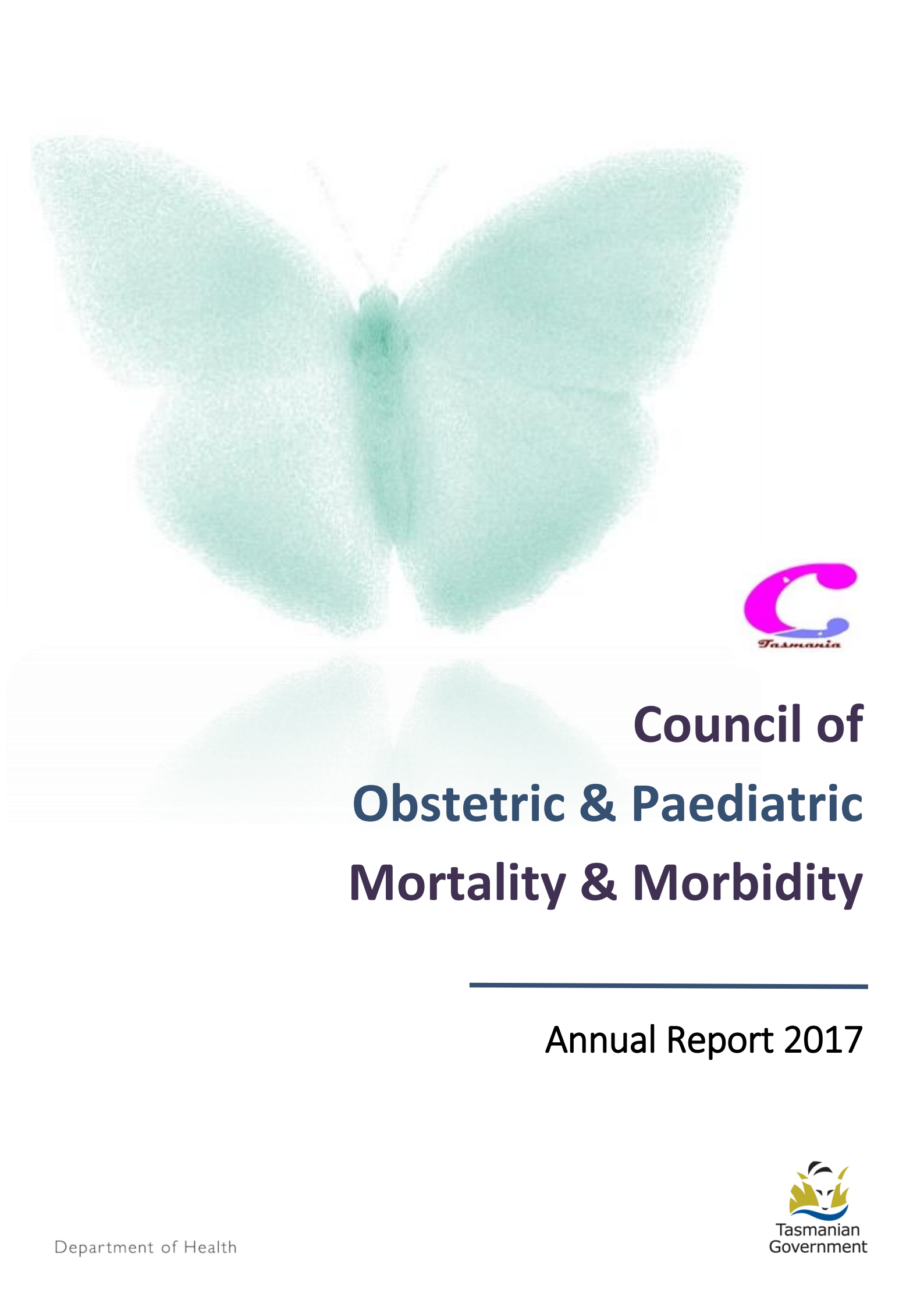

Council of Obstetric & Paediatric Mortality & Morbidity

Annual Report 2017

Department of Health

Tasmanian Government

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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 2017 is 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	**Youth suicide** 1. The *Paediatric Mortality & Morbidity Committee* strongly supports the Coroner's recommendations 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 such as listed below: • Emergency services 000 • Lifeline 131 114 • Suicide Call Back Service 1300 659 467 • Beyond Blue support service 1300 224 636 • Kids Helpline 1800 551 800 • http://suicideprevention.com.au/ • Youth Beyond Blue have also developed the check in app, to assist young people who are concerned about a friend but worried about saying the wrong thing. https://www.youthbeyondblue.com/help-someone-you-know/thecheckin 2. That all health professionals should be advised to inform relevant family members, carers or guardians of a child who may be at risk of suicide of that risk. 3. COPMM supports the Coroner's recommendation that the Media, in publishing articles and editorial on suicide, ensure complete compliance with Mindframe Guidelines. 4. That the Media clearly outline appropriate and available support helplines at the time of reporting on paediatric death cases that have been particularly related to suicidal behaviour. 5. 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 committed suicide. 6. That age appropriate mental health services and facilities be established and resourced for adolescents as part of an improved Mental Health Service. 7. That all jurisdictions consider using a consistent national classification system for review of paediatric death cases.

	Safe sleeping for infants 1. That a clear 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 crime or death scene examinations be undertaken to establish whether the cause of death is due to overlying[1]. **Children and motor vehicles: travelling as passengers or external to vehicles** 1. 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. 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. 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. 2. That drivers of vehicles must pay special attention to surroundings where there may be small children present when reversing vehicles especially on farms when farming equipment is being operated.
PERINATAL	**NEONATAL DEATHS** 1. Pregnant women should be encouraged to stop smoking cigarettes and taking other substances of abuse at all opportunities. 2. Requests for in-utero transfer or neonatal retrieval are now coordinated through a central point of contact: Tasmanian Aeromedical and Retrieval – Ph. 1300 558 329. This will facilitate communication between all parties involved in a transfer and improve efficiency. 3. Obstetric and Paediatric staff at all Tasmanian hospitals should complete the NPDCA forms, either electronically (now also possible via Obstetrix) or in hard copy, at the time of the hospital Mortality and Morbidity meetings. 4. All preterm infants born in Tasmania at less than 32 weeks gestation, and in particular those born at less than 28 weeks gestation, should have neurodevelopmental assessments in infancy and early childhood. In the case of neurodevelopmental impairment, there should be streamlined access to a) therapies aimed at improving function and b) child and family support.

[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.

	STILLBIRTHS: 1. That all women be informed about options of aneuploidy screening by their primary health physicians and maternity providers and have access to early aneuploidy screening. 2. That fetal DNA screening is made affordable and supported by public funded health services in appropriate clinical settings. 3. That molecular karyotyping is offered routinely following the diagnosis of a morphologically abnormal pregnancy to aid in appropriate counselling of the parents. 4. That there is early referral for all pregnant women to antenatal services for triage. 5. That women deemed at risk of premature labour are managed by a dedicated team using evidence-based strategies. 6. That all women are assessed for risk of preterm delivery at the time of morphology scanning with an appropriate measurement of cervical length. 7. That education is routinely made available to women and all maternity care providers regarding risks of stillbirths, and that caregivers discuss these risks with the women in their care. 8. That the optimal timing of delivery be individualised for women by their carers taking into account risk factors and the wishes of the individual woman. 9. That all providers are supported in provision of appropriate investigations for reduced fetal movements. 10. That all women who smoke during pregnancy are actively encouraged and supported to stop. 11. That there is ongoing research and funding to address maternal obesity and the risks it presents in pregnancy. 12. 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 Council's legislation.
MATERNAL	1. That engagement with appropriate antenatal care is undertaken soon after the diagnosis of pregnancy. 2. That perinatal mental health services in Tasmania be funded and supported adequately to ensure effective delivery to all women who require support. 3. That there is adequate investment and support for women with complex drug and alcohol presentations during pregnancy. 4. That all clinicians writing a Tasmanian death certificate determine whether the decedent had been pregnant in the preceding 12 months.

Executive Summary

The members of the *Council of Obstetric & Paediatric Mortality & Morbidity* (COPMM) are pleased to present the Annual Report for the calendar year 2017.

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 2017, and on their children. Data are derived from the Perinatal Data System with the source of data being the *ObstetrixTas* database that is supplemented where necessary by 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 2017 include:

Babies

- The number of live births recorded on the Perinatal Data System in 2017 was **5 550**, a decrease of 327 (5.6 per cent) since 2016 (5 877). The total number of births including stillbirths was **5 581.**
- Males accounted for 50.7 per cent of births and females 49.3 per cent.
- 55.7 per cent of babies were delivered by unassisted vaginal birth and 10.4 per cent delivered by instrumental birth.
- 33.8 per cent of babies were delivered via caesarean section (compared to 27.3 per cent in 2006).
- There were 85 episodes of multiple births, including 85 sets of twins and no triplets.
- The proportion of low birth weight babies (less than 2 500 grams) in Tasmania was 8.3 per cent, which is higher than national figures reported in 2017 (i.e., 7.2 per cent).
- 11.0 per cent of deliveries were preterm (less than 37 weeks gestation) compared to national figures reported in 2017 of 8.7 per cent.

Mothers

- 73.8 per cent of mothers were public patients and 25.2 per cent were private patients.
- 48.7 per cent of mothers were aged over 30 years; 3.7 per cent of mothers were under the age of 20 years, a higher proportion than the national average of 2.2 per cent in 2017.
- 40.6 per cent of mothers had their first baby and 33.0 per cent had their second baby.
- 5.8 per cent of mothers were identified as Aboriginal & Torres Strait Islanders in Tasmania compared to 4.5 per cent nationally in 2017.
- Of all women who gave birth and had a caesarean section, 47.3 per cent were elective and 52.7 per cent were emergencies.
- 85.6 per cent of mothers were breastfeeding (including partially) at maternal discharge.

Antenatal factors

- Smoking while pregnant was reported by 14.5 per cent of all mothers and 40.0 per cent of teenage mothers.
- 1.3 per cent of women who reported smoking during the first 20 weeks of pregnancy did not report smoking during the last 20 weeks.
- 3.2 per cent of **mothers** reported that they had consumed alcohol during pregnancy, significantly lower than the rates for both 2016 and 2015 (4.0 per cent, p=0.022 & 7.6%, p<0.001, respectively), with the rate being the greatest for young mothers aged less than 20 years old (4.4 per cent), similar to previous years. Of note is the significant reduction in maternal alcohol consumption amongst women aged 40 years and over, with the rate falling significantly from 7.0 per cent in 2016 to 1.8 percent in 2017 (p=0.008). The proportion of pregnant women aged less than 20 who reported to have consumed alcohol during their pregnancy in 2017 had increased slightly compared to 2016 (4.4 per cent c.f. 2.8 per cent), but this increase was not statistically significant. For 2017, the proportion of mothers electing to be public patients who reported consumption of alcohol during pregnancy was significantly higher (p<0.001) than private patients (4.2 per cent c.f. 0.3 per cent), with both public and private patients showing similar levels of reported alcohol consumption during pregnancy when compared with 2016.
- 89.2 per cent of women attended at least one antenatal visit before 14 weeks gestation, although 3.4 per cent of women did not receive antenatal care until after 20 weeks.
- Based on self-reported height and weight at the first antenatal visit, over half (52.2 per cent) of the 5 496 women who gave birth in a Tasmanian facility in 2017 had a body mass index (BMI) in the overweight or obese range (25.0 and above); one-quarter (26.0 per cent) had a BMI in the obese range (30 and over). It is noted however that these figures are lower than recorded in 2017-18 (based on measured height and weight) for Tasmanian women as a whole aged 18 years and over2.
- Women who gave birth outside hospital (39) were the most likely to have taken an iodine supplement whilst pregnant (26.3 per cent) with this proportion being statistically significantly higher (p<0.001) than for women who gave birth in public hospital (4.5 per cent), and also higher than for women who gave birth in a private facility (19.8 per cent).
- Compared to public facilities, women who gave birth in a private facility were significantly more likely to have taken supplemental iodine whilst pregnant (21.7 per cent c.f. 2.7 per cent, p<0.001).
- Higher numbers of women who gave birth in Tasmania in 2017 reported to have taken an iron supplement when pregnant compared to an iodine supplement, with 15.2 per cent overall reporting to have taken supplemental iron whilst pregnant, and the highest proportions reported amongst women who gave birth outside hospital (73.1 per cent) or in a private facility (21.5 per cent).
- In 2017, 17.7 per cent of women reported to have taken Vitamin D supplements whilst pregnant, with the highest level of maternal Vitamin D supplementation reported amongst women giving birth in a private facility (24.1 per cent), compared with 14.0 per cent for women giving birth in a public facility and 11.5 per cent of women who gave birth outside hospital.
- A significant number of mothers (60.1 per cent) in 2017 reported not taking folic acid supplements at some point during pregnancy or pre-conceptually, with mothers who gave birth in a public facility or

[2] National Health Survey: First Results, 2017-18

outside hospital found to be less likely to take folic acid, while mothers giving birth in a private facility were the most likely.

- Of mothers who did take a folic acid supplement at some point during pregnancy, a significantly lower proportion of those who gave birth in a public setting reported taking folic acid both pre- and post-conceptually (6.0 per cent), compared to 22.2 per cent of mothers who gave birth outside hospital and 49.8 per cent of mothers who gave birth in a private facility.

Perinatal and paediatric deaths at a glance

Table 1: Perinatal and paediatric deaths at a glance

Classification	Total number for 2017 (5 581)	Tasmanian rate per 1 000 births[(a)] in 2017
Perinatal mortality	47	8.4
Stillbirths	31	5.6
Neonatal deaths	16	2.9
Total infant mortality (from birth to 1 year)	21	3.8
Non-neonatal infant mortality (>28 days post-delivery to 1 year)	5	0.9
Paediatric mortality	22	0.20[(b)]

(a) Stillbirths and perinatal mortality rates were calculated using all births. Neonatal death rate was calculated using all live births.

(b) ABS figure for total no. of children <18 years for 2017 in Tasmania is estimated at 112 321 (ABS Cat no. 3101.0 June 2018 Australian Demographic Statistics, Population by Single Year of Age, Tasmania, Table 56). 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 and multiplied by 1 000.

Perinatal deaths

The *Perinatal Mortality and Morbidity Committee* reviewed 47 deaths in 2017. Sixteen of these deaths were neonatal deaths (liveborn infants who did not live beyond 28 days of age) and thirty-one were stillbirths. The overall perinatal mortality rate was 8.4 per 1 000 births. The neonatal mortality rate was 2.9 per 1 000 live births, with a stillbirth rate of 5.6 per 1 000 births.

In Tasmania, the perinatal mortality rate in 2017 was lower than for the previous year and similar to the 2017 national rate of perinatal deaths (9.5 rate per 1 000 births). In 2017, the national stillbirth rate was 7.1 per 1 000 births; the neonatal death rate was 2.4 per 1 000 live births; and the perinatal death rate was 9.5 per 1 000 births.

The neonatal mortality rate of 2.9 per 1 000 live births reported in Tasmania in 2017 was similar to the rate reported for Tasmania in 2016, but marginally higher than the reported national rate for 2017 (i.e., 2.4 per 1 000 births).

The stillbirth rate of 5.6 per 1 000 births reported in Tasmania in 2017 was lower than the rate reported for Tasmania in 2016 (7.3 per 1 000 births) and nationally in 2017 (7.1 per 1 000 births).

Full recommendations arising from the review of perinatal deaths from this year are outlined within the *COPMM Key Recommendations*.

Paediatric deaths

The *Paediatric Mortality and Morbidity Committee* noted that the number of paediatric deaths in Tasmania in 2017 was 22 (with an estimated paediatric mortality rate of 0.20 per 1 000 persons aged 0-17 years). This rate was similar to the 2016 national paediatric mortality rate (estimated to be 0.29 per 1 000 persons aged 0-17 years).

While the overall number of reported paediatric death cases had increased from the previous year largely attributed to an increase in fatal injuries and acquired conditions, it was pleasing to find that the number of 'unexpected infant deaths' remained stable with only two infants reported in this category, aged 7 weeks and two months. Both cases were found to be associated with clear risk factors including an unsafe sleeping environment where the infants had been found to have co-slept in bed with an adult or sibling.

Council recommendations based on the reported paediatric death cases in 2017 are highlighted within the *COPMM Key Recommendations.*

Maternal deaths

There was one incidental maternal death reported in Tasmania in 2017. This mother died of disseminated disease 37 days after delivery after suffering from a metastatic adenocarcinoma possibly pulmonary in origin.

Council recommendations from the previous year remain relevant and are reiterated within the *COPMM Key Recommendations*.

Smoking and pregnancy

The proportion of Tasmanian women who reported that they had smoked tobacco during pregnancy has fallen significantly since 2010 ($p<0.001$). In 2017, 14.5 per cent of Tasmanian women reported smoking whilst pregnant, statistically significantly higher than for 2016 ($p=0.008$), with 13.3 per cent reporting to have smoked 10 cigarettes or fewer per day and 1.3 per cent reporting to have smoked more than 10 cigarettes daily.

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 2017 value of 40.0 per cent being statistically similar ($p=0.245$) to that reported for 2016 (34.7 per cent). The proportion of women aged 20-24 years who smoked during pregnancy in 2017 (26.9 per cent) is statistically similar to the 2016 figure of 23.4 per cent ($p=0.074$), and identical to the 2012 rate, the highest since 2011.

There has been a continuous, non-statistically significant, decrease in smoking during pregnancy for private patients over the last few years, with the 2017 smoking rate of 1.9 per cent being essentially unchanged from that recorded for 2016 (2.0 per cent). Conversely, the maternal smoking rate for public patients of 19.0 per cent has increased significantly since 2016 when the rate was 16.6 per cent ($p=0.004$), widening the gap in smoking rates amongst public and private patients. As reported in previous years, the significantly higher smoking rates amongst public patients when compared to private patients reflects the higher prevalence of smoking amongst lower socio-economic groups.

In 2017, a total of 14.2 per cent of all women who had smoked in pregnancy had a low birth weight (LBW) baby compared to 5.6 per cent of women who reported not to have smoked (see Figure 21), a difference which is statistically significant ($p<0.001$). This figure representing the proportion of LBW babies in mothers who smoked remains a finding that continues to highlight the potential deleterious effects of smoking on birth weight. The relative risk of having a LBW baby in 2017 was 2.55 (95 per cent CI: 2.07, 3.14) in women who smoked in pregnancy compared with those who reported not to smoke.

Alcohol consumption and pregnancy

From the data available in 2017, overall 3.2 per cent of Tasmanian women indicated that they had consumed alcohol during their pregnancy with 2.9 per cent reporting to have consumed one or fewer standard alcoholic drinks per day and 0.3 per cent reporting to have consumed more than one alcoholic drink per day. The overall proportion of women who reported to have consumed alcohol in 2017 was significantly lower ($p=0.0223$) than the 2016 figure (4.0 per cent), continuing the significant reduction observed since 2015.

Maternal alcohol consumption remains generally higher for women aged 30 years and over, but the gap has narrowed over recent years. Over the period -2016-17, maternal alcohol consumption decreased across each of the age groups with the sole exception of women aged under 20 years, of whom 4.4 per cent reported consuming alcohol whilst pregnant in 2017, statistically similar to the 2016 figure of 2.8 per cent. The largest decrease, of 5.2 per cent, was for women aged 40 years old and over ($p<0.001$). However, only the decreases observed for the 25-29 and 40 years and over age groups were statistically significant.

Alcohol consumption during pregnancy by private patients (0.3 per cent) in 2017 is the lowest recorded, significantly lower ($p<0.05$) than 2016 and previous years. Further, reported alcohol consumption during pregnancy in 2017 amongst public patients (4.2 per cent), whilst continuing to be statistically significantly higher ($p<0.001$) than for private patients, was also the lowest recorded, similar to the 2016 figure of 5.0 per cent, and significantly lower ($p<0.001$) than for 2015 and previous years.

In 2017, a total of 6.9 per cent of all women who had consumed alcohol during pregnancy had a LBW baby compared to 6.8 per cent of women who reported not to have consumed alcohol (Figure 26), a difference which was not statistically significant ($p=0.959$). The relative risk of having a LBW baby in 2017 was 1.03 (95 per cent CI: 0.59, 1.79) in women who consumed alcohol in pregnancy compared to those who reported not having consumed alcohol, a ratio which was not statistically significant.

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) continues to be the preferred form to use 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 has been advised that significant work continues to be undertaken by IT services to progress the integration of this form into the *ObstetrixTas* system. All Tasmanian hospitals (including all public and Nor West Private Hospital) are now familiar in the use of this tool to complete details around reported perinatal deaths where Council urges that only the attending medical practitioner/specialist completes the NPDCAT in respect to their reported perinatal mortality case. Council also urges participating hospitals to undertake data corrections in a timely manner in order to allow auditing of data to proceed efficiently to enable COPMM reporting to be achieved in a timely manner. This form and other relevant forms can be accessed via COPMM's website (www.dhhs.tas.gov.au/about_the_department/partnerships/registration_boards/copmm).

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 Health Information Team and Epidemiology Unit, DoH.

Dr Michelle Williams

Chairperson – Council of Obstetric and Paediatric Mortality and Morbidity

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, Health Professional Policy and Advisory Services, Level 2, 22 Elizabeth Street, 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 and Morbidity, Maternal Mortality and Morbidity, Perinatal Mortality and Morbidity and Data Management*);
- The Department of Health Tasmania (DoH) for its commitment to, and funding of, COPMM and its activities;
- Clinical Governance, Health Professional Policy and Advisory Services, DoH;
- Public Health Services, Epidemiology Unit, DoH;
- 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 Information, Planning Purchasing and Performance Group, DoH;
- Legislative Review and Legal Support, DoH;
- Media Unit, DoH;
- 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;
- Royal Automobile Club of Tasmania (RACT); and
- Tasmanian Health Service.

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 fetus is viable (before 20 weeks gestation)

Birthweight:

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 of at least 20 weeks gestation, or birthweight at least 400 grams.

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 fetus within the woman's body.

Maternal death: 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 fetus within the woman's body.

Neonatal death: A death occurring within 28 days of birth in an infant born after at least 20 weeks of gestation, or birthweight at least 400 grams.

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

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

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

Stillbirth: A fetal death prior to the complete expulsion or extraction from its mother of a product of conception of 20 or more completed weeks of gestation or 400 grams or more birthweight; the death is indicated by the fact that after such separation the 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.[3]

Sudden Infant Death Syndrome (SIDS): Sudden death of an infant under 1 year of age, which remains unexplained after a thorough case investigation including performance of a complete autopsy, examination of the death scene, and a review of the clinical history.[4]

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

[4] 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

Sudden Unexpected Death in Infancy (SUDI): The death of an infant less than 12 months of age that was sudden in nature and that was unexpected. This definition excludes infants who die unexpectedly in misadventures due to external injury (such as transport incidents) and accidental drowning[5].

Supplementary definition[6]

Maternal death:

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.

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

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

[5] Policy Directive #PD2008_070, NSW Government Health, (22 December 2008), *Death-Management of Sudden Unexpected Death in Infancy*.

[6] 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 2017	Current Membership as of June 2019[(a)]
Person nominated by the Secretary employed in delivery of Neonatal Services	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 Tania Hingston	Dr Tania Hingston
Person nominated by the Secretary employed in the Department of Health	Vacant	Dr Scott McKeown
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 Mr Mark Morrissey - Commissioner for Children	Ms Kate Cuthbertson Ms Leanne McLean - Commissioner for Children

(a) Please note that the 3-year term (2016-2019) commenced in February 2016 with new membership reflected under “current membership”.

Members of Committees and Support Services

Name of Committee	Membership as of June 2017	Current Membership as of June 2019
Maternal Mortality & Morbidity Committee	Assoc. Prof Amanda Dennis (Chair) Dr Tania Hingston Ms Sue McBeath Dr Kristine Barnden Dr Jill Camier Dr Jo Jordan (Manager, COPMM)	Assoc. Prof Amanda Dennis (Chair) Dr Tania Hingston Ms Sue McBeath Dr Kristine Barnden Dr Jill Camier Dr Jo Jordan (Manager, COPMM)
Paediatric Mortality & Morbidity Committee	Dr Michelle Williams (Chair) Dr Anagha Jayakar Dr Chris Lawrence Dr Jillian Camier Dr Chris Williams CfC - Mr Mark Morrissey Dr Jo Jordan (Manager, COPMM)	Dr Michelle Williams (Chair) Dr Anagha Jayakar Dr Chris Lawrence (resigned in June 2019 and Dr Don Ritchey has been co-opted) Dr Jillian Camier Dr Chris Williams CfC – Ms Leanne McLean Dr Jo Jordan (Manager, COPMM)
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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 gestational age of at least 20 weeks, or birth weight of at least 400 grams.

