr Michelle Williams (RACP-Paediatric Rep) Mr Michael Long (Epidemiology Unit, Population Health) Dr Kelly Shaw (Specialist Medical Advisor-Public and Environmental Health Services) Mr Peter Mansfield (Health Statistics) Ms Peggy Tsang (Health Statistics) Mr Richard Smith (IT Consultant) Dr Jo Jordan (Manager, COPMM)	Prof Peter Dargaville (Chair) Dr Tania Hingston (RANZCOG rep) Assoc Prof Boon Lim (O&G,THO Sth) Dr Michelle Williams (RACP-Paediatric Rep) Mr Michael Long (Epidemiology Unit, Population Health) Dr Kelly Shaw (Specialist Medical Advisor-Public and Environmental Health Services) Mr Peter Mansfield (Health Statistics) Ms Peggy Tsang (Health Statistics) Mr Richard Smith (IT Consultant) Dr Jo Jordan (Manager, COPMM)
National Perinatal Data Development Committee- Tasmanian representative	Mr Peter Mansfield	Mr Peter Mansfield
Executive	Dr Jo Jordan	Dr Jo Jordan
Support staff	Mr Peter Mansfield (SPP) Ms Peggy Tsang (SPP) Ms Cynthia Rogers (SPP)	Mr Peter Mansfield (SPP) Ms Peggy Tsang (SPP) Ms Cynthia Rogers (SPP)

Compilation of this 2012 Annual Report by:

Executive:	**Dr Jo Jordan (Service Quality and Improvement, DHHS)**
Support staff:	**Mr Peter Mansfield (System Purchasing and Performance Division)**
	Ms Peggy Tsang (System Purchasing and Performance Division)
	Ms Cynthia Rogers (System Purchasing and Performance Division)

Committee reports

Perinatal Mortality & Morbidity Committee

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

There were 64 perinatal deaths in Tasmania who died in 2012. Nineteen of these deaths were neonatal deaths (live born infants who did not live beyond 28 days of age) and forty-five were stillbirths. The overall perinatal mortality rate was 10.8 per 1 000 births. The neonatal mortality rate was 3.2 per 1 000 births, with a stillbirth rate of 7.6 per 1 000 births.

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

Table 2: Perinatal deaths for 2012

Cause of death	Number of deaths									
	2003	2004	2005	2006*	2007*	2008*	2009*	2010*	2011*	2012*
Congenital anomalies	15	8	6	5+8	15+6	17+3	12+3	6+4	9+5	**17+5**
Perinatal infection	2	3	1	2	2+1	1+1	1+ 2	3+3	1+0	**0+0**
Hypertension	0	0	0	0+2	0	2+3	3	6+1	0+0	**2+1**
Antepartum haemorrhage	8	8	4	1+5	1+2	3+2	6+4	5+3	4+6	**0+1**
Maternal conditions	4	5	1	0+1	2	1	2	1+0	1+0	**0+0**
Specific perinatal conditions	4	3	9	1+6	6	4	7	1+0	5+2	**1+3**
Hypoxic peripartum death	1	4	3	0+4	2+2	3+2	1	1+0	4+3	**1+1**
Foetal Growth Restriction (FGR)	3	9	9	0+4	6	12	8	9+0	5+1	**3+0**
Spontaneous pre-term	19	10	10	4+6	3+6	6+3	2+6	5+13	3+2	**8+7**
Unexplained antepartum deaths	15	1	5	6	3	11	10	5+0	2+0	**13+0**
No obstetric antecedent	2	0	0	0	4	0	0	0+0	0+1	**0+1**
Birth trauma	0	0	0	0	0	1	0	0+0	0+0	**0+0**
Overlying	-	-	-	-	1	-	-	-	0+0	**0+0**
Total	73	51	48	55	62	75	67	66	54	**64**

* The + symbol indicates stillbirths plus neonatal deaths

Basic information on stillbirths for 2012

There were 45 stillbirths for 2012 which was higher than the figure reported in the previous year. The tables below show the breakdown by 1) gestation, 2) the Perinatal Society of Australia and New Zealand (PSANZ) classification used nationally, and 3) by gestation and PSANZ classification together.

Table 3: Gestation of stillbirth (number = 45)

Gestation (completed weeks)	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	Gestation (completed weeks)	2012*	
								%	Number
20-24	38.1	63.7	45.8	46.2	31.0	58.8	**20-27**	**64.4**	**29**
25-29	11.9	6.8	16.3	5.8	23.8	8.8	**28-31**	**13.3**	**6**
30-34	23.8	6.8	11.5	13.5	21.4	11.8	**32-36**	**13.3**	**6**
35-39	21.4	15.9	21.6	34.6	19.0	17.6	**37-41**	**8.9**	**4**
40+	4.8	6.8	3.2	1.9	4.8	2.9	**42 and over**	**0.0**	**0**

* Stillbirth rate is per 1 000 births at that gestation; gestation (completed weeks) for 2012 has been presented in line with AIHW reporting categories.

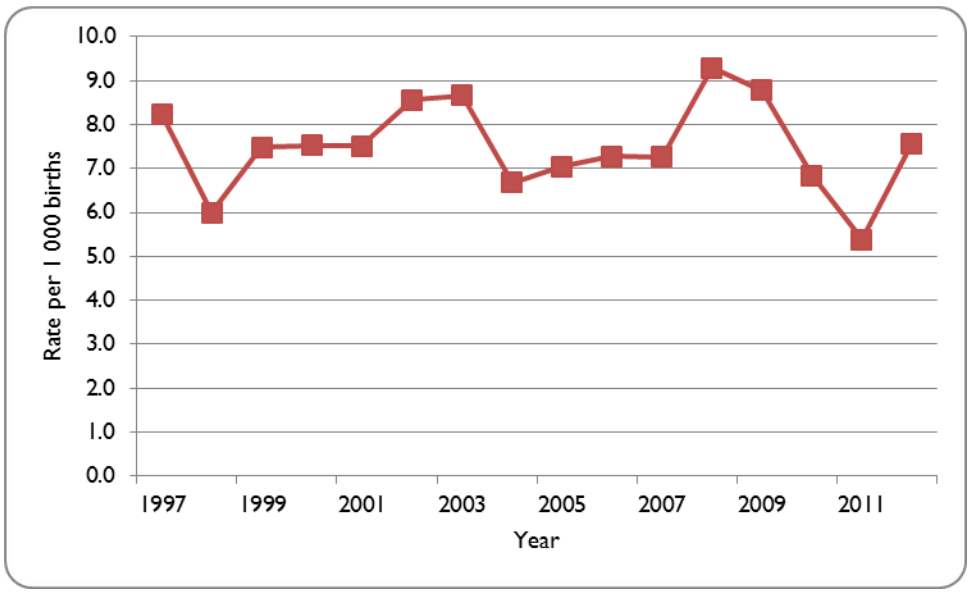
Table 4: Stillbirths by classification according to the Perinatal Society of Australia & New Zealand

Category	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012	
							%	Number
1 Congenital anomalies	19	31.8	27.8	23.1	14.3	26.5	**37.8**	**17**
2 Perinatal infection	0.0	0.6	1.6	1.9	7.1	2.9	**0.0**	**0**
3 Hypertension	4.7	0.0	3.2	5.8	14.3	0	**4.4**	**2**
4 Antepartum haemorrhage	11.9	2.3	4.9	11.5	11.9	11.8	**0.0**	**0**
5 Maternal conditions	2.4	6.8	1.6	3.8	2.4	2.9	**0.0**	**0**
6 Specific perinatal conditions	14.4	13.6	6.5	13.5	2.4	11.8	**2.2**	**1**
7 Hypoxic peripartum death	9.4	6.8	4.9	1.9	2.4	11.8	**2.2**	**1**
8 Foetal growth restriction (FGR)	9.4	13.6	19.6	15.4	21.4	14.7	**6.7**	**3**
9 Spontaneous preterm labour	14.4	6.8	9.8	3.8	11.9	8.8	**17.8**	**8**
10 Unexplained antepartum deaths	14.4	6.8	18.0	19.2	11.9	5.9	**26.7**	**13**
11 No obstetric antecedent	0.0	0.0	0.0	0.0	0.0	0	**0**	**0**
12 Birth trauma	0.0	6.8	1.6	0.0	14.3	0	**0**	**0**

Table 5: Number of stillbirths by year and stillbirth rate (per 1000 births) 1997 to 2012

Year	Number	Births	Rate per 1 000 births
1997	52	6 309	8.24
1998	37	6 171	5.99
1999	46	6 145	7.48
2000	45	5 975	7.53
2001	43	5 726	7.51
2002	49	5 714	8.56
2003	48	5 545	8.66
2004	37	5 540	6.68
2005	42	5 965	7.04
2006	45	6 184	7.28
2007	46	6 337	7.26
2008	60	6 461	9.29
2009	56	6 381	8.78
2010	42	6 137	6.84
2011	34	6 323	5.38
2012	**45**	**5 940**	**7.58**

Figure 1: Stillbirth rate per 1 000 births for Tasmania 1997-2012



Classification by gestation period and PSANZ (2012) classification with brief description of essential details for each foetal death

20 to 27 completed weeks gestation (29 cases)

Category	Causes of stillbirth
1-Congenital Abnormality (14 cases)	23.6 week foetus with large thoracolumbar myelomeningocoele born to mother on Sodium Valproate; 2 unspecified central nervous system abnormalities at 20 and 24 weeks; one Trisomy 21 with a cardiac A-V canal malformation at 22 weeks; one tetrasomy 12p with a diaphragmatic hernia at 23.5 weeks; one large 8q duplication at 20.2 weeks; 4 unspecified chromosomal abnormalities at 20.5, 22.6, 21.5 and 24 weeks; one posterior urethral valves with oligohydramniosis (and CMV villitis) at 21 weeks; one unspecified multiple abnormalities at 22 weeks gestation; one 24^{+4} Major deletion of chromosome 6 associated with Tetralogy of Fallot; one with unspecified chromosomal abnormality at 26.6 weeks.
3-Hypertension (2 cases)	One loss at 20.4 weeks with essential hypertension, diabetes and spontaneous preterm labour without chorioamnionitis; one loss at 25.2 weeks @ 300g with associated factor foetal growth restriction.
6-Specific Perinatal Conditions (1 case)	One 22 week foetus died antenatally and was found to be well grown but with a cord stricture at insertion into the umbilicus.
8- Foetal Growth Restriction (FGR) (2 cases)	There were 2 losses with FGR – one at 23.6 weeks weighing 250g and the other at 22.3 weeks weighing 250g.
9-Preterm Labour (7 cases)	A 22^{+6} foetus was born following spontaneous preterm labour at 22^{+6} and a set of twins at 23.4 weeks, all with evidence of chorioamnionitis; two 20 week foetuses, a 22 week foetus and a 23.5 week foetus were born after spontaneous preterm labour without clinical or placental evidence of chorioamnionitis.
10-Unexplained (3 cases)	One loss at 25 weeks, showing placental evidence of reduced placental function antenatally; one at 25/40 weeks weighing 330g and probably FGF; one loss at 27.2 of a foetus weighing 165g following an antepartum haemorrhage, however the foetus had been long deceased.

28 to 31 completed weeks gestation (6 cases)

Category	Causes of stillbirth
1-Congenital Abnormality (1 case)	One 30.1 week foetus with Trisomy 21 (diagnosed in second trimester with parents electing to continue pregnancy).
7-Hypoxic Peripartum Death (1 case)	One 28.4 week loss following uterine rupture.
9-Preterm Labour (1 case)	One preterm labour with chorioamnionitis at 29.3 weeks.
10-Unexplained (3 cases)	One at 28 weeks with no placental pathology available; one at 28.6 weeks with a maternal history of diabetes; and one unexplained loss at 31.5 weeks of a baby weighing 1280g with no pathology available.

32 to 36 completed weeks gestation (6 cases)

Category	Causes of stillbirth
1-Congenital Abnormality (2 cases)	One unspecified CNS abnormality died at 32 weeks gestation; one 34 week foetus with multiple abnormalities.
8-Foetal Growth Restriction (1 case)	One 36.3 week foetus weighing 1765g associated with maternal Anti E antibodies.
10-Unexplained (3 cases)	One loss at 34 weeks of a foetus weighing 1866g with evidence of placental vasculopathy and maternal heterozygous MTHFR; one loss at 34.1 weeks of a foetus weighing 2215 g with evidence of non-specific villitis and chorionitis; one at 36.3 weeks weighing 2480g.

37 to 41 completed weeks gestation (4 cases)

Category	Causes of stillbirth
10-Unexplained (4 cases)	One at 38.4 weeks weighing 3950g to a mother with BMI 62 and a history of previous maternal PE on clexane for pregnancy; one 39 week weighing 2565 with cord around the neck 3 times and possibly IUGR (though not meeting criteria); one loss at 41 weeks of a foetus weighing 3615g; and one loss at 41.4 weeks gestation where the baby was appropriately grown and placental pathology unremarkable.

42+ completed weeks gestation

There were no stillbirth cases reported at 42 weeks and over.

Recommendations on Stillbirths

1. That a senior member of the obstetric team counsel parents and encourage post-mortem examination and karyotyping of the infant after a perinatal death.
2. That molecular karyotyping be offered routinely following the diagnosis of a morphologically abnormal pregnancy to aid in appropriate counselling of the parents.
3. That development of risk factors in a previously low risk pregnancy such as antepartum haemorrhage and foetal growth restriction mandate a transfer of model of care from midwifery led or GP shared care to maternity team care involving specialist obstetric services for the duration of the pregnancy and delivery. All maternity care providers must have well-established protocols in place and remain vigilant in the early detection and identification of growth restricted foetuses.
4. That the community is informed of the risks associated with pregnancy and maternal obesity. Obese pregnant women should not be classified as low risk for pregnancy care.
5. That obese women (with a BMI of 30 or more) should have higher dose folate supplementation, namely 5 mg per day rather than 500 micrograms of folic acid from preconception to 12 weeks gestation, as maternal obesity is associated with a higher risk of neural tube defects.
6. That a morphology scan be performed at 19-20 weeks gestation in women with a BMI >40, rather than the usual 18 weeks for better visualisation, and clinicians should have a low threshold for repeating the scan at 24 weeks to obtain further views. (note: maternal obesity lowers the likelihood of detecting foetal anomalies at the time of morphology scan by at least 20 per cent).
7. That ultrasound/assessment monitoring should be used in the third trimester for women who are pregnant and obese to allow appropriate screening for foetal growth restriction and macrosomia.
8. That low dose aspirin (100mg orally/day), starting before 16 weeks gestation, at the latest, and continued to 36 weeks, be considered for women without contra-indications with:
    - a previous history of placental insufficiency syndromes (including pre-eclampsia and intrauterine growth restriction); and/or
    - two or more risk factors in the current pregnancy (e.g., pre-gestational hypertension, obesity, maternal age > 40 years, use of artificial reproductive technology, pre-gestational diabetes mellitus, multiple gestation, past history of placental abruption, past history of placental infarction, pregnancy associated plasma protein A (PAPP-A) < 0.4 MoM on first trimester serology, and abnormal uterine artery Doppler's in the first trimester or at the anatomy ultrasound).
9. That surveillance of monochorionic twins is undertaken with reference to the RANZCOG guideline recommending 2-3 weekly scanning until 18 weeks gestation and then two weekly scans. (Interstate tertiary units in Victoria, NSW and QLD which offer laser therapy for management of some complications of monochorionic twin pregnancies should also be considered).
10. That every maternity hospital, public and private, should have a designated perinatal mortality and morbidity committee to review all perinatal deaths and provide information to COPMM as gazetted under our legislation.
11. That any perinatal death that occurs outside a hospital should be brought to the attention of COPMM so that a review could be initiated, and any homebirths would be captured (note: a neonatal death that occurs outside the hospital such as an early SIDS or SUDI type death would usually be investigated by the Coroner).

Basic information on neonatal deaths for 2012

There were a total of **19** neonatal deaths.

Table 6: Neonatal deaths by classification according to the Perinatal Society of Australia and New Zealand

Category	2008 %	2009 %	2010 %	2011 %	2012	
					%	Number
1. Congenital anomalies	21	20	17	25	**26.3**	**5**
2. Perinatal infection	7	13	13	0	**0.0**	**0**
3. Hypertension	21	0	4	0	**5.3**	**1**
4. Antepartum haemorrhage	14	27	13	30	**5.3**	**1**
5. Maternal conditions	0	0	0	0	**0**	**0**
6. Specific perinatal conditions	0	0	0	10	**15.8**	**3**
7. Hypoxic peripartum death	14	0	0	15	**5.3**	**1**
8. Foetal growth restriction	0	0	0	5	**0.0**	**0**
9. Spontaneous preterm labour	21	40	54	10	**36.8**	**7**
10. Unexplained antepartum deaths	0	0	0	0	**0.0**	**0**
11. No obstetric antecedent	0	0	0	5	**5.3**	**1**
12. Birth trauma	0.	0	0	0	**0.0**	**0**

CONGENITAL ABNORMALITIES

There were 5 neonatal deaths in Tasmania associated with a congenital abnormality. These included:

- Central nervous system abnormality (absence of corpus callosum);
- Chromosomal anomaly with congenital heart defect;
- Conjoined twins; and
- Renal agenesis.

PERINATAL INFECTION

There were no deaths related to peri-partum infection.

HYPERTENSION

There was one neonatal death related to maternal hypertension:

- An infant born at 26 weeks gestation with significant growth restriction (birth weight 536 gm). Post-natal complications included gram-negative sepsis and pulmonary interstitial emphysema.

ANTEPARTUM HAEMORRHAGE

One neonatal death was preceded by antepartum haemorrhage:

- An infant born at 25 weeks gestation, with post-natal complications including intraventricular haemorrhage and pulmonary haemorrhage.

UTERINE ABNORMALITIES

There were 3 neonatal deaths related to uterine abnormalities. These included:

- One infant born at 23 weeks gestation, with a post-natal complication of spontaneous ileal perforation;
- Two infants born at 21 and 22 weeks gestation respectively.

HYPOXIC PERIPARTUM DEATH

One neonatal death was related to hypoxic-ischaemic encephalopathy:

- An infant born at 29 weeks gestation with severe hypoxic-ischaemic encephalopathy.

FOETAL GROWTH RESTRICTION

There were no neonatal deaths related to foetal growth restriction.

SPONTANEOUS PRE-TERM

There were 7 neonatal deaths associated with spontaneous preterm labour. These included:

- Three infants born at 22 weeks gestation;
- Two infants born at 23 weeks gestation, in whom resuscitation was not commenced or was unsuccessful (one case each);
- One infant born at 24 weeks gestation, with post-natal complications including pulmonary interstitial emphysema;
- One infant born at 25 weeks gestation, with hypoxic respiratory failure in the immediate post-natal period, potentiated by multiple accidental extubations.

NO OBSTETRIC ANTECEDENT

There was one death without an obstetric antecedent:

- One death at 37 weeks gestation of an infant born by caesarean section in whom there were early bilateral pneumothoraces and hypoxic respiratory failure. A newborn emergency transfer was undertaken, but the infant continued to deteriorate with pulmonary hypertension. The infant's poor oxygen levels may have improved with inhaled nitric oxide if it were available on the newborn emergency transport service (NETS) cot, as it is in some other Australian states. This case is now the subject of a coronial investigation.

Issues:

The review of neonatal mortality identified the following issues:

- Tasmania's neonatal mortality rate in 2012 was 3.2 per 1 000, a figure on par with previous years, but slightly above the national average for 2011 of 2.6 per 1000. Note that the majority of neonatal deaths recorded for 2012 were at a pre-viable gestation (<23 weeks), with only one death in an infant near term.
- Survival for infants born prematurely at a gestation above 25 weeks gestation remains on par with that reported by the Australian and New Zealand Neonatal Network (ANZNN).
- Survival for infants at 25 weeks gestation continues to be around 10-20 per cent lower than the ANZNN average, and highlights the challenge faced by all clinicians in Tasmania in provision of care to this vulnerable group. Several factors have been identified that contribute to the difficulties in maintaining the highest level of care for these infants:
    i. The relatively low number of extremely preterm infants each year (around 15-20 <28 weeks gestation)
    ii. The requirement for, and difficulties maintaining, close two-way communication between Obstetric and Paediatric staff statewide to provide the best possible management for these difficult cases.
    iii. The lack of experienced junior medical staff and thus heavy reliance on Staff Specialists for provision of care and emergency management within the Neonatal and Paediatric Intensive Care Unit at Royal Hobart Hospital (RHH). This especially applies out-of-hours, where in the case of major deterioration (including accidental extubation), a Staff Specialist may be required to attend urgently to provide the skills necessary to salvage the patient.
- Survival for babies at 23 and 24 weeks gestation in Tasmania is relatively low compared to the ANZNN averages. This, in part, reflects the agreed position regarding provision of care to infants at these gestations in the Tasmanian Neonatal Care Guidelines, taking into account the acknowledged high risk of long term disability in survivors. The option of not offering resuscitation, particularly at 23 weeks, should be carefully considered and discussed.
- Inhaled nitric oxide, if available on the NETS cot, may have assisted in stabilisation of one critically ill infant with hypoxic respiratory failure.
- There remains a high rate of smoking amongst mothers of preterm infants.
- There were delays associated with completion of NPDCAT forms, in particular at Tasmanian Health Organisation-South (THO-S).

Recommendations on neonatal deaths:

1. Close two-way communication must be maintained between Obstetric and Paediatric staff in the management of women threatening to deliver prematurely. *In utero* transfer to the tertiary centre at RHH is by far the preferred option for those <30 weeks gestation.
2. All Tasmanian perinatal centres must be staffed by personnel capable of providing neonatal life support at a level appropriate for their patient population.
3. Inhaled nitric oxide should be made available during NETS transfer.
4. Vigilance for the onset of foetal compromise must be maintained in every pregnancy.
5. Pregnant women should be encouraged to stop smoking at every opportunity.
6. Obstetric and Paediatric staff at all Tasmanian hospitals should complete the NPDCAT forms at the time of the hospital Mortality and Morbidity meetings.

Paediatric Mortality & Morbidity Committee

Paediatric Deaths for 2012

The Council's Terms of Reference in relation to paediatric mortality and as specified under the updated *Obstetric and Paediatric Mortality and Morbidity Act, 1994* are:

> *To investigate the circumstances surrounding, and the conditions that may have caused deaths of children in Tasmania in the age group from 29 days to 17 years.*

The total number of paediatric deaths in Tasmania during 2012 was **21**, with an estimated paediatric mortality rate of 0.18 per 1 000 persons aged 0-17 years. Due to the relatively small number of paediatric deaths, paediatric mortality is classified using a broad four category classification system. Deaths are classified as being due to a condition determined at birth, an acquired condition, a sudden unexplained infant death (SUDI) or due to an injury.

A decrease in the total number of deaths due to sudden unexplained infant deaths was noted in 2012. Child protection status reflects the following factors: whether a notification to child protection services had been made; whether the notification had been substantiated in the last 3 years and/or whether the case had been placed on orders prior to death. This more comprehensive information is now tracked for paediatric death cases reported for Tasmania. The total number of children who had been notified to child protection services prior to the death of the reported child in 2012 for all categories was six. Noting the child protection status in this report does not necessarily imply that protective concerns were implicated in the cause of death. Of those cases where no restricted access had been placed by CPIS, one case had been substantiated in the last 3 years. Paediatric deaths for the years 2001 to 2012 have been classified below.

Table 7: Paediatric deaths for 2012

Cause of Death	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Conditions determined at birth	3	3	7	1	5	4	7	8	11	7	5	**5**
Acquired conditions	8	8	5	3	7	5	6	3	8	10	4	**9**
Unexplained Infant Deaths	8	2	2	4	4	5	3	5	3	7	5	**2**
Injuries	4	12	4	10	8	20	7	7	14	12	3	**5**
Unknown / Indeterminate	2	1	1	0	1	1	0	1	0	0	1	**0**
Still under investigation	-	-	-	-	-	-	-	-	-	1	0	**0**
TOTAL	**26**	**27**	**21**	**18**	**25**	**35**	**25**	**24**	**36**	**37**	**18**	**21**

Table 8: Type of injury leading to paediatric death in year 2012

Type of Injury	Total No.
Motor Vehicle Accident (MVA)	2
Hanging	1
Overdose	1
Brain Injury	1

1. CONDITIONS DETERMINED AT BIRTH

In 2012, there were four reported paediatric death cases in this category, the causes of which were:

- Adenylosuccinate lyase deficiency with intractable seizures secondary to this deficiency (age 3 months).
- Hypoventilation syndrome; congenital (age 2.5 months).
- Cerebral Palsy (age 7 years).
- Ventricular cardiac arrhythmia complicating mitral valve prolapse (myxoid degeneration of mitral valve) (age 16 years).

