# Council of Obstetric & Paediatric Mortality & Morbidity

Annual Report 2019

Department of Health

Tasmanian Government

Publishing supported by Clinical Quality, Regulation and Accreditation, Department of Health, Tasmania.



Published on www.health.tas.gov.au

**September 2021**

# Table of Contents

**COPMM Key Recommendations** **9**

**Executive Summary** **14**

Babies 14

Mothers 14

Antenatal factors 15

Smoking during pregnancy 15

Alcohol consumption 15

Antenatal visits 16

Body Mass Index 16

Vitamins 16

Perinatal and paediatric deaths at a glance 18

Perinatal deaths 18

Paediatric deaths 19

Maternal deaths 19

Data collection and reporting 19

**Acknowledgments** **22**

***Obstetric and Paediatric Mortality and Morbidity Act 1994*** **23**

Definitions used by the Council 24

Supplementary definition 25

**Members of the Council of Obstetric & Paediatric Mortality & Morbidity** **26**

Members of Committees and Support Services 27

**Committee reports** **28**

Perinatal Mortality & Morbidity Committee 28

Basic information on stillbirths for 2019 30

Basic information on neonatal deaths for 2019 35

Paediatric Mortality & Morbidity Committee 38

Paediatric deaths for 2019 38

Maternal Mortality & Morbidity Committee 44

Maternal deaths for 2019 44
Data Management Committee 45
**Perinatal statistics** **47**
Births, birth rates and pregnancies 47
Sex of livebirths 49
Mode of delivery 50
Presentation at birth 53
Birthweight 54
Low birthweight 55
Apgar scores 57
Resuscitation 58
Perinatal mortality 58
Perinatal mortality in Tasmania over the period 2010-2018, a regional analysis 61
Neonatal mortality 63
Autopsy rates 65
**Mothers' statistics** **66**
Maternal age 66
Indigenous status 69
In-patient election status 69
Parity status 70
Antenatal visits 71
Maternal body mass index by birth setting 72
Maternal iodine/iron/vitamin D intake by birth setting 74
Iodine 74
Iron 75
Vitamin D 75
Maternal folic acid intake by birth setting 76
Multiple pregnancies 78
Onset of labour 78
Induction of labour 79
Augmentation of labour 80
Mode of delivery 80

Caesarean section 82

Maternal hypertension 86

Antepartum haemorrhage 87

Postpartum haemorrhage 87

Breastfeeding 88

Smoking and pregnancy 90

Smoking status during the first 20 weeks and after 20 weeks of pregnancy 96

Alcohol consumption and pregnancy 100

**Attachment A: Guideline for Investigation of 'Unexplained' Stillbirths 108**

**Attachment B: Perinatal Data Collection Form 110**

**Attachment C: National Perinatal Death Clinical Audit Tool (NPDCAT) 113**

**Feedback Form 128**

**Notes 129**

# Index of Tables

Table 1: Perinatal and paediatric deaths at a glance 18

Table 2: Number of perinatal deaths by PSANZ perinatal mortality classification 2015-2019 29

Table 3: Gestation of stillbirth 2011-2019 30

Table 4: Stillbirths reported by gestation period and PSANZ perinatal mortality classification 2019 30

Table 5: Stillbirths by PSANZ perinatal mortality classification 2011-2019 31

Table 6: Number of stillbirths and stillbirth rate per 1 000 births 1997-2019 32

Table 7: Neonatal deaths by PSANZ perinatal mortality classification 2015-2019 35

Table 8: Neonatal deaths by PSANZ neonatal mortality classification 2015-2019 36

Table 9: Paediatric deaths 2010-2019 38

Table 10: Origin of injury leading to paediatric death 2019 38

Table 11: Live births and birth rates in Tasmania 2015-2019 47

Table 12: Live births by region 2015-2019 48

Table 13: Live births by birth setting 2015-2019 48

Table 14: Live births by sex 2015-2019 49

Table 15: Births by mode of delivery 2015-2019 50

Table 16: Births by mode of delivery and gestation 2015-2019 51

Table 17: Births by caesarean section following induction of labour 2015-2019 52

Table 18: Births by caesarean section following augmentation of labour 2015-2019 52