There were **47** perinatal deaths reported in Tasmania in 2017. Sixteen of these deaths were neonatal deaths (liveborn infants who did not live beyond 28 days of age) and thirty-one were stillbirths. The overall perinatal mortality rate was 8.4 per 1 000 births. The neonatal mortality rate was 2.9 per 1 000 live births, with a stillbirth rate of 5.6 per 1 000 births.

The Perinatal Society of Australia and New Zealand (PSANZ) Perinatal Mortality Classification System (version 2.2) was used to classify the perinatal deaths.

Table 2: Number of perinatal deaths by PSANZ Perinatal Mortality classification 2008-2017[(a)]

Cause of death	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
1 Congenital anomalies	17+3	12+3	6+4	9+5	17+5	11+5	18+7	10+9	20+6	5+9
2 Perinatal infection	1+1	1+ 2	3+3	1+0	0+0	0+2	2+1	3+0	2+1	1+0
3 Hypertension	2+3	3	6+1	0+0	2+1	2+0	1+2	1+1	1+1	0+1
4 Antepartum haemorrhage	3+2	6+4	5+3	4+6	0+1	5+1	5+1	2+3	0+1	3+0
5 Maternal conditions	1	2	1+0	1+0	0+0	1+0	1+1	1+0	2+1	0+0
6 Specific perinatal conditions	4	7	1+0	5+2	1+3	1+2	6+0	5+0	2+1	0+1
7 Hypoxic peripartum death	3+2	1	1+0	4+3	1+1	0+1	1+1	0+3	2+0	0+0
8 Fetal Growth Restriction (FGR)	12	8	9+0	5+1	3+0	4+1	1+0	4+0	4+0	6+1
9 Spontaneous pre-term	6+3	2+6	5+13	3+2	8+7	11+5	2+8	0+7	3+8	7+4
10 Unexplained antepartum deaths	11	10	5+0	2+0	13+0	7+0	12+0	7+0	7+0	7+0
11 No obstetric antecedent	0	0	0+0	0+1	0+1	0+0	0+3	0+0	0+0	0+0
Birth trauma	1	-	-	-	-	-	-	-	-	-
Not classified due to insufficient information	-	-	-	-	-	-	-	1+0	-	2+0
Total	**75**	**67**	**66**	**54**	**64**	**59**	**73**	**57**	**62**	**47**

(a) The + symbol indicates stillbirths plus neonatal deaths

Basic information on stillbirths for 2017

There were **31** stillbirths for 2017 which was significantly less than 43 stillbirths reported in the previous year. Over two thirds of these occur in the 20-24-week gestational period and therefore pre-viability. Many of these are associated with significant or lethal fetal malformations or extreme prematurity. The tables below show the breakdown by 1) gestation, 2) the PSANZ Perinatal Mortality Classification used nationally, and 3) by gestation and PSANZ Perinatal Mortality Classification together.

Table 3: Gestation of stillbirth

Gestation (weeks)	2008 %	2009 %	2010 %	2011 %	Gestation[(a)] (weeks)	2012 %	2013 %	2014 %	2015 %	2016 %	2017	
											%	Number
20-24	45.8	46.2	31.0	58.8	**20-27**	64.4	71.4	55.1	61.8	65.1	**67.7**	**21**
25-29	16.3	5.8	23.8	8.8	**28-31**	13.3	4.8	4.1	26.5	16.3	**6.5**	**2**
30-34	11.5	13.5	21.4	11.8	**32-36**	13.3	7.1	22.5	8.8	7.0	**3.2**	**1**
35-39	21.6	34.6	19.0	17.6	**37-41**	8.9	14.3	18.4	2.9	4.7	**16.1**	**5**
40 and over	3.2	1.9	4.8	2.9	**42 and over**	0.0	2.4	0.0	0.0	7.0	**6.5**	**2**

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

Table 4: Stillbirths by PSANZ Perinatal Mortality Classification

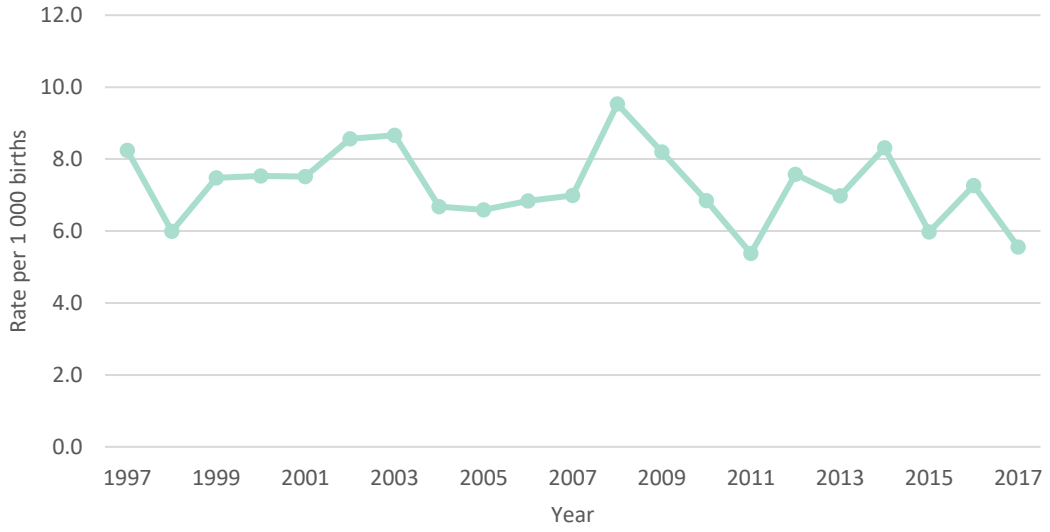
Category	2008 %	2009 %	2010 %	2011 %	2012 %	2013 %	2014 %	2015 %	2016 %	2017	
										%	Number
1 Congenital anomalies	27.8	23.1	14.3	26.5	37.8	26.2	36.7	29.4	46.5	**16.1**	**5**
2 Perinatal infection	1.6	1.9	7.1	2.9	0.0	0.0	4.1	8.8	4.7	**3.2**	**1**
3 Hypertension	3.2	5.8	14.3	0.0	4.4	4.8	2.0	2.9	2.3	**0.0**	**0**
4 Antepartum haemorrhage	4.9	11.5	11.9	11.8	0.0	11.9	10.2	5.9	0.0	**9.7**	**3**
5 Maternal conditions	1.6	3.8	2.4	2.9	0.0	2.4	2.0	2.9	4.7	**0.0**	**0**
6 Specific perinatal conditions	6.5	13.5	2.4	11.8	2.2	2.4	12.2	14.7	4.7	**0.0**	**0**
7 Hypoxic peripartum death	4.9	1.9	2.4	11.8	2.2	0.0	2.0	0.0	4.7	**0.0**	**0**
8 Fetal growth restriction (FGR)	19.6	15.4	21.4	14.7	6.7	9.5	2.0	11.8	9.3	**19.4**	**6**
9 Spontaneous preterm labour	9.8	3.8	11.9	8.8	17.8	26.2	4.1	0.0	7.0	**22.6**	**7**

Category	2008 %	2009 %	2010 %	2011 %	2012 %	2013 %	2014 %	2015 %	2016 %	2017	
										%	Number
10 Unexplained antepartum deaths	18.0	19.2	11.9	5.9	26.7	16.7	24.5	20.6	16.3	**22.6**	**7**
11 No obstetric antecedent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0**
Birth trauma	1.6	0.0	14.3	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0**
Not classified due to insufficient information	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**2.9**	**0.0**	**6.5**	**2**

Table 5: Number of stillbirths and stillbirth rate per 1 000 births 1997 to 2017

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
2013	42	6 021	6.98
2014	49	5 892	8.32
2015	34	5 693	5.97
2016	43	5 920	7.26
2017	**31**	**5 581**	**5.55**

Figure 1: Stillbirth rate per 1 000 births for Tasmania 1997-2017



Over the period of 1997 to 2017 the stillbirth rate has dropped significantly, from 8.24 to 5.55 per 1 000 births. This corresponds to a non-statistically significant average annual decrease of 0.63 per cent (p=0.247).

Table 6: Stillbirths reported by gestation period and PSANZ Perinatal Mortality Classification 2017

Category	20-27 weeks	28-31 weeks	32-36 weeks	37-41 weeks	42 weeks and over
	Number (rates per 1 000 births in the reference category)				
1 Congenital anomalies	4 (74.1)	0 (0)	0 (0)	1 (0.2)	0 (0)
2 Perinatal infection	0 (0)	0 (0)	0 (0)	0 (0)	1 (76.9)
3 Hypertension	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
4 Antepartum haemorrhage	0 (0)	0 (0)	3 (5.8)	0 (0)	0 (0)
5 Maternal conditions	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
6 Specific perinatal conditions	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
7 Hypoxic peripartum death	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
8 Fetal growth restriction (FGR)	4 (74.1)	0 (0)	0 (0)	2 (0.4)	0 (0)
9 Spontaneous preterm labour	7 (129.6)	0 (0)	0 (0)	0 (0)	0 (0)
10 Unexplained antepartum deaths	6 (111.1)	0 (0)	0 (0)	1 (0.2)	0 (0)
11 No obstetric antecedent	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)

Category	20-27 weeks	28-31 weeks	32-36 weeks	37-41 weeks	42 weeks and over
	Number (rates per 1 000 births in the reference category)				
Not classified due to insufficient information	2 (37)	0 (0)	0 (0)	0 (0)	0 (0)
Total number of stillbirths	**23 (425.9)**	**0 (0)**	**3 (5.8)**	**4 (0.8)**	**1 (76.9)**
Total number of babies	**54**	**39**	**521**	**4 954**	**13**

The above data indicate that congenital abnormalities are more likely to contribute to stillbirth in the 20-27 week gestational period then at later gestations. With morphology scans performed at 18-20 week gestation, this is to be expected as diagnosis of fetal anomaly such as spina bifida and hydrocephalus may not be made until this time. Some congenital anomalies require expert review by fetal maternal specialists or other specialists (neonatologists, paediatric cardiologists and neurosurgeons) for adequate assessment and prognosis, leading to stillbirth at later gestations. Where possible, investigations for congenital abnormalities should be offered to all pregnant women in first and early second trimester pregnancy followed by timely morphology scan in attempt to reduce the rate of late diagnosis of lethal anomalies (e.g., trisomy 18) at late gestations of pregnancy.

The table above shows that during the early stages of pregnancy, particularly 20-27 weeks gestation, there is also a high rate of stillbirths attributed to spontaneous preterm labour and unexplained antepartum deaths. As such, it is important to determine how many of these cases had been investigated further.

Recommendations on stillbirths 2017 cases

1. That all women be informed about options of aneuploidy screening by their primary health physicians and maternity providers and have access to early aneuploidy screening.
2. That fetal DNA screening is made affordable and supported by public funded health services in appropriate clinical settings.
3. That molecular karyotyping is offered routinely following the diagnosis of a morphologically abnormal pregnancy to aid in appropriate counselling of the parents.
4. That there is early referral for all pregnant women to antenatal services for triage.
5. That women deemed at risk of premature labour are managed by a dedicated team using evidence-based strategies.
6. That all women are assessed for risk of preterm delivery at the time of morphology scanning with an appropriate measurement of cervical length.
7. That education is routinely made available to women and all maternity care providers regarding risks of stillbirths, and that caregivers discuss these risks with the women in their care.
8. That the optimal timing of delivery be individualised for women by their carers taking into account risk factors and the wishes of the individual woman.

9. That all providers are supported in provision of appropriate investigations for reduced fetal movements.
10. That all women who smoke during pregnancy are actively encouraged and supported to stop.
11. That there is ongoing research and funding to address maternal obesity and the risks it presents in pregnancy.
12. 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 Council's legislation.

Basic information on neonatal deaths for 2017

There was a total of **16** neonatal deaths.

Table 7: Neonatal deaths by PSANZ Perinatal Mortality Classification

Category	2010 %	2011 %	2012 %	2013 %	2014 %	2015 %	2016 %	2017 %	2017 Number
1 Congenital anomalies	16.7	25.0	26.3	29.4	29.2	39.1	31.6	**56.3**	**9**
2 Perinatal infection	12.5	0.0	0.0	11.8	4.2	0.0	5.2	**0.0**	**0**
3 Hypertension	4.2	0.0	5.3	0.0	8.3	4.3	5.2	**6.3**	**1**
4 Antepartum haemorrhage	12.5	30.0	5.3	5.9	4.2	13.0	5.2	**0.0**	**0**
5 Maternal conditions	0.0	0.0	0.0	0.0	4.2	0.0	5.2	**0.0**	**0**
6 Specific perinatal conditions	0.0	10.0	15.8	11.8	0.0	0.0	5.2	**6.3**	**1**
7 Hypoxic peripartum death	0.0	15.0	5.3	5.9	4.2	13.0	0.0	**0.0**	**0**
8 Fetal growth restriction (FGR)	0.0	5.0	0.0	5.9	0.0	0.0	0.0	**6.3**	**1**
9 Spontaneous preterm labour	54.2	10.0	36.8	29.4	33.3	30.4	42.1	**25.0**	**4**
10 Unexplained antepartum deaths	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0**
11 No obstetric antecedent	0.0	5.0	5.3	0.0	12.5	0.0	0.0	**0.0**	**0**

CONGENITAL ABNORMALITIES

There were 9 neonatal deaths in Tasmania associated with a congenital abnormality. These included:

- Four neonates with major central nervous system anomalies;
- Five infants with other major congenital anomalies (one case each of aneuploidy, metabolic defect, hydrops fetalis, hypoplastic left heart syndrome and multiple congenital anomalies).

PERINATAL INFECTION

There were no cases reported in 2017 that had been associated with perinatal infection.

HYPERTENSION

There was 1 neonatal death secondary to extreme preterm birth due to pre-eclampsia.

ANTEPARTUM HAEMORRHAGE

There were no neonatal deaths associated with antepartum haemorrhage in 2017.

MATERNAL CONDITIONS

There were no neonatal deaths associated with maternal conditions in 2017.

SPECIFIC PERINATAL CONDITIONS

There was one death of an infant born spontaneously at an extremely preterm gestation due to cervical insufficiency.

HYPOXIC PERIPARTUM DEATH

There were no deaths related to hypoxic peripartum events.

FETAL GROWTH RESTRICTION

There was one death of an infant born after severe fetal growth restriction, with the cause of death being focal intestinal perforation.

SPONTANEOUS PRE-TERM

There were 4 neonatal deaths associated with spontaneous preterm labour, all at a gestation less than 23 weeks. Each of these cases had associated clinical and/or histological chorioamnionitis, in one case occurring in the context of known cervical incompetence, with a cervical suture *in situ*.

Issues

The review of neonatal mortality identified the following issues:

- Tasmania's neonatal mortality rate in 2017 was 2.9 per 1 000 live births, similar to both the 2016 Tasmanian rate (3.2 per 1 000 live births) and the 2017 national rate (2.4 per 1 000 live births).
- As reported in Table 22, aggregate survival for infants born preterm from 24-27 weeks gestation for the 5-year epoch 2013-17 (inclusive) is comparable to that reported by the Australian and New Zealand Neonatal Network (ANZNN)[7] for the 2017 calendar year (86 per cent).
- Survival for infants born at 25 weeks gestation or less appears to have improved for the period 2013-17 (Table 22). These infants remain a challenge in the Tasmanian context with a high rate of socio-economic disadvantage and a relatively low number of extremely preterm infants admitted to the Royal Hobart Hospital Neonatal Paediatric Intensive Care Unit (RHH NPICU) each year (47 infants <28 weeks gestation admitted in 2016-17). Despite improving survival these infants remain at high risk of significant long-term neurodevelopmental impairment.
- Despite improving survival, infants born at gestations <32 weeks remain at risk of significant long-term neurodevelopmental impairment. Recent published data[8], as well as unpublished data from the ANZNN, highlight that Tasmanian infants are at considerable risk of neurodevelopmental impairment after preterm birth. Disproportionately high rates of cognitive delay, language delay, motor delay and functional impairment have been noted in Tasmanian infants born less than 28 weeks gestation compared with the ANZNN overall.
- Survival for babies born at 23 weeks gestation in Tasmania remains low (43 per cent for 2013-17) compared with the ANZNN (54 per cent for 2017, Table 22). This in part reflects the agreed position regarding provision of care to infants at these gestations in the Tasmanian Neonatal Care Guidelines, considering 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.

[7] Chow, SSW, Creighton, P., Kander, V., Haslam, R. and Lui, K. (2018). *Report of the Australian and New Zealand Neonatal Network 2016*. Sydney: ANZNN.

[8] O'Meagher S, Norris K, Kemp N, et al. Parent and teacher reporting of executive function and behavioral difficulties in preterm and term children at kindergarten. Appl Neuropsychol Child 2019;1-12.

- Ongoing efforts to improve the care provided to these and all infants in Tasmania must take account of the following:

    i. The requirement for, and difficulties maintaining, close communication between Obstetric and Paediatric staff statewide to provide the best possible management of difficult cases. Whenever it is safe to do so, a mother at risk of very preterm birth should be transferred with her fetus *in utero.*

    ii. The lack of experienced junior medical staff results in a heavy reliance on Staff Specialists for provision of care and emergency management. This especially applies out of hours, where in the case of major deterioration (including unplanned extubation) a Staff Specialist may be required to attend urgently to provide the necessary care. Additional junior medical and nursing staff are being recruited, via funds provided to Ambulance Tasmania, to provide more robust staffing cover for the Newborn Emergency Transport Service and a higher level of support for the Neonatal and Paediatric ICU, particularly after hours.

- There remains a high rate of smoking amongst pregnant women, including mothers of preterm infants.

Recommendations on neonatal deaths 2017

1. Pregnant women should be encouraged to stop smoking cigarettes and taking other substances of abuse at all opportunities.
2. Requests for in-utero transfer or neonatal retrieval are now coordinated through a central point of contact: Tasmanian Aeromedical and Retrieval – Ph. 1300 558 329. This will facilitate communication between all parties involved in a transfer and improve efficiency.
3. Obstetric and Paediatric staff at all Tasmanian hospitals should complete the NPDCA forms, either electronically (now also possible via Obstetrix) or in hard copy, at the time of the hospital Mortality and Morbidity meetings.
4. All preterm infants born in Tasmania at less than 32 weeks gestation, and in particular those born at less than 28 weeks gestation, should have neurodevelopmental assessments in infancy and early childhood. In the case of neurodevelopmental impairment, there should be streamlined access to a) therapies aimed at improving function and b) child and family support.

Paediatric Mortality & Morbidity Committee

Paediatric deaths for 2017

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 2017 was **22**, with an approximate paediatric mortality rate of 0.20 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 unexpected death in infancy or due to an injury.

The total number of deaths due to SUDI remained stable in 2017 with the previous year's number of reported cases. 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 2017 was six. Noting the child protection status in this report does not necessarily imply that protective concerns were implicated in the cause of death. Paediatric deaths for the years 2008 to 2017 have been classified below.

Table 8: Paediatric deaths 2008-2017

Cause of Death	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Conditions determined at birth	8	11	7	5	5	4	5	1	1	4
Acquired conditions	3	8	10	4	9	8	6	4	8	2
Sudden Unexpected Death in Infancy	5	3	7	5	2	6	3	2	2*	2*
Injuries	7	14	12	3	5	7	10	5	9	14
Unknown/ Indeterminate	1	0	0	1	0	1	0	0	0	0
Still under investigation	-	-	1	0	0	0	0	0	0	0
TOTAL	**24**	**36**	**37**	**18**	**21**	**26**	**24**	**12**	**20**	**22**

** Both cases having been identified as being associated with risk factors such as unsafe sleeping.*

Table 9: Origin of injury leading to paediatric death in year 2017

Origin of injury	Number
Motor Vehicle Accident	7
MVA due to impact of reversing vehicle or farm accident	3
Suspected Suicide	2
Injury with suspected child abuse	1

In 2017, the Northern Territory recorded the highest child mortality rate (74.6 deaths per 100 000 children aged 0-17 years), followed by New Zealand (37.5 per 100 000). Deaths from diseases and morbid conditions accounted for 73.2 per cent of all child deaths in 2017 (excluding Western Australia), with infants (children aged less than 1 year) exhibiting the highest mortality rate from diseases and morbid conditions in all jurisdictions. In 2017, transport was the leading external cause of death in New South Wales and Tasmania while suicide was found to be the leading external cause of death in Queensland, Western Australia, the Northern Territory and New Zealand. In 2017, it was also found that New Zealand had the highest rate of infant deaths from Sudden Infant Death Syndrome (SIDS) and undetermined causes (57.8 per 100 000), followed by Victoria (42.2 per 100 000), whilst Queensland recorded the lowest rate of infant deaths from SIDS and undetermined causes (21.3 per 100 000)[9].

Overall, the number of infant (less than 1 year old) deaths in Australia in 2016 where the cause of death was ill-defined or unknown, including deaths due to SIDS, was 94 or a rate of 0.3 deaths per 1 000 livebirths[10].

CONDITIONS DETERMINED AT BIRTH

In 2017 there were 4 deaths in children ranging from 1 month to 17 years. These included:

- One case due to Dandy Walker Syndrome (age 1 month).
- One case with congenital syndrome PMP22 microdeletion and cerebral palsy who acquired Haemophilus Influenza pneumonia (age 11 years).
- One case due to epileptic seizure and x-linked creatinine transporter defect and possible early viral gastroenteritis (age 14 years).
- One case with Trisomy 21 and myelodysplasia who presented with a primary diagnosis of acidosis and chronic liver failure (age 17 years).

ACQUIRED CONDITIONS

In 2017 there were 2 deaths in children ranging from 4 months to 2 years. These included:

- One case due to an acquired condition following complications from prematurity (age 4 months).
- One case due to idiopathic myocarditis (age 7 years).

[9] The State of Queensland (Queensland Family and Child Commission): Australian and New Zealand Child Death statistics, 2017. Supplementary Chapter, Annual Report: Deaths of Children and Young People, Queensland, 2018-19.

[10] Australian Bureau of Statistics; 2016, *Causes of Death*, cat.no. 3303.0, viewed 2018 http://www.abs.gov.au/AUSSTATS/abs@.nsf/allprimarymainfeatures/2ABFC8DC5C3C53A9CA2581A7001599A3?opendocument

UNEXPLAINED INFANT DEATH

In 2017, the number of reported 'unexplained infant deaths' remained stable with the previous year with a total of two infants reported in this category aged 3 months. Both cases were found to be associated with clear risk factors including an unsafe sleeping environment where the infants had been found to have co-slept in bed with an adult. In one of the cases the infant had also been identified as having been premature with minor medical problems and received the antidepressant Desvenlafaxine through breastmilk. A Desvenlafaxine Breastfeeding Warning has been noted. The other infant case was found to have died as a result of probable suffocation and overlaying whilst sleeping with an adult.

INJURY

The number of children dying in 2017 as a result of injury was significantly higher than figures reported since 2009 with a total of fourteen paediatric death cases having been reviewed in this year.

Again, it is concerning to note that two of the paediatric deaths had been associated with suspected suicide. The Committee wishes to support the Coroners recommendations in relation to youth suicide and reiterates the importance of addressing youth suicide and encouraging appropriate measures to be in place within the Community to help young individuals considered to be at risk.

Another concerning finding is in relation to the multiple injuries sustained from the impact of motor vehicles, particularly larger motor vehicles (trucks) where children had not been seen by the driver. All of these cases received fatal injuries from larger farming vehicles (i.e., prime mover truck, tractor slasher or Ford transit flat tray truck) where on all occasions the children had been playing outdoors on a farm or driveway and fatally impacted by a reversing vehicle. On all these occasions the respective drivers had reduced visibility and were unable to see the children while operating their farming equipment.

CASES STILL UNDER INVESTIGATION

Nil.

UNKNOWN/INDETERMINATE

Nil.