2. ACQUIRED CONDITIONS

In 2012 there were 9 deaths in children ranging from 1 month to 17 years. These included:

- One case due to extreme prematurity and necrotising enterocolitis with maternal pre-eclampsia also noted (age 1 month).
- One case due to capnocytophaga sepsis (age 1 year 11 months), a blood infection caused by bacteria common to the mouths of dogs and cats.
- One case due to natural causes with a number of medical conditions worsening with Cerebral Palsy and Epilepsy (age 10 years).
- One case due to cardiorespiratory arrest; osteogenic sarcoma with metastases (age 15 years); one case due to metastatic lung cancer; osteogenic sarcoma humerus (age 17 years).
- One case due to acute asthma where medication had been stopped due to pregnancy (age 17 years). (note: that further details are outlined in Maternal Mortality and Morbidity Report).
- One case due to acute lymphoblastic leukaemia (1 month) and one case due to relapsed acute lymphoblastic leukaemia; anaemia; neutropenia; bone marrow failure; thrombocytopenia (age 15 years).
- One case where cause of death was a large volume aspiration of gastric contents that occurred whilst coughing and vomiting with a significant contributing factor being a viral respiratory tract infection (influenza A and adenovirus) (age 2 years).

3. UNEXPLAINED INFANT DEATH

In 2012, two paediatric 'unexplained infant deaths' were reported in infants aged from 1 month to 8 months. Both of these cases were found to be associated with clear risk factors including an unsafe sleeping environment where one of the infants had been co-sleeping (bed sharing) with a parent. The other case was known to have been suffering from tracheo-bronchitis that was considered to place the infant at risk.

- A more detailed comparison of Tasmania's number and rate of unexplained deaths of infants with other jurisdictions (i.e., QLD, NSW, SA, VIC, ACT, NT & NZ) in 2011 calendar year showed that the Northern Territory recorded the highest rate of unexplained infant deaths

(137.0 per 100 000 infants) followed by Tasmania (97.2 per 100 000 infants) in this year)[6]. As noted last year, caution must be exercised when comparing these jurisdictional rates since although the rates are based on a population rather than a sample, common practice is to consider death a random event, and hence have an associated sampling error. This is particularly important when comparing rates from low numbers. Current methodology calculates the crude rates for 2011, and should not be used to infer the general probability of death for specific cohorts.

- Overall, the number of infant (less than 1 year old) deaths in Australia in 2012 where the cause of death was ill-defined or unknown was 115 or a rate of 0.4 deaths per 1 000 livebirths where this number/rate includes deaths due to Sudden Infant Death Syndrome[7].

4. INJURY

The number of children dying in 2012 as a result of injury continued to be lower as was reported in 2011 with a total of five paediatric death cases having been reviewed.

One case was reported to have died as a result of injuries sustained in road trauma where this adolescent had been a pedestrian who had sustained head and chest injuries as a result of having been hit by a car after exiting a bus.

An adolescent male had also died as a result of multiple blunt traumatic injuries sustained during a bicycle crash.

One adolescent female died as a result of hypoxic brain injury and asphyxia following hanging.

One adolescent male died as a result of morphine toxicity (overdose); opium ingestion, aspiration pneumonia and pulmonary oedema.

One reported case included an infant who had died as a result of sustaining traumatic brain injury following an assault and suspected child abuse. This case listed had been known to child protection services.

5. CASES STILL UNDER INVESTIGATION

Nil.

6. UNKNOWN/INDETERMINATE

Nil

[6] Annual Report: Deaths of children and young people, Queensland, 2012-13, Part VII: Australian and New Zealand child death statistics: 2011 calendar year, Chapter 10- Interjurisdiction comparison.

[7] Australian Bureau of Statistics; 3303.0 Causes of Death, Australia, 2012.

Summary:

The number of paediatric deaths reported in Tasmania in 2012 continued to be at a lower rate than earlier years, similar to the level reported in 2011.

Paediatric death associated with road trauma is a modifiable risk factor particularly with regards to appropriate use of restraints for young children.

Again in this year, it was encouraging to find that there was a lower number of sudden unexplained infant deaths (SUDI) reported in 2012 compared with previous years. However, the fact that deaths associated with risk factors for SUDI continue to occur highlights the need to ensure that parents and the community receive a consistent message about safe sleeping practices. In particular, the dangers of co-sleeping must be emphasised. The risk of bed-sharing with adults, especially those who have consumed alcohol or other drugs should continue to be clearly highlighted to families. It is noted however that co-sleeping with adults had only been reported in one of the two reported cases in this year. The other reported case of unexplained infant death was associated with tracheo-bronchitis which was considered as a risk factor that contributed to this infant's death.

Recommendations:

1. The *Paediatric Mortality & Morbidity Committee* strongly supports the recommendations previously made by Coroner McTaggart with regards to youth suicide. To young persons whose friends have told them they are thinking about suicide, the Coroner recommends that (1) The statement is to be taken seriously; (2) Do not keep it a secret, even if your friend has asked you to; (3) tell a teacher or counsellor as soon as possible about what your friend has told you; and (4) encourage your friend to seek help from a trusted adult such as a counsellor or to call a helpline. The Coroner offers two websites providing advice and important helpline numbers for young persons considering suicide as well as for young people whose friends have spoken to them about wanting to take their own lives. Websites are ***au.reachout.com*** (Reach Out Australia) and www.youthbeyondblue.com (Youth Beyond Blue).
2. That all health professionals should be advised to act appropriately by informing relevant family members of a child who may be at risk of suicide.
3. That the Media follow stringent guidelines and clearly outline appropriate and available support helplines at the time of media releases reporting on paediatric death cases that may be suicides.
4. That appropriate support is available to all young people engaged in the use of social media networks such as Facebook where the issue of youth suicide may be discussed. This is particularly important where a young person may have been known to have committed suicide.
5. That the community continue to be alerted to risks associated with unsatisfactory restraint of children as passengers in moving vehicles and encouraged to ensure that all children are safely restrained with seatbelts when travelling in motor vehicles and preferably seated in the rear of the car.
6. That age, height and weight restrictions for children sitting in the front of a motor vehicle should be better defined and that children should not ride in motor vehicles as front seat passengers based on height/weight guidelines as well as age restrictions.
7. That children should not wear lap belts whilst travelling as passengers in a motor vehicle. As reported in previous years, the benefits of young children wearing harnesses with and without booster seats have been highlighted.

8. That a clear and consistent message is used as part of the universal distribution of educational material concerning safe sleeping practices to all new parents. It is also recommended that further education packages are provided to parents highlighting the risks associated with parental use of illegal and prescribed drugs and co-sleeping. As highlighted in previous reports, it is also recommended that more effective death scene examinations be undertaken to establish whether the cause of death is due to overlying[8].
9. That a classification system is introduced in Tasmania to sub-categorise suspected cases of youth suicide from other paediatric death cases where death has been a result of injury. Classification systems used nationally are being considered with a view to propose that jurisdictions consider using a consistent national classification system for review of paediatric death cases.
10. That children should wear helmets when cycling and it is ensured that their bicycles are properly maintained and serviced.

[8] Li, L., Zhang, Y., Zielke, R.R., Ping,Y., and Fowler, D.R. (2009). Observations on Increased Accidental Asphyxia Deaths in Infancy while Co-sleeping in the State of Maryland. *American Journal of Forensic Medical Pathology*. Vol.30, No.4, pp. 318-321.

Maternal Mortality & Morbidity Committee

Maternal deaths for 2012

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

The Maternal Mortality and Morbidity Committee has been requested to use an updated *National Maternal Death Reporting Form (NMDR)* for 2011-2012 (see Appendices) to supply data for reported maternal deaths during 2011 and 2012 by the Australian Institute of Health and Welfare (AIHW) National Perinatal Epidemiology and Statistics Unit. To this end, the review and classification of the two maternal deaths reported in 2012 has been assisted with the use of this NMDR form.

In 2012, there were two maternal deaths (including any late maternal deaths) reported in Tasmania. One death was a likely homicide (fatal domestic violence) which represented a '*non-maternal incidental death'*. The other case was an *indirect maternal death* with the teenage mother suffering a fatal asthma attack leading to her dying during her pregnancy.

Council reiterates that potential risks and near misses are still important to be made aware of and as such clinicians should be alerted to these so as to ensure that morbidity remains at a minimum thus reducing maternal mortality. Appropriate management of significant maternal morbidity issues is important and the establishment of the *Australian Maternity Outcomes Surveillance System (AMOSS): Improving the Safety and Quality of Maternity Care in Australia* has provided a significant step in initiating a comprehensive study of serious maternal morbidity events considered to contribute significantly to maternal morbidity in Australia. The System undertakes active surveillance and epidemiological research of selected obstetric conditions with the aim of improving the knowledge of rare obstetric disorders and their management in Australia, providing evidence-based data for; clinical guideline development, educational resources and ongoing national perinatal research. While the National Health & Medical Research Council (NH&MRC) will support this project for the first five years, it is hoped that hospitals/states will, in the future, continue to support this system as part of their normal risk management framework.

All six main providers of birthing services in Tasmania (i.e., Royal Hobart Hospital (RHH), Hobart Private Hospital (HPH), Calvary Health, Launceston General Hospital (LGH), Mersey Community Hospital (MCH) and North West Private Hospital (NWPH)) are participating in AMOSS with data collection being initially based on six morbid events. Additional maternal morbid events as determined by an advisory group will be included as part of future data collections. The AMOSS website became operational at the end of July 2009 http://www.npsu.unsw.edu.au/NPSUweb.nsf/page/AMOSS.

While the NH&MRC will support this project for the first five years, it is hoped that hospitals/states will, in the future, continue to support this system as part of their normal risk management framework.

Recommendations:

1. That Perinatal Mental Health Services in Tasmania should have increased funding to improve the currently deficient services in view of its importance in relation to morbidity issues. COPMM should highlight issues of psychiatric or psychological morbidity in the perinatal period.
2. That asthma should be regarded as a serious medical condition in the pregnant population. Women should not have preventers stopped upon diagnosis of pregnancy. They require careful assessment of ongoing respiratory status as some will deteriorate in pregnancy. All sufferers should have an asthma management plan and clinicians should not be hesitant in prescribing preventative inhaled steroids and short term oral and intravenous steroids for acute exacerbations. Pregnant women who present to hospital with asthma should be managed by senior medical staff with experience of severe asthma in pregnancy.

Data Management Committee

Membership of the Data Management Committee includes representatives derived from obstetric, paediatric, midwifery, Health Statistics and Epidemiology Unit, Population Health areas with Professor Peter Dargaville agreeing to Chair this committee. The committee continues to meet regularly to progress discussions around formatting and preparation of future Annual Reports as well as the Electronic Perinatal Database (*ObstetrixTas System*) and development of a more comprehensive Congenital Abnormality Register for Tasmania.

The following activities have continued to be progressed in 2012 and beyond:

Data collection form:

The *National Perinatal Death Clinical Audit Tool* (NPDCAT) has been adopted as the form of choice to collect detailed information on reported stillbirths and neonatal deaths in view of the current lack of stillbirth and neonatal death forms on the *ObstetrixTas* system. Council continues to await the integration of this form into the *ObstetrixTas* system as a priority. All Tasmanian hospitals (including all public and NWPH) are now using this tool to complete details around reported perinatal deaths where Council urges that only the attending medical practitioner/specialist completes the NPDCA form in respect to their reported perinatal mortality case.

National interest in the development of a national database for congenital anomalies has previously been reported. In recent times, this Committee has agreed that this area is complex and as such has supported the move to seek national developments in this area with a view to incorporate a national model for a Congenital Abnormality Register into the Tasmanian *ObstetrixTas* system in the future.

The new Tasmanian Perinatal Data Collection Form which was implemented in January 2013 continues to be completed by all services that do not have access to the *ObstetrixTas* system (i.e., private hospitals and birth centres where the birth occurs; or private midwifery and medical practitioners who deliver babies outside hospitals). Completion of this form is a mandatory requirement for data collection under the *OPMM 1994 Act*. A copy of this form and associated guidelines can be accessed via COPMM's website.

As indicated previously, the Maternal Mortality and Morbidity Committee of Council utilised an updated *National Maternal Death Reporting* (NMDR) form for 2011-2012 to review and classify the two maternal deaths reported in 2012. This form was also used to supply data at the request of the AIHW National Perinatal Epidemiology and Statistics Unit for reported maternal deaths during 2011 and 2012.

Progress in database:

The development and establishment of a statewide Electronic Perinatal Database known as *ObstetrixTas* was implemented in all statewide public maternity hospitals in 2010 to provide obstetric units with access to clinical information for management, planning, teaching and research purposes. The database is the repository of information for the perinatal data system with the aim to eliminate the need for a hand written perinatal data form and improving the timeliness, completeness and accuracy of information reported from the system. Council hopes that the NPDCAT and Congenital Abnormality Register for Tasmania are incorporated into *ObstetrixTas* as a priority.

Review the structure of the Annual Report

The 2012 report format continues to be refined as required to ensure a more effective format for clearer presentation of data. The role of the Data Management Committee provides opportunities to discuss and revise formatting issues as required.

Perinatal statistics

Births and birth rates

Table 9: *Livebirths* and birth rates in Tasmania 2006-2012

Year	Number of live births	Birth rate per 1 000 population	Number of total births
2006	6 139	12.5	6 184
2007	6 291	12.8	6 337
2008	6 401	12.9	6 461
2009	6 325	12.6	6 381
2010*	6 095	12.0	6 137
2011*	6 289	12.3	6 323
2012*	**5 895**	**11.5**	**5 940**

NB: Australian Bureau of Statistics estimates Tasmania's population 512 414 in December 2012 (Australian Bureau of Statistics December 2013, 3101.0 - Australian Demographic Statistics). Please note this estimation of population is a preliminary figure only and is subject to change.

* **Livebirths -** Births as per ObsterixTas system and available Perinatal Data Forms provided by maternity units and maternity service providers.

After a statistically significant annual rate of increase (p=0.001) in the birth rates from 2005-2008, followed by a gradual but statistically significant annual decline (p<0.001) until 2012, the data from 2012 shows that the total number of births has dropped to the lowest level since 2005.

Figure 2: Birth rate for Tasmania per 1 000 head of population 2005-2012

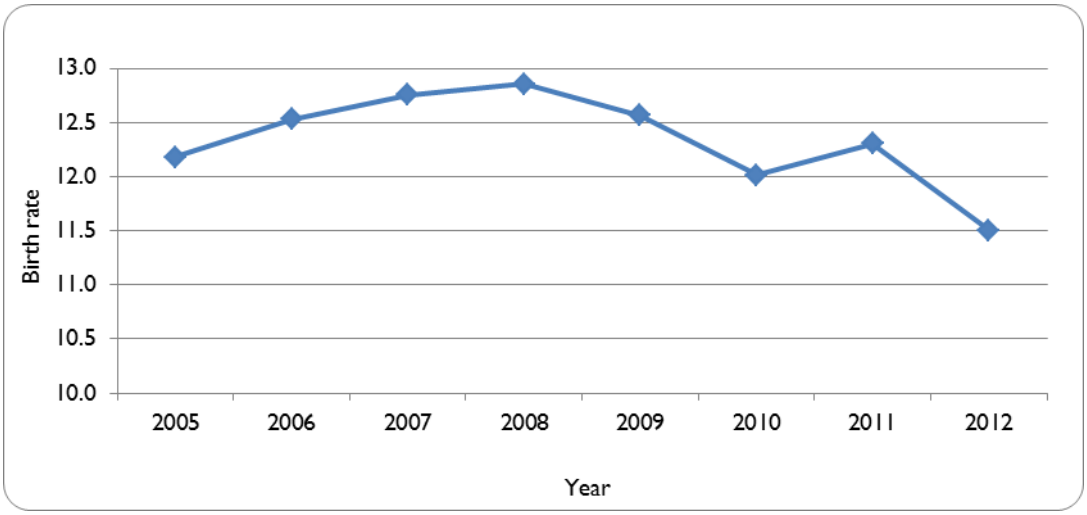


Table 10: Livebirths by region 2006-2012

Year	South	North	Northwest	Interstate	Total
2006	3 068	1 705	1 364	2	**6 139**
2007	3 178	1 709	1 398	6	**6 291**
2008	3 203	1 769	1 426	3	**6 401**
2009	3 180	1 721	1 416	8	**6 325**
2010	3 117	1 654	1 320	4	**6 095**
2011	3 197	1 767	1 318	7	**6 289**
2012	**3 049**	**1 412**	**1 423**	**11**	**5 895**

A decrease in the number of births was reported in both Southern and Northern regions of Tasmania in 2012 with the Northern region reporting the greatest decrease (20.1 per cent) in this year since 2011 followed by the Southern region (4.6 per cent). By contrast, the North West region reported an increase in this year (8.0 per cent) over the same period.

Table 11: Livebirths by hospital 2006-2012

Year	Royal Hobart (QAH)	Launceston General (QVH)	District hospitals	Mersey Community	Private hospitals†	Others (including homebirths)	Total
2006	1 910	1 630	47	547	1 956	49	**6 139**
2007	2 017	1 606	44	537	2 033	54	**6 291**
2008	2 032	1 671	46	500	2 089	63	**6 401**
2009	1 971	1 668	26	476	2 129	55	**6 325**
2010	1 955	1 577	25	407	2 090	41*	**6 095**
2011	1 992	1 694	26	425	2 120	32	**6 289**
2012	**1 916**	**1 493**	**24**	**398**	**2 026**	**38**	**5 895**

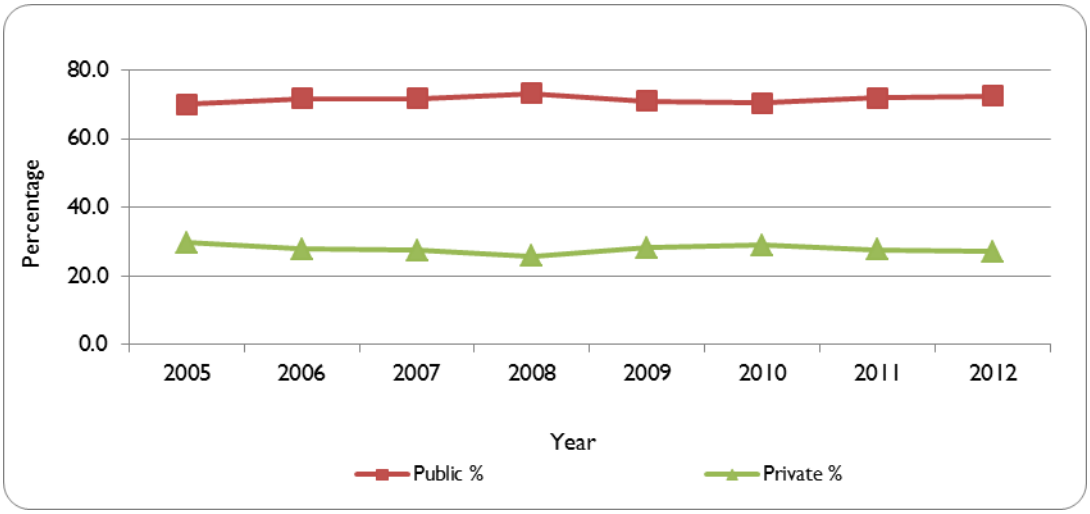
† includes for some years public patients at the North West Private Hospital.

* Includes one birth occurred at the North West Regional Hospital.

Table 12: Proportion of women who gave birth by admitted patient election status 2006-2012

Year	Public %	Private %	Not stated %
2006	71.6	27.7	0.7
2007	71.8	27.4	0.8
2008	73.2	25.8	1.0
2009	71.0	28.1	0.9
2010	70.3	29.0	0.7
2011	71.8	27.7	0.5
2012	**72.4**	**27.0**	**0.6**

Figure 3: Proportion of women who gave birth by admitted patient election status 2005-2012



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

In Tasmania, the proportion of private patients (27.0 per cent) was slightly lower (p=0.388) than that reported in 2011, and also lower than the 2011 national value (29.0 per cent). Conversely, the proportion of public patients (72.4 per cent) in Tasmania in 2012 was slightly higher (p=0.462) than for 2011, and also slightly higher than the 2011 national value (71.0 per cent).

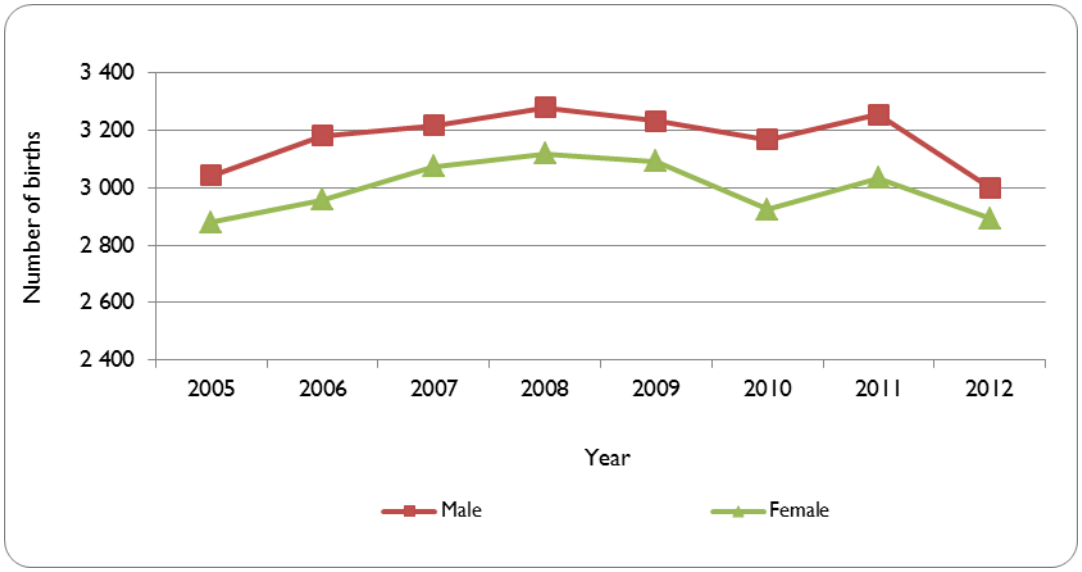
Sex of infants

Table 13: Livebirths by sex 2006-2012

Year	Male		Female		Indeterminate		Total
	Number	%	Number	%	Number	%	Number
2006	3 181	51.8	2 958	48.2	0	^	**6 139**
2007	3 216	51.1	3 075	48.9	0	^	**6 291**
2008	3 280	51.2	3 119	48.7	2	^	**6 401**
2009	3 232	51.1	3 093	48.9	0	^	**6 325**
2010	3 169	52.0	2 925	48.0	1	^	**6 095**
2011	3 254	51.7	3 035	48.3	0	^	**6 289**
2012	**3 001**	**50.9**	**2 894**	**49.1**	**0**	**^**	**5 895**

^ Less than 0.1 per cent.