Table 19: Births by presentation at vaginal delivery only 2015-2019 53

Table 20: Births by presentation via caesarean section delivery 2015-2019 53

Table 21: Births by birthweight groups 2015-2019 54

Table 22: Incidence of low and very low birthweight 2015-2019 55

Table 23: Survival to hospital discharge by gestation 1996-2019 55

Table 24: Live births by Apgar score at five minutes 2015-2019 57

Table 25: Live births by active intubation and resuscitation at birth 2015-2019 58

Table 26: Perinatal outcome 2015-2019 58

Table 27: Perinatal mortality rates 2015-2019 59

Table 28: Perinatal mortality in multiple pregnancies 2015-2019 60

Table 29: Perinatal mortality in multiple pregnancies by birth order 2015-2019 61

Table 30: Perinatal mortality by region, Tasmania 2011-2019 61

Table 31: Perinatal mortality by region and year, Tasmania 2011-2019 62

Table 32: Neonatal mortality per 1 000 births in infants over 28 weeks gestation 2015-2019 63

Table 33: Neonatal mortality per 1 000 births in infants over 1 000 grams birthweight 2015-2019 63

Table 34: Fetal, neonatal and perinatal death rate per 1 000 births by state and territory 2015-2019 64

Table 35: Rate of autopsies on perinatal deaths 2015-2019 65

Table 36: Women who gave births by maternal age groups 2015-2019 66

Table 37: Rates of birth per 1 000 female population by maternal age 2015-2019 67

Table 38: Women who gave birth, by Indigenous status 2015-2019 69

Table 39: Women who gave birth, by admitted patient election status 2015-2019 69

Table 40: Women who gave birth, by parity 2015-2019 70

Table 41: Women who gave birth, by gestational age at first antenatal visit 2015-2019 71

Table 42: Women who gave birth, by number of antenatal visits 2015-2019 71

Table 43: Women who gave birth, by maternal body mass index and birth setting 2015-2019 72

Table 44: Women who gave birth and had iodine / iron / vitamin D intake, by birth setting 2015-2019 76

Table 45: Women who gave birth and had folic acid consumption, by birth setting 2015-2019 77

Table 46: Women who gave birth, by plurality 2015-2019 78

Table 47: Women who gave birth, by onset of labour 2015-2019 78

Table 48: Women who gave birth after induction of labour, by method of birth and hospital sector 2015-2019 79

Table 49: Women who gave birth and had augmentation of labour, by type of augmentation 2015-2019 80

Table 50: Women who gave birth, by emergency / elective caesarean section 2015-2019 82

Table 51: Women who gave birth, by emergency / elective caesarean section and hospital sector 2015-2019 82

Table 52: Women who gave birth, by primary / repeat caesarean section 2015-2019 82

Table 53: Women who gave birth, by primary / repeat caesarean section and hospital sector 2015-2019 83

Table 54: Relative risk of adverse maternal outcomes in overweight and obese women by BMI category ($kg/m^2$) 85

Table 55: Women who gave birth and had pregnancy-induced hypertension 2015-2019 86

Table 56: Women who gave birth and had antepartum haemorrhage 2015-2019 87

Table 57: Women who gave birth and had postpartum haemorrhage 2015-2019 87

Table 58: Women who gave birth, by breastfeeding status (including partially) at maternal discharge 2015-2019 89

Table 59: Women who gave birth and were breastfeeding (including partially) at maternal discharge, by parity 2015-2019 89

Table 60: Women who gave birth and were breastfeeding (including partially) at maternal discharge, by hospital sector 2015-2019 89

Table 61: Proportion of women who gave birth, by tobacco smoking status during pregnancy, maternal age and election status; 1982 and 2015-2019 90