Summary:

The number of paediatric deaths in Tasmania reported in 2017 was again higher than reported in the previous year although generally lower than reported over the last decade. Again, it is of particular concern to find that a number of paediatric death cases had been associated with injuries arising from self-harm. The recommendations outlined previously in relation to youth suicide continue to be supported and are again reiterated in this report.

The Committee welcomes the finding of no increases from recent years to the number of reported unexplained infant death cases associated with risk factors in this year. Again, it is encouraged to continue to ensure that parents and the community receive a consistent message about safe sleeping practices particularly with regards to the dangers of co-sleeping and bed-sharing with adults.

Another finding that is of a concern relates to the preventative deaths of children playing in close proximity to moving larger vehicles (e.g., trucks), particularly the larger farm operating vehicles where drivers have been found not to have seen children playing within the vicinity of their moving vehicles. Committee members particularly noted that children in a farming community should be especially monitored when playing on farms in close proximity to operating farm equipment.

Recommendations:

Youth suicide

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 such as listed below:
    - Emergency services 000
    - Lifeline 131 114
    - Suicide Call Back Service 1300 659 467
    - Beyond Blue support service 1300 224 636
    - Kids Helpline 1800 551 800
    - http://suicideprevention.com.au/
    - Youth Beyond Blue have also developed the check in app, to assist young people who are concerned about a friend but worried about saying the wrong thing. https://www.youthbeyondblue.com/help-someone-you-know/thecheckin
2. That all health professionals should be advised to inform relevant family members, carers or guardians of a child who may be at risk of suicide of that risk.
3. COPMM supports the Coroner's recommendation that the Media, in publishing articles and editorial on suicide, ensure complete compliance with Mindframe Guidelines.
4. That the Media clearly outline appropriate and available support helplines at the time of reporting on paediatric death cases that have been particularly related to suicidal behaviour.
5. 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 committed suicide.
6. That age appropriate mental health services and facilities be established and resourced for adolescents as part of an improved Mental Health Service.
7. That all jurisdictions consider using a consistent national classification system for review of paediatric death cases.

Safe sleeping for infants

1. That a clear 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 crime or death scene examinations be undertaken to establish whether the cause of death is due to overlying[11].

Children and motor vehicles: travelling as passengers or external to vehicles

1. 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. 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. 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.
2. That drivers of vehicles must pay special attention to surroundings where there may be small children present when reversing vehicles especially on farms when farming equipment is being operated.

[11] 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 2017

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.

There was one maternal death (indirect) reported in Tasmania in 2017. Details are highlighted below.

Incidental maternal death (1 case)

A 40-year-old parity of 2 presented to the Royal Hobart Hospital in premature labour at 32 weeks gestation and was delivered by caesarean section of a baby boy weighing 1 616 grams because of cord prolapse and non-reassuring fetal status. She was noted to be under the care of her general practitioner for a respiratory tract infection at that time with late attending antenatal care provided by an independent midwife. She was diagnosed with pneumonia postpartum and then readmitted with deteriorating respiratory function 11 days post-delivery. A diagnosis was ultimately made of a metastatic adenocarcinoma possibly pulmonary in origin and she died of disseminated disease 37 days after delivery.

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 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 has undertaken 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.

In 2017, 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), and North West Private Hospital (NWPH)) have participated in AMOSS with data collection being initially based on six morbid events. Additional maternal morbid events as determined by an advisory group have been included as part of future data collections. The AMOSS website became operational at the end of July 2009 (https://www.amoss.com.au/index.html).

It is hoped that hospitals/states will, in the future, continue to support this system as part of their normal risk management framework.

Recommendations on maternal deaths 2017

1. That engagement with appropriate antenatal care is undertaken soon after the diagnosis of pregnancy.
2. That perinatal mental health services in Tasmania be funded and supported adequately to ensure effective delivery to all women who require support.
3. That there is adequate investment and support for women with complex drug and alcohol presentations during pregnancy.
4. That all clinicians writing a Tasmanian death certificate determine whether the decedent had been pregnant in the preceding 12 months.

Data Management Committee

Membership of the Data Management Committee continues to include representatives derived from obstetric, paediatric, midwifery, Health Information Team and Epidemiology Unit with Professor Peter Dargaville Chairing this committee. The committee continues to meet as required 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 2017 and beyond.

Data collection form

The *National Perinatal Death Clinical Audit Tool* (NPDCAT) continues to be the preferred form to use 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. Significant work has continued to be undertaken by IT services to progress the integration of this form into the *ObstetrixTas* system. All Tasmanian hospitals (including all public and NWPH) are now familiar in the use of this tool to complete details around reported perinatal deaths where Council urges that only the attending medical practitioner/specialist completes the NPDCAT in respect to their reported perinatal mortality case. Council also urges participating hospitals to undertake data corrections in a timely manner in order to allow auditing of data to proceed efficiently to enable COPMM reporting to be achieved in a timely manner.

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 that was implemented in January 2019 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 (http://www.dhhs.tas.gov.au/about_the_department/partnerships/registration_boards/copmm).

The Maternal Mortality and Morbidity Committee of Council continues to utilise the COPMM Maternal Death Notification Form to review and classify the maternal death cases reported in 2017. This tool has also been used to supply data at the request of the AIHW National Perinatal Epidemiology and Statistics Unit for reported maternal deaths as required.

Progress in database

The statewide Electronic Perinatal Database known as *ObstetrixTas* was implemented in all Tasmanian public maternity hospitals and public contracted maternity private 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 welcomes the integration of the NPDCAT into the ObsterixTas system and supports the proposal to incorporate a Congenital Abnormality Register for Tasmania into *ObstetrixTas* as a future priority.

Review the structure of the Annual Report

The 2017 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 through its Working Group is to provide an opportunity to discuss and revise formatting issues as required.

Perinatal statistics

Births, birth rates and pregnancies

Table 10: Live births and birth rates in Tasmania 2013-2017

Year[a]	Number of live births	Birth rate per 1 000 population[b]	Number of total births	Number of total pregnancies
2013	5 979	11.6	6 021	5 936
2014	5 843	11.3	5 892	5 818
2015	5 659	10.9	5 693	5 610
2016	5 877	11.3	5 920	5 818
2017	**5 550**	**10.6**	**5 581**	**5 496**

(a) Live births - Births as per ObstetrixTas system and available Perinatal Data Forms provided by maternity units and maternity service providers.

(b) Australian Bureau of Statistics estimates Tasmania's population at 524 957 in December 2017 (Australian Bureau of Statistics, 2018, Australian Demographic Statistics, 'Table 4 Estimated Resident Population, States and Territories (Number)', time series spreadsheet, cat. no. 3101.0, viewed 17 April 2019.

From 2006 to 2008, the birth rate gradually increased from 12.5 to 12.9 per 1 000 population, which equates to a statistically significant (p=0.002) increase of 1.8 per cent per annum. From 2008 to 2017, this trend reversed, with a statistically significant (p<0.001) annual decline of 1.9 per cent per annum from 12.9 to 10.6 per 1 000 population. From 2016 to 2017, the birth rate dropped significantly from 11.3 to 10.6 per 1 000 population, in contrast to the period 2013-2016 when the birth rate remained essentially unchanged.

Figure 2: Birth rate for Tasmania per 1 000 head of population 2005-2017

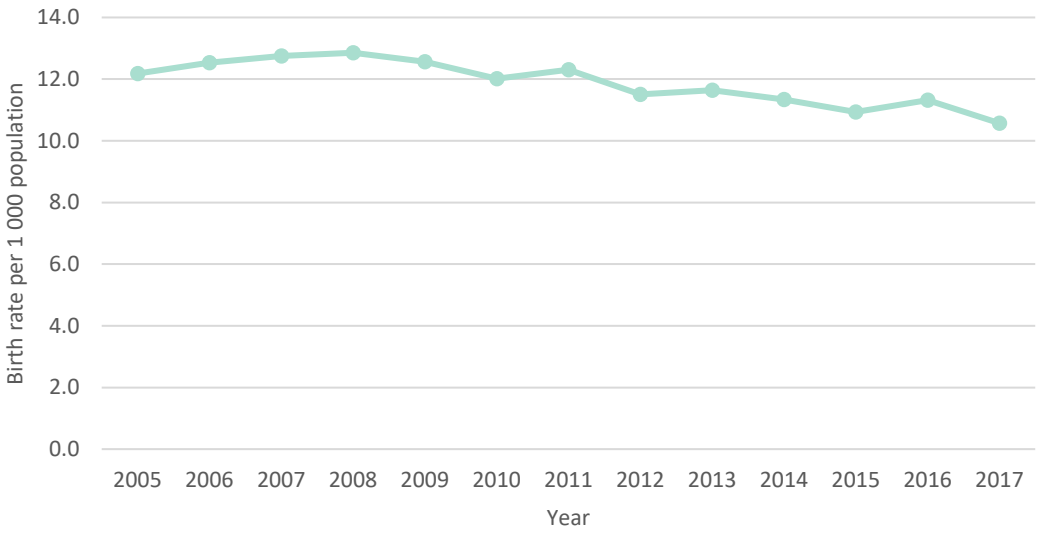


Table 11: Live births by region 2013-2017

Year	South		North		Northwest		Interstate		Total live births
	n	%	n	%	n	%	n	%	
2013	3 064	51.2	1 630	27.3	1 278	21.4	7	0.1	**5 979**
2014	3 068	52.5	1 545	26.4	1 225	21.0	5	0.1	**5 843**
2015	2 984	52.7	1 510	26.7	1 161	20.5	4	0.1	**5 659**
2016	3 055	52.0	1 635	27.8	1 178	20.0	9	0.2	**5 877**
2017	**2 895**	**52.2**	**1 496**	**27.0**	**1 154**	**20.8**	**5**	**0.1**	**5 550**

A decrease in the number of births was reported in each of the regions of Tasmania in 2017 with the Northern region reporting the greatest decrease (8.5 per cent) since 2016, followed by the Southern region (5.2 per cent) and the North West region (2.0 per cent).

Table 12: Live births by birth setting 2013-2017

Year	Royal Hobart (QAH)	Launceston General (QVH)	District hospitals	Mersey Community	Private hospitals[(a)]	Others (including homebirths)	Total live births
Number							
2013	1 955	1 570	20	410	1 989	35	**5 979**
2014	1 894	1 509	20	345	2 028	47	**5 843**
2015	1 939	1 480	10	386	1 798	46	**5 659**
2016	1 950	1 643	8	316	1 921	39	**5 877**
2017	**1 880**	**1 572**	**4**	**0**	**2 042**	**52**	**5 550**
Percentage							
2013	32.7	26.3	0.3	6.9	33.3	0.6	**100.0**
2014	32.4	25.8	0.3	5.9	34.7	0.8	**100.0**
2015	34.3	26.2	0.2	6.8	31.8	0.8	**100.0**
2016	33.2	28.0	0.1	5.4	32.7	0.7	**100.0**
2017	**33.9**	**28.3**	**0.1**	**0.0**	**36.8**	**0.9**	**100.0**

(a) Includes public patients at the North West Private Hospital.

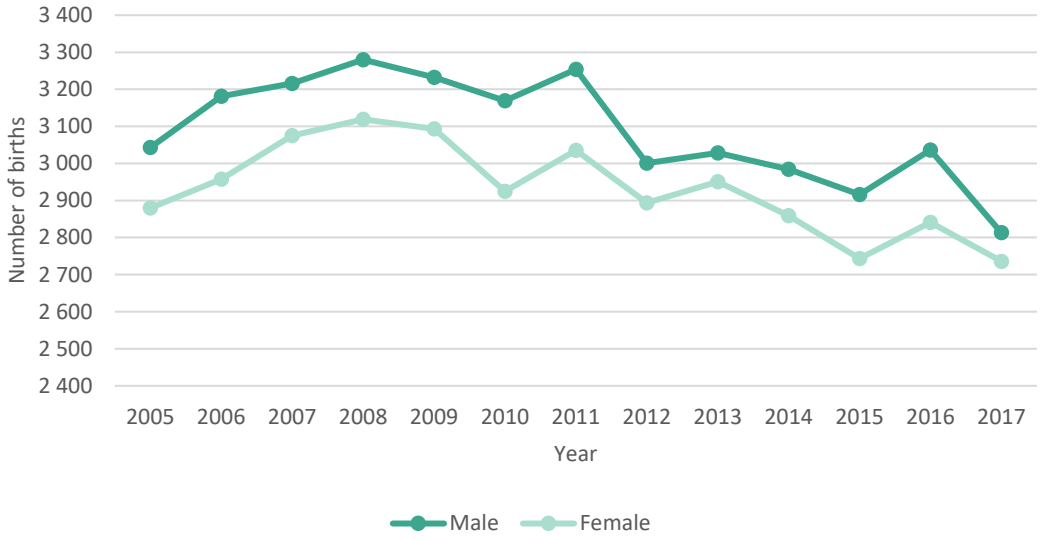
Baby sex

Table 13: Live births by sex 2013-2017

Year	Male		Female		Indeterminate		Total live births
	n	%	n	%	n	%	
2013	3 028	50.6	2 951	49.4	0	^	**5 979**
2014	2 984	51.1	2 859	48.9	0	^	**5 843**
2015	2 916	51.5	2 743	48.5	0	^	**5 659**
2016	3 036	51.7	2 841	48.3	0	^	**5 877**
2017	**2 813**	**50.7**	**2 736**	**49.3**	**1**	**^**	**5 550**

^ Less than 0.1 per cent.

Figure 3: Live births by sex 2005-2017



Male births continue to exceed female births, accounting for 50.7 per cent of all Tasmanian births in 2017 compared to 49.3 per cent (sex ratio: 102.8). This finding is comparable to national trends reported in 2017 with national sex ratio for live births being 106.0 male liveborn babies per 100 female liveborn babies.

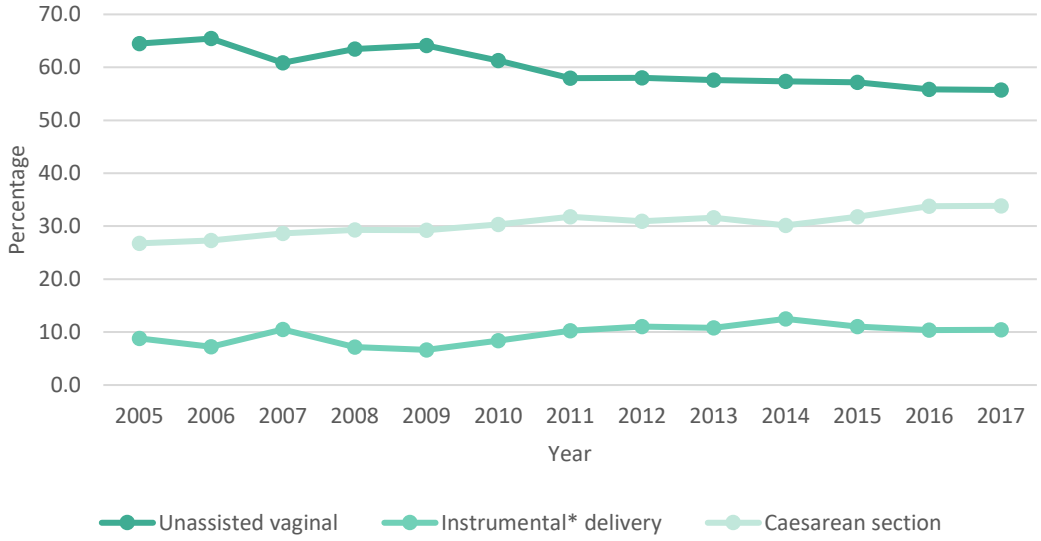
Mode of delivery

Table 14: Births by mode of delivery 2013-2017

Year	Unassisted vaginal		Instrumental[(a)] delivery		Caesarean section		Total births
	n	%	n	%	n	%	
2013	3 468	57.6	649	10.8	1 904	31.6	**6 021**
2014	3 378	57.3	736	12.5	1 778	30.2	**5 892**
2015	3 255	57.2	629	11.0	1 809	31.8	**5 693**
2016	3 307	55.9	615	10.4	1 998	33.8	**5 920**
2017	**3 110**	**55.7**	**582**	**10.4**	**1 889**	**33.8**	**5 581**

(a) Instrumental delivery includes forceps, forceps rotation and vacuum extraction.

Figure 4: Births by mode of delivery 2005-2017



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

Table 15: Births by mode of delivery and gestation 2013-2017[(a)]

Gestation in weeks	Year	Vaginal delivery		Caesarean section		Total
		n	%	n	%	n
20 – 27	2013	44	78.6	12	21.4	**56**
	2014	48	85.7	8	14.3	**56**
	2015	38	67.9	18	32.1	**56**
	2016	56	77.8	16	22.2	**72**
	2017	**37**	**68.5**	**17**	**31.5**	**54**
28 – 31	2013	19	35.8	34	64.2	**53**
	2014	20	29.9	47	70.1	**67**
	2015	32	45.7	38	54.3	**70**
	2016	18	28.6	45	71.4	**63**
	2017	**12**	**30.8**	**27**	**69.2**	**39**
32 - 36	2013	235	49.2	243	50.8	**478**
	2014	265	52.9	236	47.1	**501**
	2015	245	48.4	261	51.6	**506**
	2016	249	46.8	283	53.2	**532**
	2017	**250**	**48.0**	**271**	**52.0**	**521**
37 - 41	2013	3 800	70.3	1 606	29.7	**5 406**
	2014	3 766	71.8	1 481	28.2	**5 247**
	2015	3 547	70.4	1 488	29.6	**5 035**
	2016	3 588	68.5	1 652	31.5	**5 240**
	2017	**3 384**	**68.3**	**1 570**	**31.7**	**4 954**
42 and over	2013	19	67.9	9	32.1	**28**
	2014	15	71.4	6	28.6	**21**
	2015	21	84.0	4	16.0	**25**
	2016	11	84.6	2	15.4	**13**
	2017	**9**	**69.2**	**4**	**30.8**	**13**

(a) A total of two vaginal births had unknown gestation in 2014 and 2015.

Table 16: Births by caesarean sections following induction of labour 2013-2017

Year	Births by caesarean section	Induction of labour with caesarean section delivery	
		n	%
2013	1 904	329	17.3
2014	1 778	355	20.0
2015	1 809	343	19.0
2016	1 998	429	21.5
2017	**1 889**	**404**	**21.4**

The percentage of CS deliveries that followed induction of labour has remained relatively steady over the years from 20.0 per cent in 2014 to 21.4 per cent in 2017 (see Table 16). 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.

Table 17: Births by caesarean section following augmentation of labour 2013-2017

Type of augmentation	Year	Primary	Repeat	Proportion of all augmentations
ARM[(a)] only	2013	70	35	12.4
	2014	47	22	8.9
	2015	34	26	8.8
	2016	38	22	9.4
	2017	**48**	**21**	**12.7**
Oxytocin only	2013	18	1	32.2
	2014	6	1	17.9
	2015	6	1	17.5
	2016	36	2	27.0
	2017	**29**	**0**	**21.2**
Oxytocin and ARM[(a)]	2013	79	5	26.0
	2014	52	2	18.4
	2015	63	3	20.4
	2016	62	2	19.3
	2017	**51**	**0**	**16.0**

(a) ARM = Artificial Rupture of Membranes

Presentation at birth

Table 18 below shows that the number of vaginal breech presentations in 2016 was similar to that reported in the previous year.

Table 18: Births by presentation at vaginal delivery only 2013-2017

Year	Vertex		Face and brow		Breech		Other		Total vaginal births
	n	%	n	%	n	%	n	%	n
2013	4 062	98.7	5	^	36	^	14	^	4 117
2014	4 057	98.6	1	^	35	^	20	^	4 114[(a)]
2015	3 823	98.4	8	^	35	^	18	^	3 884
2016	3 866	98.6	6	^	29	^	21	^	3 922
2017	**3 637**	**98.5**	**1**	**^**	**27**	**^**	**27**	**^**	**3 692**

^ Less than 1 per cent

(a) Including one vaginal birth where the presentation is unknown.

Table 19: Births by presentation via caesarean section delivery 2013-2017

Year	Vertex		Face and brow		Breech		Other		Not stated		Total CS births
	n	%	n	%	n	%	n	%	n	%	n
2013	1 696	89.1	12	^	175	9.2	21	1.1	0	^	**1 904**
2014	1 579	88.8	8	^	169	9.5	22	1.2	0	^	**1 778**
2015	1 601	88.5	9	^	175	9.7	24	1.3	0	^	**1 809**
2016	1 757	87.9	5	^	202	10.1	34	1.7	0	^	**1 998**
2017	**1 671**	**88.5**	**11**	**^**	**181**	**9.6**	**26**	**1.4**	**0**	**^**	**1 889**

^ Less than 1 per cent

The percentage of breech presentations delivered by caesarean (9.6 per cent) in 2017 was similar to the figure for 2016 (10.1 per cent).

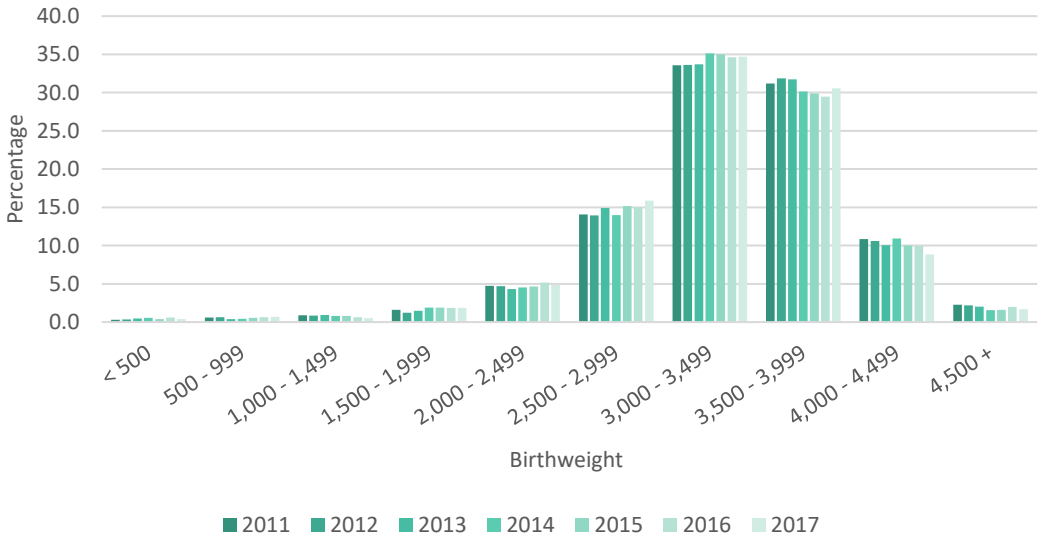
Birthweight

Table 20: Births by birthweight groups 2013-2017

Birthweight groups	2013		2014[(a)]		2015		2016		2017	
	n	%	n	%	n	%	n	%	n	%
< 500	29	0.5	32	0.5	21	0.4	35	0.6	**21**	**0.4**
500 - 999	23	0.4	25	0.4	31	0.5	37	0.6	**37**	**0.7**
1,000 - 1,499	57	0.9	48	0.8	46	0.8	39	0.7	**29**	**0.5**
1,500 - 1,999	88	1.5	111	1.9	109	1.9	110	1.9	**103**	**1.8**
2,000 - 2,499	259	4.3	267	4.5	265	4.7	306	5.2	**272**	**4.9**
2,500 - 2,999	897	14.9	825	14.0	864	15.2	890	15.0	**886**	**15.9**
3,000 - 3,499	2 030	33.7	2 069	35.1	1 993	35.0	2 051	34.6	**1 938**	**34.7**
3,500 - 3,999	1 911	31.7	1 776	30.1	1 703	29.9	1 744	29.5	**1 706**	**30.6**
4,000 - 4,499	605	10.0	645	10.9	569	10.0	590	10.0	**494**	**8.9**
4,500 +	122	2.0	93	1.6	92	1.6	118	2.0	**95**	**1.7**
Total	**6 021**	**100.0**	**5 892**	**100.0**	**5 693**	**100.0**	**5 920**	**100.0**	**5 581**	**100.0**

(a) Including one vaginal birth where the birthweight is unknown.