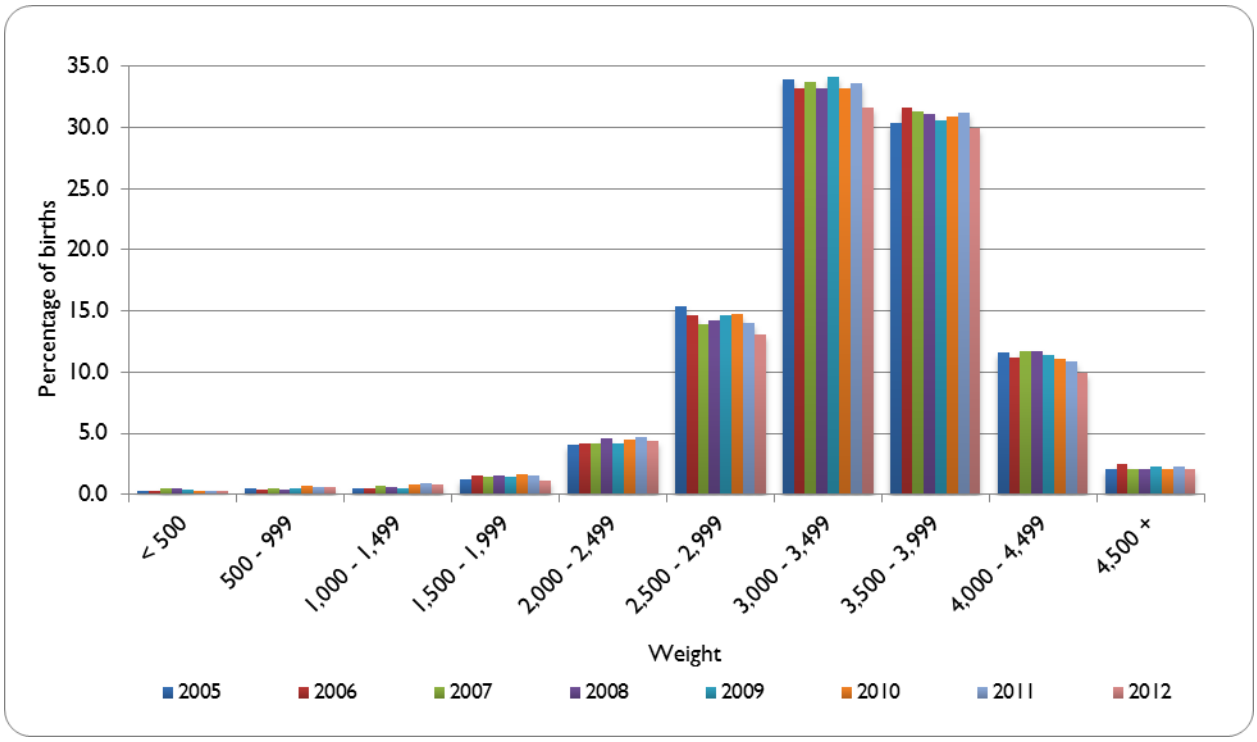
Figure 4: Number of livebirths by sex 2005-2012



Male births continue to exceed female births, accounting for 50.9 per cent of all Tasmanian births in 2012. This is comparable to national trends reported in 2011 with male births reported as higher (51.4 per cent) than female births (48.6 per cent). The 2011 national sex ratio for singleton livebirths was 105.9 male liveborn babies per 100 female liveborn babies.

Birthweight

Figure 5: Percentage of births by birthweight groups 2005-2012



Low birthweight

Low birthweight is defined as weight less than 2 500 grams and includes babies that are small for gestational age as well as those who are premature. Very low birthweight is defined as weight less than 1 500 grams.

Table 14: Incidence of low and very low birthweight 2006-2012

Year	Very low birthweight (< 1 500 grams)		Low birthweight* (< 2 500 grams)		Total births
	Number	%	Number	%	Number
2006	71	1.1	426	6.9	**6 184**
2007	107	1.7	463	7.3	**6 337**
2008	95	1.5	492	7.6	**6 461**
2009	88	1.4	444	7.0	**6 381**
2010	115	1.9	487	7.9	**6 137**
2011	111	1.8	512	8.1	**6 323**
2012	**110**	**1.9**	**462**	**7.8**	**5 940**

* Note that number - low birthweight (< 2 500 grams) figures also includes very low birthweight babies; total births include stillbirths

The percentage of very low birthweight infants reported in Tasmania for 2012 was slightly higher (p=0.708) than reported in 2011. Conversely, the percentage of low birthweight infants reported in Tasmania in 2012 was slightly lower (p=0.499) than reported in the previous year. Both proportions though, were higher than the respective national values. In 2011, the national percentage of very low birthweight infants was 1.5 per cent of all births (including stillbirths) and the percentage of low birthweight infants was 6.8 per cent of all births.

Table 15: Survival to hospital discharge by gestation 1996-2012*

Year	% Survival								
	23 wks	24 wks	25 wks	26 wks	27 wks	24-27 wks	28 wks	29 wks	30 wks
96-99	29	67	50	72	87	73	94	93	98
00-03	0	30	43	69	93	67	94	94	98
04-07	33	55	72	93	93	81	91	100	97
08-12	0	46	61	82	88	74	92	98	98
ANZNN 2012†	50	70	80	92	93	86	95	96	99

* Outcomes are for infants admitted to the Tasmanian Neonatal and Paediatric Intensive Care Unit at the Royal Hobart Hospital.

† Survival figures from the Australian and New Zealand Neonatal Network registry for the calendar year 2012. This registry receives data from all Neonatal Intensive Care Units in Australia and New Zealand (including Royal Hobart Hospital).

Overall, around three-quarters of Tasmanian infants born at less than 28 weeks gestation survive to hospital discharge, somewhat below the national figure of 86 per cent. Survival from 28 weeks onwards is on par with national averages.

Apgar scores

The Apgar score is routinely recorded shortly after birth, (usually at one minute and again at five minutes after birth) for all infants. It is a general measure of an infant's well-being immediately after birth based on assessment of the heart rate, breathing, colour, muscle tone, and reflex irritability. An Apgar score at five minutes is a good indication of the infant's overall health and well-being. An Apgar score of less than 6 at five minutes is indicative of an unwell infant.

Table 16: Proportion of livebirths by Apgar score at five minutes 2006-2012

Apgar score	2006 %	2007 %	2008 %	2009 %	2010 %	2011 %	2012 %
0	^	^	^	^	^	^	^
1	^	^	^	^	^	^	^
2	^	^	^	^	^	^	^
3	^	^	^	^	^	^	^
4	^	^	^	^	^	^	^
5	^	^	^	^	^	^	^
6	^	^	^	^	^	^	**1.2**
7	1.5	1.5	1.6	1.1	1.4	1.4	**2.1**
8	3.8	4.0	4.2	3.6	4.0	5.1	**4.4**
9	62.7	63.8	64.2	67.4	68.0	71.8	**69.6**
10	30.6	29.4	28.7	26.5	24.5	22.8	**21.4**
Not observed	^	^	^	^	^	^	**^**

^ Less than 0.1 per cent

Figure 6: Proportion of livebirths with Apgar score less than 6 at five minutes 2005-2012

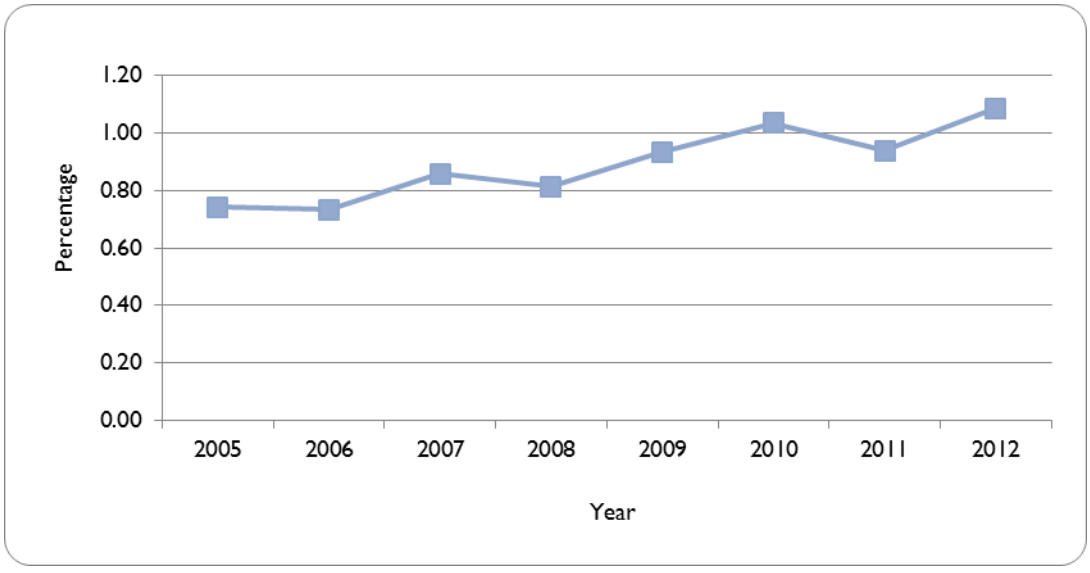


Figure 6 above reflects there has been a slight rise in the number of births associated with low Apgar scores at five minutes since 2005.

Resuscitation

The following table show all intubations in the delivery room, including those done in conjunction with other methods of resuscitation as specified in the electronic perinatal data database system and on the paper-based form. The percentage of livebirths requiring intubation reported in 2012 was again slightly lower (p=0.402) than reported in the previous year. Also, the proportion of livebirths requiring resuscitation in 2012 has steadily dropped since 2006, with the 2012 value being significantly lower (p=0.004) than for the previous year.

Table 17: Livebirths by active intubation and resuscitation at birth 2006-2012

Year	Intubation		Resuscitation		Number of live births
	Number	%	Number	%	
2006	23	0.4	2 578	42.0	6 139
2007	33	0.5	2 143	34.1	6 291
2008	31	0.5	1 968	30.7	6 401
2009	30	0.5	1 926	30.5	6 325
2010	52	0.9	1 689	27.7	6 095
2011	38	0.6	1 336	21.2	6 289
2012	**29**	**0.5**	**1 130**	**19.2**	**5 895**

Presentation at Delivery

Table 18 below shows that the number of vaginal breech presentations in 2012 was not significantly higher (p=0.269) than previously reported.

Table 18: Births by presentation at vaginal delivery only 2006-2012

Year	Vertex		Face & brow		Breech		Other		Total vaginal births
	Number	%	Number	%	Number	%	Number	%	Number
2006	4 466	99.4	10	^	5	^	14	^	4 495
2007	4 513	99.8	3	^	2	^	6	^	4 524
2008	4 535	99.3	11	^	4	^	16	^	4 566
2009	4 496	99.6	2	^	3	^	15	^	4 516
2010	4 238	99.1	8	^	13	^	17	^	4 276
2011	4 265	98.8	6	^	31	^	13	^	4 315
2012	**4 044**	**98.6**	**6**	**^**	**38**	**^**	**16**	**^**	**4 102**

Table 19: Births by presentation via caesarean section delivery only in 2012

Year	Vertex		Face & brow		Breech		Other		Not stated	
	Number	%	Number	%	Number	%	Number	%	Number	%
2012	1 212	89.1	7	^	119	8.7	22	1.6	1	^

Presentation via caesarean section has been collected in public and contract private maternity hospitals from 2012. Private hospitals data is available from 2013.

Perinatal mortality

The Tasmanian perinatal mortality rate per 1 000 births in 2012 (10.8 deaths per 1 000 births) was found to be higher than reported in both this state in 2011 and nationally 9.9 deaths per 1 000 births reported in 2011. Causes of perinatal mortality are outlined in Table 2.

Table 20: Perinatal outcome 2006-2012

Outcome	Stillbirth	Liveborn and survived*	Neonatal death	Other (post-neonatal death)	Total
2006	45	6 124	15	0	6 184
2007	46	6 273	18	0	6 337
2008	60	6 385	16	0	6 461
2009	56	6 308	17	0	6 381
2010	42	6 075	20 (+4)†	0	6 137
2011	34	6 270	18 (+2)†	1	6 323
2012	**45**	**5 875**	**19**	**1**	**5 940**

* Survived to first hospital discharge.

† Number is bracket means that neonatal deaths occurred after first hospital discharge.

Figure 7: Stillbirths & neonatal deaths per 1 000 births 2005-2012

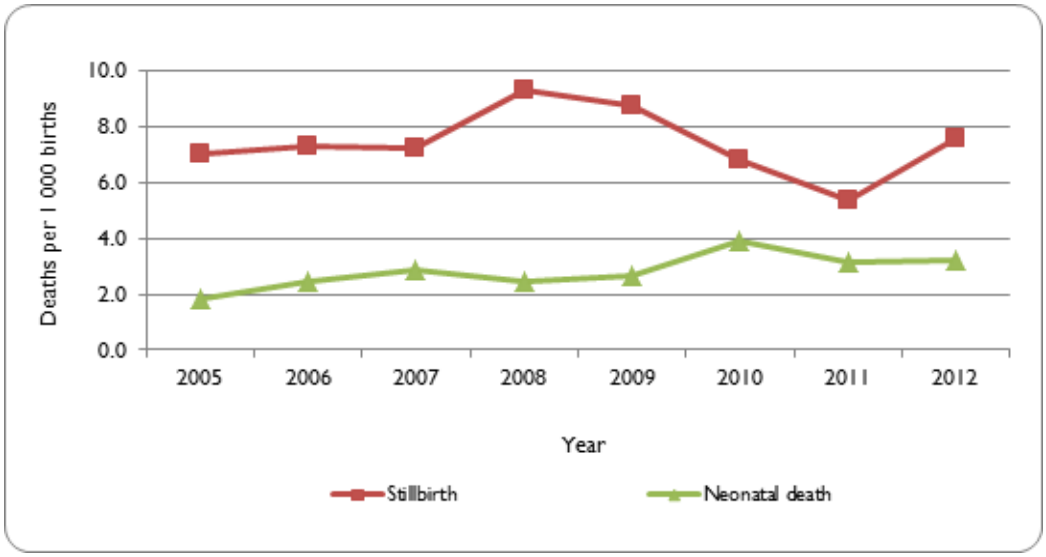
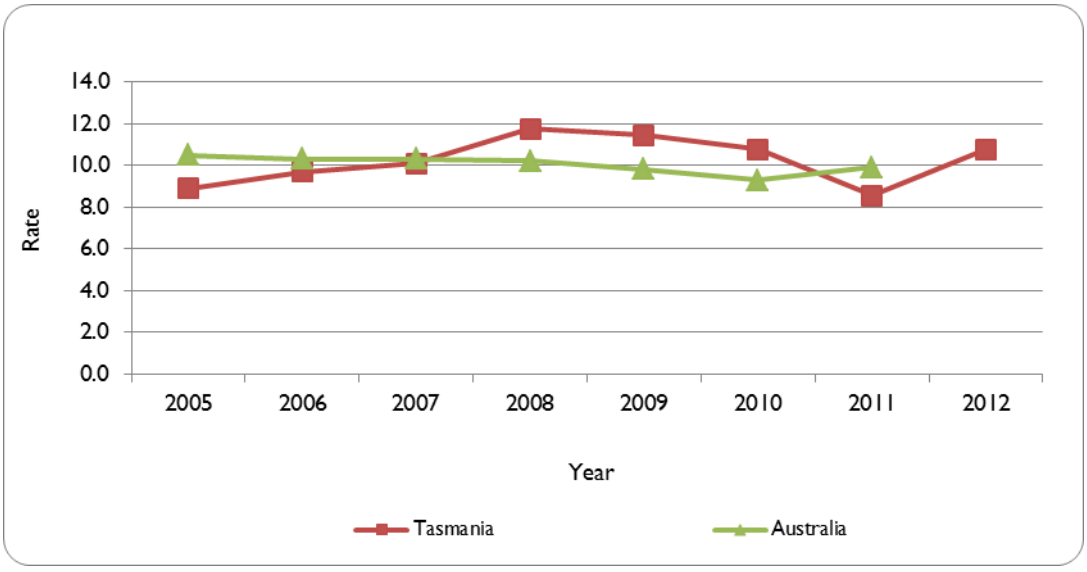


Table 21: Perinatal mortality rates 2006-2012

Year	Number of perinatal deaths	Number of total births	Rate of perinatal mortality per 1 000 births
2006	60	6 184	9.7
2007	64	6 337	10.1
2008	76	6 461	11.8
2009	73	6 381	11.4
2010	66	6 137	10.8
2011	54	6 323	8.5
2012	**64**	**5 940**	**10.8**

It is evident that for Tasmania, the perinatal mortality rate in 2012 increased from the previous year to a similar rate reported in 2010 (p=0.206) and was also slightly higher than the 2011 national rate of perinatal deaths (9.9 per 1 000 births). In 2011, the national stillbirth rate was 7.4 per 1 000 births; the neonatal death rate was 2.6 per 1 000 live births; and the perinatal death rate was 9.9 per 1 000 births.

Figure 8: Perinatal mortality rate per 1 000 births in Tasmania 2005-2012 and Australia 2005-2011



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

Neonatal mortality

Neonatal mortality includes all deaths of liveborn babies born after 20 weeks gestation or with a birthweight greater than 400 grams within the first 28 days of life, and the rate is expressed as deaths per 1 000 births.

The neonatal mortality rate of 3.2 per 1 000 births reported in Tasmania in 2012 was statistically significantly higher (p=0.012) than the rate reported for Tasmania in 2011, but was slightly higher than reported nationally in 2011 (i.e., 2.6 per 1 000 births).

Table 22: Neonatal mortality, per 1 000 births, in infants over 28 weeks gestation 2005-2012

Year	Number of neonatal deaths	Rate of neonatal mortality per 1 000 births*
2005	4	0.7
2006	3	0.5
2007	8	1.3
2008	2	0.3
2009	2	0.3
2010	6	1.0
2011	7	1.1
2012	**2**	**0.3**

* showing neonatal mortality that is not related to prematurity

Table 23: Neonatal mortality, per 1 000 births, in infants over 1 000 grams birthweight 2005-2012

Year	Number of neonatal deaths	Rate of neonatal mortality per 1 000 births*
2005	4	0.7
2006	6	1.0
2007	9	1.4
2008	3	0.5
2009	3	0.5
2010	7	1.1
2011	8	1.3
2012	**2**	**0.3**

* showing neonatal mortality that is not related to prematurity

Table 24: Foetal, neonatal and perinatal death rate per 1 000 births by state and territory 2004-2011

Year	Aus	TAS	NT	ACT	NSW	VIC	QLD	SA	WA
Foetal									
2004	7.5	6.7	6.3	6.7	6.6	9.7	6.8	6.4	7.4
2005	7.3	6.4	11.4	9.2	5.9	9.2	6.8	7.1	7.4
2006	7.4	6.8	11.0	9.1	6.4	9.0	6.9	7.4	7.3
2007	7.4	7.0	8.9	7.2	6.6	9.6	6.9	6.6	6.3
2008	7.4	9.0	7.3	9.6	6.1	9.7	6.3	7.6	7.3
2009	7.8	8.2	11.0	6.8	6.2	10.7	7.2	7.0	7.5
2010	7.4	6.8	8.8	11.3	5.8	10.3	6.7	5.9	7.0
2011	7.4	5.4	7.1	7.7	5.9	9.8	6.4	7.4	8.4
Neonatal									
2004	3.1	2.2	5.5	4.7	2.5	3.3	3.9	2.9	2.4
2005	3.2	1.4	6.6	4.0	2.9	3.7	3.4	3.4	2.7
2006	3.0	2.1	n.a.	5.2	2.4	3.3	4.0	2.0	2.2
2007	2.9	2.7	3.7	4.4	2.5	3.4	3.4	2.6	2.0
2008	2.8	1.9	3.9	4.4	2.6	3.0	3.3	2.5	1.9
2009	3.0	2.5	4.1	7.2	2.5	n.a.	3.8	2.3	2.5
2010	2.9	3.3	4.2	4.1	2.5	n.r	3.8	2.2	2.2
2011	2.6	2.9	5.9	3.5	2.6	2.1	3.2	2.2	2.0
Perinatal									
2004	10.5	8.9	11.8	11.4	9.0	13.0	10.7	9.4	9.8
2005	10.5	7.8	17.8	13.2	8.7	12.9	10.1	10.5	10.1
2006	10.3	9.0	n.a.	14.2	8.8	12.2	10.8	9.4	9.5
2007	10.3	9.7	12.6	11.6	9.0	12.9	10.3	9.2	8.2
2008	10.2	10.8	11.2	14.0	8.7	12.7	9.6	10.1	9.2
2009	9.8	10.7	15.1	14.0	8.6	n.a.	11.0	9.3	10.0
2010	9.3	10.1	12.9	15.3	8.2	n.r	10.4	8.1	9.1
2011	9.9	8.2	13.0	11.2	8.5	11.9	9.7	9.5	10.3

Source: Li, Z., Zeki, R., Hilder, L., & Sullivan, E.A., (2013), *Australia's mothers and babies 2011*, Perinatal statistics series, No. 28, Cat. no. PER 59, Sydney: AIHW National Perinatal Epidemiology and Statistics Unit.

Autopsy rates

In view of the repeated recommendation from the *Council of Obstetric & Paediatric Mortality & Morbidity* on the value of autopsy as an investigative tool in cases of perinatal death, especially in cases of unexplained intrauterine death, it is encouraging to find that the autopsy rate was significantly higher in 2012 than reported in more recent years.

It is important to note that the Australia and New Zealand Stillbirth Alliance is seeking to improve and conduct research into stillbirth in the Australia and New Zealand region. In particular, it aims to identify factors contributing to low autopsy consent rate for stillbirths and will provide robust information to develop information and educational materials that address the needs of parents and clinicians and improve overall autopsy rates in the future.

Table 25: Rate of autopsies on perinatal deaths 2005-2012

Year	Autopsy rate %
2005	30.8
2006	33.3
2007	27.0
2008	35.5
2009	39.7
2010	21.0
2011	NA*
2012	**42.2**

*Note that a significant number of stillbirth cases had not been recorded and as such autopsy rates could not be accurately calculated for this year

Age of mothers

Table 26: Number of births by maternal age groups 2006-2012

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	40 and over years of age
Number						
2006	445	1 248	1 678	1 766	884	163
2007	423	1 299	1 719	1 764	940	192
2008	451	1 269	1 811	1 777	954	199
2009	447	1 249	1 814	1 710	958	203
2010	361	1 188	1 811	1 624	963	190
2011	385	1 198	1 824	1 732	949	235
2012	**363**	**1 061**	**1 728**	**1 643**	**921**	**224**
Percentage						
2006	7.2	20.2	27.1	28.6	14.3	2.6
2007	6.7	20.5	27.1	27.8	14.8	3.0
2008	7.0	19.6	28.0	27.5	14.8	3.1
2009	7.0	19.6	28.4	26.8	15.0	3.2
2010	5.9	19.4	29.5	26.5	15.7	3.1
2011	6.1	18.9	28.8	27.4	15.0	3.7
2012	**6.1**	**17.9**	**29.1**	**27.7**	**15.5**	**3.8**

In Tasmania, the ages of mothers in the various groups reported in 2012 are consistent with those reported in 2011. In general, the proportions of mothers in the 25-29 year old and the 30-34 year old age groups continue to remain higher than for the other age groups included in the assessment in 2012, a trend consistent with national reports from 2011. Overall, the proportion of mothers in Tasmania aged 35 years or more has increased annually since 2005 ($p<0.001$), commensurate with national figures which has shown the proportion of older mothers, aged 35 years and over, has continued to increase from 18.1 per cent in 2002 to 22.5 per cent in 2011. The average age of women who gave birth in Australia has increased by 7.5 per cent since 1991. Nationally, the mean age in 2011 was 30.0 years, compared with 29.4 years in 2002. Mothers aged 40 years and over constituted 4.3 per cent of women giving birth nationally in 2011 compared with 3.0 per cent in 2002. Furthermore, national figures have shown the proportion of teenage mothers (younger than 20 years) declined slightly from 3.9 per cent in 2010 to 3.7 per cent in 2011, compared with 4.9 per cent in 2002[9].

[9] Li, Z., Zeki, R., Hilder, L., & Sullivan, E.A., (2013), *Australia's mothers and babies 2011*, Perinatal statistics series, No. 28, Cat. no. PER 59, Sydney: AIHW National Perinatal Epidemiology and Statistics Unit.