Table 62: Proportion of women who gave birth, by tobacco smoking status during pregnancy and state and territory 2010-2019 91

Table 63: Women who gave birth, by tobacco smoking status during pregnancy and maternal age 2015-2019 92

Table 64: Women who gave birth, by tobacco smoking status during pregnancy and admitted patient election status 2015-2019 93

Table 65: Women who gave birth, by tobacco smoking status during pregnancy and public hospital 2015-2019 94

Table 66: Women who gave birth, by tobacco smoking status during pregnancy and birthweight category 2015-2019 95

Table 67: Women who gave birth, by tobacco smoking status during first and last 20 weeks of pregnancy 2015-2019 97

Table 68: Percentage of women who gave birth, by tobacco smoking status during the first 20 weeks and did not continue to smoke after 20 weeks 2015-2019 98

Table 69: Proportion of women who gave birth, by alcohol consumption status during pregnancy, maternal age and election status 2015-2019 101

Table 70: Women who gave birth, by alcohol consumption status during pregnancy and maternal age 2015-2019 103

Table 71: Women who gave birth, by alcohol consumption status during pregnancy and admitted patient election status 2015-2019 104

Table 72: Women who gave birth, by alcohol consumption status during pregnancy and public hospital in Tasmania 2015-2019 105

Table 73: Women who gave birth, by alcohol consumption status during pregnancy and birthweight category 2015-2019 107

# Index of Figures

Figure 1: Stillbirth rate per 1 000 births for Tasmania 1997-2019 33

Figure 2: Birth rate for Tasmania per 1 000 head of population 2005-2019 47

Figure 3: Live births by sex 2005-2019 49

Figure 4: Births by mode of delivery 2005-2019 50

Figure 5: Births by birthweight groups 2011-2019 54

Figure 6: Survival by gestational age 2012-2019 56

Figure 7: Live births with Apgar score less than 6 at five minutes 2005-2019 57

Figure 8: Stillbirths and neonatal deaths per 1 000 births 2005-2019 59

Figure 9: Perinatal mortality rate per 1 000 births in Tasmania and Australia 2005-2019 60

Figure 10: Perinatal mortality rate per 1 000 births by region, Tasmania 2011-2019 62

Figure 11: Proportion of women who gave birth, by maternal age in Tasmania and Australia 2019 67

Figure 12: Women who gave birth, by admitted patient election status 2005-2019 70

Figure 13: Proportion of women who gave birth, by body mass index in Tasmania 2015-2019 and Australia 2019 73

Figure 14: Proportion of women who gave birth in public hospitals, by mode of delivery in Tasmania and Australia 2019 80

Figure 15: Proportion of women who gave births, by mode of delivery and admitted patient election status in Tasmania 2019 81

Figure 16: Proportion of babies born by caesarean section and assisted vaginal 2005-2019 83

Figure 17: Proportion of women who gave birth and had postpartum haemorrhage 2011-2019 88

Figure 18: Women who gave birth, by tobacco smoking status during pregnancy in Tasmania 2019 91

Figure 19: Women who gave birth, by tobacco smoking status during pregnancy and age in Tasmania 2019 93

Figure 20: Women who gave birth, by tobacco smoking status during pregnancy and admitted patient election status in Tasmania 2019 94

Figure 21: Women who gave birth, by tobacco smoking status during pregnancy and public hospital in Tasmania 2019 95

Figure 22: Women who gave birth, by tobacco smoking status during pregnancy and birthweight category in Tasmania 2019 96

Figure 23: Women who gave birth, by tobacco smoking status during first and last 20 weeks of pregnancy in Tasmania 2019 97

Figure 24: Percentage of women who gave birth, by tobacco smoking status during the first 20 weeks and did not continue to smoke after 20 weeks 2019 98

Figure 25: Women who gave birth, by alcohol consumption status during pregnancy in Tasmania 2019 102

Figure 26: Women who gave birth, by alcohol consumption status during pregnancy and maternal age in Tasmania 2019 104