Figure 5: Births by birthweight groups 2011-2017



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 21: Incidence of low and very low birthweight 2013-2017

Year	Very low birthweight (< 1 500 grams)		Low birthweight[a] (< 2 500 grams)		Total births
	n	%	n	%	
2013	109	1.8	456	7.6	**6 021**
2014	105	1.8	483	8.2	**5 892**
2015	98	1.7	472	8.3	**5 693**
2016	111	1.9	527	8.9	**5 920**
2017	**87**	**1.6**	**462**	**8.3**	**5 581**

(a) Note low birthweight (< 2 500 grams) figures also include very low birthweight babies; total births include stillbirths.

The proportions of very low birthweight infants and low birthweight infants reported in Tasmania for 2017 generally remained steady when compared to figures reported in 2016, and slightly higher than the respective national values. In 2017, the national incidence of very low birthweight infants was 1.5 per cent of all births (including stillbirths) and the incidence of low birthweight infants was 7.2 per cent of all births.

Table 22: Survival to hospital discharge by gestation 1996-2017[a]

Year	% Survival								
	23 weeks	24 weeks	25 weeks	26 weeks	27 weeks	24-27 weeks	28 weeks	29 weeks	30 weeks
1996-2003	25	44	46	70	90	**70**	94	94	98
2004-2007	33	55	72	93	93	**81**	91	100	97
2008-2012	0	46	61	82	88	**74**	92	98	98
2013-2017	43	88	75	94	89	**88**	94	98	97
ANZNN 2017[b]	54	68	83	91	94	**86**	97	97	99

(a) Outcomes are for infants admitted to the Tasmanian Neonatal and Paediatric Intensive Care Unit at the Royal Hobart Hospital. Lethal congenital anomalies are not excluded.

(b) Survival to discharge home figures from the Australian and New Zealand Neonatal Network registry for the calendar year 2017. This registry receives data from all Neonatal Intensive Care Units in Australia and New Zealand (including Royal Hobart Hospital). Lethal congenital anomalies are not excluded.

As reported in Table 22, aggregate survival for infants born preterm from 24-27 weeks gestation for the 5-year epoch 2013-17 (inclusive) is higher than the national figure of 86.5 per cent (2017 calendar year). Survival from 28 to 30 weeks is close to, or 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 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 23: Live births by Apgar score at five minutes 2013-2017

Apgar score	2013		2014		2015		2016		2017	
	n	%	n	%	n	%	n	%	n	%
0	0	^	0	^	2	^	3	^	**3**	**^**
1	4	^	5	^	6	^	6	^	**2**	**^**
2	7	^	7	^	4	^	7	^	**6**	**^**
3	10	^	5	^	3	^	11	^	**10**	**^**
4	11	^	20	^	6	^	15	^	**13**	**^**
5	29	^	36	^	44	^	24	^	**33**	**^**
6	61	1.0	66	1.1	66	1.2	75	1.3	**83**	**1.5**
7	107	1.8	112	1.9	117	2.1	139	2.4	**111**	**2.0**
8	252	4.2	292	5.0	249	4.4	290	4.9	**289**	**5.2**
9	4 055	67.8	4 080	69.8	4 058	71.7	4 052	68.9	**4 049**	**73.0**
10	1 425	23.8	1 202	20.6	1 078	19.0	1 233	21.0	**939**	**16.9**
Not observed	18	^	18	^	26	^	22	^	**12**	**^**
Total live births	**5 979**	**100.0**	**5 843**	**100.0**	**5 659**	**100.0**	**5 877**	**100.0**	**5 550**	**100.0**

^ Less than 0.1 per cent

Figure 6: Live births with Apgar score less than 6 at five minutes 2005-2017

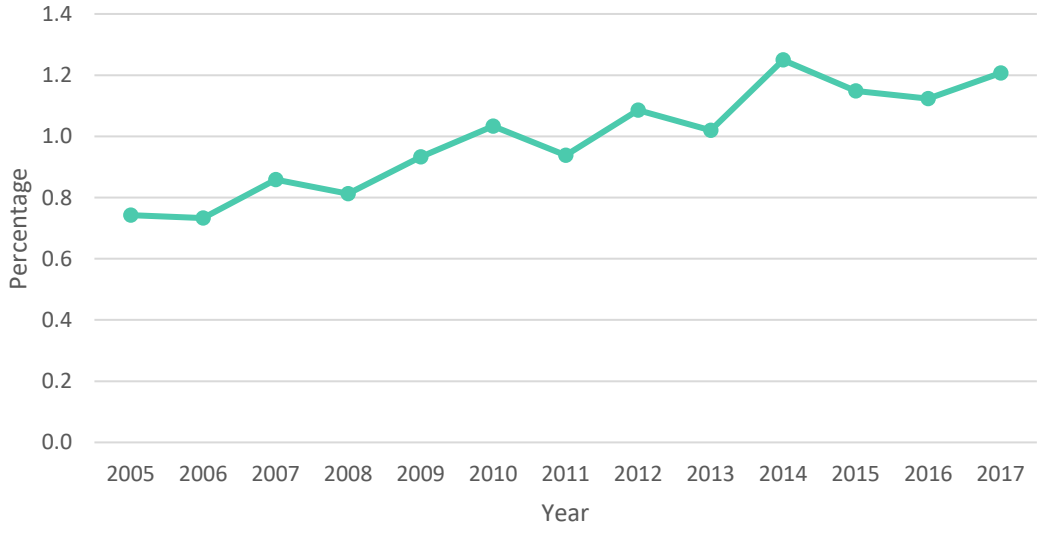


Figure 6 reflects that there has been a slight decrease in the number of births associated with low Apgar scores at five minutes since 2005.

Resuscitation

The following table shows all intubations in the delivery room, including those undertaken in conjunction with other methods of resuscitation as specified in the electronic perinatal data database system or on the paper-based form. The percentage of live births requiring intubation reported in 2017 was similar to that reported for the previous year, having decreased steadily from 0.9 per cent in 2010.

Table 24: Live births by active intubation and resuscitation at birth 2013-2017

Year	Intubation		Resuscitation		Total live births
	n	%	n	%	
2013	23	0.4	974	16.3	**5 979**
2014	27	0.5	897	15.4	**5 843**
2015	17	0.3	894	15.8	**5 659**
2016	20	0.3	915	15.6	**5 877**
2017	**18**	**0.3**	**879**	**15.8**	**5 550**

Perinatal mortality

The Tasmanian perinatal mortality rate per 1 000 births in 2017 (8.4 deaths per 1 000 births) was the lowest since 2010 and also similar to the national perinatal mortality rate of 9.5 deaths per 1 000 births reported in 2017. Causes of perinatal mortality are outlined previously in Table 2.

Table 25: Perinatal outcome 2013-2017

Year	Stillbirth		Liveborn and survived[a]		Neonatal death		Other (post-neonatal death)		Total births
	n	%	n	%	n[b]	%[c]	n	%	
2013	42	0.7	5 965	99.1	14 (+3)	0.2	0	^	**6 021**
2014	49	0.8	5 825	98.9	18 (+6)	0.3	0	^	**5 892**
2015	34	0.6	5 642	99.1	17 (+6[d])	0.3	0	^	**5 693**
2016	43	0.7	5 858	99.0	19 (+0)	0.3	0	^	**5 920**
2017	**31**	**0.6**	**5 533**	**99.1**	**15 (+1)**	**0.3**	**2**	**^**	**5 581**

^ Less than 0.1 per cent

(a) Survived to first hospital discharge.

(b) Number in bracket means that neonatal deaths occurred after first hospital discharge.

(c) Percentage calculated after excluding the number in bracket.

(d) Include one baby was not born in Tasmania but died in Tasmania.

Figure 7: Stillbirths and neonatal deaths per 1 000 births 2005-2017

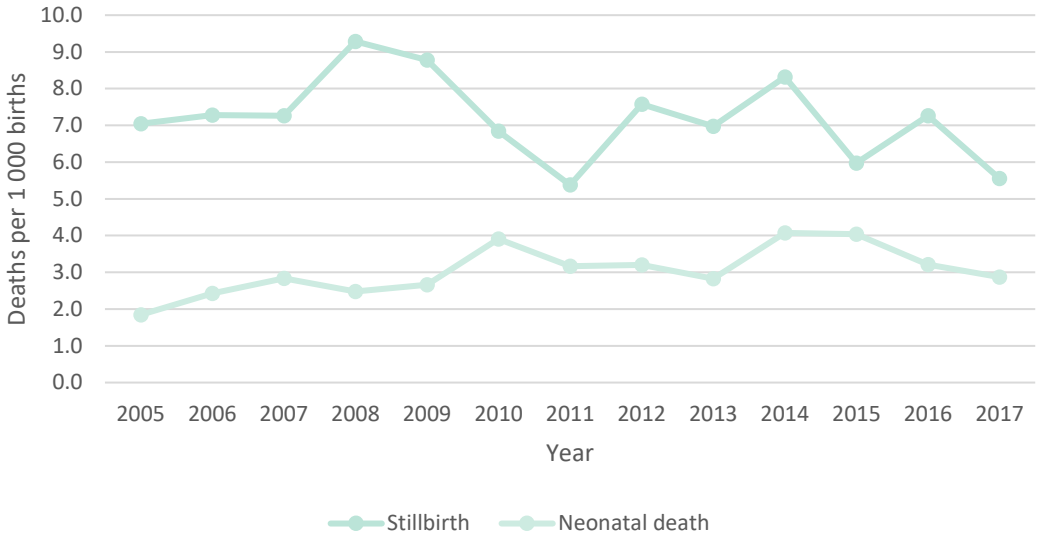
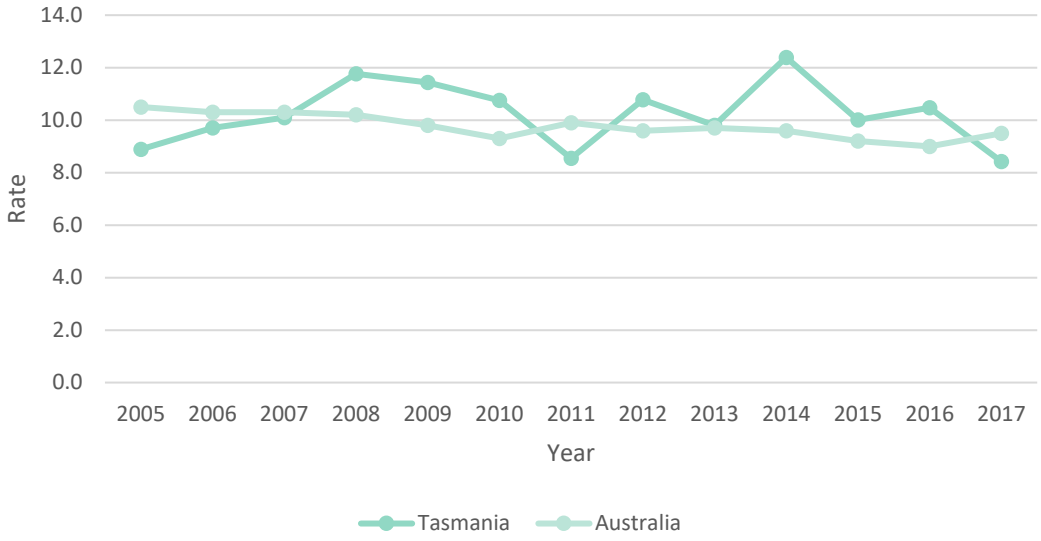


Table 26: Perinatal mortality rates 2013-2017

Year	Number of perinatal deaths	Percentage of perinatal deaths	Number of total births	Rate of perinatal mortality per 1 000 births
2013	59	1.0	6 021	**9.8**
2014	73	1.2	5 892	**12.4**
2015	57	1.0	5 693	**10.0**
2016	62	1.0	5 920	**10.5**
2017	**47**	**0.8**	**5 581**	**8.4**

The Tasmanian annual perinatal mortality rates have fluctuated over the period 2005 to 2017 without displaying any clear trend, with the 2017 rate being lower than that for 2010. In 2017, the national stillbirth rate was 7.1 per 1 000 births; the neonatal death rate was 2.4 per 1 000 live births; and the perinatal death rate was 9.5 per 1 000 births.

Figure 8: Perinatal mortality rate per 1 000 births in Tasmania and Australia 2005-2017



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

Table 27: Perinatal mortality in multiple pregnancies 2013-2017

Year	Twin deaths		Births born from a twin pregnancy	Triplet deaths		Births born from a triplet pregnancy
	n	%	n	n	%	n
2013	6	3.5	170	0	0.0	0
2014	9	6.0	148	0	0.0	0
2015	6	3.6	166	0	0.0	0
2016	5	2.5	200	0	0.0	3
2017	**1**	**0.6**	**170**	**0**	**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[12], hence consultant associated management is necessary. There is a widespread trend towards delivering term twins by caesarean section.

[12] 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.

Table 28: Perinatal mortality in multiple pregnancies by birth order 2013-2017

Year	Twin 1		Twin 2		Triplet Stillbirth		
	Stillbirth	Neonatal death	Stillbirth	Neonatal death	Triplet 1	Triplet 2	Triplet 3
2013	2	1	1	2	0	0	0
2014	2	3	3	1	0	0	0
2015	1	2	1	2	0	0	0
2016	1	1	2	1	0	0	0
2017	**0**	**0**	**1**	**0**	**0**	**0**	**0**

Perinatal mortality in Tasmania over the period 2009-2017, a regional analysis

Over the period 2009-2017 there were 554 perinatal deaths in Tasmania, which equates to a perinatal mortality rate of 10.3 per 1 000 births. As shown in Table 29, about half of these deaths were of babies born to mothers' resident in the Southern region of Tasmania, with slightly more deaths in the Northern region (140) than the North West region (123).

The perinatal mortality rates over this period were similar for each of the regions and the state as a whole. Further, there were no statistically significant trends in perinatal mortality rates over this period at either the state or regional level.

Table 29: Perinatal [(b)] mortality by region, Tasmania 2009-2017

Region	2009-2017		
	n	rate[(a)]	95% CI
South	284	10.2	[9,11.5]
North	140	9.6	[8.1,11.3]
North West	123	10.8	[9,12.9]
Tasmania	**554**	**10.3**	**[9.4,11.2]**

(a) Rate per 1 000 births

(b) Includes neonatal deaths and stillbirths

The lack of any significant trends becomes quite clear when considering perinatal mortality rates at the state and regional level calculated using a three-year rolling average (Table 30 and Figure 9). As expected, in accordance with the overall lack of significant variation in rates between regions, there were no significant regional differences within each of the three-year time periods between 2009 and 2017.

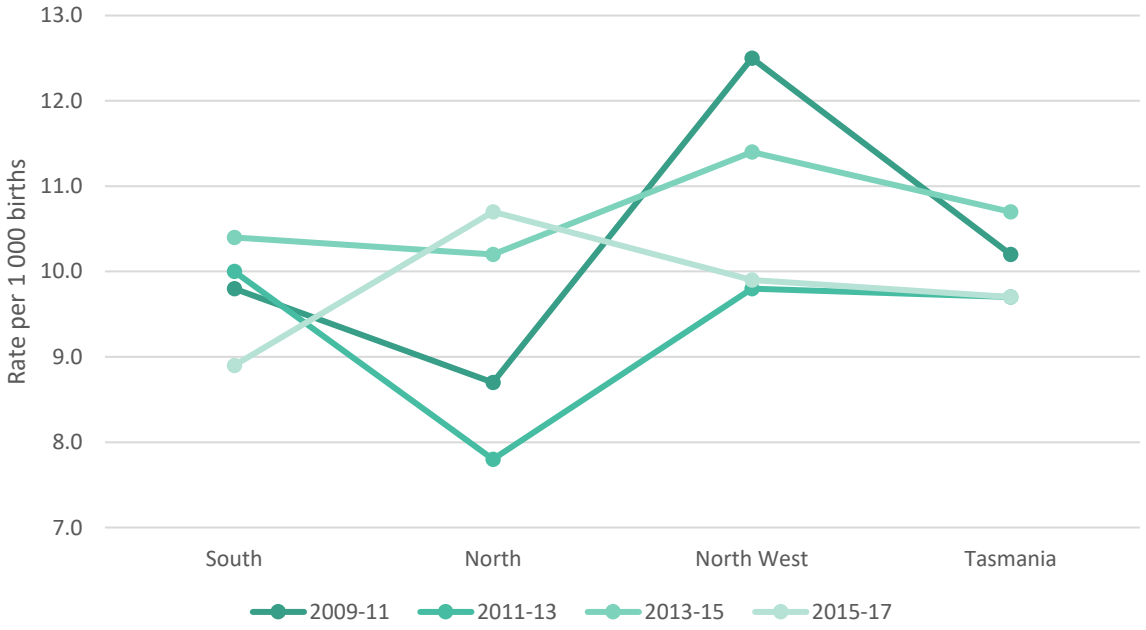
Table 30: Perinatal [b] mortality by region and year, Tasmania 2009-2017

Region		South	North	North West	Tasmania
2009-2011	**n**	94	45	51	**193**
	rate[a]	9.8	8.7	12.5	**10.2**
	95% CI	[7.9,12]	[6.4,11.7]	[9.3,16.4]	**[8.8,11.8]**
2011-2013	**n**	94	39	38	**177**
	rate[a]	10	7.8	9.8	**9.7**
	95% CI	[8.1,12.2]	[5.6,10.7]	[6.9,13.4]	**[8.3,11.2]**
2013-2015	**n**	96	48	42	**188**
	rate[a]	10.4	10.2	11.4	**10.7**
	95% CI	[8.5,12.8]	[7.5,13.5]	[8.2,15.4]	**[9.2,12.3]**
2015-2017	**n**	80	50	35	**166**
	rate[a]	8.9	10.7	9.9	**9.7**
	95% CI	[7.1,11.1]	[7.9,14.1]	[6.9,13.8]	**[8.2,11.2]**

(a) Rate per 1 000 births

(b) Includes neonatal deaths and stillbirths

Figure 9: Perinatal mortality rate per 1 000 births by region, Tasmania 2009-2017



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 2.9 per 1 000 births reported in Tasmania in 2017 was the lowest since 2014 (4.1 per 1 000 births) (see Table 1), but slightly higher than the rate reported nationally in 2017 (i.e., 2.4 per 1 000 births). Neither of these differences, however, were statistically significant (p>0.05).

Table 31: Neonatal mortality per 1 000 births in infants over 28 weeks gestation 2013-2017

Year	Number of neonatal deaths	Rate of neonatal mortality per 1 000 births[(a)]
2013	4	0.7
2014	10	1.7
2015	10	1.8
2016	5	0.8
2017	**4**	**0.7**

(a) Showing neonatal mortality that is not related to prematurity

Table 32: Neonatal mortality per 1 000 births in infants over 1 000 grams birthweight 2013-2017

Year	Number of neonatal deaths	Rate of neonatal mortality per 1 000 births[(a)]
2013	5	0.8
2014	10	1.7
2015	11	1.9
2016	5	0.8
2017	**4**	**0.7**

(a) Showing neonatal mortality that is not related to extremely low birth weight

Table 33: Fetal, neonatal and perinatal death rate per 1 000 births by state and territory 2014-2017

Year	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
Fetal									
2014	5.5	8.8	6.8	7.1	7.0	8.3	9.5	8.1	7.0
2015	6.2	8.3	6.6	6.4	7.6	6.0	7.3	9.7	7.0
2016	5.5	8.3	6.4	6.5	6.8	7.3	7.6	8.5	6.7
2017	**6.1**	**8.5**	**6.8**	**6.9**	**6.6**	**5.6**	**10.3**	**9.4**	**7.1**
Neonatal									
2014	2.2	2.9	3.0	1.4	1.9	3.9	3.1	4.8	2.5
2015	1.9	2.4	2.8	1.5	1.7	3.9	2.8	4.0	2.2
2016	2.0	2.7	2.7	2.0	2.0	3.2	3.2	4.3	2.4
2017	**2.2**	**2.5**	**3.0**	**1.5**	**2.4**	**2.7**	**2.6**	**5.5**	**2.4**
Perinatal									
2014	7.7	11.7	9.7	8.5	8.9	12.2	12.6	12.8	9.6
2015	8.1	10.7	9.4	7.9	9.3	9.8	10.0	13.7	9.2
2016	7.4	10.9	9.1	8.5	8.7	10.5	10.8	12.7	9.0
2017	**8.3**	**11.0**	**9.8**	**8.4**	**9.0**	**8.2**	**12.8**	**14.8**	**9.5**

Source: Australian Institute of Health and Welfare 2019. Australia's mothers and babies 2017—in brief. Perinatal statistics series no. 35. Cat. no. PER 100. Canberra: AIHW.

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 disappointing to find that the autopsy rate could not be determined in this year due to significant instances in which information about autopsy was unavailable.

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 34: Rate of autopsies on perinatal deaths 2013-2017

Year	Autopsy rate (%)
2013	29.2
2014	25.9
2015	33.3
2016	NA*
2017	**31.9**

**Data unavailable*

Mothers statistics

Maternal age

Table 35: Women who gave births by maternal age groups 2013-2017

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						
2013	326	1 098	1 765	1 676	842	229
2014	294	1 052	1 723	1 718	817	214
2015	247	1 017	1 573	1 759	827	187
2016	248	1 053	1 610	1 784	908	215
2017	**205**	**913**	**1 557**	**1 740**	**863**	**218**
Percentage						
2013	5.5	18.5	29.7	28.2	14.2	3.9
2014	5.1	18.1	29.6	29.5	14.0	3.7
2015	4.4	18.1	28.0	31.4	14.7	3.3
2016	4.3	18.1	27.7	30.7	15.6	3.7
2017	**3.7**	**16.6**	**28.3**	**31.7**	**15.7**	**4.0**

In Tasmania, the ages of mothers in the various groups reported in 2017 are consistent with those reported in 2015. 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 2017, a trend consistent with national reports from 2016. Overall, the proportion of mothers in Tasmania aged 35 years or more has increased, on average, annually since 2005 ($p<0.001$), a trend also seen nationally. Nationally, the mean age in 2017 was 30.6 years, compared with 29.7 years in 2004. Mothers aged 40 years and over constituted 4.3 per cent of women giving birth nationally in 2017 compared with 3.2 per cent in 2003. Furthermore, national figures have shown the proportion of mothers aged 35 and over has increased from 18.8 per cent in 2003 to about 23.7 per cent in 2017, while the proportion of mothers 24 years and under has decreased from 19.0 per cent to about 13.8 per cent[13].

[13] Australian Institute of Health and Welfare 2019. Australia's mothers and babies 2017—in brief. Perinatal statistics series no. 35. Cat. no. PER 100. Canberra: AIHW.