Figure 9: Proportion of births by maternal age groups 2005-2012

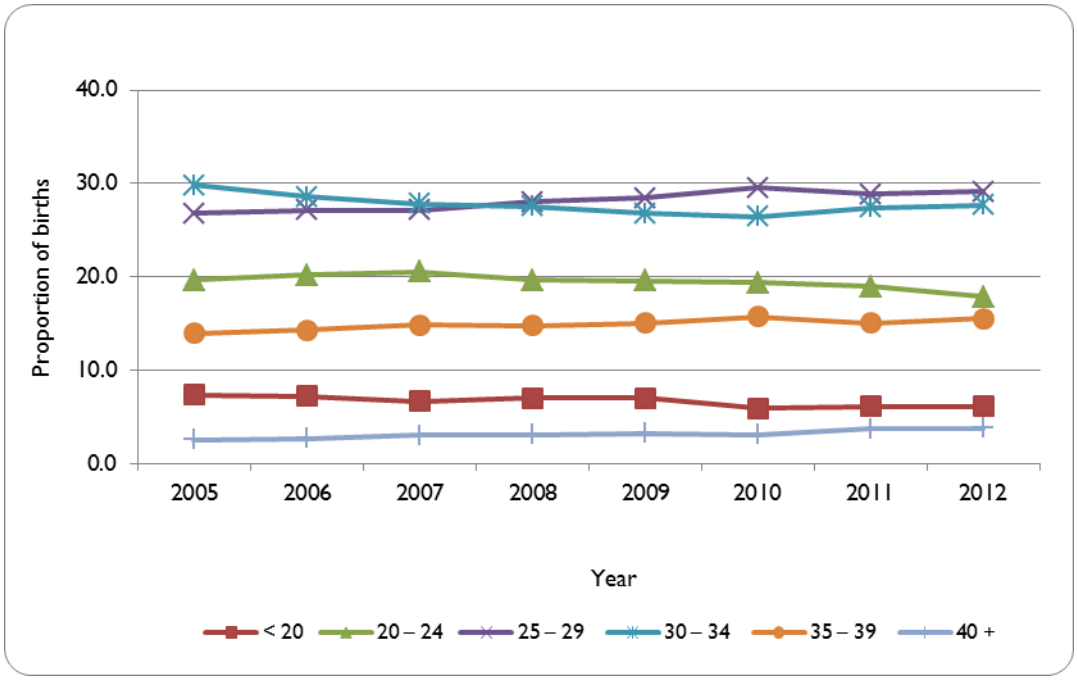


Figure 10: Proportion of women who gave birth by maternal age in Tasmania 2012 and Australia 2011

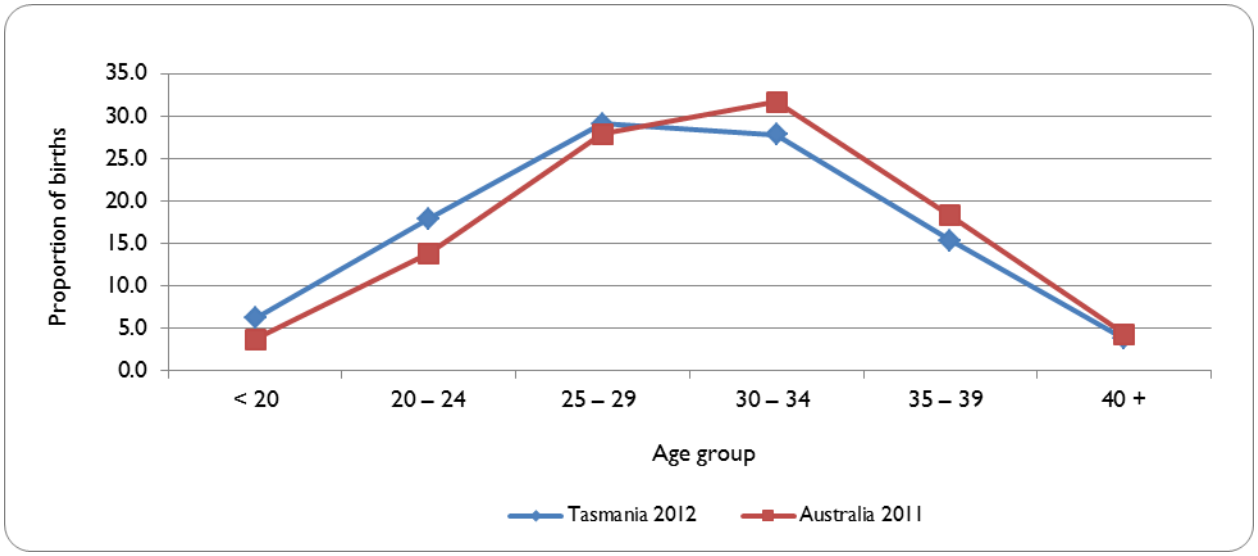


Table 27: Rates of birth per 1 000 female population by maternal age 2006-2012

Maternal age in years	Year	Number of estimated Tasmanian female population*	Rate of births per 1 000 female population
15 – 19	2006	16 497	26.8
	2007	16 594	25.3
	2008	16 698	26.9
	2009	16 833	26.3
	2010	17 010	21.2
	2011	16 245	23.5
	2012	16 176	22.3
20 – 24	2006	15 477	80.6
	2007	15 282	85.0
	2008	15 322	82.8
	2009	15 389	81.2
	2010	15 380	77.2
	2011	15 762	76.0
	2012	15 448	68.7
25 – 29	2006	13 835	121.3
	2007	14 106	121.9
	2008	14 250	127.1
	2009	14 502	125.1
	2010	14 825	122.2
	2011	15 174	120.2
	2012	14 957	115.5
30 – 34	2006	15 443	114.4
	2007	14 854	118.8
	2008	14 573	121.9
	2009	14 575	117.3
	2010	14 454	112.4
	2011	14 486	119.6
	2012	14 710	111.7
35 – 39	2006	17 054	51.8
	2007	17 254	54.5
	2008	17 424	54.8
	2009	17 242	55.6
	2010	17 053	56.5
	2011	16 277	58.3
	2012	15 411	59.8
40 – 44	2006	17 922	8.8
	2007	17 471	10.5
	2008	17 207	11.3
	2009	17 147	11.1
	2010	17 277	10.8
	2011	17 656	12.6
	2012	17 877	11.9

Maternal age in years	Year	Number of estimated Tasmanian female population*	Rate of births per 1 000 female population
45 –49	2006	18 745	0.3
	2007	18 935	0.4
	2008	19 107	0.3
	2009	19 211	0.5
	2010	18 862	0.2
	2011	18 110	0.7
	2012	17 650	0.6

* Australian Bureau of Statistics 2000-2001, 3311.6 - Demography, Tasmania; Australian Bureau of Statistics June 2002-2012, 3201.0 - Population by Age & Sex.

Parity status

Parity refers to the condition of having given birth to an infant or infants, alive or deceased. A multiple birth (giving birth to >1 infant in a delivery) is considered as a single parity.

Table 28: Percentage of women who gave birth by parity 2006-2012

Year	None %	One %	Two %	Three %	Four and over %
2006	40.7	32.8	16.3	6.0	4.3
2007	39.4	33.4	16.6	6.1	4.5
2008	39.0	33.4	16.4	6.3	4.9
2009	40.3	33.1	15.5	6.8	4.3
2010	40.0	34.1	14.7	6.6	4.6
2011	40.4	33.6	15.8	6.1	4.1
2012	**40.4**	**34.0**	**15.4**	**5.7**	**4.4**

For Tasmania in 2012, 40.4 per cent of mothers gave birth for the first time and 34.0 per cent had their second baby. This trend is similar to those reported nationally in 2011, where 43.0 per cent of mothers gave birth for the first time and 33.5 per cent had their second baby. One in six mothers (14.6 per cent) nationally had given birth twice previously and 8.7 per cent had given birth three or more times.

Indigenous status

Reporting of Indigenous status is by self-identification and patients are asked if they are of Aboriginal or Torres Strait Island origin when commencing antenatal care. Low community acceptance of the need to ask the question, and a lack of confidence in how an affirmative response will be treated has possibly resulted in some under reporting of indigenous status. As a result of a targeted project to improve the quality of indigenous status data, the number of mothers identifying as Aboriginal has increased markedly since 2005.

Nationally in 2011, 11 729 women identified as being Aboriginal or Torres Strait Islander gave birth in Australia, representing 3.9 per cent of all women who gave birth.

Table 29: Percentage of women who gave birth by Indigenous status 2006-2012

Year	Aboriginal	Torres Strait Islander	Aboriginal & Torres Strait Islander	Non-indigenous	Not stated
2006	173	14	30	5 876	0
2007	198	14	19	6 010	0
2008	249	21	26	6 058	0
2009	238	19	28	6 007	0
2010	201	9	19	5 735	56
2011	264	10	18	5 801	127
2012	**271**	**12**	**18**	**5 456**	**106**

Breastfeeding

Trends reported in Tasmania (see tables below) indicate that the percentage of women who gave birth and breastfeeding at maternal discharge has in general decreased since 2006 with a more pronounced drop between 2010 -2011. In December 2012, the National Health and Medical Research Council released revised *Infant Feeding Guidelines* which provide convincing evidence that breastfeeding provides major public health benefits to both the infant and mother[10] . In 2012, the percentage of public hospital patients' breastfeeding at discharge is significantly lower ($p<0.001$) than the percentage reported for private hospital patients. This is likely to reflect lower rates of breastfeeding that have been observed among women of lower socio-economic status[11]. The continued decline in breastfeeding at maternal discharge in 2012 remains alarming and would benefit from an investigation as to why women are leaving maternity service not intending to breastfeed. A redoubling of effort in the antenatal and perinatal period is warranted to prepare women for breastfeeding and to provide adequate support in the early stages, particularly in the public hospital system.

Table 30: Women who gave birth and breastfeeding at maternal discharge 2006-2012

Year	Yes	No	% Yes
2006	5 004	1 045	82.7
2007	5 079	1 119	81.9
2008	4 998	1 298	79.4
2009	4 980	1 259	79.8
2010	4 678	1 302	78.2
2011	4 643	1 545	75.0
2012	**4 323**	**1 496**	**74.3**

Table 31: Women who gave birth and breastfeeding at maternal discharge by public / private hospital 2006-2012

Year	Public % Yes	Private % Yes
2006	80.3	87.7
2007	79.7	86.4
2008	77.4	83.0
2009	79.5	80.2
2010	76.3	81.7
2011	70.3	84.3
2012	**69.4**	**83.5**

[10] National Health and Medical Research Council (2012) *Infant Feeding Guidelines*. Canberra: National Health and Medical Research Council.

[11] Australian Health Ministers Conference (2009) *Australian National Breastfeeding Strategy* 2010-2015 Canberra: Commonwealth of Australia

Table 32: Women who gave birth and breastfeeding at maternal discharge by parity 2006-2012

Year	Primiparae % Yes	Multiparae % Yes
2006	84.2	81.7
2007	84.4	80.4
2008	81.8	77.8
2009	81.8	78.5
2010	80.4	76.8
2011	73.0	76.4
2012	**74.7**	**74.0**

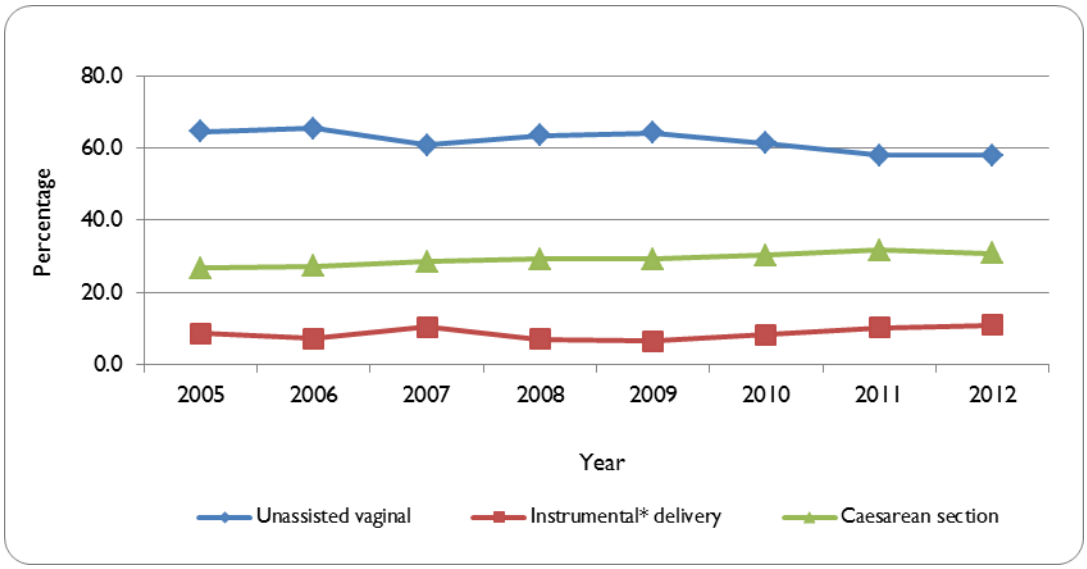
Mode of delivery

Table 33: Births by method of birth 2006-2012

Year	Total births	Unassisted vaginal		Instrumental* delivery		Caesarean section	
		Number	%	Number	%	Number	%
2006	6 184	4 046	65.4	449	7.3	1 689	27.3
2007	6 337	3 857	60.9	667	10.5	1 813	28.6
2008	6 461	4 101	63.5	465	7.2	1 895	29.3
2009	6 381	4 092	64.1	424	6.6	1 865	29.2
2010	6 137	3 760	61.3	516	8.4	1 861	30.3
2011	6 323	3 665	58.0	650	10.3	2 008	31.8
2012	**5 940**	**3 445**	**58.0**	**657**	**11.1**	**1 838**	**30.9**

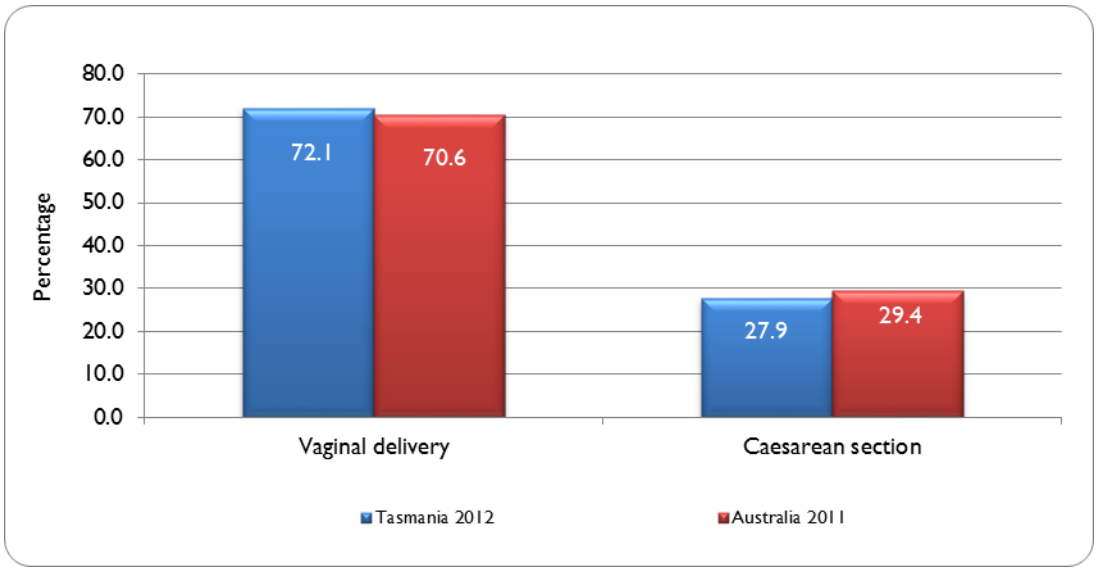
* Instrumental delivery includes forceps, forceps rotation & vacuum extraction.

Figure 11: Mode of delivery in Tasmania 2005-2012



* Instrumental delivery includes forceps, forceps rotation & vacuum extraction.

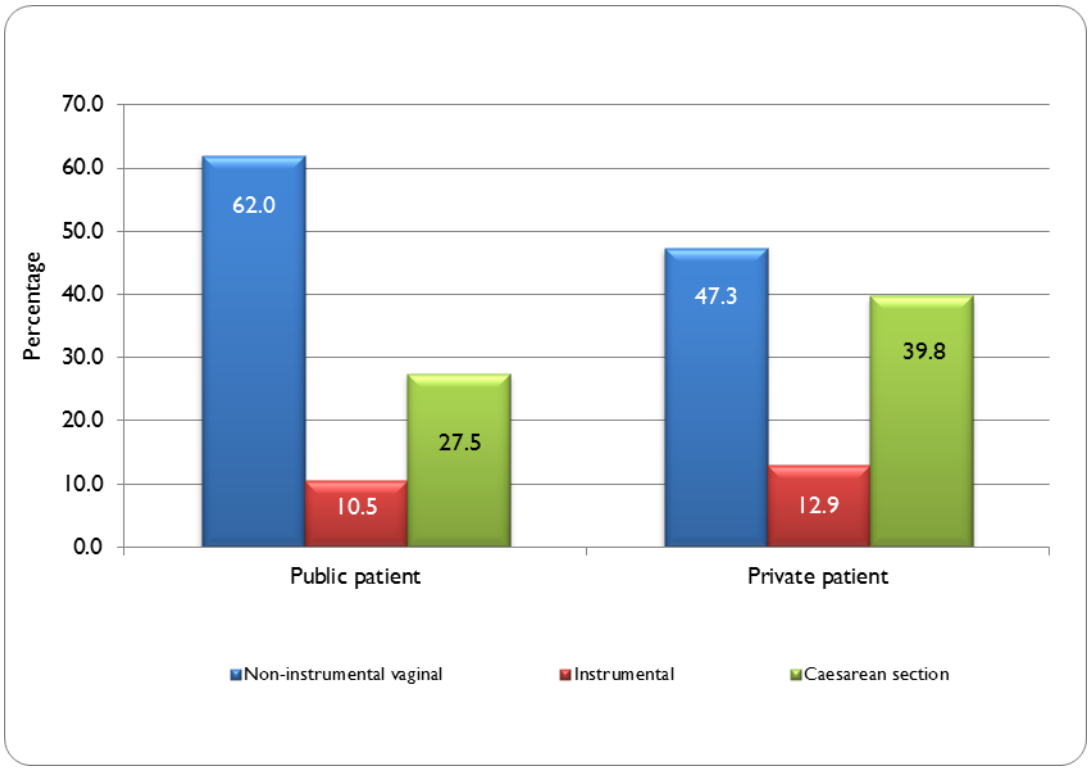
Figure 12: Percentage of women who gave birth in public hospitals by mode of delivery in Tasmania 2012 and Australia 2011



Note: It should be highlighted that Tasmanian public hospital rates reported here may be skewed since all babies that are both public and private are born at the Launceston General Hospital thus inflating the public hospital rate via the private patient contribution. Moreover, the North West Private Hospital at Burnie is a private hospital contracted to accommodate public patients.

Mode of delivery has remained relatively unchanged over recent years with Tasmania recording 72.2 per cent in 2012 and Australia recording 70.6 per cent for vaginal deliveries in 2011 compared to 71.3 per cent for Tasmania in 2011 and 71.6 per cent nationally in 2010. Furthermore, caesarean sections (CS) were reported at 27.8 per cent for Tasmania in 2012 and 29.4 per cent nationally in 2011 compared with 28.7 per cent for Tasmania in 2011 and 28.4 per cent nationally in 2010.

Figure 13: Percentage of women who gave births by mode of delivery by admitted patient election status in Tasmania 2012



Note: There were 38 births where the mother had not declared insurance status undertook all non-instrumental vaginal deliveries.

Private patients in Tasmania in 2012 continued to undergo more caesarean sections and instrumental vaginal deliveries than public patients (see Figure 13), a trend which was consistent with last year's figures. Conversely, more non-instrumental deliveries continued to be performed for public patients compared to private patients during 2012. In each case, the difference between public and private patients was statistically significant ($p<0.001$). Overall in Tasmania in 2012, the total caesarean section (CS) rate was 30.9 per cent; the total unassisted vaginal delivery rate was 58.0 per cent and the total instrumental delivery rate was 11.1 per cent.

In further detail:

- The higher caesarean section rates reported in 2012 in Tasmanian *private* hospitals is a trend consistent with national findings reported in 2011. National figures derived from 2011 have shown caesarean section rates to be higher in *private* hospitals (42.8 per cent) compared with *public* hospitals (29.4 per cent) across all age groups;
- Of the vaginal deliveries nationally reported in *public* hospitals in 2011, 59.3 per cent were spontaneous, 4.2 per cent were forceps deliveries and 7.1 per cent were vacuum extraction; and
- Of the vaginal deliveries nationally reported in *private* hospitals in 2011, 41.9 per cent were spontaneous, 4.5 per cent were forceps deliveries and 10.7 per cent were vacuum extraction.

Table 34: Births by mode of delivery and gestation 2006-2012

Gestation in weeks	Year	Vaginal delivery		Caesarean section		Total
		Number	%	Number	%	Number
20 – 27	2006	33	82.5	7	17.5	40
	2007	45	84.9	8	15.1	53
	2008	44	75.9	14	24.1	58
	2009	39	72.2	15	27.8	54
	2010	45	72.6	17	27.4	62
	2011	36	70.6	15	29.4	51
	2012	46	82.1	10	17.9	56
28 – 31	2006	20	42.6	27	57.4	47
	2007	24	36.9	41	63.1	65
	2008	29	44.6	36	55.4	65
	2009	11	28.9	27	71.1	38
	2010	24	32.9	49	67.1	73
	2011	17	27.4	45	72.6	62
	2012	27	50.0	27	50.0	54
32 - 36	2006	240	56.1	188	43.9	428
	2007	208	52.1	191	47.9	399
	2008	266	57.0	201	43.0	467
	2009	301	62.3	182	37.7	483
	2010	255	51.8	237	48.2	492
	2011	256	48.8	269	51.2	525
	2012	270	53.3	237	46.7	507
37 - 41	2006	4 156	74.1	1 453	25.9	5 609
	2007	4 202	73.0	1 554	27.0	5 756
	2008	4 184	72.0	1 627	28.0	5 811
	2009	4 142	71.8	1 629	28.2	5 771
	2010	3 930	71.7	1 549	28.3	5 479
	2011	3 981	70.5	1 665	29.5	5 646
	2012	3 743	70.7	1 554	29.3	5 297
42 and over	2006	46	76.7	14	23.3	60
	2007	45	70.3	19	29.7	64
	2008	43	71.7	17	28.3	60
	2009	23	65.7	12	34.3	35
	2010	22	71.0	9	29.0	31
	2011	25	64.1	14	35.9	39
	2012	16	61.5	10	38.5	26

* Note: Due to 2 missing stillbirths within the system for 2008, the total number figure is slightly under-reported in this table

Caesarean section

Table 35: Proportion of women who gave birth by emergency / elective caesarean section 2006-2012

Year	Emergency		Elective	
	Number	%	Number	%
2006	780	47.5	861	52.5
2007	820	46.8	933	53.2
2008	849	46.5	976	53.5
2009	869	48.0	941	52.0
2010	864	48.6	913	51.4
2011	983	50.9	949	49.1
2012	**881**	**49.1**	**912**	**50.9**

Table 36: Proportion of women who gave birth by emergency / elective caesarean section by public / private hospitals 2006-2012

Year	Emergency %		Elective %	
	Public	Private	Public	Private
2006	51.9	38.9	48.1	61.1
2007	52.6	37.1	47.4	62.9
2008	51.0	38.9	49.0	61.1
2009	52.9	40.2	47.1	59.8
2010	52.0	43.3	48.0	56.7
2011	57.1	41.2	42.9	58.8
2012	**56.6**	**38.0**	**43.4**	**62.0**

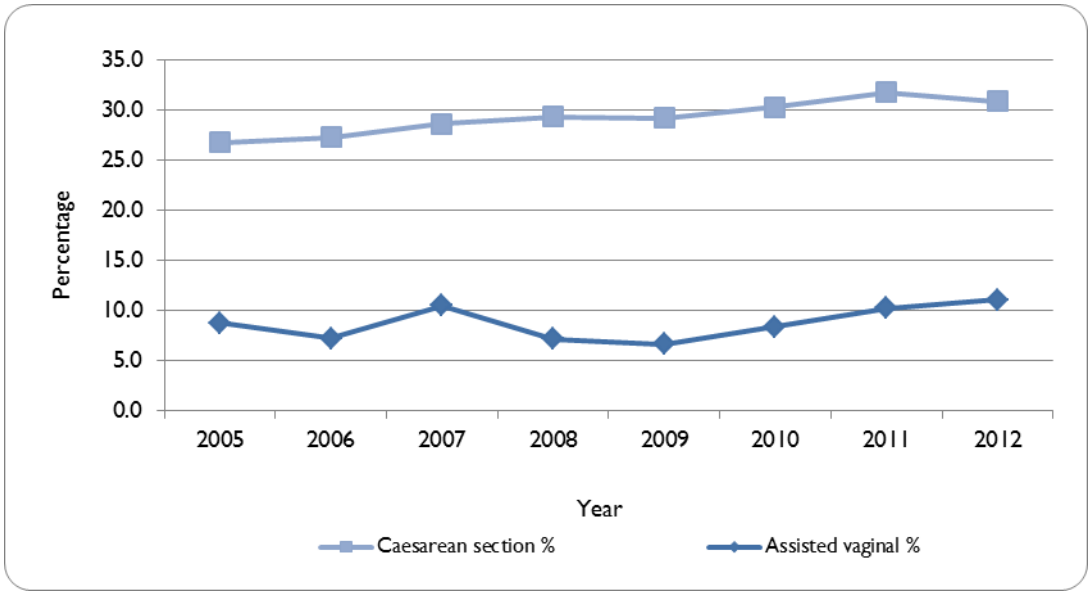
Table 37: Proportion of women who gave birth by primary / repeat caesarean section 2006-2012

Year	Primary		Repeat	
	Number	%	Number	%
2006	937	57.1	704	42.9
2007	981	56.0	772	44.0
2008	1 046	57.3	779	42.7
2009	1 036	57.2	774	42.8
2010	1 005	56.6	772	43.4
2011	1 125	58.2	807	41.8
2012	**1 014**	**56.6**	**779**	**43.4**

Table 38: Proportion of women who gave birth by primary / repeat caesarean section by public / private hospitals 2006-2012

Year	Primary %		Repeat %	
	Public	Private	Public	Private
2006	58.2	54.9	41.8	45.1
2007	55.8	56.2	44.2	43.8
2008	58.5	55.4	41.5	44.6
2009	57.8	56.3	42.2	43.7
2010	57.3	55.4	42.7	44.6
2011	60.3	55.0	39.7	45.0
2012	**57.0**	**55.9**	**43.0**	**44.1**

Figure 14: Caesarean section and assisted vaginal rates 2005-2012



The incidence of CS has risen progressively since the 1970s. This has been a trend in all countries, although the degree of rise has varied. In Tasmania, the rate is 30.9 per cent in year 2012, which is slightly lower than reported in the previous year both in Tasmania (31.8 per cent) and nationally in 2011 (32.3 per cent) but in general higher than previously reported figures.