Figure 10: Proportion of women who gave birth by maternal age in Tasmania and Australia 2017

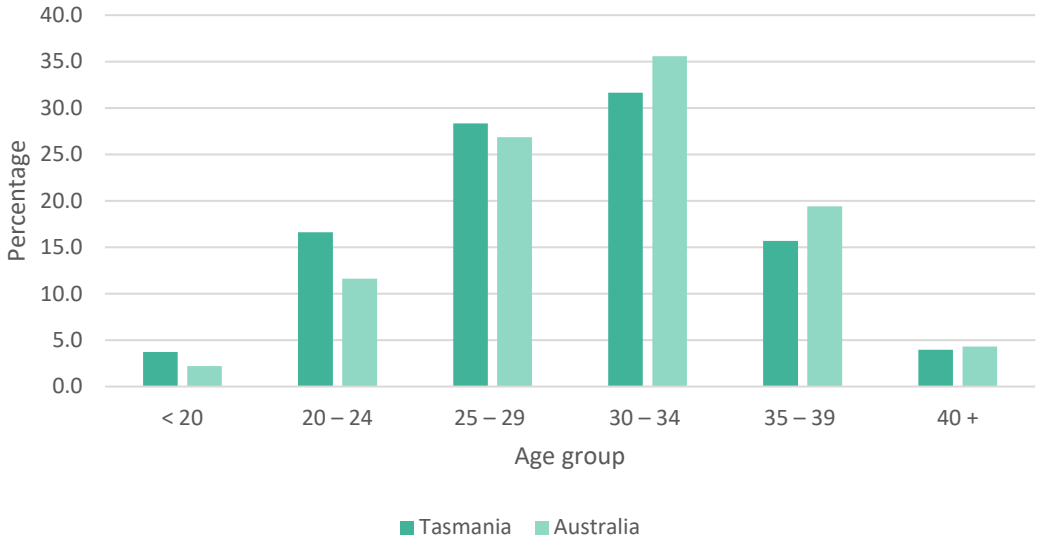


Table 36: Rates of birth per 1 000 female population by maternal age 2013-2017

Maternal age in years	Year	Number of estimated Tasmanian female population[(a)]	Rate of births per 1 000 female population	Total births[(b)]
15 – 19	2013	16 136	20.2	326
	2014	16 298	17.9	292
	2015	16 135	15.3	247
	2016	15 504	16.3	252
	2017	**15 241**	**13.3**	**202**
20 – 24	2013	15 114	73.5	1 111
	2014	14 875	71.2	1 059
	2015	15 026	67.9	1 021
	2016	15 329	70.0	1 073
	2017	**15 162**	**60.7**	**921**
25 – 29	2013	14 855	120.4	1 789
	2014	14 720	118.4	1 743
	2015	14 437	110.4	1 594
	2016	15 363	106.2	1 632
	2017	**15 546**	**101.4**	**1 577**
30 – 34	2013	14 761	115.2	1 700
	2014	14 895	117.2	1 746
	2015	15 083	118.6	1 789
	2016	15 394	118.2	1 820
	2017	**15 559**	**114.1**	**1 775**

Maternal age in years	Year	Number of estimated Tasmanian female population[a]	Rate of births per 1 000 female population	Total births[b]
35 – 39	2013	14 929	57.8	863
	2014	14 695	56.4	829
	2015	14 527	58.6	852
	2016	14 783	62.4	922
	2017	**15 222**	**57.8**	**880**
40 – 44	2013	17 826	12.5	223
	2014	17 433	11.8	205
	2015	17 121	10.2	174
	2016	16 445	12.5	206
	2017	**15 720**	**13.4**	**210**
45 –49	2013	17 360	0.5	8
	2014	17 300	0.6	11
	2015	17 314	0.6	11
	2016	17 770	0.7	12
	2017	**18 006**	**0.4**	**8**

(a) Australian Bureau of Statistics June 2006-2010, 2011, Population by Age and Sex, Australian States and Territories, 'Table 6 Estimated Resident Population by Single Year of Age, Tasmania', time series spreadsheet, cat. no. 3201.0, viewed 3 March 2011, [http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3201.0Main+Features1Jun%202010?OpenDocument].
Australian Bureau of Statistics 2011-2018, Australian Demographic Statistics, 'Table 56 Estimated Resident Population by Single Year of Age, Tasmania', time series spreadsheet, cat. no. 3101.0, viewed 18 April 2019, [http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3101.0Main+Features1Jun%202017?OpenDocument].

(b) A number of mothers who were under 15 or over 49 are excluded from the table.

Indigenous status

Reporting of Indigenous status is by self-identification and mothers 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 2017, 13 551 women identified as being Aboriginal or Torres Strait Islander gave birth in Australia, representing 4.5 per cent of all women who gave birth.

Table 37: Women who gave birth by Indigenous status 2013-2017

Year	Aboriginal		Torres Strait Islander		Aboriginal & Torres Strait Islander		Non-indigenous		Not stated		Total
	n	%	n	%	n	%	n	%	n	%	n
2013	252	4.2	12	0.2	13	0.2	5 561	93.7	98	1.7	5 936
2014	267	4.6	10	0.2	17	0.3	5 424	93.2	100	1.7	5 818
2015	271	4.8	13	0.2	27	0.5	5 188	92.5	111	2.0	5 610
2016	271	4.7	16	0.3	22	0.4	5 397	92.8	112	1.9	5 818
2017	**283**	**5.1**	**9**	**0.2**	**28**	**0.5**	**5 057**	**92.0**	**119**	**2.2**	**5 496**

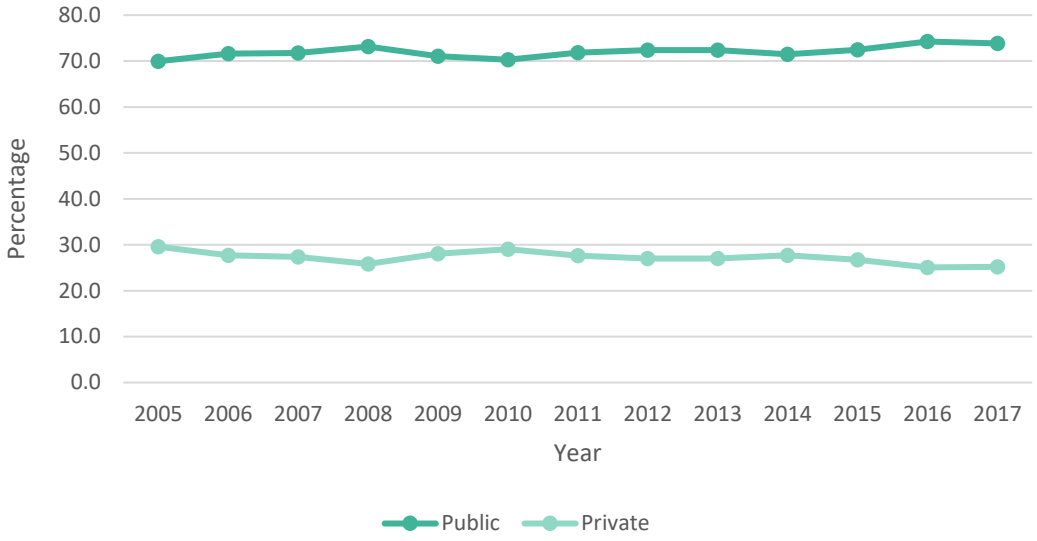
In-patient election status

In Tasmania, the proportion of private patients in 2017 (25.2 per cent) was similar to that reported in the previous year (25.1 per cent) but still lower than the 2017 national value (30.0 per cent). The proportion of public patients (73.8 per cent) in Tasmania in 2017 was similar to that for the previous two years and slightly higher than the 2016 national value (68.6 per cent).

Table 38: Women who gave birth by admitted patient election status 2013-2017

Year	Public		Private		Not stated		Total
	n	%	n	%	n	%	
2013	4 297	72.4	1 604	27.0	35	0.6	**5 936**
2014	4 160	71.5	1 611	27.7	47	0.8	**5 818**
2015	4 064	72.4	1 500	26.7	46	0.8	**5 610**
2016	4 320	74.3	1 459	25.1	39	0.7	**5 818**
2017	**4 058**	**73.8**	**1 386**	**25.2**	**52**	**0.9**	**5 496**

Figure 11: Women who gave birth by admitted patient election status 2005-2017



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.

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 39: Women who gave birth by parity 2013-2017

Year	None		One		Two		Three		Four and over		Total
	n	%	n	%	n	%	n	%	n	%	
2013	2 353	39.6	2 059	34.7	938	15.8	357	6.0	229	3.9	**5 936**
2014	2 320	39.9	2 011	34.6	903	15.5	352	6.1	232	4.0	**5 818**
2015	2 241	39.9	1 945	34.7	880	15.7	333	5.9	211	3.8	**5 610**
2016	2 366	40.7	1 998	34.3	862	14.8	358	6.2	234	4.0	**5 818**
2017	2 231	40.6	1 812	33.0	924	16.8	319	5.8	210	3.8	**5 496**

For Tasmania in 2017, 40.6 per cent of mothers gave birth for the first time and 33.0 per cent had their second baby. This trend is similar to those reported nationally in 2017, where 42.3 per cent of mothers gave birth for the first time and 35.1 per cent had their second baby.

Antenatal visits

Table 40: Women who gave birth by duration of pregnancy at first antenatal visit 2014-2017

Weeks	2014		2015		2016		2017		Australia 2017[14]
	n	%	n	%	n	%	n	%	%
Less than 14	5 094	87.6	4 947	88.2	5 119	88.0	**4 903**	**89.2**	72.0
14-19	465	8.0	449	8.0	474	8.1	**393**	**7.2**	18.0
20 and over	243	4.2	194	3.5	195	3.4	**185**	**3.4**	9.9
No antenatal care or unknown week at first antenatal visit	16	0.3	20	0.4	30	0.5	**15**	**0.3**	0.1

Table 41: Women who gave birth by number of antenatal visits 2014-2017

Weeks	2014		2015		2016		2017		Australia 2017[15]
	n	%	n	%	n	%	n	%	%
One	210	3.6	196	3.5	182	3.1	**193**	**3.5**	1.5
Two to four	293	5.0	261	4.7	246	4.2	**209**	**3.8**	4.6
Five or more	5 073	87.2	4 976	88.7	5 249	90.2	**5 077**	**92.4**	93.8
No antenatal care	242	4.2	177	3.2	141	2.4	**17**	**0.3**	0.1

Maternal body mass index by birth setting

In view of its significant contribution to morbidity and mortality for both mother and baby, the inclusion of maternal body mass index (BMI) as a measure on the perinatal data collection form allows assessment of obesity during pregnancy based on the ratio of weight and height. It has been reported that pregnant women who are obese have an increased risk of thromboembolism, gestational diabetes, pre-eclampsia, post-partum haemorrhage, wound infections and caesarean section, and their babies have higher rates of congenital anomaly, stillbirth and neonatal death compared with pregnant women who are not obese[16]. The normal range of BMI for non-pregnant women is 18.5 to 24.9 while a BMI of 30.0 kg/m^2 or more at the first antenatal consultation has been defined as obesity in pregnancy. Table 42 on the next page shows findings for maternal BMI by birth setting in Tasmania in 2017.

[14] Australian Institute of Health and Welfare 2019. Australia's mothers and babies 2017—in brief. Perinatal statistics series no. 35. Cat. no. PER 100. Canberra: AIHW.

[15] Australian Institute of Health and Welfare 2019. Australia's mothers and babies 2017—in brief. Perinatal statistics series no. 35. Cat. no. PER 100. Canberra: AIHW.

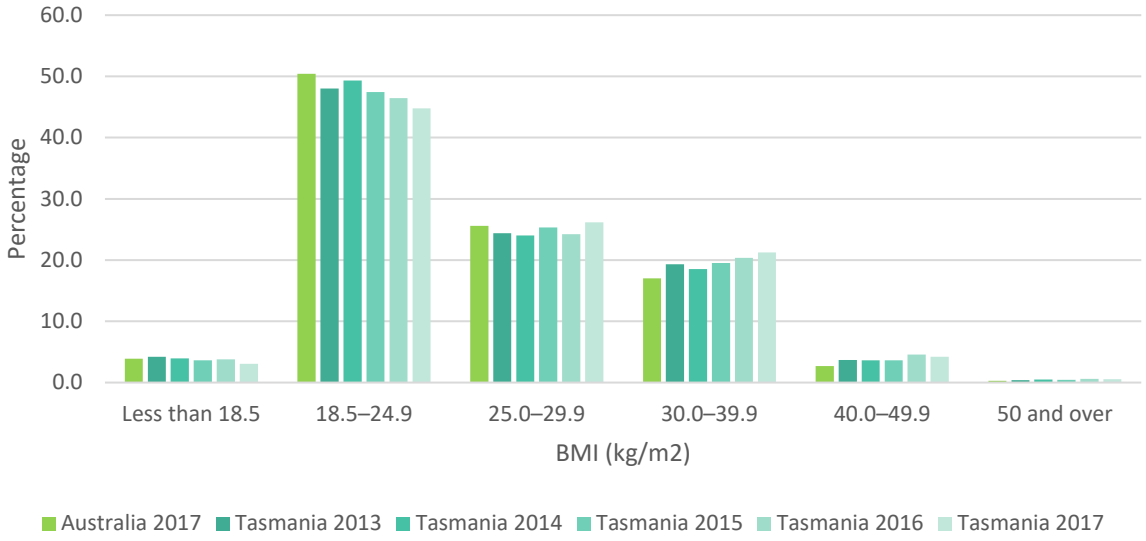
[16] Hilder L, Zhichao Z, Parker M, Jahan S, Chambers GM 2014. *Australia's mothers and babies 2012*. Perinatal statistics series no. 30. Cat. no. PER 69. Canberra: AIHW.

Table 42: Women who gave birth by maternal body mass index and birth setting 2014-2017

Birth setting	BMI (kg/m^2)	2014		2015		2016		2017	
		n	%[(a)]	n	%[(a)]	n	%[(a)]	n	%[(a)]
Public	Less than 18.5	144	4.2	138	3.9	155	4.3	108	3.4
	18.5–24.9	1 659	48.2	1 621	45.9	1 611	45.1	1 388	43.9
	25.0–29.9	811	23.5	880	24.9	840	23.5	793	25.1
	30.0–39.9	659	19.1	727	20.6	759	21.2	702	22.2
	40.0–49.9	149	4.3	145	4.1	185	5.2	150	4.7
	50 and over	21	0.6	19	0.5	26	0.7	21	0.7
	Not stated	308	-	252	-	306	-	254	-
	Total	**3 751**	**100.0**	**3 782**	**100.0**	**3 882**	**100.0**	**3 416**	**100.0**
Private	Less than 18.5	66	3.4	52	3.1	47	2.6	51	2.6
	18.5–24.9	985	51.0	857	50.5	869	48.7	909	45.5
	25.0–29.9	484	25.1	446	26.3	463	25.9	561	28.1
	30.0–39.9	342	17.7	292	17.2	337	18.9	402	20.1
	40.0–49.9	48	2.5	46	2.7	63	3.5	68	3.4
	50 and over	6	0.3	5	0.3	6	0.3	8	0.4
	Not stated	88	-	84	-	112	-	29	-
	Total	**2 019**	**100.0**	**1 782**	**100.0**	**1 897**	**100.0**	**2 028**	**100.0**
Homebirths / Birth Centre	Less than 18.5	4	9.3	1	2.4	2	5.7	1	2.5
	18.5–24.9	28	65.1	23	54.8	27	77.1	31	77.5
	25.0–29.9	7	16.3	9	21.4	4	11.4	6	15.0
	30.0–39.9	4	9.3	9	21.4	2	5.7	2	5.0
	40.0–49.9	0	0.0	0	0.0	0	0.0	0	0.0
	50 and over	0	0.0	0	0.0	0	0.0	0	0.0
	Not stated	4	-	4	-	4	-	12	-
	Total	**47**	**100.0**	**46**	**100.0**	**39**	**100.0**	**52**	**100.0**
Total	Less than 18.5	214	3.9	191	3.6	204	3.8	160	3.1
	18.5–24.9	2 673	49.3	2 501	47.5	2 507	46.5	2 328	44.8
	25.0–29.9	1 301	24.0	1 335	25.3	1 307	24.2	1 360	26.1
	30.0–39.9	1 005	18.5	1 028	19.5	1 098	20.3	1 106	21.3
	40.0–49.9	197	3.6	191	3.6	248	4.6	218	4.2
	50 and over	28	0.5	24	0.5	32	0.6	29	0.6
	Not stated	399	-	340	-	422	-	295	-
	Total	**5 818**	**100.0**	**5 610**	**100.0**	**5 818**	**100.0**	**5 496**	**100.0**

(a) Percentages calculated after excluding records with missing values.

Figure 12: Proportion of women who gave birth by body mass index in Tasmania 2013-2017 and Australia 2017



Based on self-reported height and weight at the first antenatal visit, over half (52.2 per cent) of the 5 496 women who gave birth in a Tasmanian facility in 2017 had an overweight or obese BMI (25.0 and above); one-quarter (26.0 per cent) had an obese BMI (30 and over). However, it is somewhat reassuring to note that these figures are lower than recorded in 2017-18 for Tasmanian women as a whole aged 18 years and over, when 65.3 per cent were estimated to be overweight or obese, and 36.3 per cent estimated to be obese[17], with the one caution that the 2017-18 figures were based on *measured* height and weight; this tends to result in a higher BMI than when calculated using self-reported height and weight.

The proportion of overweight/obese women giving birth in public facilities (52.7 per cent) was significantly higher ($p<0.001$) than for those giving birth at home or in a birth centre (20.0 per cent), or when compared to Australia as a whole for 2016 (45.0 per cent), but similar to women giving birth in private facilities (52.0 per cent). Accordingly, the proportion of women giving birth in private facilities who were overweight/obese was also significantly higher ($p<0.001$) than for women who gave birth at home or in a birth centre.

The proportion of women giving birth in a public setting in Tasmania in 2017 who reported to have an obese BMI (27.6 per cent) was statistically significantly higher ($p=0.003$) than for those giving birth in a private facility (23.9 per cent). Both the public and private facility obesity proportions were significantly higher ($p<0.006$) than for women who gave birth outside hospital (5.0 per cent). Also, both the public and private facility obesity levels were statistically significantly higher ($p<0.001$) than reported for Australian mothers overall in 2016 (19.5 per cent).

[17] Australian Bureau of Statistics, 2018, National Health Survey: First results 2017-18, cat. no. 4364.0.55.001, viewed 24 April 2019. [http://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/4364.0.55.001Main+Features100012017-18?OpenDocument].

Maternal iodine/iron/vitamin D intake by birth setting

The World Health Organisation recommends that women who are pregnant take a daily iodine supplement, as the amount of dietary iodine is not enough to meet the additional needs of pregnancy[18]. However, very few women (9.9 per cent) giving birth in a Tasmanian facility in 2017 reported to have taken an iodine supplement whilst pregnant, similar to 2016 (9.6 per cent), but statistically significantly higher than for the three years prior ($p<0.001$).

As shown in Table 43, women who gave birth in a private hospital were the most likely to have taken an iodine supplement whilst pregnant (21.7 per cent). This proportion was statistically significantly higher ($p<0.001$) than for women who gave birth in a public hospital (2.7 per cent), and similar to women who gave birth outside hospital (21.2 per cent). This might reflect a higher level of health awareness amongst women who choose to give birth in a private facility or outside hospital.

Compared to public facilities, women who gave birth outside hospital were statistically significantly ($p<0.001$) more likely to have taken supplemental iodine whilst pregnant (21.2 c.f. 2.7 per cent), which again might reflect a higher level of health awareness amongst women who give birth or outside hospital. Compared to 2016, a statistically significantly lower proportion of women who gave birth in a public facility took supplemental iodine (2.7 per cent c.f. 4.5 per cent, $p<0.001$).

Higher numbers of women who gave birth in Tasmania in 2017, either outside of hospital or in a public facility, reported to have taken an iron supplement when pregnant compared to an iodine supplement. This might be at least partially attributable to greater publicity over the importance of iron to health. For women who gave birth in a private facility, 437 reported taking an iron supplement, similar to the number who reported taking supplemental iodine (440).

Overall, in 2017 15.2 per cent of women reported to have taken supplemental iron whilst pregnant, with the highest proportions being amongst women who gave birth outside hospital (73.1 per cent) or in a private facility (21.5 per cent). Compared to women who gave birth in a public facility and reported to have taken an iron supplement whilst pregnant (10.5 per cent), these differences were statistically significant ($p<0.001$). Additionally, the difference in iron supplementation between private hospital patients (21.5 per cent) and those who gave birth outside hospital (73.1 per cent) was statistically significant ($p<0.001$). Compared to 2016 there were no statistically significant differences in iron supplementation, regardless of birth setting.

In 2017, about one in six (17.7 per cent) of women reported to have taken a Vitamin D supplement whilst pregnant.

The highest level of maternal Vitamin D supplementation was amongst women giving birth in a private hospital (24.1 per cent), which was significantly higher than for those women who gave birth outside hospital (11.5 per cent, $p=0.036$) or in a public facility (14.0 per cent, $p<0.001$).

[18] National Health and Medical Research Council (NHMRC)public statement: Iodine supplementation for pregnant and breastfeeding women, January 2010

Table 43: Maternal iodine / iron / vitamin D intake by birth setting 2014-2017

Birth setting	Vitamin	2014		2015		2016		2017	
		n	%	n	%	n	%	n	%
Public	**Iodine**	135	3.6	120	3.2	173	4.5	**92**	**2.7**
	Iron	347	9.2	339	9.0	410	10.6	**358**	**10.5**
	Vitamin D	543	14.5	504	13.3	471	12.1	**479**	**14.0**
Private	**Iodine**	259	12.8	176	9.9	374	19.8	**440**	**21.7**
	Iron	420	20.8	288	16.2	398	21.1	**437**	**21.5**
	Vitamin D	495	24.5	391	21.9	399	21.1	**489**	**24.1**
Homebirths / Birth Centre	**Iodine**	16	34.0	14	30.4	10	26.3	**11**	**21.2**
	Iron	28	59.6	24	52.2	22	57.9	**38**	**73.1**
	Vitamin D	12	25.5	10	21.7	10	26.3	**6**	**11.5**
Total	**Iodine**	410	7.0	310	5.5	557	9.6	**543**	**9.9**
	Iron	795	13.7	651	11.6	830	14.3	**833**	**15.2**
	Vitamin D	1 050	18.0	905	16.1	880	15.2	**974**	**17.7**

Maternal folic acid intake by birth setting

Folic acid deficiency has been strongly associated with an increased risk of neural tube defects in babies. As shown in Table 44, it is therefore of some concern to note that a significant number of mothers (60.1 per cent) in 2017 reported not taking supplemental folic acid either pre-conceptually or whilst pregnant. Mothers who gave birth in a public facility or outside hospital were less likely to take folic acid, with mothers giving birth in a private facility the most likely.

Of mothers who did take a folic acid supplement at some point during pregnancy, a significantly lower ($p<0.001$) proportion of those who gave birth in a public setting reported taking folic acid both pre and post conceptually (6.0 per cent), compared to 22.2 per cent of mothers who gave birth outside hospital ($p=0.044$) and 49.8 per cent of mothers who gave birth in a private facility ($p<0.001$).

Over one-third (36.2 per cent) of women who gave birth in a private facility and took a folic acid supplement whilst pregnant did so only post-conceptually. This figure was significantly lower than for public facility mothers (57.6 per cent, $p<0.001$) and for women who gave birth outside of hospital (77.8 per cent, $p=0.010$).

A significantly higher ($p<0.001$) proportion of women who gave birth in a public facility reported taking supplemental folate only pre-conceptually (36.4 per cent) compared to mothers who gave birth in a private facility (13.9 per cent). It is surprising to note that none of the women who gave birth outside hospital reported taking a folate supplement only pre-conceptually.

Table 44: Maternal folic acid consumption by birth setting 2014-2017

Birth setting	Folic acid consumption	2014		2015		2016		2017	
		n	%[(a)]	n	%[(a)]	n	%[(a)]	n	%[(a)]
Public	Pre-conceptually only	244	18.7	296	24.9	413	31.1	464	36.4
	Post-conceptually only	909	69.6	808	67.8	824	62.1	734	57.6
	Pre-& Post conceptually	153	11.7	87	7.3	90	6.8	77	6.0
	Not taken	2 446	-	2 591	-	2 555	-	2 141	-
	Total	**3 752**	**100.0**	**3 782**	**100.0**	**3 882**	**100.0**	**3 416**	**100.0**
Private	Pre-conceptually only	177	18.4	126	15.8	126	14.5	127	13.9
	Post-conceptually only	338	35.2	282	35.3	318	36.7	330	36.2
	Pre-& Post conceptually	445	46.4	392	49.0	422	48.7	454	49.8
	Not taken	1 059	-	982	-	1 031	-	1 117	-
	Total	**2 019**	**100.0**	**1 782**	**100.0**	**1 897**	**100.0**	**2 028**	**100.0**
Homebirths / Birth Centre	Pre-conceptually only	1	5.9	1	7.7	4	36.4	0	0.0
	Post-conceptually only	13	76.5	5	38.5	3	27.3	7	77.8
	Pre-& Post conceptually	3	17.6	7	53.8	4	36.4	2	22.2
	Not taken	30	-	33	-	28	-	43	-
	Total	**47**	**100.0**	**46**	**100.0**	**39**	**100.0**	**52**	**100.0**
Total	Pre-conceptually only	422	18.5	423	21.1	543	24.6	591	26.9
	Post-conceptually only	1 260	55.2	1 095	54.6	1 145	52.0	1 071	48.8
	Pre-& Post conceptually	601	26.3	486	24.3	516	23.4	533	24.3
	Not taken	3 535	-	3 606	-	3 614	-	3 301	-
	Total	**5 818**	**100.0**	**5 610**	**100.0**	**5 818**	**100.0**	**5 496**	**100.0**

(a) Percentages calculated after excluding records with missing values.

Multiple pregnancies

The proportion of multiple pregnancies in Tasmania was higher than the national average, with 15.5 multiple pregnancies per 1 000 mothers recorded in Tasmania in 2017 and 15.0 multiple pregnancies per1 000 mothers in 2017 nationally. Multiple pregnancy in 2017 accounted for 1.5 per cent of pregnancies. The continued lack of triplet pregnancies likely reflects the changes in legislation requiring one embryo per transfer in women aged under 37 years.

Table 45: Women who gave birth by plurality 2013-2017

Year	Singleton pregnancy		Twin[(a)] pregnancy		Triplet[(a)] pregnancy		Total pregnancies
	n	%	n	%	n	%	
2013	5 851	98.6	85	1.4	0	0.0	**5 936**
2014	5 744	98.7	74	1.3	0	0.0	**5 818**
2015	5 527	98.5	83	1.5	0	0.0	**5 610**
2016	5 717	98.3	100	1.7	1	^	**5 817**
2017	**5 411**	**98.5**	**85**	**1.5**	**0**	**0.0**	**5 496**

^ Less than 1 per cent

(a) All birth orders >1 are multiple.

Onset of labour

Table 46: Women who gave birth by onset of labour 2013-2017

Year	Spontaneous		Spontaneous and Augmentation		Induced		No labour		Total pregnancies
	n	%	n	%	n	%	n	%	n
2013	2 158	36.4	1 217	20.5	1 483	25.0	1 078	18.2	**5 936**
2014	1 955	33.6	1 104	19.0	1 725	29.6	1 034	17.8	**5 818**
2015	1 826	32.5	1 033	18.4	1 651	29.4	1 100	19.6	**5 610**
2016	1 851	31.8	964	16.6	1 841	31.6	1 162	20.0	**5 818**
2017	**1 653**	**30.1**	**870**	**15.8**	**1 852**	**33.7**	**1 121**	**20.4**	**5 496**

Just under half (45.9 per cent) of women who gave birth in 2017 had a spontaneous labour (including those that were augmented), more than one-quarter had induced labour (33.7 per cent) and 20.4 per cent had no labour onset.

There have been small changes over the past five years in the type of labour onset – a decrease of 11.0 per cent in spontaneous labour and corresponding increases for the induction of labour (8.7 per cent) and no labour onset (2.2 per cent).

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.

Nationally in 2017, of all women who gave birth, 45.6 per cent had a spontaneous onset of labour; 21.9 per cent of mothers had no labour; and 32.5 per cent of mothers had induced labour while labour was augmented for 15.1 per cent of all mothers, representing 30.6 per cent of mothers with spontaneous onset of labour and no augmentation. Of all women who gave birth nationally in 2017, 52.8 per cent had a non-instrumental vaginal birth; forceps delivery accounted for 5.3 per cent of mothers; while vacuum extraction accounted for 7.3 per cent of women who gave birth.

Induction of labour

Table 47: Women who gave birth by method of birth following induction of labour by public / private hospitals 2013-2017

	Vaginal delivery				Caesarean section				Induction rate	
	Public[(a)]		Private		Public		Private		Public[(a)]	Private
Year	n	%	n	%	n	%	n	%	%	%
2013	653	75.6	505	81.6	211	24.4	114	18.4	22.0	31.4
2014	776	78.1	595	81.4	218	21.9	136	18.6	26.5	36.2
2015	841	79.6	473	79.5	215	20.4	122	20.5	27.9	33.4
2016	908	75.7	510	79.4	291	24.3	132	20.6	30.9	33.8
2017	**880**	**77.1**	**574**	**80.7**	**261**	**22.9**	**137**	**19.3**	**33.4**	**35.1**

(a) Launceston Birth Centre was included in the public hospital figures prior to 2014.

Induced labour rates have risen for both the public and private sectors since 2016, with the public sector induction rate (33.4 per cent) now statistically similar (p=0.202) to that for the private sector (35.1 per cent); this contrasts with previous years when induced labour was significantly more likely in the private sector in Tasmania.

There has been a continued increase in the caesarean section rate reported nationally over the last decade with 34.6 per cent of mothers undergoing caesarean section deliveries in 2017 compared to 27.0 per cent reported in year 2002. In contrast, the proportion of instrumental deliveries has remained stable at about 12.6 per cent throughout this period[19]. Again in 2017, national data have shown that caesarean section rates increase with advancing maternal age and continue to be higher among older mothers (e.g., 42.8 per cent for mothers aged between 35 to 39 years old; 54.0 per cent for mothers aged 40 years and over) and those who gave birth in private hospitals (47.0 per cent) compared to the public sector (31.9 per cent).

[19] Australian Institute of Health and Welfare 2019. Australia's mothers and babies 2017—in brief. Perinatal statistics series no. 35. Cat. no. PER 100. Canberra: AIHW.

Augmentation of labour

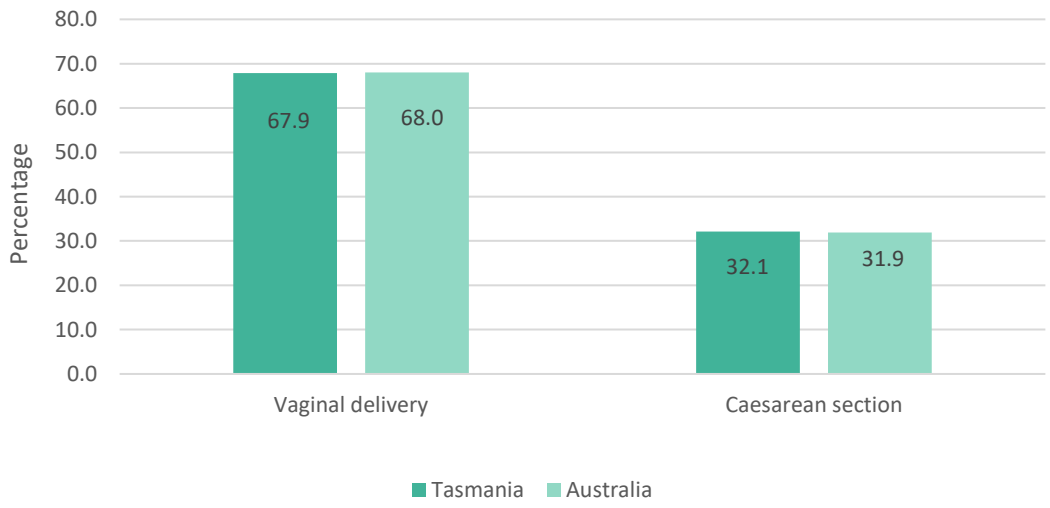
Table 48: Women who gave birth and had augmentation of labour 2013-2017

Year	Artificial Rupture of Membranes		Oxytocin		Other		Total augmentation	Augmentation rate	Total pregnancies
	n	%	n	%	n	%	n	%	n
2013	839	68.9	59	4.8	319	26.2	1 217	20.5	**5 936**
2014	774	70.1	39	3.5	291	26.4	1 104	19.0	**5 818**
2015	674	65.2	39	3.8	320	31.0	1 033	18.4	**5 610**
2016	617	64.0	36	3.7	311	32.3	964	16.6	**5 818**
2017	**524**	**60.2**	**51**	**5.9**	**295**	**33.9**	**870**	**15.8**	**5 496**

In Tasmania, 15.8 per cent of mothers were reported in 2017 to have had augmentation of spontaneous labour similar to 2016, and statistically significantly lower ($p<0.001$) than for any year over the period 2013 to 2015. Nationally in 2017, 15.1 per cent of all mothers were reported to have had their labour augmented. Furthermore, in 2017 nationally, the onset of labour was spontaneous for 45.6 per cent of all mothers giving birth and 32.5 per cent of mothers had their labour induced.

Mode of delivery

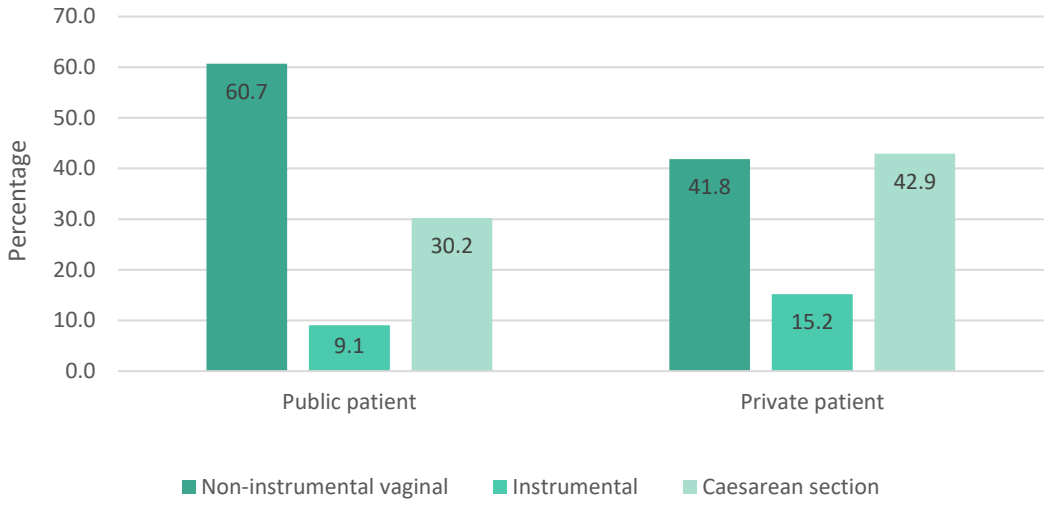
Figure 13: Proportion of women who gave birth in public hospitals by mode of delivery in Tasmania and Australia 2017



Note: It should be highlighted that Tasmanian public hospital rates reported here may be skewed since all babies that are born at the Launceston General Hospital are recorded as public, regardless of patient election status, 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 67.9 per cent in 2017, and Australia recording a similar rate of 68.0 per cent for vaginal deliveries in 2017 compared to 68.8 per cent for Tasmania in 2016. Furthermore, caesarean sections (CS) were reported at 32.1 per cent for Tasmania in 2017 and 31.9 per cent nationally in 2017 compared with 31.2 per cent for Tasmania in 2016.

Figure 14: Proportion of women who gave births by mode of delivery by admitted patient election status in Tasmania 2017



Again, private patients in Tasmania in 2017 continued to undergo more caesarean sections and instrumental vaginal deliveries than public patients (see Figure 14), a trend that was consistent with last year's figures. Conversely, more non-instrumental deliveries continued to be performed for public patients compared to private patients during 2017. For each mode of delivery, the difference between public and private patients was statistically significant ($p<0.001$). Overall in Tasmania in 2017, the total CS rate was 33.2 per cent; the total unassisted vaginal delivery rate was 56.3 per cent and the total instrumental delivery rate was 10.5 per cent.

In further detail:

- The higher caesarean section rates reported in 2017 in Tasmanian *private* hospitals is a trend consistent with national findings reported in 2017. National figures derived from 2017 have shown caesarean section rates to be higher in *private* hospitals (47.0 per cent) compared with *public* hospitals (31.9 per cent) across all age groups;
- Of the vaginal deliveries nationally reported in *public* hospitals in 2017, 55.9 per cent were spontaneous, 5.7 per cent were forceps deliveries and 6.4 per cent were vacuum extraction; and
- Of the vaginal deliveries nationally reported in *private* hospitals in 2017, 38.1 per cent were spontaneous, 4.4 per cent were forceps deliveries and 10.5 per cent were vacuum extraction.

Caesarean section

Table 49: Women who gave birth by emergency / elective caesarean section 2013-2017

Year	Emergency		Elective		Total CS
	n	%	n	%	n
2013	889	48.1	960	51.9	**1 849**
2014	823	47.5	909	52.5	**1 732**
2015	891	50.6	871	49.4	**1 762**
2016	1 016	52.8	909	47.2	**1 925**
2017	**961**	**52.7**	**861**	**47.3**	**1 822**

Table 50: Women who gave birth by emergency / elective caesarean section by public / private hospitals 2013-2017

Year	Emergency				Elective				Total	
	Public		Private		Public		Private		Public	Private
	n	%	n	%	n	%	n	%	n	n
2013	626	54.1	263	38.0	531	45.9	429	62.0	1 157	692
2014	549	53.7	274	38.6	473	46.3	436	61.4	1 022	710
2015	604	55.5	287	42.6	485	44.5	386	57.4	1 089	673
2016	685	62.9	331	49.2	525	48.2	384	57.1	1 210	715
2017	**626**	**57.1**	**335**	**46.2**	**471**	**42.9**	**390**	**53.8**	**1 097**	**725**

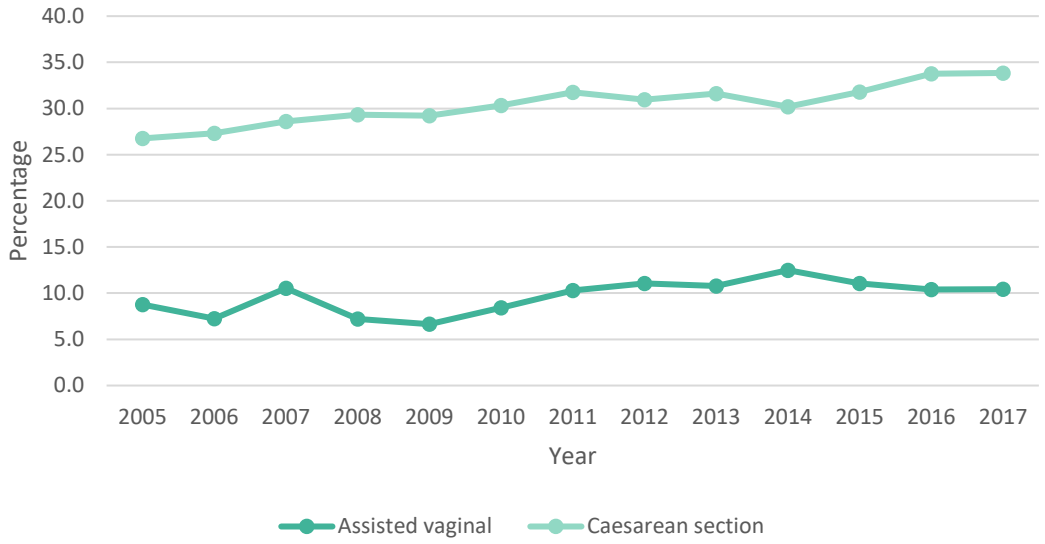
Table 51: Women who gave birth by primary / repeat caesarean section 2013-2017

Year	Primary		Repeat		Total CS
	n	%	n	%	n
2013	1 014	54.8	835	45.2	**1 849**
2014	974	56.2	758	43.8	**1 732**
2015	977	55.4	785	44.6	**1 762**
2016	1 115	57.9	810	42.1	**1 925**
2017	**1 102**	**60.5**	**720**	**39.5**	**1 822**

Table 52: Women who gave birth by primary / repeat caesarean section by public / private hospitals 2013-2017

Year	Primary				Repeat				Total	
	Public		Private		Public		Private		Public	Private
	n	%	n	%	n	%	n	%	n	n
2013	640	55.3	374	54.0	517	44.7	318	46.0	1 157	692
2014	590	57.7	384	54.1	432	42.3	326	45.9	1 022	710
2015	601	55.2	376	55.9	488	44.8	297	44.1	1 089	673
2016	718	65.9	397	59.0	492	45.2	318	47.3	1 210	715
2017	**670**	**61.1**	**432**	**59.6**	**427**	**38.9**	**293**	**40.4**	**1 097**	**725**

Figure 15: Caesarean section and assisted vaginal rates 2005-2017



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 was 33.8 per cent in 2017, the same as reported in the previous year in Tasmania, and slightly lower than the nationally reported figure for 2017 (35.2 per cent).

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, there 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 fetus. In their own right, these are associated with increased CS rates, and when coupled with a shift to an older obstetric population will inevitably lead to a rise in CS rates.

3. ***Change in parity*.** Whereas in the 1970s and before it was not unusual for women to have more than 3 babies, the average 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, fetal 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 [20] investigating BMI and obstetric outcome in more than thirty thousand women in Belfast showed the effect of BMI on rates of breastfeeding compared to normal of 18.5-24.99. Table 53 has extracted significant findings from this study in relation to the impact of various levels of obesity on maternal outcomes shows that as obesity severity increases the likelihood of breastfeeding decreases.

[20] 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 53: 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)
Breastfeeding 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*[21]

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 especially in view of the associated complications of twin pregnancy including malpresentation and discrepancy in fetal growth and condition.

6. ***Altered delivery of pre-term babies.*** Table 15 shows data from year 2012 until current. There has been an increasing trend overall to deliver babies by CS at gestations 37-41 weeks.

   Babies born very preterm from conditions such as IUGR, pre-eclampsia etc., who were in the past 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 fetuses 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.

[21] 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 fetal 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 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[22] 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.

Maternal hypertension

Table 54: Women who gave birth who had pregnancy-induced hypertension 2013-2017

Year	Pre-existing		Pregnancy-induced hypertension[(a)]		Total
	n	%	n	%	
2013	454	7.6	374	6.3	**5 936**
2014	436	7.5	356	6.1	**5 818**
2015	439	7.8	305	5.4	**5 610**
2016	449	7.7	368	6.3	**5 818**
2017	**418**	**7.6**	**349**	**6.4**	**5 496**

(a) These figures include pregnancy induced hypertension and pre-eclampsia.

The number of cases of pregnancy-induced hypertension reported in Tasmania in 2017 was similar to that reported in the previous year. As noted previously, the number and percentage of cases of pre-existing hypertension have increased significantly over the eleven-year period since 2006 (p<001).

[22] 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.

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 fetus.

Antepartum haemorrhage

Table 55: Women who gave birth and had antepartum haemorrhage 2013-2017

Year	Placenta praevia		Abruptio placenta		APH undetermined		Total
	n	%	n	%	n	%	
2013	18	0.3	24	0.4	126	2.1	**5 936**
2014	18	0.3	19	0.3	110	1.9	**5 818**
2015	19	0.3	19	0.3	126	2.2	**5 610**
2016	12	0.2	19	0.3	88	1.5	**5 818**
2017	**18**	**0.3**	**26**	**0.5**	**91**	**1.7**	**5 496**

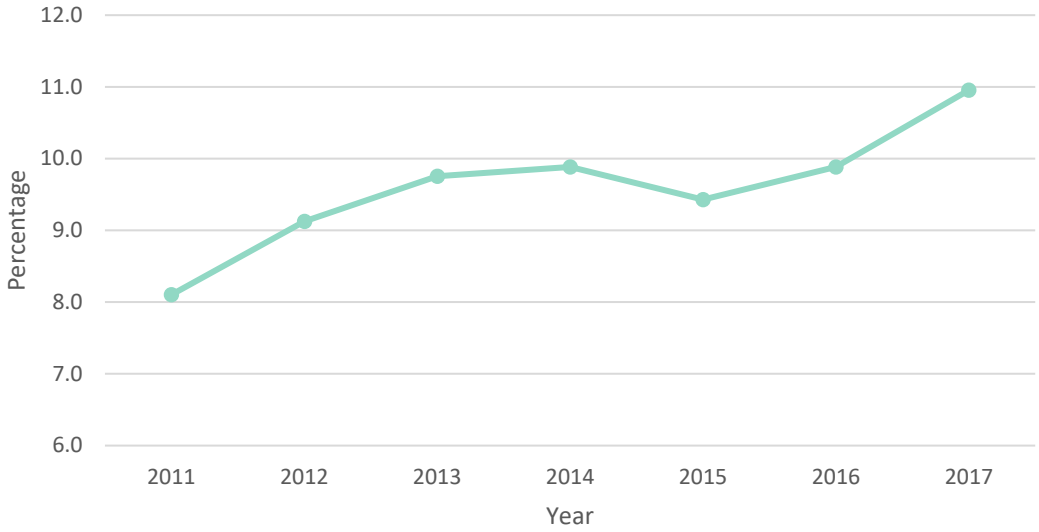
Postpartum haemorrhage

Table 56: Women who gave birth and had postpartum haemorrhage 2013-2017

Year	Number	Incidence %	Total
2013	579	9.8	**5 936**
2014	575	9.9	**5 818**
2015	529	9.4	**5 610**
2016	575	9.9	**5 818**
2017	602	11.0	**5 496**

Postpartum haemorrhage (PPH) continues to be a leading cause of both maternal mortality and morbidity. A blood loss of 500 ml or more from the genital tract after childbirth, occurring within 24 hours of birth is considered to be PPH. The incidence of PPH rose from 9.8 per cent in 2013 to 11.0 per cent in 2017.

Figure 16: Proportion of women who gave birth and had postpartum haemorrhage 2011-2017



Breastfeeding

Trends reported in Tasmania (see tables below) indicate that the percentage of women who gave birth and breastfeeding at maternal discharge has increased gradually. 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[23]. The percentage of public hospital patients breastfeeding at discharge in 2017 was similar to 2016, and, as in previous years, 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[24]. It is encouraged to prepare women for breastfeeding during the antenatal and perinatal periods with support to be provided in the early stages, particularly in the public hospital system.

Table 57: Women who gave birth and breastfeeding (including partially) at maternal discharge 2013-2017

Year	Yes		No		Total women delivered live births
	n	%	n	%	
2013	4 934	83.7	961	16.3	**5 895**
2014	4 841	83.9	931	16.1	**5 772**
2015	4 719	84.6	858	15.4	**5 577**
2016	4 870	84.3	907	15.7	**5 777**
2017	**4 681**	**85.6**	**785**	**14.4**	**5 466**

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

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

Table 58: Women who gave birth and breastfeeding (including partially) at maternal discharge by parity 2013-2017

Year	Primiparae		Multiparae		Total women breastfeeding
	n	%	n	%	
2013	2 009	86.0	2 925	82.2	**4 934**
2014	1 961	85.3	2 880	82.9	**4 841**
2015	1 935	86.8	2 784	83.1	**4 719**
2016	2 054	87.4	2 816	82.2	**4 870**
2017	**1 944**	**87.7**	**2 737**	**84.2**	**4 681**

Table 59: Women who gave birth and breastfeeding (including partially) at maternal discharge by public / private hospital 2013-2017

Year	Public		Private		Total women breastfeeding in hospital
	n	%	n	%	
2013[(a)]	3 152	80.6	1 757	89.6	**4 909**
2014	3 005	80.7	1 790	89.5	**4 795**
2015	3 090	82.3	1 584	89.2	**4 674**
2016	3 135	81.3	1 696	90.1	**4 831**
2017	**2 796**	**82.3**	**1 833**	**90.8**	**4 629**

(a) Launceston Birth Centre was included in the public hospital figures prior to 2014.

Smoking and pregnancy

Data exploring the smoking status of Tasmanian women during pregnancy continue to be available for review in 2016 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 1982) and Dr Neville Newman.

Table 60: Proportion of smoking by maternal age and election status comparison 2017 and 1982

Year	Age							Election status	
	Overall	Less than 20	21-25	26-30	30 over				
1982[(a)]	35.3	55.2	46.0	30.2	21.2				
	Overall	**Less than 20**	**20-24**	**25-29**	**30-34**	**35-39**	**40 and over**	**Public**	**Private**
2013	15.1	33.4	26.1	14.5	8.8	8.6	10.0	19.8	2.6
2014	14.3	35.0	24.0	13.2	9.1	8.4	10.7	18.7	3.5
2015	12.9	33.6	20.5	13.2	8.2	8.2	6.4	16.8	2.7
2016	12.8	34.7	23.4	11.7	11.7	8.3	7.0	16.6	1.9
2017	**14.5**	**40.0**	**26.9**	**13.4**	**13.4**	**9.2**	**2.8**	**19.0**	**2.0**

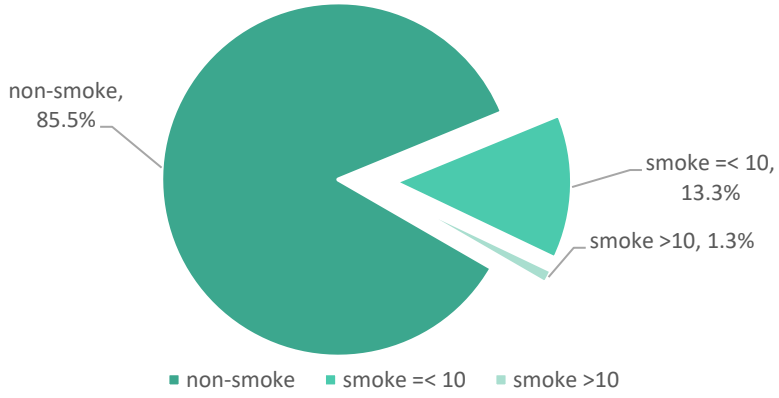
(a) Obstetric and Neonatal Report – Tasmania 1982

The 2017 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 2017, 14.5 per cent of Tasmanian women reported smoking whilst pregnant, a statistically significantly increase since 2016 ($p=0.008$), with the rate now similar to that for2013 (15.1%, $p=0.367$), with 13.3 per cent reporting to have smoked 10 cigarettes or fewer per day and 1.3 per cent reporting to have smoked more than 10 cigarettes daily.