As outlined in recent reports, multiple factors that are likely to contribute to this trend include the following:

1. ***Maternal age.*** This has been known to be an independent variable ever since perinatal outcomes were recorded by the late Professor Joe Correy when he started the first data collection in a state population in Australian in the 1970s. In general, here has been a steady trend for a reduction in births in women in the 20-29 age-group, with an equally steady trend for an increase in the 30-39 year age group and over. The CS rate for the 40+ group is approximately double the rate reported for the 20-29 age-group and as a demographic change alone it would be expected that the CS rate should rise without any change in background rates changing.

2. ***Obstetric medical disorders.*** One of the consequences of an increasing maternal age in the obstetric population is that providers are now experiencing a significant increase in the incidence of medical disorders in pregnancy. Hypertension, diabetes mellitus, renal disease, connective tissue and autoimmune diseases, and so on, all have significant potential implications for the well-being of mother and foetus. As these disorders, per se, are associated with increased CS rates, then a move to an older obstetric population will inevitably lead to a rise in CS rates as a method of managing more complex pregnancies.

3. ***Change in parity.*** Whereas in the 1970s and before it was not unusual for women to have more than 3 babies, the rate per woman is now less than 2 babies. As has been well documented, the CS rate for primigravidae is much higher than for multipara. This concentration of primigravidae, who are also older, concentrate the numbers likely to have CS delivery as a demographic change alone, without any actual increase in rates in each age group.

4. ***Maternal weight.*** The problems of obesity in pregnancy and the issues in relation to pregnancy have been highlighted in recent times, particularly with obesity becoming a modern health epidemic. Maternal obesity can present challenges for pregnant women and is associated with multiple complications in pregnancy such as congenital anomalies (including spina bifida), pre-existing and gestational hypertension, diabetes, preterm birth, foetal death and an increased rate of caesarean section with a resulting risk of complications. In developed countries this has reached proportions that have a significant consequence for health services. In recent years much attention has rested on smoking and its effects on health. There is emerging evidence of a similar effect and magnitude related to obesity. Even being overweight has been shown to increase morbidity and health costs. In the last decade attention has been directed to maternal body weight and its effects on pregnancy outcome. Although no obstetric weight data from Tasmania are available, it has been shown that the rate of obesity in the general population in Tasmania has increased significantly – as in other states in Australia. A research study [12] investigating body mass index (BMI) and obstetric outcome in more than thirty thousand women in Belfast showed the effect of BMI on rates of breast feeding compared to normal of 18.5-24.99. Table 39, that has extracted significant findings from this study in relation to the impact of various levels of obesity on maternal outcomes, shows in particular, that as obesity severity increases the likelihood of breastfeeding decreases.

[12] Scott-Pillai, Spence, D., Cardwell, C.R., Hunter, A & Holmes, V.A. (2013). The impact of body mass index on maternal and neonatal outcomes: a retrospective study in a UK obstetric population, 2004-2011. *British Journal of Obstetrics & Gynaecology*, July, Vol 120 (no. 8), pp. 932-939.

Table 39: Relative risk of adverse maternal outcomes in overweight and obese women (by BMI category (Kg/m^2)

	Overweight BMI 25.00-29.99	Obese Class 1 BMI 30.00-34.99	Obese Class 2 BMI 35.00-39.99	Obese Class 3 BMI >=40
Gestational diabetes	1.7 (1. 3-2.3)	3.7 (2.8–5.0)	6.0 (4.2-8.5)	8.5 (5.7-12.9)
Hypertensive disorders of pregnancy	1.9 (1.7–2.3)	3.5 (2.9–4.2)	5.0 (4.0–6.4)	6.6 (4.9–8.9)
Induction of labour	1.2 (1.1–1.3)	1.3 (1.2-1.5)	1.4 (1.2-1.7)	1.6 (1.3-2.0)
Emergency CS	1.4 (1.2-1.5)	1.6 (1.4-1.8)	1.8 (1.5-2.2)	1.9 (1.4-2.5)
PPH	1.4 (1.3-1.5)	1.8 (1.6–2.0)	2.4 (2.0-2.8)	2.7 (2.2-3.4)
Wound problems	1.2 (0.7–2.1)	1.6 (0.9–3.0)	3.5 (1.8-6.7)	6.0 (3.0-12.1)
C-section	1.4 (1.3-1.5)	1.8 (1.6–2.0)	2.5 (2.1-2.9)	2.8 (2.4-3.5)
Breast feeding at discharge	0.8 (0.7-0.8)	0.6 (0.6-0.7)	0.5 (0.4-0.6)	0.4 (0.3-0.5)

*Note: Risk is relative to that for women of normal weight. All variables are adjusted for age, parity, social deprivation, smoking and year of birth. Values presented as OR (99% CI), with p<0.01 considered to be significant. All p values <0.001 were considered to be significant for all listed maternal outcomes by BMI Category except for **wound problems** in **overweight** and **obese class 1** categories. Note that the findings are taken from research study previously referenced*[13]

5. ***A change in method of delivery from the early 1980s.*** Instrumental delivery rates have fallen from above 20 per cent to under 10 per cent. This is in recognition that traumatic instrumental delivery, particularly from high in the birth canal, is attended by significant morbidity both for the baby and the mother. Few breech babies are born vaginally now Australia-wide and an increasing number of twins undergo CS delivery for all of the reasons postulated with the addition of the complications of twin pregnancy including malpresentation and discrepancy in foetal growth and condition.

6. ***Altered delivery of pre-term babies.*** Table 34 shows data from year 2006 until current. There has been an increasing trend to deliver babies by CS at gestations 28-36 weeks.

   This reflects the increasing neonatal support, and survival rates, available now, where babies born very preterm from conditions such as IUGR, pre-eclampsia etc, who were managed longer in utero, are now born earlier and in better condition by CS. Those delivered by CS at very early gestations are now expected to have very high survival rates in NICU.

7. ***The use of cardiotocography (CTG).*** Although it is known that the introduction and widespread use of CTG in the 1970s to monitor foetuses in labour has been associated with a significant rise in CS rates, it is questionable whether CTG use is still responsible for ongoing rising rates. The institution of the *RANZCOG CTG* guidelines has yet to be evaluated with regard to its impact on the rate of CS since the widespread Australian use of the guidelines began.

[13] Scott-Pillai, Spence, D., Cardwell, C.R., Hunter, A & Holmes, V.A. (2013). The impact of body mass index on maternal and neonatal outcomes: a retrospective study in a UK obstetric population, 2004-2011. *British Journal of Obstetrics & Gynaecology*, July, Vol 120 (no. 8), pp. 932-939.

8. ***Concern regarding Pelvic Floor function.*** The colorectal and urological literature has focused on the burden of both faecal and urinary incontinence in the female population highlighting the effects of childbirth. In practice this has led to a more liberal offer of CS to women perceived to be at higher risk of subsequent bowel or urinary incontinence e.g. those who experienced anal sphincter damage (a third or fourth degree tear with a prior delivery) or who have undergone surgery for prolapse or urinary incontinence.

9. ***Debate in Obstetric Academic Circles*** and literature with regard to the safety of Vaginal Birth after Caesarean Section (VBAC) and the low acceptance of any foetal risk within the pregnant population and their families.

10. ***Empowerment of women*** as the consumer of maternity care and a preference among some groups of women to request CS. Although elective CS in a primigravida with no medical indication is still relatively rare practitioners face difficulty in the current practising climate to refuse such requests. Once minor risk factors are added – VBAC, multiple pregnancy, difficult previous vaginal delivery, IVF pregnancy, predicted larger than average baby the practitioner has limited grounds for refusal of a request for CS.

11. ***Induction of labour***. Whilst overall the effect of increasing induction of labour rates is associated with increased CS rates, research[14] shows that women carefully selected have no increase in CS rates. The practice of delaying induction of labour to term plus 10 days, in the absence of contra-indications to waiting, means labour is more likely to occur spontaneously.

[14] Patterson, J. A., Roberts, C. L., Ford, J. B. and Morris, J. M. (2011), Trends and outcomes of induction of labour among nullipara at term. *Australian and New Zealand Journal of Obstetrics and Gynaecology*. doi: 10.1111/j.1479-828X.2011.01339.

Table 40: Births by caesarean section following augmentation of labour 2006-2012

Type of augmentation	Year	Primary	Repeat	Proportion of all augmentations
ARM* only	2006	96	14	11.1
	2007	97	17	12.4
	2008	74	16	10.2
	2009	91	17	11.3
	2010	69	14	11.4
	2011	33	16	11.3
	2012	37	12	11.0
Oxytocin only	2006	97	1	21.4
	2007	91	6	21.3
	2008	113	3	24.6
	2009	97	4	23.0
	2010	85	2	21.2
	2011	66	4	27.0
	2012	80	2	29.3
Oxytocin & ARM*	2006	68	2	24.9
	2007	103	4	24.5
	2008	93	5	24.9
	2009	125	4	29.8
	2010	98	2	31.1
	2011	58	3	28.6
	2012	57	3	27.9
Other	2006	0	0	0.0
	2007	0	0	0.0
	2008	0	0	0.0
	2009	0	0	0.0
	2010	0	0	0.0
	2011	0	0	0.0
	2012	0	0	0.0

* ARM = Artificial Rupture of Membranes

Induction of labour

Table 41: Births by method of birth following induction of labour 2006-2012

Year	Vaginal delivery		Caesarean section		Total	Induction rate
	Number	%	Number	%	Number	%
2006	1 388	80.4	338	19.6	1 726	27.9
2007	1 322	78.7	357	21.3	1 679	26.5
2008	1 301	78.7	352	21.3	1 653	25.6
2009	1 357	78.1	381	21.9	1 738	27.2
2010	1 319	78.7	358	21.3	1 677	27.3
2011	1 579	75.6	510	24.4	2 089	33.0
2012	**1 443**	**75.8**	**461**	**24.2**	**1 904**	**32.1**

The rate of induction of labour has increased since year 2000 (22.9 per cent) as highlighted in previous reports, reaching a peak in 2005 (30.1 per cent) and then remaining relatively steady until 2010, with a higher peak reached in more recent years (33.0 per cent in 2011 and 32.1 per cent in 2012) (see Table 41). These figures are comparable to national figures of 25.7 per cent in 2000 to 26.0 per cent in 2011. In addition, the percentage of CS deliveries has increased over the years to 2011 and plateauing in 2012 (see Table 42), with a statistically significant ($p=0.014$) annual change. The consequences of increasing maternal age are the concomitant increase in complex maternal obstetric conditions such as hypertension, diabetes mellitus, renal disease etc. As these medical conditions are known to potentially impact on the pregnancy and the well-being of the baby it is not surprising that rates of induction of labour have increased.

The true reasons for increased induction of labour and caesarean section in Tasmania remain to be elucidated. Prospective data are necessary to meaningfully analyse these trends and propose interventions that may reverse these trends.

Table 42: Percentage of births by caesarean sections following induction of labour 2006-2012

Year	Births by caesarean section	Induction of labour with caesarean section delivery	
		Number	%
2006	1 689	338	20.0
2007	1 813	357	19.7
2008	1 895	352	18.6
2009	1 865	381	20.4
2010	1 861	358	19.2
2011	2 008	510	25.4
2012	**1 835**	**461**	**25.1**

Table 43: Births by method of birth following induction of labour by public / private hospitals 2006-2012

Year	Vaginal delivery				Caesarean section				Induction rate	
	Public		Private		Public		Private		Public	Private
	Number	%	Number	%	Number	%	Number	%	%	%
2006	860	78.0	528	84.6	242	22.0	96	15.4	26.3	31.7
2007	784	77.6	538	81.1	226	22.4	125	18.9	23.7	32.5
2008	787	78.6	513	78.8	214	21.4	138	21.2	23.1	31.0
2009	822	77.7	535	78.7	236	22.3	145	21.3	25.2	31.6
2010	780	78.8	539	78.5	210	21.2	148	21.5	24.6	32.7
2011	965	73.6	614	78.9	346	26.4	164	21.1	31.3	36.5
2012	**882**	**74.6**	**561**	**77.8**	**301**	**25.4**	**160**	**22.2**	**30.4**	**35.3**

Nationally in 2011, of all women who gave birth, 54.8 per cent had a spontaneous onset of labour; 19.1 per cent of mothers had no labour; and 26.0 per cent of mothers had induced labour while labour was augmented for 17.9 per cent of all mothers, representing 32.8 per cent of mothers with spontaneous onset of labour. Of all women who gave birth nationally in 2011, 55.6 per cent had a non-instrumental vaginal birth; forceps delivery accounted for 4.2 per cent of mothers while vacuum extraction accounted for 7.9 per cent of women who gave birth. Induced labour continues to be significantly more likely ($p<0.001$) in the private sector in Tasmania (35.3 per cent).

There has been a continued increase in the caesarean section rate reported nationally over the last decade with 32.3 per cent of mothers undergoing caesarean section deliveries in 2011 compared to 27.0 per cent reported in year 2002. In contrast, the proportion of instrumental deliveries has remained stable at about 11.0 per cent throughout this period[15]. Again in 2011, national data have shown that caesarean section rates increase with advancing maternal age and continue to be higher among older mothers (e.g., 41.4 per cent for mothers aged between 35 to 39 years old; 48.8 per cent for mothers aged 40 years and over) and those who gave birth in private hospitals (42.8 per cent) compared to the public sector (29.4 per cent).

[15] Li, Z., Zeki, R., Hilder, L., & Sullivan, E.A., (2013), *Australia's mothers and babies 2011*, Perinatal statistics series, No. 28, Cat. no. PER 59, Sydney: AIHW National Perinatal Epidemiology and Statistics Unit.

Augmentation of labour

Table 44: Women who gave birth and had augmentation of labour 2006-2012

Year	Artificial Rupture of Membranes	Oxytocin	Other	None	Total number of augmentation	Augmentation rate (%)
2006	979	452	278	4 384	1 709	28.0
2007	912	452	430	4 447	1 794	28.7
2008	877	466	386	4 625	1 729	27.2
2009	952	437	426	4 477	1 815	28.8
2010	725	408	316	4 571	1 449	24.1
2011	433	256	212	5 318	901	14.5
2012	**444**	**275**	**211**	**4 933**	**930**	**15.9**

In Tasmania, 15.9 per cent of mothers were reported in 2012 to have undertaken augmentation of spontaneous labour, significantly less than in any year since 2005 (p=0.032). In contrast, 17.9 per cent of all mothers nationally (2011) were reported to have their labour augmented. Furthermore, in 2011 nationally, the onset of labour was spontaneous for 54.8 per cent of all mothers giving birth and 26.0 per cent of mothers had their labour induced.

Multiple pregnancy

Table 45: Births by multiple pregnancies 2006-2012

Year	Number of infants born from a twin pregnancy	Number of infants born from a triplet* pregnancy
2006	174	6
2007	188	3
2008	209	3
2009	166	9
2010	234	0
2011	206	0
2012	**154**	**0**

* All birth orders >1 are multiple.

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

The proportion of multiple pregnancies in Tasmania was lower than the national average with 13.1 multiple pregnancies per 1 000 mothers recorded in Tasmania in 2012. There were 15.5 multiple pregnancies per 1 000 mothers in 2011 nationally. Multiple pregnancies in 2011 accounted for 1.5 per cent of all mothers: 4 595 twin pregnancies, 75 triplet and other higher-order multiple pregnancies were reported nationally in this year. It has been reported[16] that the number of multiple births has increased in the last two decades where this increasing national trend being most likely attributable to increased fertility-related drugs and reproduction technology; delay in childbearing and the increasing number of older mothers.

Table 46: Perinatal mortality in multiple pregnancies 2006-2012

Year	Twin deaths		Triplet deaths	
	Number	%	Number	%
2006	2	1.1	0	0.0
2007	9	4.8	0	0.0
2008	6	2.9	0	0.0
2009	7	4.2	1	11.1
2010	13	5.6	0	0.0
2011	8	3.9	0	0.0
2012	**5**	**3.2**	**0**	**0.0**

Twin pregnancies encompass monochorionic and dichorionic twins. It is recognised that monochorionic twins pose special risks in the form of (a) diamniotic – twin to twin transfusion syndrome, and (b) monoamniotic – cord entanglement. These pregnancies are often interrupted prematurely so the risks attached are not the same as for singleton pregnancies. The extra risk to second twins has been noted in the literature[17], hence consultant associated management is necessary. There is a widespread trend towards delivering term twins by caesarean section; however these data support the Tasmanian practice of offering vaginal deliveries having ruled out contraindications to vaginal delivery.

Table 47: Perinatal mortality in multiple pregnancies by birth order 2006-2012

Year	Twin 1		Twin 2		Triplet Stillbirth		
	Stillbirth	Neonatal death	Stillbirth	Neonatal death	Triplet 1	Triplet 2	Triplet 3
2006	1	0	1	0	0	0	0
2007	1	3	3	2	0	0	0
2008	1	1	2	2	0	0	0
2009	3	1	2	1	0	0	1
2010	5	2	2	4	0	0	0
2011	1	3	2	2	0	0	0
2012	**2**	**1**	**1**	**1**	**0**	**0**	**0**

[16] Li, Z., Zeki, R., Hilder, L., & Sullivan, E.A., (2013), *Australia's mothers and babies 2011*, Perinatal statistics series, No. 28, Cat. no. PER 59, Sydney: AIHW National Perinatal Epidemiology and Statistics Unit.

[17] Smith, G., Pell, J. & Dobbie, R. (2002), 'Birth order, gestational age, and risk of delivery related perinatal death in twins: retrospective cohort study', *British Medical Journal*, vol. 325, 2 November, pp. 1004-1006.

Maternal hypertension

Table 48: Women who gave birth who had pregnancy-induced hypertension 2006-2012

Year	Pre-existing		Pregnancy-induced hypertension*	
	Number	%	Number	%
2006	91	1.5	309	5.1
2007	99	1.6	322	5.2
2008	86	1.4	307	4.8
2009	104	1.7	332	5.3
2010	150	2.5	329	5.5
2011	404	6.5	426	6.8
2012	**438**	**7.5**	**320**	**5.5**

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

The number of cases of pregnancy-induced hypertension reported in Tasmania in 2012 was significantly lower ($p=0.003$) than reported for the previous year, although the number and percentage of cases of *existing* hypertension have increased significantly over the six year period since 2006 ($p<0.001$).

The increasing rate of obesity in the general population, which is reflected in higher maternal obesity rates, in association with increasing maternal ages in the obstetric population, have been found to impact on the state of pregnancy-induced hypertension and have significant potential implications for the well-being of mother and foetus.

Antepartum haemorrhage

Table 49: Women who gave birth and had antepartum haemorrhage 2006-2012

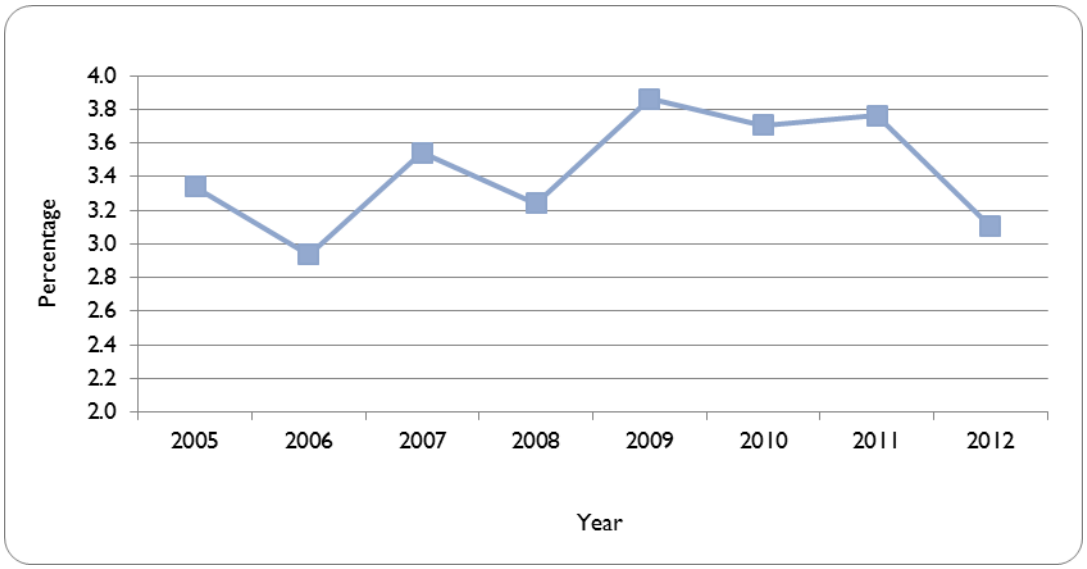
Year	Placenta praevia		Abruptio placenta		APH undetermined	
	Number	%	Number	%	Number	%
2006	28	0.5	17	0.3	85	1.4
2007	25	0.4	17	0.3	106	1.7
2008	32	0.5	18	0.3	97	1.5
2009	22	0.3	26	0.4	97	1.5
2010	21	0.3	24	0.4	123	2.0
2011	24	0.4	27	0.4	138	2.2
2012	**23**	**0.4**	**19**	**0.3**	**105**	**1.8**

Postpartum haemorrhage

Table 50: Women who gave birth and had postpartum haemorrhage 2006-2012

Year	Number	Incidence %
2006	179	2.9
2007	221	3.5
2008	206	3.2
2009	243	3.9
2010	223	3.7
2011	234	3.8
2012	**182**	**3.1**

Figure 15: Percentage of women who gave birth and had postpartum haemorrhage 2005-2012



Smoking and pregnancy

Data exploring the smoking status of Tasmanian women during pregnancy continue to be available for review in 2012 through the recently implemented *ObstetrixTas* system, supplementing previous work conducted in the 1980's by the late Professor Joe Correy (Obstetric and Neonatal Report, Tasmania 1981) and Dr Neville Newman.

Table 51: Smoking comparison 2012 and 1982

Age	1982* %	Age	2008 %	2009 %	2010 %	2011 %	2012 %
Overall	35.3	Overall	26.9	24.6	23.0	17.1	**16.3**
<20	55.2	<20	49.4	43.0	46.8	35.7	**35.6**
21-25	46.0	20-24	43.4	39.6	35.5	30.8	**26.9**
26-30	30.2	25-29	25.5	25.1	25.0	15.5	**15.9**
30 +	21.2	30-34	18.5	14.5	12.7	10.6	**10.2**
		35-39	15.4	14.2	14.0	9.0	**9.0**
		40 an over	14.1	18.8	12.8	9.7	**12.2**
		Admitted patient election status					
		Public	34.4	32.3	30.5	22.3	**21.4**
		Private	6.5	5.7	5.4	4.0	**3.0**

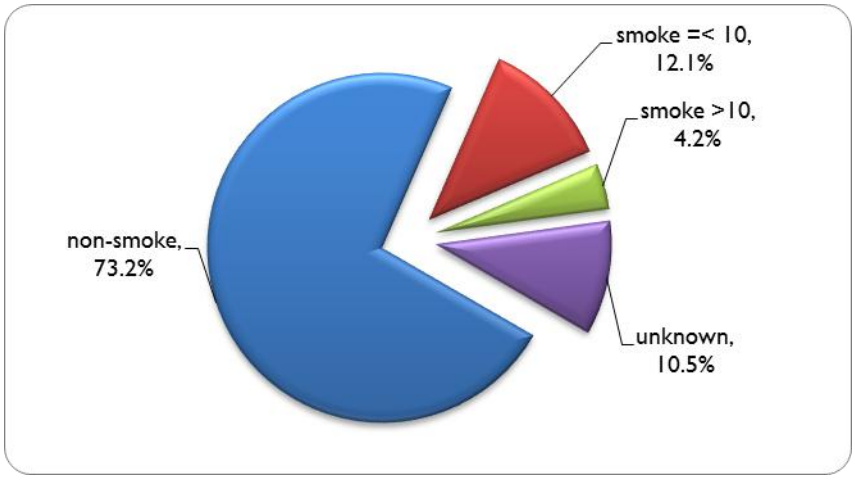
*Obstetric and neonatal Report – Tasmania 1982

The 2012 data on smoking prevalence during pregnancy are derived from self-reported information obtained by clinicians from the mother and reported on *ObstetrixTas* system.