Figure 17: Self-reported tobacco smoking during pregnancy in Tasmania 2017



Number of mothers who reported = 5 496

As shown in the table below, 14.5 per cent of Tasmanian women who reported their smoking status stated that they had smoked during pregnancy in 2017 [(a)]. This was the second highest maternal smoking proportion of all the jurisdictions following the Northern Territory (see Table 61). Overall nationally, 9.9 per cent of women in these states and territories who reported their smoking status had smoked during pregnancy[25].

Table 61: Proportion[(a)] of women smoking tobacco during pregnancy by state and territory 2007-2017[25]

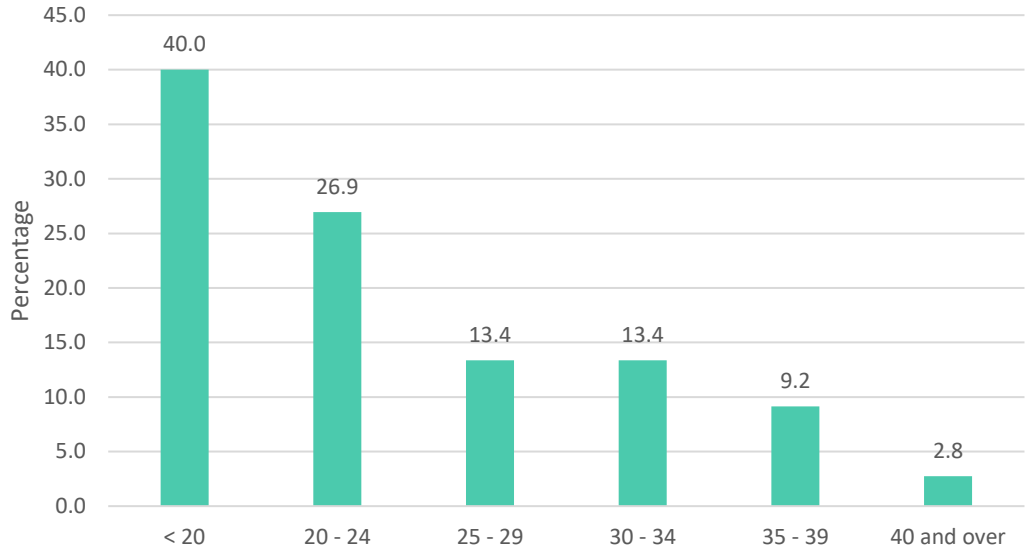
Jurisdiction	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUS
2007	12.8	n.a.	19.7	16.5	20.7	28.0	12.8	27.3	16.6
2008	12.8	n.a.	19.3	15.4	20.1	26.9	14.0	23.5	16.2
2009	12.0	11.7	18.7	14.5	19.6	24.5	10.9	23.2	14.5
2010	11.2	11.8	17.2	12.0	17.4	23.0	11.2	25.5	13.5
2011	11.2	12.2	16.1	12.1	17.0	18.4	10.0	26.0	13.2
2012	10.5	11.8	15.2	11.6	15.6	18.2	7.8	24.4	12.5
2013	9.7	11.2	14.2	10.8	14.5	16.7	6.1	23.4	11.7
2014	9.3	10.6	13.1	10.3	13.0	16.3	7.2	21.2	11.0
2015	8.9	10.0	12.4	9.7	12.5	15.2	7.4	21.6	10.4
2016	8.4	9.3	12.0	9.1	12.0	14.2	5.8	21.1	9.9
2017	**8.9**	**9.0**	**11.9**	**8.9**	**11.3**	**14.5**	**6.2**	**20.6**	**9.9**

(a) Please note that the percentages in the table above are calculated after excluding records with missing values (i.e. unknown smoking status) and are included for jurisdictional comparisons only. Care must therefore be taken when interpreting these percentages.

Figure 18 shows 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 2017 value of 40.0 per cent being similar ($p=0.245$) to that reported for 2016 (34.7 per cent). The proportion of women aged 40 years and over who smoked during pregnancy has dropped significantly ($p=0.043$) from 7.0 per cent in 2016 to 2.8 per cent in 2017, which is lower than for any previous year. Conversely, the smoking rates for mothers in the remaining age-groups were, statistically, similar to the previous year.

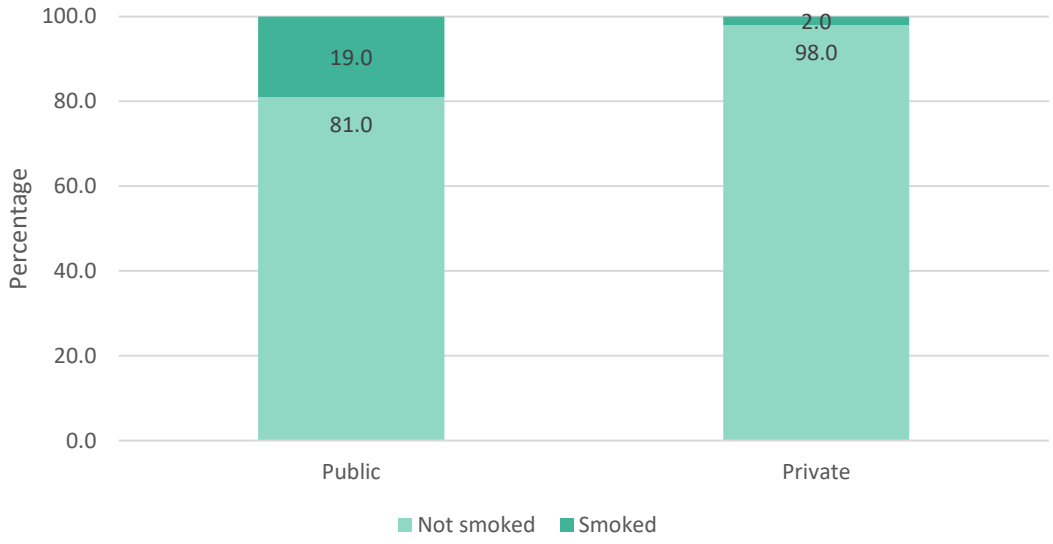
[25] Australian Institute of Health and Welfare 2019. Australia's mothers and babies 2017—in brief. Perinatal statistics series no. 35. Cat. no. PER 100. Canberra: AIHW.

Figure 18: Self-reported tobacco smoking status during pregnancy by age in Tasmania 2017



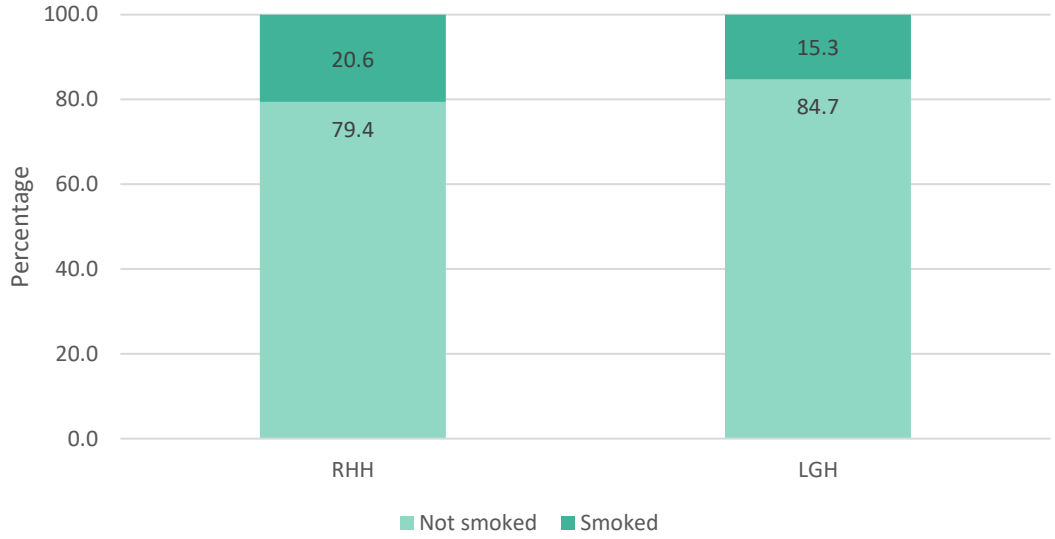
Whilst the maternal smoking rate for private patients has remained essentially unchanged since 2016 (2.0 per cent c.f. 1.9 per cent), the public patient maternal smoking rate has increased significantly (p=0.004) from 16.6 percent to 19.0 per cent, reversing the continuous downward trend observed since 2008. Smoking during pregnancy continues to be significantly more prevalent for public patients (19.0 per cent) compared to private patients (2.0 per cent) (Figure 19), with the gap between the two (17.0 per cent) now the highest since 2013. As reported in previous years, this trend continues to reflect the higher prevalence of smoking amongst lower socio-economic groups.

Figure 19: Self-reported smoking status by admitted patient election status in Tasmania 2017



For patients delivering in public hospitals, as shown in Figure 20, smoking during pregnancy was reported in 2017 most frequently by patients at the Royal Hobart Hospital (20.6 per cent), a sharp increase from 13.7 per cent in 2016, and the least frequently (15.3 per cent) reported by patients at the Launceston General Hospital, which was essentially the same as the reported level for the previous year (15.2 per cent). Contrary to the Launceston General Hospital, where the maternal smoking rate remained essentially unchanged since 2016, the rate for the Royal Hobart Hospital increased significantly ($p<0.001$) from 13.7 per cent in 2016 to 20.6 per cent in 2017, reversing the downward trend observed since 2014. 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 these two hospitals.

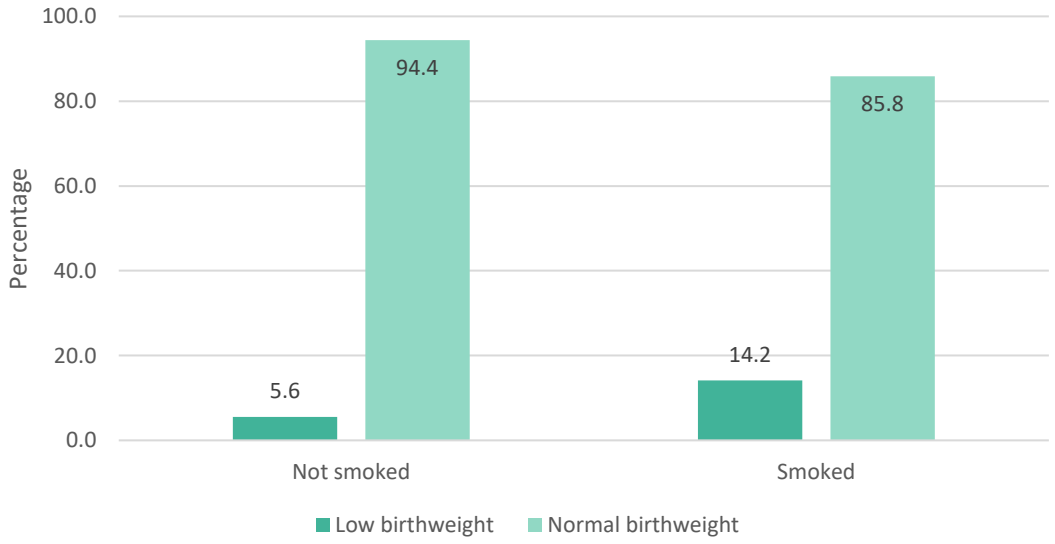
Figure 20: Self-reported tobacco smoking status during pregnancy by public hospital in Tasmania 2017



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 **Yes** to the smoking questions, a total of 112 babies in 2017 had a birthweight of less than 2 500 grams. Of these, 15.2 per cent had a birthweight of less than 1 500 grams (very LBW). In 2017, a total of 14.2 per cent of all women who had smoked in pregnancy had an LBW baby compared to 5.6 per cent of women who reported not to have smoked (see Figure 21), 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 that continues to highlight the potential deleterious effects of smoking on birth weight. The relative risk of having an LBW baby in 2017 was 2.55 (95 per cent CI: 2.07, 3.14) in women who smoked in pregnancy compared with those who reported not to smoke.

Figure 21: Self-reported smoking status during pregnancy by birthweight in Tasmania 2017



Note: Multiple births have been omitted.

It continues to be important to note that a number of sources of error and confounding factors may influence the strength of this association. For example, since some women may be uncomfortable in disclosing their smoking status during 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 2.55 may be an overestimate due to confounding (Epidemiology Unit, 2019).

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/low intensity strategies, utilising maternity care providers at antenatal visits (i.e., brief interventions) have been found to be as effective as high intensity strategies. 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.

In view of this evidence, the Tasmanian Health Service (THS) Smoking Cessation Program continues to train doctors and midwives on how to provide brief interventions on smoking cessation during pregnancy. From 2009 onwards, the Tasmanian Health Service 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 THS 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 Consultation Liaison 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 that can provide counselling support specifically for pregnant women on the Quitline.

Positive outcomes have particularly demonstrated that such smoking cessation programmes as undertaken by the THS 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.

Recommendations

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 THS Smoking Cessation Program.

Alcohol consumption and pregnancy

The effects of alcohol consumption during pregnancy have been extensively reported in medical literature. Alcohol is a teratogen that has been found to have deleterious effects on fetal development and birth outcomes. In particular, exposure of the fetus to alcohol may result in a spectrum of adverse effects known as *Fetal Alcohol Spectrum Disorders* (FASD)[26]. *Fetal 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.

Alcohol has been found to cross the placental barrier causing such problems as reduced fetal growth or weight, characteristic facial abnormalities, damaged neurons and brain structures as well as other physical, mental or behavioural problems[27]. 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)[28]. In fact, fetal alcohol exposure has been found to be a primary cause of neurological problems and mental retardation[29].

While the risk of birth defects is greatest with high, frequent maternal alcohol intake during the first trimester, it is concerning to note that alcohol exposure throughout pregnancy, and even before a pregnancy is confirmed, can have negative consequences on the development of the fetal brain since the fetal brain continues to develop throughout the whole pregnancy[30].

High level and/or frequent intake of alcohol in pregnancy has also been associated with increased risk of miscarriage, stillbirth and premature birth[31]. In addition, there is new evidence to suggest that prenatal alcohol exposure may increase the risk of alcohol dependence in adolescence[32].

It is also necessary to highlight that timing is important and not all “heavy” drinkers will have an affected child.

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

[27] 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.

[28] 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.

[29] 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.

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

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

[32] 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 have been available for review since 2008 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.

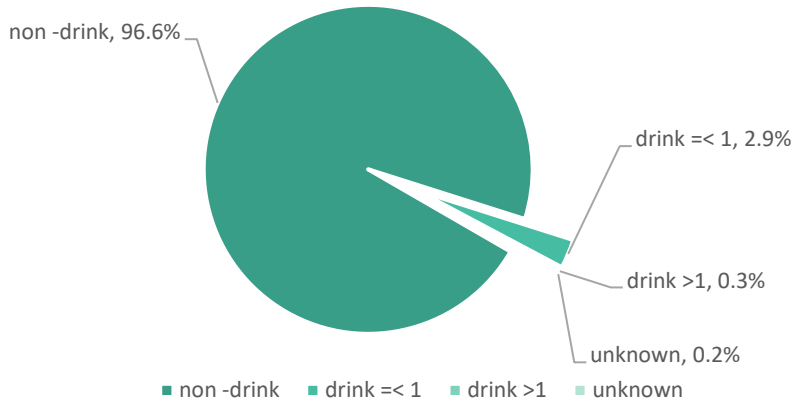
As with the data available for smoking during pregnancy, it is important to note that some women may be similarly uncomfortable in disclosing their alcohol consumption status during the course of their pregnancy and as such the data provided may not be entirely accurate.

Table 62 and Figure 22 below show that overall 3.2 per cent of Tasmanian women indicated that they had consumed alcohol during their pregnancy with 2.9 per cent reporting to have consumed one or fewer standard alcoholic drinks per day and 0.3 per cent reporting to have consumed more than one alcoholic drink per day. The overall proportion of women reported to have consumed alcohol in 2017 was significantly lower (p=0.023) than the 2016 figure (4.0 per cent), continuing the significant fall observed from 2015 to 2016. The proportion of women aged 40 years and over who reported to have consumed alcohol during pregnancy has dropped significantly (p=0.043) from 7.0 per cent in 2016 to 1.8 per cent in 2017, which is lower than for any previous year.

Table 62: Proportion of alcohol consumption by maternal age and election status 2013-2017

Year	Age							Election status	
	Overall	Less than 20	20-24	25-29	30-34	35-39	40 and over	Public	Private
2013	6.4	4.0	5.8	5.8	6.7	8.6	5.7	7.4	3.6
2014	6.5	3.7	4.7	5.7	7.5	9.2	7.9	6.6	6.3
2015	7.6	6.5	6.4	6.4	8.2	10.0	9.6	6.8	10.0
2016	4.0	2.8	3.6	3.5	4.0	5.0	7.0	5.0	1.0
2017	**3.2**	**4.4**	**3.4**	**2.2**	**3.5**	**4.3**	**1.8**	**4.2**	**0.3**

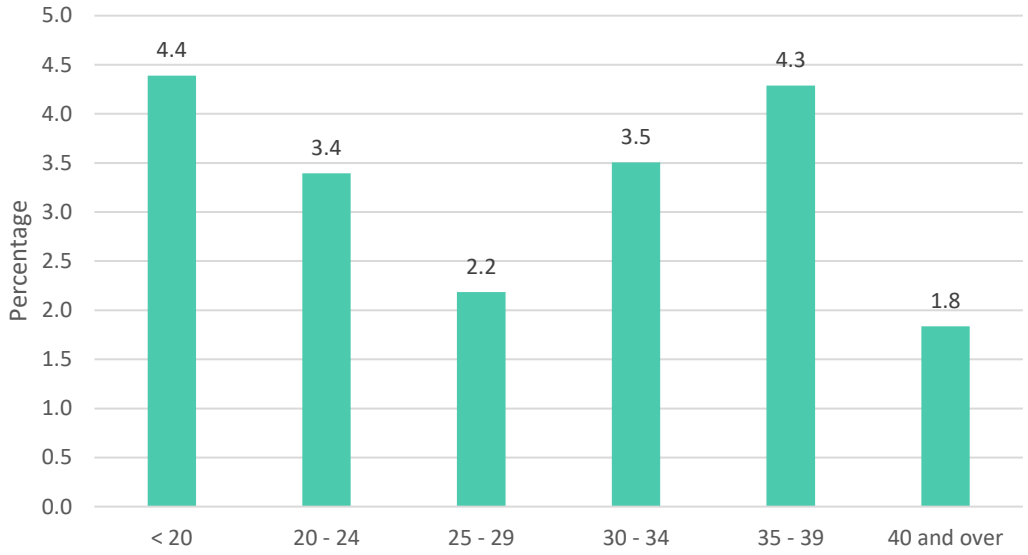
Figure 22: Self-reported alcohol consumption status during pregnancy in Tasmania 2017



Number of mothers who reported = 5 496

Unlike in previous years, in 2017 maternal alcohol consumption for women aged 30 years and over is not distinctly higher than amongst younger mothers. In particular, maternal alcohol consumption amongst women aged 40 years and over decreased significantly (p=0.008) from 7.0 per cent to 1.8 per cent in 2017, lower than for any previous year, and the lowest of any other age group. Whilst, with the sole exception of mothers aged less than 20, maternal alcohol consumption decreased for each age group, only the decreases for those mothers aged 25-29 or 40 years and over were statistically significant (Table 62 and Figure 23).

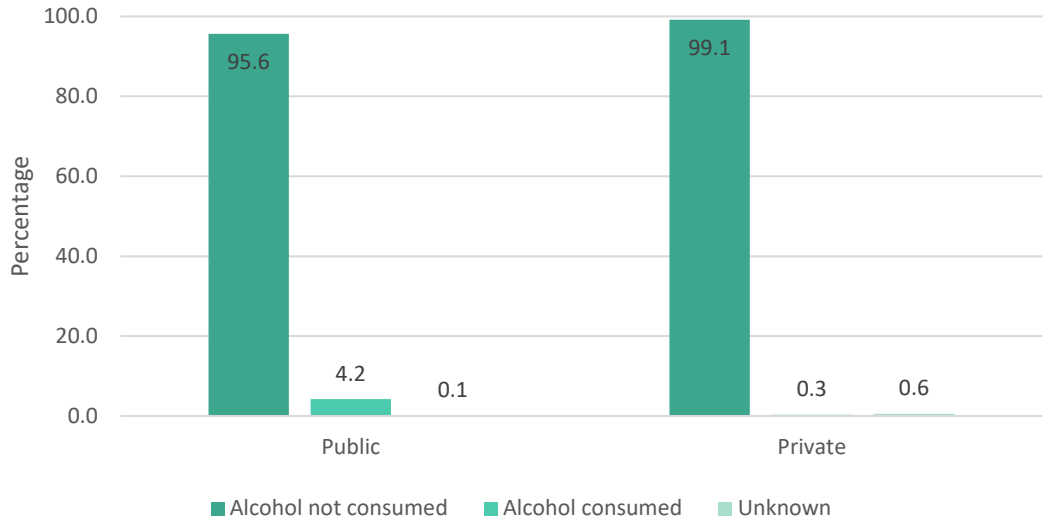
Figure 23: Self-reported alcohol consumption status during pregnancy by age in Tasmania



Alcohol consumption during pregnancy by private patients (0.3 per cent) in 2017 is the lowest recorded, but statistically similar to 2016 (p=0.030). Further, reported alcohol consumption during pregnancy in 2017 amongst public patients (4.2 per cent), whilst remaining statistically significantly higher (p<0.001) than for private patients, was also the lowest recorded, but again statistically similar to 2016 (p=0.081), as shown in Table 62 and Figure 24.

Of those who reported consuming alcohol whilst pregnant, the consumption of more than one alcoholic drink was reported by 10.5 per cent of public patients, but not by any private patients.

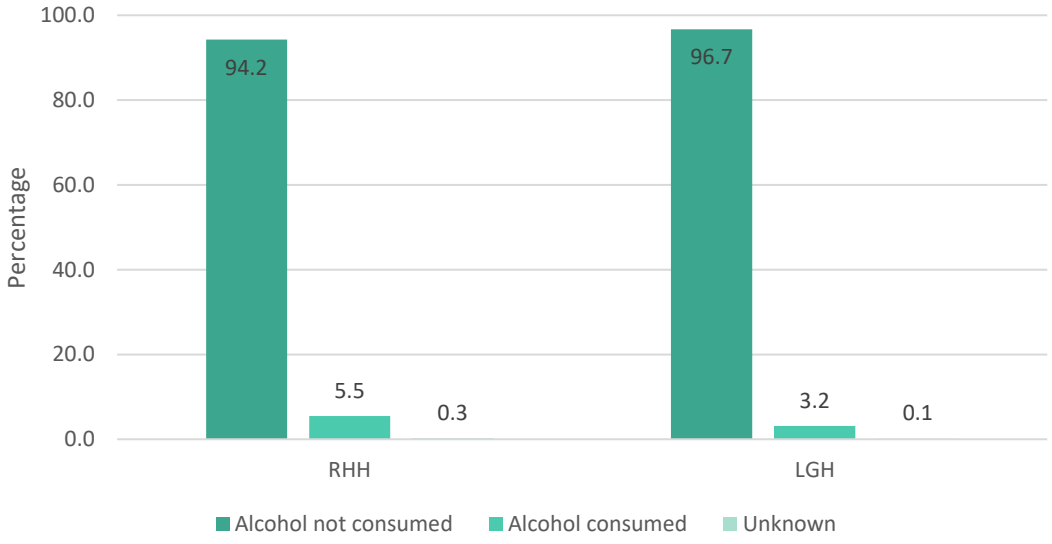
Figure 24: Self-reported alcohol consumption status by admitted patient election status in Tasmania 2017



With regard to the proportion of Tasmanian mothers from public hospitals reporting to have consumed alcohol during pregnancy, Figure 25 shows that in 2017, alcohol consumption during pregnancy was reported most frequently by patients at the Royal Hobart Hospital (5.5 per cent), followed by 3.2 per cent of patients at the Launceston General Hospital. Compared to 2016, at both the Royal Hobart Hospital and the Launceston General Hospital, the proportion of patients who reported consuming alcohol whilst pregnant had decreased; however, neither difference was statistically significant (RHH - 5.5 per cent c.f. 6.9 percent (p=0.074), LGH - 3.2 per cent c.f. 3.7 per cent (p=0.440)).