Smoking during pregnancy is regarded as one of the key preventable causes of low birth weight and pre-term birth. Low birth weight (LBW) babies (less than 2 500 grams) are more likely to die in the first year of life and are more susceptible to chronic illness later in life, such as heart and kidney disease and diabetes.

The proportion of Tasmanian women who reported that they had smoked tobacco during pregnancy has fallen significantly since 2010 ($p<0.001$). In 2012, 16.3 per cent of Tasmanian women reported smoking whilst pregnant, slightly lower than for 2011 ($p=0.239$), with 12.1 per cent reporting to have smoked less than 10 cigarettes per day and 4.2 per cent reporting to have smoked more than 10 cigarettes daily.

Figure 16: Self-reported tobacco smoking status during pregnancy in Tasmania 2012



Number of mothers who reported = 6 220

In 2011, 18.4 per cent of Tasmanian women reported to have smoked during pregnancy, which was the second highest of all the jurisdictions following the Northern Territory (see Table 52). Overall nationally, 13.2 per cent of women in these states and territories smoked during pregnancy[18]. Again, it is very encouraging to find that in 2012 that there continued to be a marked reduction in the proportion of women who had reported to have smoked (16.3 per cent) compared to previous years (e.g., 17.1 per cent in 2011).

Table 52: Proportion of women smoking tobacco during pregnancy by state and territory 2011[18]

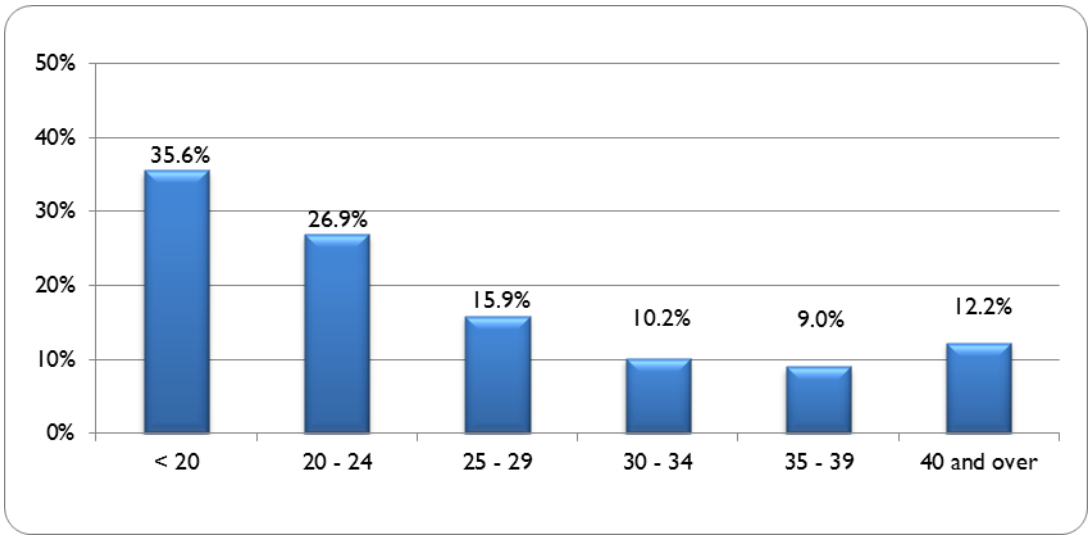
Jurisdiction	Proportion of women who smoked during pregnancy
NT	26.0
TAS	18.4
SA	17.0
QLD	16.1
WA	12.1
ACT	10.0
NSW	11.2
VIC	12.2

Please note that the percentages in the table above are calculated after excluding records with missing values. Care must be taken when interpreting percentages.

[18] Li, Z., Zeki, R., Hilder, L., & Sullivan, E.A., (2013), *Australia's mothers and babies 2011*, Perinatal statistics series, No. 28, Cat. no. PER 59, Sydney: AIHW National Perinatal Epidemiology and Statistics Unit.

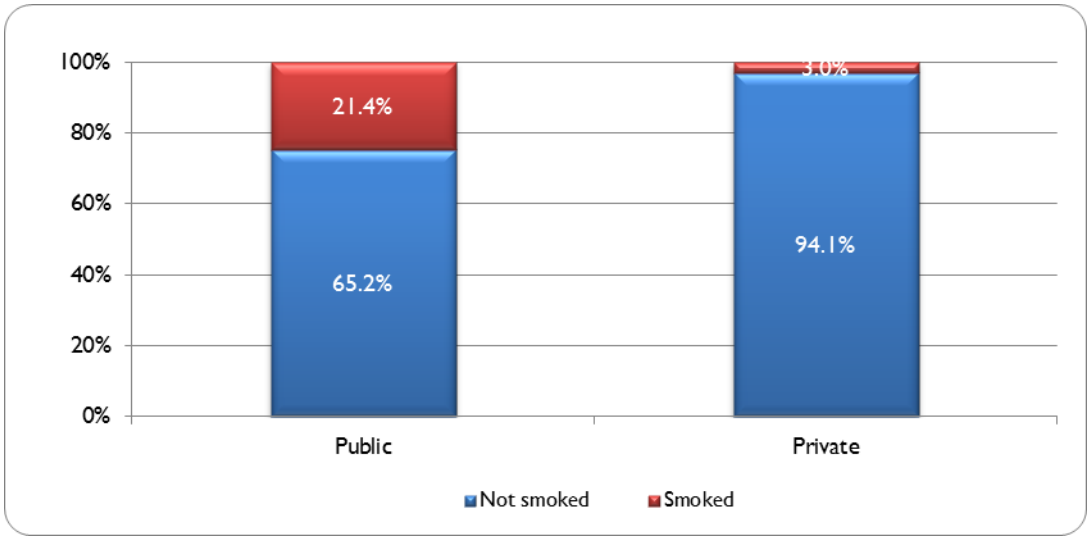
Table 51 and Figure 17 show that maternal smoking continues to be more prevalent amongst younger women in Tasmania, particularly those aged less than 20 years. However, the proportion of maternal smokers in this age group dropped significantly in 2011 from earlier years ($p<0.05$), with the 2012 value being similar to that reported for 2011. The proportion of women aged 30-34 years who smoked during pregnancy also continues to decline, from 12.7 per cent in 2010 to 10.2 per cent in 2012; this difference was statistically significant ($p=0.025$). It is also encouraging to note, compared to 2011, that there was a statistically significant ($p=0.043$) reduction in mothers aged 20-24 years who reported smoking during pregnancy in 2012. The proportion of maternal smokers in all other age groups remained steady, with the sole exception of the 40 years and over group which evidenced an increase in smoking during pregnancy from 9.7 per cent to 12.2 per cent; this difference was not statistically significant.

Figure 17: Self-reported tobacco smoking status during pregnancy by age in Tasmania 2012



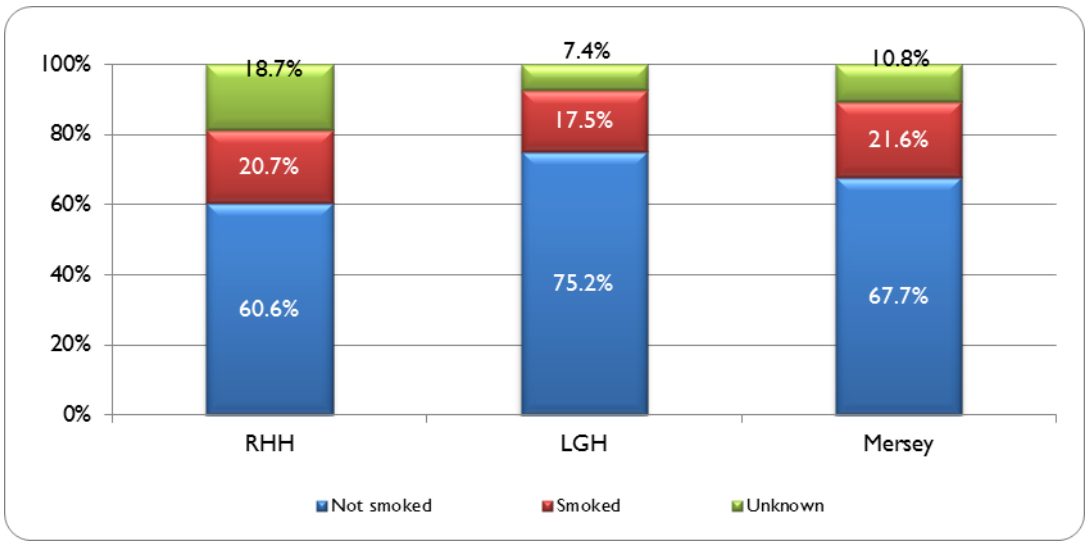
There has been a slight decrease in smoking during pregnancy in both private patients (3.0 per cent in 2012 *vs.* 4.0 per cent in 2011) and public patients (21.4 per cent in 2012 *vs.* 22.3 per cent in 2011). However, smoking during pregnancy continues to be more prevalent for public patients (21.4 per cent) compared to private patients (3.0 per cent) (Figure 18). As reported in previous years, this trend continues to reflect the higher prevalence of smoking amongst lower socio-economic groups.

Figure 18: Self-reported smoking status by admitted patient election status in Tasmania 2012



For patients delivering in public hospitals, as shown in Figure 19, smoking during pregnancy was reported in 2012 most frequently by patients at the Mersey Community Hospital (21.6 per cent), down from 25.7 per cent, followed by the Royal Hobart Hospital (20.7 per cent), a similar value to the previous year (20.5 per cent), and the least frequently (17.5 per cent) reported by patients at the Launceston General Hospital, which was slightly lower than the levels reported in the previous year (18.6 per cent). None of the changes in maternal smoking levels from 2011 to 2012 for these three hospitals were statistically significant. It is important to remember that a key factor in the variations reported between public hospitals relates to the differences in the patient mix at the three hospitals.

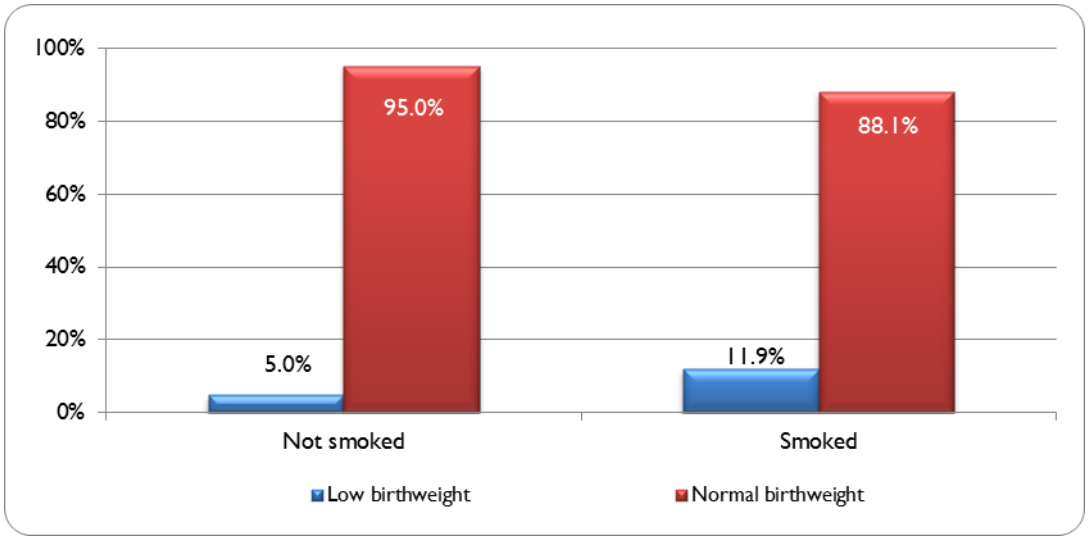
Figure 19: Self-reported tobacco smoking status during pregnancy by public hospital in Tasmania 2012



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

Based on the number of births (excluding multiple births, as multiparous births often result in low birth weight babies regardless of the mother's smoking status) whose mothers answered the smoking questions, a total of 369 babies had a birthweight of less than 2 500 grams. Of these, around 24.4 per cent (*90*) had a birthweight of less than 1 500 grams (very LBW). In 2012, a total of 11.9 per cent of all women who had smoked in pregnancy had a LBW baby compared to 5.0 per cent of women who reported not to have smoked (see Figure 19), a difference which is statistically significant ($p<0.001$). This figure representing the proportion of low birth weight babies in mothers who smoked remains a finding which continues to highlight the potential deleterious effects of smoking on birth weight. The relative risk of having a LBW baby in 2012 was 2.42 (95%CI: 1.95, 3.01) in women who smoked in pregnancy compared with those who reported not to smoke.

Figure 20: Self-reported smoking status during pregnancy by birthweight in Tasmania 2012



Note: Multiparous births have been omitted;

It continues to be important to note that a number of sources of error may influence the strength of this association. For example, since some women may be uncomfortable in disclosing their smoking status during the course of their pregnancy the reported data may not therefore provide an accurate measure of trends. Furthermore, maternal smokers may have other risk factors associated with LBW babies including younger maternal age, poorer prenatal care, inadequate maternal weight gain or other substance abuse. Such factors were not adjusted for in the analyses. If one or more of these factors is positively associated with LBW, they may be responsible for some of the excess risk that is attributed to maternal smoking. That is, the relative risk (RR) estimate of 2.42 may be an overestimate due to confounding (Epidemiology Unit, Population Health, 2014).

Smoking in pregnancy: comments from the Council

As cited previously, evidence suggests that smoking cessation strategies do result in a reduction in the frequency of smoking, where low cost/intensity strategies, utilising maternity care providers at antenatal visits (i.e., brief interventions) have been found to be as effective as high intensity strategies.

In view of this evidence, the Department of Health and Human Services' Smoking Cessation Program continues to train doctors and midwives on how to provide brief interventions on smoking cessation during pregnancy. From 2009 onwards, the Department of Health and Human Services' Smoking Cessation Program has provided ABC brief intervention training to midwifery and obstetric staff in all hospitals. In addition, the e-learning module was developed to ensure all DHHS staff members have access to brief intervention education. The Program has also facilitated the inclusion of a mandatory smoking field in the *ObstetrixTas* system which ensures that all antenatal clients receive an ABC brief intervention at every antenatal visit, which includes personalised brief advice and an offer of a Quit referral or referral to the CL service. Recurrent education sessions have resulted in a team of midwives highly skilled in providing interventions on a regular basis to pregnant women. QUIT Tasmania have also trained staff who can provide counselling support specifically for pregnant women on the Quitline.

Positive outcomes have been welcomed where the review of the data available from 2012 has particularly demonstrated that such smoking cessation programmes as undertaken by the Department and Quit Tasmania are providing beneficial effects for younger women especially those aged between 20 to 24 years. Positive outcomes from these smoking cessation programmes have also been welcomed at both public and private hospitals.

In general, the positive findings found in the younger 20-24 year age group and within both public and private hospitals demonstrate that such interventions to reduce smoking in pregnancy continue to be important especially in view of evidence suggesting that where intrauterine growth restriction continues to be a significant contributor to perinatal mortality, any strategy that reduces the incidence of growth restriction may correspondingly reduce the stillbirth rate.

Recommendation:

As reported in previous years, interventions to reduce smoking in pregnancy are important particularly in view of reducing the incidence of growth restriction and potentially stillbirth rate. Standard antenatal care should therefore continue to incorporate smoking cessation advice and support by maternity staff for all women who smoke in line with the education provided by the DHHS Smoking Cessation as provided by QUIT Tasmania.

Alcohol consumption and pregnancy

The effects of alcohol consumption during pregnancy have been extensively reported in medical literature. Alcohol is evidenced to have deleterious effects on foetal development and birth outcomes. Alcohol is a teratogen and exposure of the foetus to alcohol may result in a spectrum of adverse effects - *Foetal Alcohol Spectrum Disorders* (FASD)[19]. *Foetal Alcohol Syndrome* (FAS) has been described in children exposed to high levels of alcohol in utero as a result of either chronic or intermittent maternal alcohol use[6]. Alcohol has been found to cross the placental barrier causing such problems as reduced foetal growth or weight, characteristic facial abnormalities, damaged neurons and brain structures as well as other physical, mental or behavioural problems[20]. In particular, the primary effect of FAS is permanent central nervous system damage, especially to the brain. Furthermore, developing brain cells and structures are underdeveloped or malformed by prenatal alcohol exposure and as such are often associated with an array of primary cognitive and functional disabilities (e.g., attention and memory deficits) and secondary disabilities (e.g., mental health problems and drug addiction)[21]. In fact, foetal alcohol exposure has been found to be a primary cause of neurological problems and mental retardation[22]. Of great concern is that while the risk of birth defects is greatest with high, frequent maternal alcohol intake during the first trimester, alcohol exposure throughout pregnancy, and before a pregnancy is confirmed, can have negative consequences on the development of the foetal brain since the foetal brain continues to develop throughout the whole pregnancy[6,23].

High level and/or frequent intake of alcohol in pregnancy has also been associated with increased risk of miscarriage, stillbirth and premature birth[24]. In addition, there is new evidence to suggest that prenatal alcohol exposure may increase the risk of alcohol dependence in adolescence[25].

It is also necessary to highlight that timing is important and not all "heavy" drinkers will have an affected child[6].

---

[19] National Health and Medical Research Council (NHMRC) (2009), *Australian Guidelines to Reduce Health Risks from Drinking Alcohol*, Canberra.

[20] Ulleland, C.N. (1972). The offspring of alcoholic mothers. Annals New York Academy of Sciences, 197, 167-169. PMID 4504588.

Streissguth, A. (1997). Fetal Alcohol Syndrome: A Guide for Families and Communities. Baltimore: Brookes Publishing. ISBN 1-55766-283-5.

[21] Streissguth, A.P., Barr H.M., Kogan, J. & Bookstein, F.L. (1996). Understanding the occurrence of secondary disabilities in clients with fetal alcohol syndrome (FAS) and fetal alcohol effects (FAE): Final report to the Centers for Disease Control and Prevention on Grant No. RO4/CCR008515 (Tech. Report No. 96-06). Seattle: University of Washington, Fetal Alcohol and Drug Unit.

[22] Abel, E.L., & Sokol, R.J. (1987). Incidence of fetal alcohol syndrome and economic impact of FAS-related anomalies: Drug alcohol syndrome and economic impact of FAS-related anomalies. Drug and Alcohol Dependency, 19(1), 51-70. PMID 3545731.

[23] Guerri, C. (2002). Mechanisms involved in central nervous system dysfunctions induced by prenatal ethanol exposure. Neurotoxicity Research, 4(4), 327-335. PMID 12829422.

[24] O'Leary C.M., (2004). Fetal alcohol syndrome: diagnosis, epidemiology and developmental outcomes. Journal of Paediatric Child Health, 40: 2-7.

[25] Alanti R., Mamun, A.A., Williams, G. et.al., (2006). In utero alcohol exposure and prediction of alcohol disorders in early adulthood: A birth cohort study. Arch. Gen. Psychiatry, 63: 1009-1016.

In view of the potential problems associated with alcohol consumption during pregnancy, data exploring the alcohol consumption status of Tasmanian women during pregnancy were available for review last year and continue to be collected for review. Available data on alcohol consumption during pregnancy is derived from self-reported information obtained by clinicians from the mother and reported to the Perinatal Data Collection.

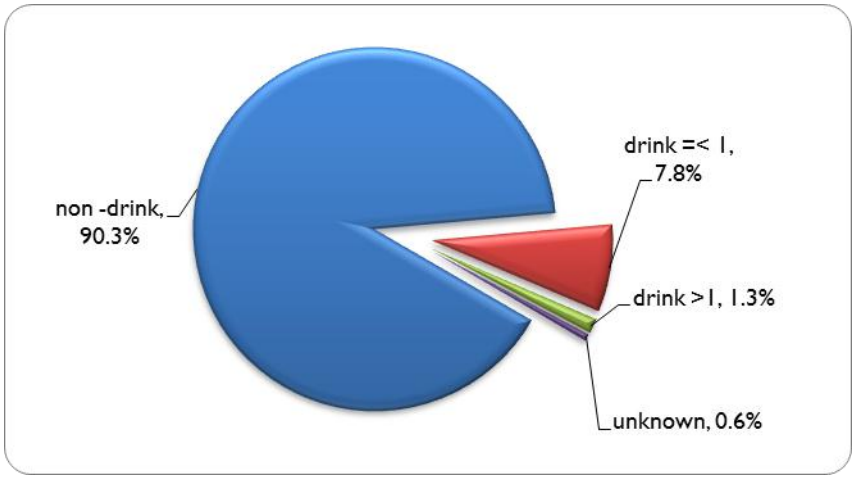
In 2012, a total of 5 863 pregnant women in Tasmania reported on their use of alcohol during pregnancy. As with the data available for smoking during pregnancy, it is important to note that some women may be similarly uncomfortable in disclosing their alcohol consumption status during the course of their pregnancy and as such the data provided may not be entirely accurate.

Table 53 and Figure 21 below show that overall 9.1 per cent of Tasmanian women indicated that they had consumed alcohol during their pregnancy with 7.8 per cent reporting to have consumed less than one standard alcoholic drink per day and 1.3 per cent reporting to have consumed more than one alcoholic drink per day. The overall proportion of women reported to have consumed alcohol in 2012 has remained generally at a steady level since 2010 but is significantly ($p<0.001$) lower than for 2009 and 2008.

Table 53: Alcohol consumption in 2012

Age	2008 %	2009 %	2010 %	2011 %	2012 %
Overall	12.7	11.2	9.2	9.5	9.1
<20	14.7	8.7	8.7	8.1	7.2
20-24	13.0	10.5	8.8	10.0	8.6
25-29	10.3	9.8	8.0	8.3	8.2
30-34	12.6	11.0	8.5	10.2	9.4
35-39	15.4	16.1	11.6	10.8	11.9
40 and over	17.7	11.7	16.5	8.4	8.1
Admitted patient election status					
Public	11.9	9.7	9.3	10.9	10.8
Private	15.5	15.0	9.0	5.9	4.8

Figure 21: Self-reported alcohol consumption status during pregnancy in Tasmania 2012



Number of mothers who reported = 6 220

It appears that maternal alcohol consumption continues to be more prevalent amongst the older mothers in Tasmania, especially between the ages of 30 and 39. Compared to 2011, in 2012 a slightly higher proportion of women aged 35 to 39 years reported consuming alcohol whilst pregnant. Conversely, for women aged 30 to 34 years, and 40 years and over, the proportion who reported consuming alcohol during pregnancy in 2012 fell slightly from the previous year. Overall, apart from the 35 to 39 year age group, the proportion of women who reported consuming alcohol whilst pregnant in 2012 fell across all age groups compared to 2011. The largest decline was observed for women aged 20 to 24 years; however, as with all the age groups, this difference was not statistically significant (p=0.257). The proportion of women consuming alcohol during pregnancy in 2012 appears to be lowest for women aged less than 20 years (Table 53 and Figure 22).

Figure 22: Self-reported alcohol consumption status during pregnancy by age in Tasmania 2012

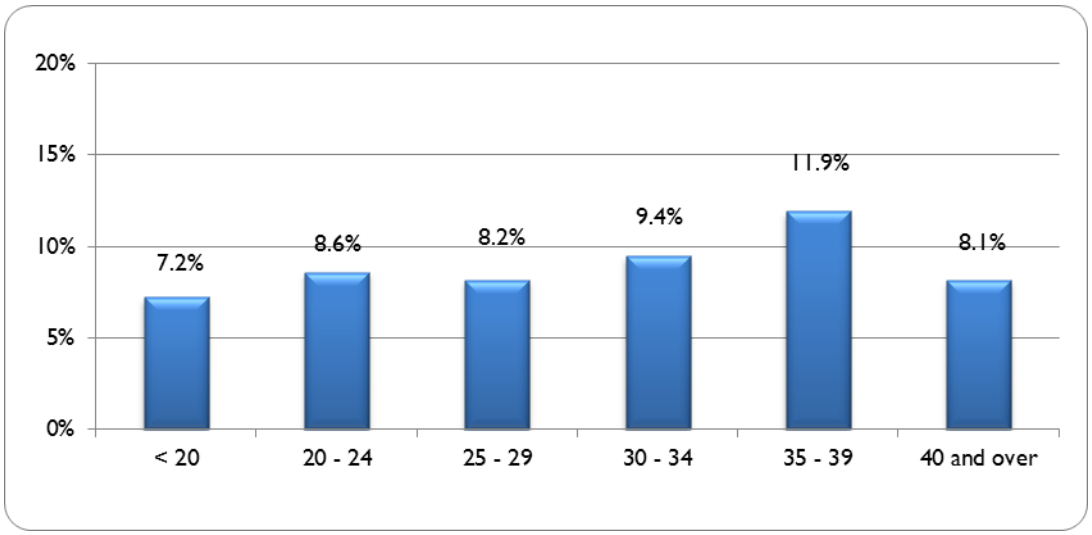
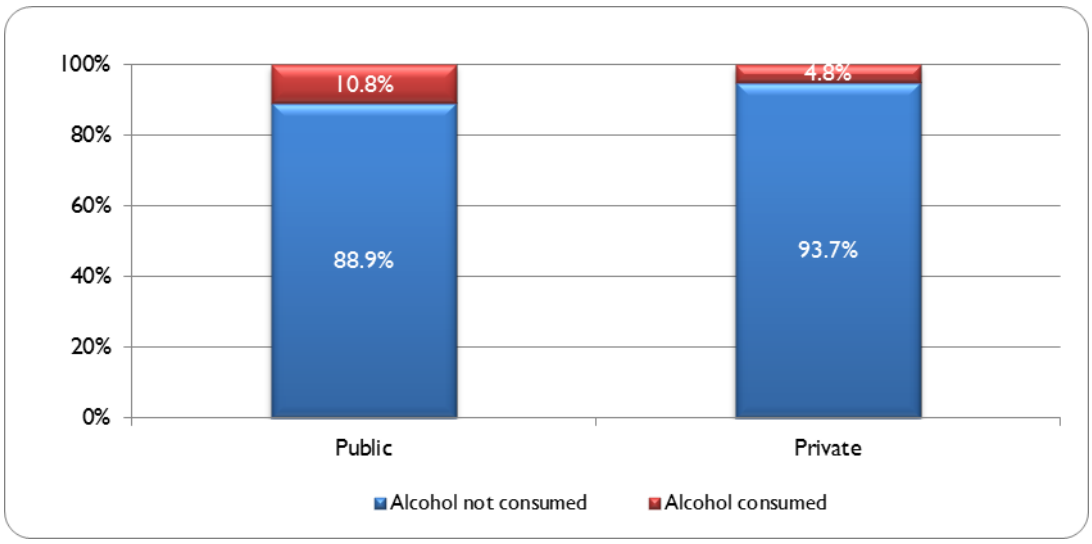


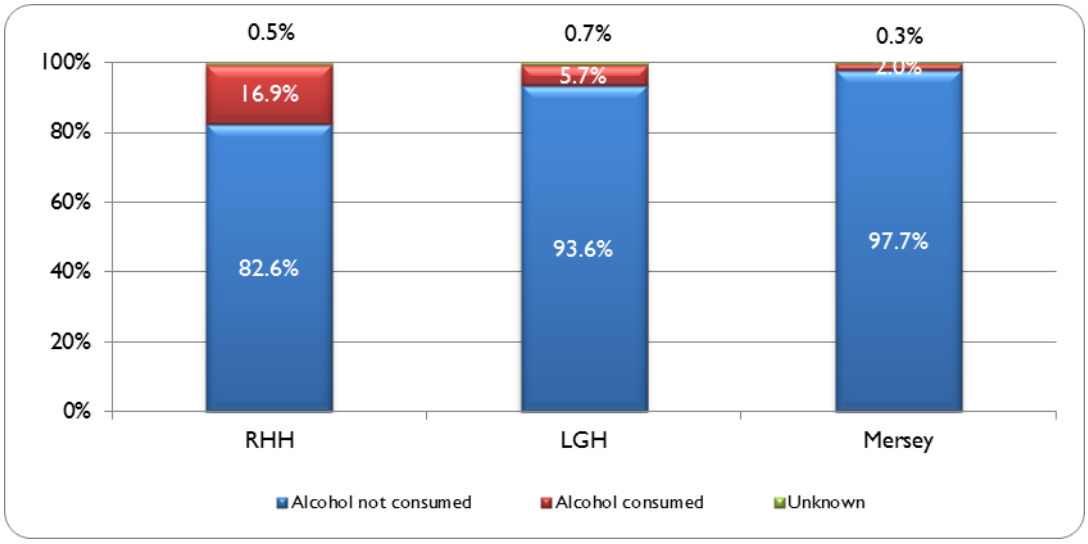
Figure 23: Self-reported alcohol consumption status by admitted patient election status in Tasmania 2012



Alcohol consumption during pregnancy by private patients (4.8 per cent) continues to be less prevalent in 2012 compared to levels reported in recent years, with the 2012 value being slightly lower than for 2011, and significantly lower than in 2010 and earlier years ($p<0.001$). Further, reported alcohol consumption during pregnancy in 2012 amongst public patients (10.8 per cent) remains significantly higher ($p<0.001$) than for private patients (4.8 per cent), as shown above in Table 53 and Figure 23. Of those who reported consuming alcohol during pregnancy, the consumption of more than one alcoholic drink was reported by 10.8 per cent of public patients and 4.8 per cent of private patients.

With regard to the proportion of Tasmanian mothers from public hospitals reporting to have consumed alcohol during pregnancy, Figure 24 shows that in 2012, alcohol consumption during pregnancy was reported at the highest level by patients at the Royal Hobart Hospital (16.9 per cent), followed by patients at the Launceston General Hospital (5.7 per cent) and finally at Mersey Community Hospital (2.0 per cent). Interestingly, there was an increased proportion of patients reporting at the Royal Hobart Hospital (16.9 per cent) since the previous year (15.5 per cent), but the difference was not statistically significant. Conversely, in 2012, compared to the previous year, there were decreases in the proportions of patients who reported to have consumed alcohol at both the Mersey Community Hospital (2.0 per cent in 2012, down from 4.3 per cent) and the Launceston General Hospital (5.7 per cent in 2012, down from 8.2 per cent) compared to the previous year, with the decline for the Launceston General Hospital being statistically significant ($p=0.006$). Similar to the smoking and pregnancy data, a key factor in these variations may relate to difference in the patient mix at the three hospitals.

Figure 24: Self-reported alcohol consumption status during pregnancy by public hospital in Tasmania 2012

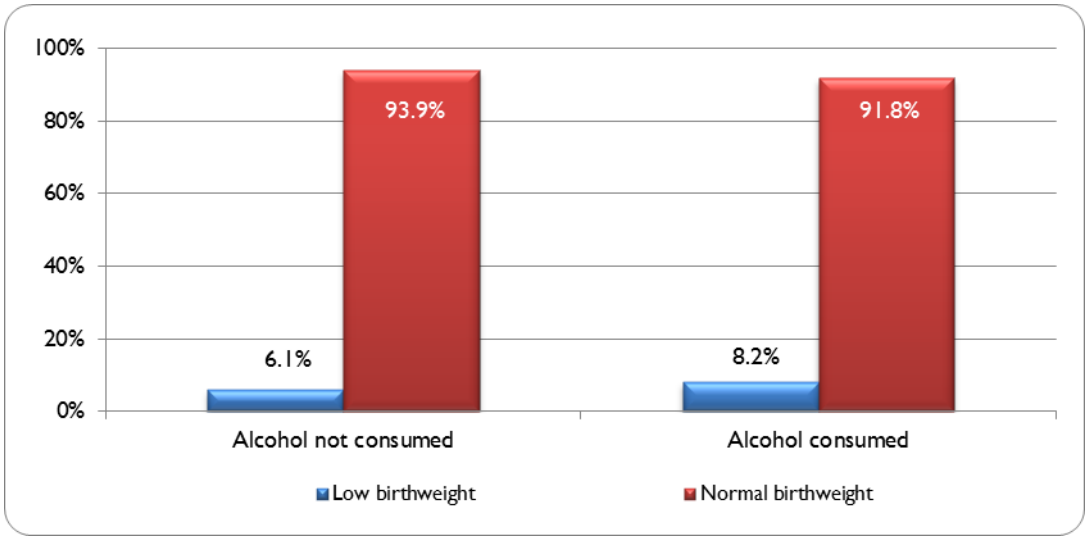


As indicated previously, low birthweight (LBW) is defined as a weight of less than 2 500 grams and includes babies that are small for gestational age as well as premature.

Based on the number of births (excluding multiple births, as multiparous births often result in low birth weight babies regardless of the mother's smoking status) whose mothers answered the alcohol consumption questions, a total of 369 babies, had a birthweight of less than 2 500 grams. Of these, 24.4 per cent (90) had a birthweight of less than 1 500 grams (very LBW). In 2012, a total of 8.2 per cent of all women who had consumed alcohol during pregnancy had a LBW baby compared to 6.1 per cent of women who reported not to consumed alcohol (Figure 25), a difference which was not statistically significant (p=0.059). The relative risk of having a LBW baby in 2012 was 1.34 (95% CI: 0.99, 1.83) in women who consumed alcohol in pregnancy compared to those who reported not having consumed alcohol, a ratio which was not statistically significant.

It is important to note that a number of sources of error may influence findings of this analysis. Since some women may be uncomfortable in disclosing alcohol consumption during the course of their pregnancy, the reported data may not provide an accurate measure of alcohol consumption during pregnancy. Furthermore, other risk factors associated with LBW babies may be involved, including smoking, younger maternal age, poorer prenatal care, inadequate maternal weight gain, or other substance abuse. Such factors were not adjusted for in the analyses.

Figure 25: Self-reported alcohol consumption status during pregnancy by birthweight in Tasmania 2012



Recommendation:

In relation to recommendations around alcohol consumption during pregnancy from the *NHMRC Australian Guidelines to Reduce Health Risks from Drinking Alcohol,* Australian Government, *2009 (c.f. Guideline 4: Pregnancy and breastfeeding)* Council agrees that:

A. For women who are pregnant or planning pregnancy, not drinking is the safest option.

B. For women who are breastfeeding, not drinking is the safest option.

Attachment A: Guidelines for Investigation of "Unexplained" Stillbirths

Introduction

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

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

Guideline

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.

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.

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.

Autopsy of the baby

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

Karyotype

Ideally obtained by amniocentesis prior to delivery, but if consent not obtained then placental biopsy and/or cord blood (if obtainable) or foetal skin should be sent for chromosomal analysis. Chromosomal analysis is still possible in macerated foetuses.

Maternal Investigations

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

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

Attachment B: Perinatal Data Collection Form

PERINATAL DATA COLLECTION FORM — **CONFIDENTIAL**

This form is to be completed for all babies (both liveborn & stillborn) who have a gestational age greater than 20 weeks or who weigh greater than 400 grams at birth. For multiple births please complete one form for each baby.

(Tas. Perinatal Registry Act 1994)

Denotes Additional section to be completed

** Denotes that more than 1 box may be ticked

1. **Hospital Code** ☐☐☐☐

MOTHERS' DETAILS

2. **Full name** _____
3. **Unit Record Number** ☐☐☐☐☐☐
4. **Date of Birth** ____ / ____ / 1 9 ____
5. **Residential Suburb** _____
6. **Postcode** ☐☐☐☐
7. **Country of Birth** _____
8. **Indigenous Status**
   - ☐ Neither Aboriginal nor Torres Strait Islander
   - ☐ Aboriginal
   - ☐ Torres Strait Islander
   - ☐ Both Aboriginal & Torres Strait Islander
9. **Number of Previous**
   - ☐☐ Livebirths
   - ☐☐ Stillbirths
   - ☐☐ Ectopic Pregnancy
   - ☐☐ Miscarriage
   - ☐☐ Terminated Pregnancy
10. **Parity** (after delivery) ☐☐
11. **Neonatal deaths?** ☐ Yes ☐ No Number ____
12. **Previous Caesarean** ☐ Yes ☐ No Number ____
13. **Mode of last delivery** ☐ Vaginal ☐ Caesarean Section ☐ N/A
14. **Estimated date of confinement** ____ / ____ / 2 0 ____
15. **Determined by** (select most accurate option only)
    - ☐ Known conception
    - ☐ Known date LMP
    - ☐ Ultra sound < 12 weeks
    - ☐ Ultra sound > 12 weeks
16. **Is this pregnancy the result of assisted reproductive technology?** ☐ Yes ☐ No
17. **Intended place of birth** ☐ Hospital ☐ Birth Centre ☐ Home/Other
18. **Intending to breastfeed** ☐ Yes ☐ No ☐ Unsure
19. **Antenatal Testing** **
    - ☐ None
    - ☐ 1st Trimester Downs Screening
    - ☐ 2nd Trimester Downs Screening
    - ☐ Amniocentesis
    - ☐ Chorion villus sampling
    - ☐ Screening for Gestational Diabetes
    - ☐ GBS Screen
    - ☐ Level 2 Ultrasound
20. **Plurality** ☐ Single ☐ Multiple No. ___

MOTHER's DETAILS (cont.)

21. **Pre Pregnancy Conditions** **
    - ☐ None
    - ☐ Cardiovascular
    - ☐ Thyroid
    - ☐ Diabetes Mellitus
    - ☐ Other _____
    - ☐ Mental Health
    - ☐ Renal Disease
    - ☐ Epilepsy
    - ☐ Hypertension
22. **During this pregnancy has the mother:**
    - i. Smoked tobacco ☐ Yes ☐ < 10/day ☐ > 10/day ☐ No
    - ii. Consumed alcohol ☐ Yes ☐ < 1 standard/day ☐ > 1 standard/day ☐ No
    - iii. Smoked marijuana ☐ Yes ☐ No
    - iv. Used other recreational drugs ☐ Yes ☐ No

DELIVERY DETAILS

23. **Date of Admission in which delivery occurs** ____ / ____ / 2 0 ____
24. **Admitted Patient Election Status** ☐ Public ☐ Private ☐ Not applicable
25. **Transfer of Patient Prior to delivery**
    - ☐ No transfer
    - ☐ Hospital to hospital
    - ☐ Birth Centre to hospital
    - ☐ Home to hospital (intended homebirth only)
26. **Obstetric Complications** **
    - ☐ None
    - ☐ Bleed < 20 weeks (threatened miscarriage)
    - ☐ Placenta Previa
    - ☐ APH undetermined origin
    - ☐ Placental abruption
    - ☐ Threatened premature labour
    - ☐ Pregnancy induced hypertension
    - ☐ Pre-eclampsia
    - ☐ Prolonged rupture of membranes (> 18 hours)
    - ☐ Pre-labour rupture of membranes
    - ☐ Gestational Diabetes
    - ☐ Other _____
27. **Labour** ☐ Spontaneous ☐ Induced ☐ None
28. **Method of Induction** **
    - ☐ Prostaglandin
    - ☐ Balloon
    - ☐ ARM
    - ☐ Oxytocin
29. **Indication for induction of labour** **
    - ☐ Social/geographical
    - ☐ Post dates
    - ☐ Maternal indications
    - ☐ Fetal indications
30. **Augmentation of labour** (both ARM & Oxytocin may be ticked) ☐ Not Augmented ☐ ARM ☐ Oxytocin
31. **Analgesia during Labour** **
    - ☐ None
    - ☐ O_2/Nitrous Oxide
    - ☐ IM Opioids
    - ☐ Epidural/Caudal
    - ☐ IV Opioids
    - ☐ Pudendal
    - ☐ Spinal
    - ☐ Other

DELIVERY DETAILS (cont.)

32. **Principal Accoucheur**
☐ Obstetrician ☐ Midwife ☐ GP Obstetrician
☐ Hospital Medical Officer ☐ Other

33. **Labour & Delivery Complications** **
☐ None
☐ Grade 2- 3 meconium
☐ Shoulder Dystocia
☐ Primary PPH (greater than 500 mls in first 24 hrs)
☐ Retained placenta (requiring manual removal)
☐ Other _____

34. **Perineal Status** **
☐ Intact
☐ 1st degree tear
☐ 2nd degree tear
☐ 3rd degree tear
☐ 4th degree tear
☐ Episiotomy

35. **Indication for Caesarean Section** **
☐ Maternal Indications (includes patient's choice)
☐ Dystocia (FTP, CPD)
☐ Abnormal Presentation
☐ Fetal Indications
☐ Failed Induction
☐ Failed trial of instrumental delivery
☐ Elective Repeat

36. **Was the Caesarean Section:**
a) ☐ Elective ☐ Emergency
b) ☐ Primary ☐ Repeat

37. **Anaesthesia for delivery** **
☐ None ☐ Spinal
☐ Local anaesthetic ☐ Epidural/Caudal
☐ Pudendal ☐ General Anaesthetic

BABY'S DETAILS

38. **Unit Record Number** ☐☐☐☐☐☐

39. **Date of Birth** ____ / ____ / 2 0____

40. **Presentation at Vaginal Birth**
☐ Vertex ☐ Face ☐ Other
☐ Breech ☐ Brow

41. **Mode of Birth**
☐ Non-instrumental vaginal
☐ Forceps - low ☐ Vacuum extraction
☐ Forceps - mid ☐ Vacuum rotation
☐ Forceps rotation ☐ Caesarean Section

42. **Birth Status**
☐ Liveborn ☐ Stillborn

43. **Apgar score** at 1 minute ☐☐
at 5 minutes ☐☐

44. **Cord pH**
☐ not done ☐ < 7.2 ☐ ≥ 7.2

45. **Gestational age at birth** ☐☐ (completed weeks)

46. **Weight** ☐☐☐☐ (grams)

47. **Sex**
☐ Male ☐ Female ☐ Indeterminate

BABY'S DETAILS (cont.)

48. **Birth Order**
☐ Singleton ☐ Twin/Triplet 2
☐ Twin/Triplet 1 ☐ Triplet 3

49. **Actual Place of Birth**
☐ Hospital ☐ Birth centre ☐ Home or other

50. **Resuscitation at Birth** **
☐ None
☐ Suction
☐ Passive Oxygen Therapy
☐ Bag & Mask IPPV
☐ Endoctracheal intubation & IPPV
☐ External Cardiac Massage
☐ Adrenaline

51. **Medical Admission to SCN/ICU**
☐ Yes Number of days ☐☐
☐ No

52. **Congenital Abnormalities** **
☐ None
☐ Malformation of nervous system
☐ Malformation of eye, ear, face & neck
☐ Malformation of circulatory system
☐ Cleft lip and cleft palate
☐ Malformations of digestive system
☐ Malformation of genital organs
☐ Malformation of urinary system
☐ Malformation of musculoskeletal system
☐ Chromosomal malformations
☐ Inborn errors of metabolism
☐ Other _____

53. MOTHER'S DISCHARGE

☐ Discharged ____ / ____ / 2 0____
☐ Transferred ____ / ____ / 2 0____
☐ Died ____ / ____ / 2 0____

54. **Breastfeeding at Discharge**
☐ Fully ☐ Partially ☐ Not at all

55. BABY'S DISCHARGE

☐ Discharged ____ / ____ / 2 0____
☐ Transferred ____ / ____ / 2 0____
☐ Died ____ / ____ / 2 0____
☐ Still in hospital at 28 days of age

56. **Reason for Transfer of Baby**
☐ Medical ☐ Other

Please complete the
☐ Stillbirth or Neonatal Death Forms
and / or
☐ Congenital Abnormality Notification Form

Please attach the
☐ Maternal Death Reporting Form
This is a separate form.

Congenital Abnormality Notification Form

This form must be completed for all infants (both liveborn and stillborn) where a congenital abnormality is detected.

To be completed by the Paediatrician

Please list each anomaly separately:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Case Summary

_____

_____

_____

_____

_____

_____

_____

_____

Signature: _____

Designation: _____

Date: _____ / _____ / 2 0_____

Stillbirth Clinical Review Form

This form must be completed for all stillborn infants who are greater than 20 weeks gestation, or who weigh more than 400 grams at birth

To be completed by the Obstetric Registrar or Consultant

** Denotes that more than 1 box may be ticked

1. **Tests of fetal wellbeing under taken after 20 weeks** **
   - ☐ CTG
   - ☐ Ultrasound
   - ☐ Amniocentesis
   - ☐ U/S Doppler
2. **Rupture of membranes prior to labour**
   - ☐ Yes — Number of hours prior to delivery _____
   - ☐ No
   - ☐ Uncertain
3. **Was there clinical or ultrasound evidence of IUGR (EFW ≤ 10% for GA)**
   - ☐ Yes
   - ☐ No
4. **Liquor** **
   - ☐ Clear
   - ☐ Bloodstained
   - ☐ Infected
   - ☐ Meconium (grade 2-3)
5. **Placenta - clinical evidence of:**
   - ☐ Abruption
   - ☐ Vasa Praevia
   - ☐ Infarction
6. **Cord - clinical evidence of:**
   - ☐ Prolapse
   - ☐ True Knot
7. **Fetal Heart Monitoring during Labour** **
   - ☐ Intermittent CTG
   - ☐ Intermittent Auscultation
   - ☐ Not applicable
   - ☐ Continuous electronic
   - ☐ No Monitoring
8. **Was fetal scalp blood pH monitoring performed?**
   - ☐ Yes Result _____ ☐ No
9. **Was Cord pH measured?**
   - ☐ Yes Result _____ ☐ No
10. **Maternal Investigations** **
    - ☐ HbA1C
    - ☐ TORCH Screen
    - ☐ Kleihauer
    - ☐ Antiphospholipid Antibodies
    - ☐ Fetal Karyotyping
    - ☐ Thrombophilia Screen
11. **Autopsy Performed** ☐ Yes ☐ No
12. **Cause of death**

    _____
13. **Antecedent cause of death**

    _____

    _____

    _____
14. **Case Summary**

    _____

    _____

    _____

Signature: _____

Date: _____ / _____ / 2 0_____

Neonatal Death Clinical Review Form

This form must be completed for all infants who are liveborn but die before 29 days of age.

To be completed by the Paediatrician

** Denotes that more than 1 box may be ticked

1. **Apgar score at 10 minutes** ☐☐

2. **Trauma suffered** **

- ☐ Nil trauma
- ☐ Fractures
- ☐ Bruising
- ☐ Other _____

3. **Was surgery performed during the infants life?**

- ☐ No
- ☐ Yes

Please specify

_____

_____

4. **Was there proven evidence of infection?**
(e.g. positive cultures of blood or CSF)

- ☐ No
- ☐ Yes

Please specify the organisms isolated

_____

_____

_____

5. **What antibiotics were given?**

_____

_____

_____

6. **Complications in the neonatal period** **

- ☐ Nil
- ☐ Pneumothorax
- ☐ Bronchopulmonary dysplasia
- ☐ Intraventricular haemorrhage
- ☐ Necrotising enterocolitis
- ☐ Other

Please specify

_____

_____

7. **Autopsy Performed?**

- ☐ No
- ☐ Yes

Neonatal Death Clinical Review Form (cont.)

8. **Cause of death**

_____

9. **Antecedent cause of death**

_____

_____

_____

_____

_____

10. **Case Summary**

_____

_____

_____

_____

_____

_____

Signature: _____

Date: _____ / _____ / 2 0 _____

Attachment C: National Perinatal Death Clinical Audit (NPDCA) Tool

National Perinatal Death Clinical Audit Tool

Australian and New Zealand stillbirth alliance

Tasmania

Perinatal Society of Australia & New Zealand

Type of Perinatal Death

☐ **STILLBIRTH (Fetal death) :** 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 of 400 g or more birthweight where gestation is not known. The death is indicated by the fact that after such separation the fetus 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.

Please select type:
- ☐ Antepartum fetal death
- ☐ Intrapartum fetal death
- ☐ Time of fetal death not known
- ☐ Termination of pregnancy

OR

☐ **NEONATAL DEATH:** Death of a liveborn infant occurring before 28 completed days after birth.

Please select type:
- ☐ Non-admitted neonatal death
- ☐ Neonatal death in hospital
- ☐ Termination of pregnancy

Please follow the instructions and answer all questions as directed. You may not know the answer to some of the questions but please provide as much detail as possible. Personally identifiable information collected on this form will be kept confidential. Information included in reports will be grouped and non identifiable.

Section 1: CLINICAL DATA RELEVANT TO PERINATAL DEATH

PLEASE COMPLETE THIS SECTION WITHIN 48 HOURS OF THE STILLBIRTH OR NEONATAL DEATH.