Similar to the smoking during pregnancy data, a key factor in these variations may relate to difference in the patient mix at these two hospitals.

Figure 25: Self-reported alcohol consumption status during pregnancy by public hospital in Tasmania 2017



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.

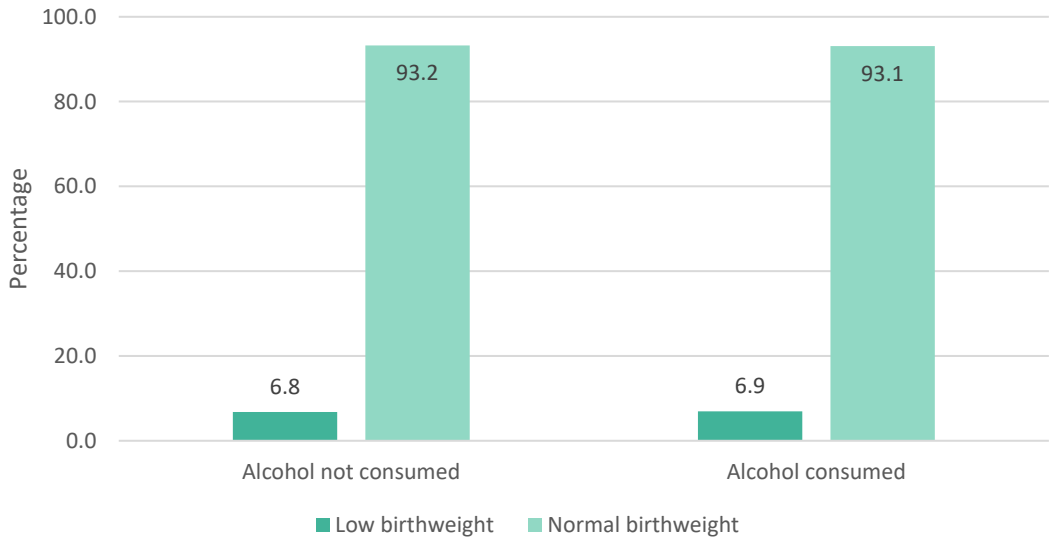
Based on the number of births (excluding multiple births, as multiparous births often result in low birth weight babies regardless of the mother's smoking status) whose mothers answered **Yes** to the alcohol consumption questions, a total of 12 babies had a birthweight of less than 2 500 grams. Of these, 16.7 per cent (2) had a birthweight of less than 1 500 grams (very LBW).

In 2017, a total of 6.9 per cent of all women who had consumed alcohol during pregnancy had a LBW baby compared to 6.8 per cent of women who reported not to have consumed alcohol (Figure 26), a difference which was not statistically significant (p=0.959).

The relative risk of having a LBW baby in 2017 was 1.03 (95 per cent CI: 0.59, 1.79) 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 several sources of error may influence findings of this analysis. Since some women may be uncomfortable in disclosing alcohol consumption during 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 26: Self-reported alcohol consumption status during pregnancy by birthweight in Tasmania 2017



Recommendations

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

Maternal Investigations

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

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

Attachment B: Perinatal Data Collection Form

TASMANIAN PERINATAL DATA COLLECTION FORM

Effective 1 January 2015

Reset Form

CONFIDENTIAL *Obstetric and Paediatric Mortality and Morbidity Act 1994*

***Data submission timeline:** within 30 days of the birth of a baby.*

This form is to be completed for all babies (both livebom & stillborn) who have a gestational age of at least 20 weeks **and/or** weighing at least 400 grams at birth. **In the case of multiple births, a separate form must be completed in full for each baby.**

*** tick one or more*

Note: This form must be completed in the hospital where the birth occurs or where the mother is first admitted if the baby is born before arrival.

MOTHER'S DETAILS

Hospital code ☐☐☐☐ **URN** ☐☐☐☐☐☐☐☐☐☐

Surname _____ **First name** _____ **Date of birth** D D M M Y Y Y Y

Country of birth _____ **Suburb** _____ **Postcode** ☐☐☐☐

Indigenous status ☐ Aboriginal ☐ Torres Strait Islander ☐ Aboriginal and Torres Strait Islander ☐ Neither

Marital status ☐ Never married ☐ Widowed ☐ Divorced ☐ Separated ☐ Married *(including defacto)*

PREVIOUS PREGNANCIES

☐☐ Livebirths ☐☐ Stillbirths

☐☐ Ectopic pregnancy

☐☐ Miscarriage

☐☐ Terminated pregnancy

Parity ^ *(excluding this pregnancy)* ☐☐

Number of neonatal deaths ☐☐

Number of previous caesareans ☐☐

Mode of last delivery

☐ Vaginal ☐ Caesarean section ☐ N/A

^ *No. of previous pregnancies resulting in births ≥ 20 wks or ≥ 400 g*

THIS PREGNANCY

Estimated date of confinement

D D M M Y Y Y Y

Determined by *(select most accurate option only)*

☐ Known conception ☐ Known date LMP

☐ Ultrasound <12 wks ☐ Ultrasound >12 wks

Is this pregnancy the result of assisted reproductive technology?

☐ No ☐ Yes

Intended place of birth

☐ Hospital ☐ Birth centre ☐ Home/other

Intending to breastfeed

☐ No ☐ Yes ☐ Unsure

Plurality ☐ Single ☐ Multiple, no.: ☐

Est. gestation at 1st antenatal visit ☐☐

Total number of antenatal visits ☐☐

Height *(whole cm)* ☐☐☐

Weight *(whole kg)* ☐☐☐

Self reported at conception

ANTENATAL TESTING **

☐ None

☐ 1st trimester Downs screening

☐ 2nd trimester Downs screening

☐ Amniocentesis

☐ Chorionic villus sampling

☐ Screening for gestational diabetes

☐ GBS screen

☐ Level 2 ultrasound

PRE PREGNANCY CONDITIONS **

☐ None

☐ Cardiovascular

☐ Thyroid

☐ Diabetes mellitus

- ☐ Pre-existing Type 1 diabetes
- ☐ Pre-existing Type 2 diabetes
- ☐ Other type of diabetes mellitus

Diabetes mellitus treatment **

- ☐ Insulin
- ☐ Oral hypoglycaemic
- ☐ Diet and exercise

☐ Mental health

☐ Renal disease

☐ Epilepsy

☐ Chronic hypertension

☐ Other _____

SMOKING / ALCOHOL / DRUG

Did the mother smoke at all during the first half *(< 20 weeks)* of pregnancy?

☐ No ☐ Yes, avg cigarettes/day? ☐☐

Did the mother smoke at all during the second half *(≥ 20 weeks)* of pregnancy?

☐ No ☐ Yes, avg cigarettes/day? ☐☐

Did the mother consume alcohol during the pregnancy?

☐ No ☐ Yes, avg std drinks/day? ☐☐

Did the mother smoke marijuana during the pregnancy?

☐ No ☐ Yes ☐ Not stated

Did the mother use other recreational drugs during the pregnancy?

☐ No ☐ Yes ☐ Not stated

VITAMIN SUPPLEMENTS **

Did the mother take vitamin supplements during the pregnancy?

☐ None ☐ Vitamin D

☐ Iron ☐ Folate, pre-conceptually

☐ Iodine ☐ Folate, post-conceptually

☐ Other _____

ADMISSION

Date of admission *(in which birth occurs)*

D D M M Y Y Y Y

Admitted patient election status

☐ Public ☐ Private ☐ N/A

Transfer of patient prior to delivery

☐ No transfer ☐ Hospital to hospital

☐ Birth centre to hospital

☐ Home to hospital *(intended homebirth only)*

OBSTETRIC COMPLICATIONS **

☐ None

☐ Bleed <20 weeks *(threatened miscarriage)*

☐ Placenta praevia

☐ APH undetermined origin

☐ Placental abruption

☐ Threatened premature labour

☐ Hypertension

- ☐ Pregnancy induced hypertension
- ☐ Pre-eclampsia
- ☐ Eclampsia

☐ Prolonged rupture of membranes *(> 18 hours)*

☐ Pre-labour rupture of membranes

☐ Gestational diabetes, treatment **

- ☐ Insulin
- ☐ Oral hypoglycaemic
- ☐ Diet and exercise

☐ Other _____

LABOUR AND DELIVERY

Onset of labour

☐ Spontaneous ☐ Induced ☐ None

Method of induction **

☐ Prostaglandin ☐ ARM

☐ Balloon ☐ Oxytocin

Indication for induction of labour **

Tick all relevant reason(s) and circle the main reason

☐ Social/geographical

☐ Maternal indications

☐ Fetal indications

☐ Post dates

Augmentation of labour

Both ARM & Oxytocin may be ticked

☐ Not augmented

☐ ARM ☐ Oxytocin

LABOUR & DELIVERY (cont.)

Analgesia during labour **

- ☐ None
- ☐ O_2 / Nitrous Oxide
- ☐ IM Opioids
- ☐ Epidural/caudal
- ☐ IV Opioids
- ☐ Pudendal
- ☐ Spinal
- ☐ Other

Principal accoucheur

- ☐ Obstetrician
- ☐ GP Obstetrician
- ☐ Hospital Medical Officer
- ☐ Midwife
- ☐ Other

Labour & delivery complications **

- ☐ None
- ☐ Grade 2-3 meconium
- ☐ Shoulder dystocia
- ☐ Primary PPH *(>500 mls in first 24 hours)*
  - Est amount of blood loss _____ mls
  - PPH requiring blood transfusion? ☐
- ☐ Retained placenta *(requiring manual removal)*
- ☐ Other _____

Perineal status **

- ☐ Intact
- ☐ 1st degree tear
- ☐ 2nd degree tear
- ☐ 3rd degree tear
- ☐ 4th degree tear
- ☐ Episiotomy

Indication for caesarean section **
Tick all relevant reason(s) and circle the main reason

- ☐ Maternal indications *(includes patient's choice)*
- ☐ Dystocia *(FTP, CPD)*
- ☐ Abnormal presentation
- ☐ Fetal indications
- ☐ Failed induction
- ☐ Failed trial of instrumental delivery
- ☐ Elective repeat

Was the caesarean section:

a) ☐ Elective ☐ Emergency b) ☐ Primary ☐ Repeat

Anaesthesia for delivery **

- ☐ None
- ☐ Pudendal
- ☐ Spinal
- ☐ Local anaesthetic
- ☐ Epidural/caudal
- ☐ General anaesthetic

BABY'S DETAILS

URN ☐☐☐☐☐☐☐☐☐☐

Date of birth D D M M Y Y Y Y

Presentation at birth

- ☐ Vertex
- ☐ Face
- ☐ Other
- ☐ Breech
- ☐ Brow

Mode of birth

- ☐ Non-instrumental vaginal
- ☐ Forceps - low
- ☐ Forceps - mid
- ☐ Forceps rotation
- ☐ Vacuum extraction
- ☐ Vacuum rotation
- ☐ Caesarean section

Indigenous status

- ☐ Aboriginal
- ☐ Torres Strait Islander
- ☐ Aborig. & TSI
- ☐ Neither

BABY'S DETAILS (cont.)

Birth status ☐ Liveborn ☐ **Stillborn†**

Apgar score ☐☐ (1 min) ☐☐ (5 mins) ☐☐ (10 mins)

Cord pH ☐ Not done ☐ < 7.2 ☐ ≥ 7.2

Gestational age at birth ☐☐ completed weeks

Weight *(whole gram)* ☐☐☐☐

Length *(whole cm)* ☐☐

Head circumference *(whole cm)* ☐☐

Sex ☐ M ☐ F ☐ Indeterminate

Birth order

- ☐ Singleton
- ☐ Twin/Triplet 1
- ☐ Twin/Triplet 2
- ☐ Triplet 3

Actual place of birth

☐ Hospital ☐ Birth centre ☐ Home/other

Resuscitation at birth **

- ☐ None
- ☐ Suction
- ☐ Adrenaline
- ☐ Passive oxygen therapy
- ☐ Bag & mask IPPV
- ☐ Endotracheal intubation & IPPV
- ☐ External cardiac massage

Medical admission to SCN/NICU

☐ No ☐ Yes, number of days ☐☐

CONGENITAL ABNORMALITIES **

Please complete the notification form on the right

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

DISCHARGE

Mother discharge status

☐ Discharged ☐ Transferred ☐ **Died‡**

Date D D M M Y Y Y Y

‡ *National Maternal Death Reporting Form*

Breastfeeding at discharge

☐ Fully ☐ Partially ☐ Not at all

Baby discharge status

☐ Discharged ☐ Transferred ☐ **Died†**

☐ Still in hospital at 28 days

Date D D M M Y Y Y Y

† *National Perinatal Death Clinical Audit (NPDCA) Tool*

Reason for transfer of baby

☐ Medical ☐ Other

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 D D M M Y Y Y Y

OUNCIL OF OBSTETRIC & PAEDIATRIC MORTALITY & MORBIDITY

TASMANIAN PERINATAL DATA COLLECTION FORM

The Tasmanian Perinatal Data Collection Form is a mandatory requirement for data collection under the *Obstetric and Paediatric Mortality and Morbidity Act 1994 (previously known as Perinatal Registry Act 1994)*.

The Tasmanian Perinatal Data Collection Form is required to be **completed by all private hospitals and birth centres where the birth occurs, or by private midwifery and medical practitioners who deliver babies outside hospitals**. Please use the electronic perinatal database system (i.e. ObstetrixTas) for all births reported in public and public contracted maternity hospitals.

If the mother and/or baby are transferred from the hospital of confinement, the form should be **completed by the hospital of birth**. In cases where the mother is transferred to another hospital for operational birth and transferred back to the hospital of confinement immediately after the operation, the form should be **completed by the hospital of confinement.** If the mother and/or baby are admitted to hospital after the birth has occurred, a form should be **completed by the hospital where the mother is first admitted**.

NOTE: A multiple birth requires a separate Perinatal Data Collection Form to be completed for each baby with the same identifying maternal demographic information. Please ensure that the second twin's Perinatal Data Collection Form is also submitted.

Data submission timeline: within 30 days of the birth of a baby.

General Instructions

- Please print clearly using a ballpoint pen and all writing and figures must be legible (paper submission only).
- Use ticks on the form to indicate the appropriate options.
- **ANSWER ALL QUESTIONS**. If a particular item of information is not available or unknown, please fill all numeric fields with '9' or record 'Unknown' in a text field.
- If any data items are not complete, the hospital of birth will be asked to supply the missing information.
- In the case of multiple births, a separate form should be completed for each baby. For example, in the case of twins, two forms are to be completed, identifying each twin as Twin 1 and Twin 2 in the Birth order question of the Baby's Details section.
- Where boxes are present, place a tick or write the appropriate number(s) in the relevant box(es).
- Where there are more boxes provided than necessary, please 'right adjust' your response.

e.g. Weight - 58 kgs

0	5	8

Queries relating to completion of this Form, please refer to the ***Guidelines for the completion of the Perinatal Data Collection Form*** available from the website or contact:

Tasmanian Perinatal Data Collection Services
Health Information - Monitoring Reporting and Analysis Unit
Planning Purchasing and Performance Group
Department of Health and Human Services
GPO Box 125
Hobart TAS 7001
Phone : (03) 6166 1012
Email : ppp.perinataldata@dhhs.tas.gov.au
Web : http://www.dhhs.tas.gov.au/about_the_department/partnerships/registration_boards/copmm

Completing the Form

If you have not yet completed the Form and want to work on it later, please click:

Save to my computer The '**Save to my computer**' button allows you to save a draft copy of the Form to your local computer so you can access the Form without being connected to the Internet.

When you are ready to submit this Form, please click:

Submit by email The '**Submit by email**' button will allow you to submit the Form to COPMM for processing via email.

Print form The '**Print form**' button will print the Form and you will need to post it using a confidential envelope to:

Tasmanian Perinatal Data Collection Services
Health Information - Monitoring Reporting and Analysis Unit
Planning Purchasing and Performance Group
Department of Health and Human Services
GPO Box 125, Hobart TAS 7001

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

National Perinatal Death Clinical Audit Tool

Australian and New Zealand stillbirth alliance

Council of Obstetric & Paediatric Mortality & Morbidity

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 (hh:mm, 24 hour clock)
7. **Date and time of baby's death (neonatal deaths):** Date: _____ (DD/MM/YYYY)
   Time: _____ hrs (hh:mm, 24 hour clock)
8. **Calculated gestation of pregnancy at birth:** ☐☐ completed weeks
9. **Birth weight:** ☐☐☐☐ grams

Page 1 of 15

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 ☐☐ **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
☐ Other
☐ Unknown

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, 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	☐	Total number of scans = ☐☐
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	☐	

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	☐
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. Medication 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 liquor ☐
- Fetal bradycardia ☐
- Non-reassuring CTG ☐
- Cord entanglement/prolapse ☐
- Shoulder dystocia ☐
- Failure to progress/dystocia ☐
- Other, please specify: _____

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 mins ☐ 10 mins ☐ 15 mins ☐ 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, 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 ☐

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:- _____ (DD/MM/YYYY)

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

Manager, Council of Obstetric & Paediatric Mortality & Morbidity
Department of Health and Human Services
GPO Box 125
HOBART TAS 7001
ppp.perinataldata@dhhs.tas.gov.au

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 description _____

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 description _____

Associated condition 2:

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

Category description _____

OR

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

Category description _____

---

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

d) 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**
B. Factors related to access to care		
C. Factors related to professional care		
D. Other factors		

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

4. Recommendations for practice improvements: **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: _____ (DD/MM/YYYY)

Review finalized? **Yes** ☐ **No** ☐

If yes, date finalized: _____ (DD/MM/YYYY)

If no, please specify outstanding areas for review _____

Section 2 of this form completed by:-

Name:- _____

Designation:- _____

Contact details: - Phone _____

Email _____

Date:- _____ (DD/MM/YYYY)

Please copy Section 2 for perinatal mortality committee records and email/mail completed original marked 'Confidential' to:

Manager, Council of Obstetric & Paediatric Mortality & Morbidity
Department of Health and Human Services
GPO Box 125
HOBART TAS 7001
ppp.perinataldata@dhhs.tas.gov.au

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: _____ (DD/MM/YYYY HH:MM)

Neonatologist: _____ Yes ☐ Date/time: _____ (DD/MM/YYYY HH:MM)

Midwife: _____ Yes ☐ Date/time: _____ (DD/MM/YYYY HH:MM)

General Practitioner: _____ Yes ☐ Date/time: _____ (DD/MM/YYYY HH:MM)

Bereavement support: _____ Yes ☐ Date/time: _____ (DD/MM/YYYY HH:MM)

Other, specify _____ Yes ☐ Date/time: _____ (DD/MM/YYYY HH:MM)

G.P. notified of the perinatal death Yes ☐ Date notified: _____ (DD/MM/YYYY)

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: _____

Section 3 of this form completed by:-

Name:- _____

Designation:- _____

Contact details: - Phone _____

Email _____

Date:- _____ (DD/MM/YYYY)

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:

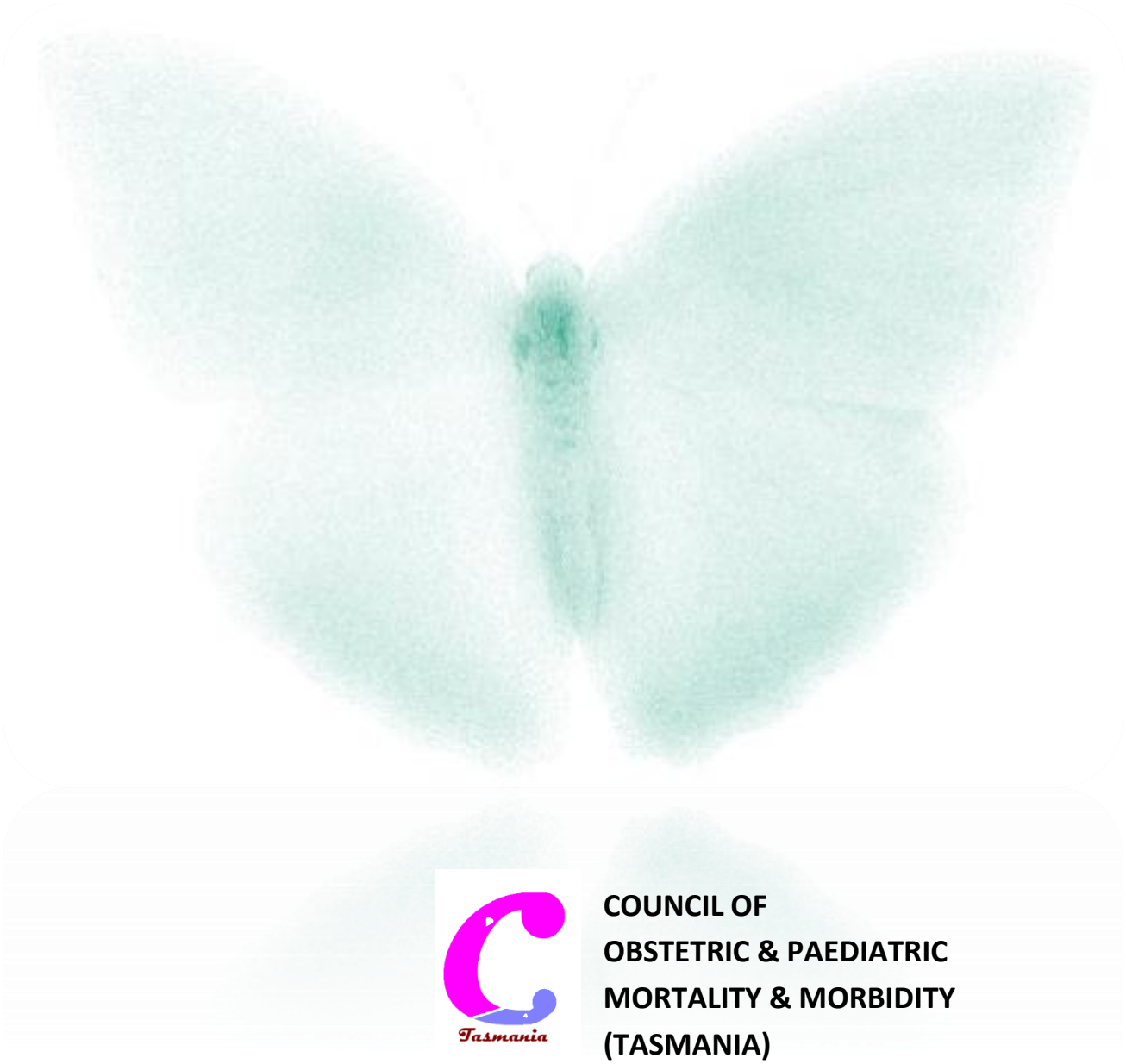
Executive
Health Professional Policy and Advisory Services
Level 2, 22 Elizabeth Street
HOBART TAS 7000

	Please circle one option	
1. Did you find the information contained within this Report useful? If no, please specify what was lacking:	Yes	No
2. Is there additional information you would like to see routinely included in the Report? If yes, please specify:	Yes	No
3. Are there any other suggestions you would make to assist in improving the usefulness of this Report? If yes, please specify:	Yes	No

---

If you require further information please contact the Executive, Health Professional Policy and Advisory Services on 6166 1052.

Notes



COUNCIL OF OBSTETRIC & PAEDIATRIC MORTALITY & MORBIDITY (TASMANIA)

Health Professional Policy and Advisory Services
Department of Health

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Visit: www.dhhs.tas.gov.au