1. How many perinatal deaths are associated with this pregnancy? ☐
2. Mother: Surname ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
   Given name(s): ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
   Other name(s): ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
3. Mother's Unit Record No: ☐☐☐☐☐☐☐☐☐☐
4. Mother's date of birth: ☐☐/☐☐/☐☐☐☐ (DD/MM/YYYY)
5. Usual residential address of mother at time of birth:
   Town/City/Locality ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
   State ☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐
   Post Code ☐☐☐☐☐☐☐☐☐☐
6. Date and time of baby's birth: Date: ☐☐/☐☐/☐☐☐☐ (DD/MM/YYYY)
   Time: ☐☐.☐☐ hrs (24hour Clock)
7. Date and time of baby's death (neonatal deaths):
   Date: ☐☐/☐☐/☐☐☐☐ (DD/MM/YYYY)
   Time: ☐☐.☐☐ hrs (24hour Clock)
8. Calculated gestation of pregnancy at birth: ☐☐ Completed Weeks
9. Birth weight: ☐☐☐☐ grams

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10. Gender: **Male** ☐ **Female** ☐ **Undetermined** ☐

11. Name of facility reporting: ☐

12. Marital status: Never Married ☐ Married ☐ De facto ☐ Widowed ☐ Divorced ☐ Separated ☐

13. Education: <High school ☐ High school ☐ Tertiary ☐

14. Mother's occupation: ☐

15. Mother's country of birth: ☐

16. Mother's ethnicity:

- ☐ Aboriginal
- ☐ Torres Strait Islander
- ☐ Aboriginal & Torres Strait Islander
- ☐ Maori / Pacific Islander
- ☐ Papua New Guinean/ Timorese
- ☐ Caucasian
- ☐ Mediterranean
- ☐ Indian, Pakistani, Bangladeshi, Sri Lankan
- ☐ Cambodian, Laos, Vietnamese, Thai
- ☐ Malay, Philippino, Indonesian
- ☐ Chinese, Korean, Japanese
- ☐ Middle Eastern, Nth African
- ☐ African
- ☐ Central / Sth American
- ☐ Other, please state: ☐

17. Mother's understanding of spoken English:

- ☐ None *or* ☐ Unknown
- ☐ Poor
- ☐ Average
- ☐ Good

18. Mother's height: ☐☐☐ cms
weight: ☐☐☐ kg (earliest measured in pregnancy)
If not available please measure height and weight.

19. Maternal BMI at booking: ☐☐.☐ *or* Unknown ☐

20. Was this a multiple pregnancy?

Yes ☐ **No** ☐ **Unknown** ☐

If yes, what was birth order of this stillborn or deceased baby?

- ☐ First
- ☐ Second
- ☐ Other

a. Number of fetuses/babies **alive** at 20 weeks gestation: ☐
b. Chorionicity (if known) _____

21. Mother's previous obstetric history:

a) total number of previous pregnancies: ☐☐ *or* Unknown ☐

b) details of previous pregnancies ***(list in order from first pregnancy- more space page 11)***

Date of Birth	Place of birth	Gestation (weeks)	Pregnancy Outcome *(codes below)*	Type of birth *(codes below)*	Birth weight	Complications (eg. IUGR) *(codes below)*
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						

Pregnancy Outcome: LB = live birth; **SM** = spontaneous miscarriage; **TOP** = termination of pregnancy; **E** = ectopic pregnancy; **SB** = stillbirth; **NNDE** = early neonatal death (<7 days age); **NNDL** = late neonatal death (7 days – 28 days); **NNDI** = Death 28 days – 2 years; **U** = unknown.

Type of Birth: NVB = normal vaginal birth; **OVD** = operative vaginal delivery; **VB** = vaginal breech; **CS** = caesarean section; **U** = unknown.

Complications: NIL = no complications; **HE** = hyperemesis; **APH** = ante partum haemorrhage/abruption; **CxS** = cervical stitch; **IUGR** = intrauterine growth retardation; **GDM** = gestational diabetes mellitus; **GH** = gestational hypertension; **U** = unknown; **Other** = please comment in summary section, page 11.

22. Mother's medical history (before this pregnancy)

	Yes	No	Unknown
a. Any pre-existing medical condition *(If no or unknown, go to question 23)*	☐	☐	☐
b. Asthma	☐	☐	☐
c. Diabetes pre pregnancy (type 1 or 2)	☐	☐	☐
d. Epilepsy	☐	☐	☐
e. Heart condition (congenital or acquired)	☐	☐	☐
f. Hypertension	☐	☐	☐
g. Endocrine disorder (eg.hyper/hypothyroid)	☐	☐	☐
h. Inflammatory bowel disease	☐	☐	☐
i. Systemic lupus erythematosus	☐	☐	☐
j. Other autoimmune disorder	☐	☐	☐
k. Mental health disorder	☐	☐	☐
l. Renal disease	☐	☐	☐
m. Venous thromboembolism	☐	☐	☐
n. Haematological disorders	☐	☐	☐
o. Cervical/uterine surgery	☐	☐	☐
p. Urinary tract infection	☐	☐	☐
q. Uterine abnormality	☐	☐	☐
r. Other, please state:	☐		

All remaining questions relate only to the pregnancy associated with this perinatal death.

23. Fertility treatment or assisted conception in this pregnancy?

Yes ☐ No ☐ Unknown ☐

If yes, method/s and dates:

24. Is mother a smoker? Yes ☐ *If yes:* ☐☐ *per day* No ☐

If no:

Never smoked ☐
Stopped before this pregnancy ☐
Stopped during this pregnancy ☐ *at gestation:* wks
Unknown ☐

25. Mother's use of alcohol and other drugs: Yes ☐ No ☐ Unknown ☐

If yes specify drug and alcohol use during this pregnancy:

a) First trimester :

b) Month prior to birth:

26. Antenatal check ups :

a. Total number of antenatal visits recorded ☐☐ Unknown ☐

b. Gestation at first antenatal visit: ☐☐ weeks Unknown ☐

27. Model of antenatal maternity care:

(Select one in each column)	At booking	At birth
No booked care	☐	☐
Obstetric hospital	☐	☐
Maternal/Fetal Medicine	☐	☐
Hospital midwifery (eg birth centre)	☐	☐
Private obstetrician	☐	☐
Private midwife	☐	☐
General Practitioner/Shared	☐	☐
Unknown	☐	☐

28.Intended place of birth before labour:

☐ Home
☐ Birth Centre
☐ Public Hospital
☐ Private Hospital
☐ Other
☐ Unknown

Please state name of intended place:

29. Actual place of birth:

☐ Home
☐ Birth Centre
☐ Public Hospital
☐ Private Hospital
☐ Unattended/Freebirth
☐ Other

Please state name of actual place:

30. Obstetric conditions during this pregnancy:

Indicate all conditions known to be present during this pregnancy.

Yes

a. Hypertension ☐

If yes indicate type of hypertension

- ☐ Gestational hypertension
- ☐ Pre-eclampsia
- ☐ Pre-eclampsia with chronic hypertension
- ☐ Eclampsia
- ☐ Unspecified

b. Preterm labour ☐

c. Prolonged rupture of membranes ☐

If yes indicate gestation

- ☐ Preterm - rupture < 37 weeks gestation
- ☐ Term - rupture ≥ 37 weeks gestation

d. Cholestasis of pregnancy ☐

e. Confirmed maternal infection ☐

If yes indicate kind of infection

- ☐ Pyelonephritis
- ☐ Lower urinary tract infection
- ☐ Other infection

If other please specify: ☐

f. Trauma ☐

If yes indicate kind of trauma

- ☐ Vehicular
- ☐ Fall
- ☐ Violent personal injury
- ☐ Other, please specify: ☐

g. Vaginal bleeding ☐

If yes indicate gestation

- ☐ Before 20 weeks
- ☐ After 20 weeks

h. Gestational diabetes ☐

If yes indicate intervention

- ☐ Oral hypoglycaemic therapy
- ☐ Insulin treated
- ☐ Other, please specify: ☐

i. Other obstetric condition ☐

Please specify: ☐

- ☐ **None of the above**
- ☐ **Unknown**

31. Suspected fetal growth restriction during pregnancy: *(Select one)*

- ☐ No
- ☐ Yes and confirmed by scan
- ☐ Yes but normal growth on scan
- ☐ Yes but no scan performed
- ☐ Unknown

32. Antenatal procedures: *(Please indicate all procedures undertaken in pregnancy **before** perinatal death)*

	Yes
First trimester screening scan	☐
Anomaly scan at ≤ 20 gestation	☐
Chorion villus sampling	☐
Cervical suture	☐
Amniocentesis	☐
Doppler studies	☐
External cephalic version	☐
Fetocide	☐
Amnioreduction	☐
Laser treatment	☐
Other, please state:	
None of the above	☐
Unknown	☐

Total number of scans= ☐

33. Please indicate if obstetric consultation occurred for these reasons: *(All that apply)*

No obstetric consultations	☐
Prolonged pregnancy (>41 weeks)	☐
Poor obstetric history	☐
Breech presentation	☐
Mother's request	☐
Previous perinatal death	☐
Size of fetus	☐ large ☐ *or* small ☐
Previous caesarean section	☐
Antepartum haemorrhage	☐
Unstable lie	☐
Fetal abnormality	☐
Prolonged rupture of membranes	☐
Decreased fetal movements	☐
Non-reassuring CTG	☐
Polyhydramnios/Oligohydramnios	☐
Surgery, specify:	
Other reason, specify:	

34. Was the mother referred to other healthcare services during pregnancy?

Yes ☐ **No** ☐ **Unknown** ☐

If yes, select all applicable:

Medical	☐
Mental health	☐
Drug and alcohol	☐
Social worker	☐
Other service	☐
If other, specify:	

35. Were maternal corticosteroids given in pregnancy?

Yes ☐ **No** ☐ **Unknown** ☐

36. Medications taken in this pregnancy? **Yes** ☐ **No** ☐

(Include all over the counter and traditional medicines)

If yes, list: _____

_____

_____

_____

NB. If fetal death confirmed before labour, please go to question 42.

Labour and Birth:

37. Onset of labour:

Spontaneous ☐ **Induced** ☐ **No labour** ☐ **Unknown** ☐

(If no labour, go to question 42)

a) If labour induced, state methods used to induce labour

☐ Drugs used, please specify: _____

☐ Artificial rupture of membranes (Date & Time_____)

☐ Other, please specify: _____

b) Reason for induction:

_____

38. Labour augmentation: Yes ☐ No ☐ Unknown ☐

(If yes, please select all that apply)

☐ Artificial rupture of membranes (Date & Time _____)

☐ Oxytocin infusion

☐ Other, please specify: _____

39. Analgesia during labour: Yes ☐ No ☐ Unknown ☐

(If yes, select all relevant)

Opiate	☐
Nitrous oxide	☐
Epidural	☐
Non-pharmacological – please specify	
Other - please state:	

40. Water immersion during labour:

Did part of labour occur in bath/pool? Yes ☐ No ☐ Unknown ☐

(If yes)

Was the baby born in bath/pool? Yes ☐ No ☐ Unknown ☐

41. Fetal monitoring during labour: Yes ☐ No ☐ Unknown ☐

(If yes select all relevant)

Intermittent auscultation	☐
CTG on admission	☐
Intermittent CTG	☐
Continuous CTG external	☐
Continuous CTG - FSE	☐
Fetal scalp ph/lactate	☐
Other, please state:	

42. Method of birth of this baby

Vaginal non-instrumental		☐
Forceps		☐
Vacuum extractor		☐
LSCS	*(see below)*	☐
Classical caesarean	*(see below)*	☐
Other, please state		☐ *Details:*
Unknown/not stated		☐

If caesarean, please answer a) and b) over:

a) Main reason for caesarean: *(select one)*

- ☐ No medical indication
- ☐ Previous caesarean
- ☐ Breech presentation
- ☐ Pre-eclampsia
- ☐ Antepartum haemorrhage
- ☐ Maternal request
- ☐ Intra uterine fetal death *(Go to Question 48.)*
- ☐ Intra uterine growth restriction
- ☐ Fetal abnormality
- ☐ Fetal distress
- ☐ Cord presentation/prolapse
- ☐ Failure to progress
- ☐ Other, please specify: _____

b) Anaesthetic for operative delivery:

General ☐
Spinal ☐
Epidural ☐

43. Complications in labour: Yes ☐ No ☐ Unknown ☐

(If yes, select all relevant)

- APH ☐
- Meconium liqour ☐
- Fetal bradycardia ☐
- Non-reassuring CTG ☐
- Cord entanglement/ prolapse ☐
- Shoulder dystocia ☐
- Failure to progress/dystocia ☐
- Other, please state: ☐

44. Length of labour:

a) First stage ☐☐ hours ☐☐ minutes *or* Unknown ☐
b) Second stage ☐☐ hours ☐☐ minutes *or* Unknown ☐
c) If birth occurred in hospital, state time in hospital before birth:
☐☐ days ☐☐ hours ☐☐ minutes *or* Unknown ☐

45. Apgar scores:

☐ 1 min ☐ 5 min ☐ 10 min ☐ 15 min
☐ Unknown

46. a) Resuscitation at birth: Yes ☐ No ☐ Unknown ☐

If yes answer the rest of this question:

Baby resuscitated and transferred to another clinical area ☐
Baby not able to be resuscitated ☐

b) Details of resuscitation at birth: *If resuscitation commenced indicate methods:*

- ☐ Suction
- ☐ Oxygen
- ☐ IPPV – bag and mask
- ☐ External cardiac massage
- ☐ Medications, specify: ☐
- ☐ Other resuscitation, specify: ☐

State category of senior staff present: ☐

47. Cord gases at birth: Yes ☐ No ☐ Unknown ☐

		Arterial	Venous
pH		☐.☐☐	☐.☐☐
Base deficit	+/-	☐☐.☐	+/- ☐☐.☐
CO_2		☐☐.☐	☐☐.☐
Lactate		☐☐.☐	☐☐.☐

48. Baby's examination after birth (live and stillborn babies):

a) Length ☐☐.☐ cm **and** Head circumference ☐☐.☐ cm

b) External abnormalities noted on examination of baby: Yes ☐ No ☐

If yes, specify (including birth trauma) _____

_____

_____

_____

c) If stillborn, degree of maceration: None ☐ Slight ☐ Moderate ☐ Marked ☐

NB. If fetal death confirmed before labour, go to question 53.

49. Was baby transferred from place of birth (eg via NETS) prior to death?

Yes ☐ **No** ☐ **Unknown** ☐

If yes, where was the baby transferred to? *(Select one)*

NICU/SCU* ☐
Post natal ward ☐
Home ☐
Died in transfer ☐
Tertiary Services ☐
Other ☐
If other please state: _____

*Neonatal Intensive Care Unit/Special Care Unit

50. If baby admitted to hospital, provide details of further treatments.

a) Diagnoses made: _____
b) Investigations/procedures: _____
c) IV therapy and drugs: _____
d) Mechanical ventilation details: _____
e) Were active life supporting measures withdrawn? Yes ☐ No ☐

f) **Summary of significant neonatal events:**

Date	Time	Baby's age	Event

51. Place of death if baby was born alive:

Home ☐
Hospital ☐ Specify location in hospital: _____
Other ☐ Give details: _____

52. Baby examination after neonatal death:

External abnormalities noted on examination of the baby?

Yes ☐ No ☐

*If yes, please specify (including birth trauma)*_____

_____

_____

53. Placental examination:

a) Placenta weight: ☐☐☐☐ gm or Unknown ☐

b) Placental examination

☐ Not examined
☐ Normal
☐ Abnormalities, please state: _____

c) Placenta sent to pathology: Yes ☐ No ☐ Unknown ☐

54. Umbilical cord notable features: Yes ☐ No ☐ Unknown ☐

If yes, indicate all features noted:

True knot	☐	tight ☐	loose ☐		
Cord round neck	☐	tight ☐	loose ☐		
Cord round limbs or body	☐	tight ☐	loose ☐		
Hyper-coiled appearance	☐				
Marginal/ velamentous insertion	☐				
Abnormal cord length	☐	short ☐	long ☐	____	cms
Unusual thickness	☐	thin ☐	thick ☐	____	cms
Meconium stained	☐				
2 vessels	☐				
Other abnormality, please state:	_____				

55. Maternal outcome:

☐ Alive and generally well

☐ Alive but with serious morbidity (e.g. admitted to ICU, hysterectomy, stroke).

☐ Dead

Please add further details in the summary (page 11) if serious maternal morbidity or mortality.

56. Post mortem examination:

a) Parents offered a post mortem examination? Yes ☐ No ☐ Unknown ☐

Parental consent to full post mortem? Yes ☐ No ☐

Parental consent to limited post mortem? Yes ☐ No ☐

Parental consent to external examination? Yes ☐ No ☐

b) Death referred to the Coroner? Yes ☐ No ☐

57. Were there any other factors which contributed to the perinatal death?

Yes ☐ No ☐

If yes, please specify and complete ***section 2****.*

_____

_____

58. Bereavement support program commenced with family? Yes ☐ No ☐

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59. **Summary:** Please provide any relevant information not covered in the previous questions, which you consider may have contributed to the perinatal death.

Section 1 of this form completed by:-
Name:-

Designation:-

Contact details: - Phone-
Email-
Date:-

Please mail completed original Section 1 marked 'Confidential' to:

Executive
Service Quality and Improvement Unit
System Purchasing and Performance Division
5th Floor, 24 Davey Street
HOBART TAS 7000

SECTION 2 : CAUSE OF DEATH AND ASSOCIATED FACTORS

COMPLETE THIS SECTION AT PERINATAL MORTALITY COMMITTEE REVIEW

Mother's Surname *(If multiple birth, indicate birth number of this baby)*	
Date of perinatal death	
Gestation	
Facility reporting	

1. Classification of cause of death

A) Cause of death recorded on Medical Certificate

i. Main disease or condition in fetus or infant:_____

ii. Other diseases or conditions in fetus or infant:_____

iii. Main maternal disease or condition affecting fetus or infant:_____

iv. Other maternal diseases or conditions affecting fetus or infant:_____

v. Other relevant circumstances_____

B) PSANZ Perinatal Mortality Classification of Cause of Death

(I) Perinatal Death Classification (PSANZ-PDC) Category ☐

Category description_____

(II) Neonatal Death Classification (PSANZ-NDC) Category ☐

Category classification_____

C) PSANZ Perinatal Mortality Classification of associated conditions

Associated condition 1:

(a) Perinatal Death Classification (PSANZ-PDC) Category ☐

Category description_____

OR

(b) Neonatal Death Classification (PSANZ-NDC) Category ☐

Category classification_____

Associated condition 2:

(a) Perinatal Death Classification (PSANZ-PDC) Category ☐

Category description_____

OR

(b) Neonatal Death Classification (PSANZ-NDC) Category ☐

Category classification_____

2. Post mortem Investigations and results

(a) Autopsy conducted **Yes - Full** ☐ **Yes - Limited** ☐ **No** ☐

If yes, state limits (if applicable) and findings (or attach copy of report)

_____

_____

(b) Placental histopathology Yes ☐ No ☐

If yes, state limits (if applicable) and findings (or attach copy of report)

(c) Maternal investigations

(c) State other tests and available results

3. Factors relating to care

Were any potentially contributing factors relating to provision of (or access to) care present?

Yes ☐ No ☐ If no, go to question 4.

If yes, complete table and state whether each event was antenatal, intrapartum or postnatal:

A. Factors related to the woman/her family/social situation	Sub-optimal factor code	Relevance to outcome code
1.		
2.		
3.		
B. Factors related to access to care		
1.		
2.		
3.		
C. Factors related to professional care		
1.		
2.		
3.		
D. Other factors:		

Suboptimal factors – coding	Relevance of sub-optimal factor to outcome - coding
R - *Failure to recognise problem* A - *Failure to act appropriately* C - *Communication failure* S - *Failure to supervise* H - *Inadequate human resources* O - *Other*	I - *Insignificant. Sub-optimal factor(s) identified but unlikely to have contributed to outcome.* P- *Possible. Sub-optimal factor(s) identified might have contributed to outcome.* S - *Significant. Sub-optimal factor(s) identified likely to have contributed to outcome* U - *Undetermined. Insufficient information available.*

4. **Recommendations for practice improvement:** Yes ☐ No ☐

Recommendation 1: _____

Action required: _____

Review date: _____

Recommendation 2: _____

Action required: _____

Review date: _____

Recommendation 3: _____

Action required: _____

Review date: _____

5. **Other recommendations (eg. education or research):** Yes ☐ No ☐

Recommendation 1: _____

Recommendation 2: _____

Recommendation 3: _____

6. **Perinatal mortality review administrative details**

Location of perinatal mortality review: _____

Date of review: _____

Review finalized? Yes ☐ No ☐

If yes, date finalized: _____

If no, please specify outstanding areas for review _____

_____

Section 2 of this form completed by:-

Name:- _____

Designation:- _____

Contact details: - Phone- _____

Email-_____

Date:- _____.

Please copy Section 2 for perinatal mortality committee records and mail completed original marked 'Confidential' to:
Executive
Service Quality and Improvement Unit
System Purchasing and Performance Division
5th Floor, 24 Davey Street
HOBART TAS 7000

SECTION 3 : PERINATAL DEATH FOLLOW-UP (*OPTIONAL*)

COMPLETE THIS SECTION WHEN MOTHER DISCHARGED FROM MEDICAL CARE (FILE IN CASE NOTES)

1. Follow-up visits for family

Obstetrician:_____ Yes ☐ Date/time:_____

Neonatologist:_____ Yes ☐ Date/time:_____

Midwife:_____ Yes ☐ Date/time:_____

General Practitioner:_____ Yes ☐ (Date/time:_____)

Bereavement support: _____ Yes ☐ Date/time:_____

Other, specify_____ Yes ☐ Date/time:_____

G.P. notified of the perinatal death: Yes ☐ Date notified:_____

Genetic counselling required? Yes ☐ No ☐
If yes, please specify
_____

Further investigations required? Yes ☐ No ☐
If yes, please specify
_____

Specific religious or cultural considerations? Yes ☐ No ☐
If yes, please specify _____

Other relevant information: _____
_____

2. Other investigations proceeding:

Coroner's case **Yes** ☐ **No** ☐
Please provide details:
_____

Sentinel event report **Yes** ☐ **No** ☐
Please provide details:
_____

Root Cause Analysis report **Yes** ☐ **No** ☐
Please provide details:
_____

Perinatal Mortality Review Committee **Yes** ☐ **No** ☐
Please provide details:
_____

Attachment D: National Maternal Death Reporting Form 2011-2012

National Maternal Death Reporting Form 2011-2012

Instructions

1) Please complete this electronic form for each maternal death in your jurisdiction between 2011-2012.

2) You may use:

- Available hospital case notes
- Jurisdictional perinatal and death data collections
- Available antenatal records
- Discharge summaries
- Notes from subsequent investigations such as coronial review.

3) Upon completion of the form, please save to a secure folder using the jurisdictional state/ territory acronym followed by an underscore, and the case number. For example: NSW_56723378.pdf or SA_45234213.pdf

4) Additional relevant electronic documentation should be listed at Section 12.2 and saved with the form in a folder of the same name. For example, NSW_56723378.pdf, NSW_56723378_DischargeSummary.doc would be stored in a folder also named NSW_56723378.

5) Additional hard copy material listed in Section 12.2 can be sent via courier (see below)

6) If you have difficulties completing any part of this form, please notify us using Section 12.3

7) Data should be encrypted and password protected and copied to CD and then couriered to the Chief Investigator (Professor Elizabeth Sullivan) at the National Perinatal Epidemiology and Statistics Unit) , University of New South Wales, Level 2 McNevin Dickson Building, Randwick Hospital Campus, Randwick NSW 2031

8) Encryption keys should be stored on a separate device and couriered separately to the data.

Please contact Dr Michelle Bonello on (02) 9382 1106 or email michelle.bonello@unsw.edu.au for any queries or comments regarding this form.

Details of person completing the form

Name:

Position:

Telephone:

Email:

Feedback Form

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

Executive
Service Quality and Improvement Unit
System Purchasing and Performance Division
5th Floor, 24 Davey Street
HOBART TAS 7000

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

---

2. Is there additional information you would like to routinely see included in the Report?	Yes	No
If yes, please specify:		

---

3. Are there any other suggestions you would make to assist in improving the usefulness of this Report?	Yes	No
If yes, please specify:		

If you require further information please contact the Executive, Service Quality and Improvement Unit, System Purchasing and Performance Division on 6166 1052.

Notes

COUNCIL OF OBSTETRIC & PAEDIATRIC MORTALITY & MORBIDITY (TASMANIA)

Service Quality and Improvement Unit,
System Purchasing and Performance Division
Department of Health and Human Services

GPO Box 125, Hobart 7001
Ph: 6166 1052
Email: jo.jordan@dhhs.tas.gov.au
Visit: www.dhhs.tas.gov.au