Figure 27: Women who gave birth, by alcohol consumption status during pregnancy and admitted patient election status in Tasmania 2019 105

Figure 28: Women who gave birth, by alcohol consumption status during pregnancy and public hospital in Tasmania 2019 106

Figure 29: Women who gave birth, by alcohol consumption status during pregnancy and birthweight category in Tasmania 2019 107

# 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 2019 is tabulated below. These recommendations highlight the issues considered by Council to be important and that need to be addressed and actioned by relevant organisations statewide. To this end, Council values the Department's efforts to action and report against Council's recommendations where possible.

| | |
|---|---|
| **PAEDIATRIC** | **Youth suicide**<br><br>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 recommended the following: (1) Take the statement 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 contact a helpline such as listed below:<br>• Emergency services 000<br>• Lifeline 131 114<br>• Suicide Call Back Service 1300 659 467<br>• Beyond Blue support service 1300 224 636<br>• Kids Helpline 1800 551 800<br>• http://suicideprevention.com.au/<br>2. Youth Beyond Blue have also developed the check in app (https://www.beyondblue.org.au/about-us/about-our-work/young-people/the-check-in-app), to assist young people who are concerned about a friend but worried about saying the wrong thing.<br>3. 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.<br>4. COPMM supports the Coroner's recommendation that the Media, in publishing articles and editorial on suicide, ensure complete compliance with Mindframe Guidelines.<br>5. That the Media clearly outline appropriate and available support helplines at the time of reporting on paediatric deaths that have been related to suicidal behaviour.<br>6. 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.<br>7. That age-appropriate and accessible mental health services and facilities be established, enhanced and adequately resourced for adolescents as part of an improved Mental Health Service. |

8. That all jurisdictions consider using a consistent national classification system for review of paediatric deaths.

### 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 forensic 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.
2. 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.
3. That recommendations from the Royal Children's Hospital (Melbourne)[2] be supported, stating that children should sit in the back seat of the car until they reach the age of 13 years and that a child should be taller than 145cm before transitioning out of a booster seat where they will need to pass a five-step test before they are big enough to use an adult seatbelt. The five-step test includes:
    - 3.1 Sit with their backs firmly against the seat back
    - 3.2 Bend knees comfortably over the front of the seat cushion
    - 3.3 Sit the sash belt across their mid-shoulder
    - 3.4 Sit with the lap belt across the top of their thighs
    - 3.5 Stay in this position for the whole car trip.
4. 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.
5. 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.

[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.

[2] The Royal Children's Hospital Melbourne 2019. Car Seat safety: are Australian children safe? Viewed 15 May 2019, https://www.rchpoll.org.au/polls/car-seat-safety-are-australian-children-safe/.

| | |
|---|---|
| | **Children suffering from asthma**<br><br>1. That a statewide protocol for children and young people with acute severe asthma be developed for Tasmania.<br><br>2. That Council supports the Coroner's recommendation that when administering salbutamol to children, it is important to ensure that the drug is administered correctly using a spacer. Guidance in this regard is available from chemists and Asthma Australia's website. |
| **PERINATAL** | **NEONATAL DEATHS**<br><br>1. As in previous years, smoking and other substance abuse remains an adverse risk factor in several neonatal deaths following extremely preterm birth. As always pregnant women should be encouraged to stop smoking cigarettes and taking other substances of abuse at all opportunities.<br><br>2. Evidence based endeavours to reduce the rate of preterm birth (e.g. the Australian Preterm Birth Prevention Alliance) and thus reduce perinatal morbidity and mortality, should be supported and funded.<br><br>3. Obstetric and Paediatric staff at all Tasmanian hospitals should complete the National Perinatal Death Clinical Audit Tool (NPDCAT), either electronically (now also possible via Obstetrix) or in hard copy, at the time of the hospital Mortality and Morbidity meetings.<br><br>**STILLBIRTHS**<br><br>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.<br><br>2. That fetal DNA screening is made affordable and supported by public funded health services in appropriate clinical settings.<br><br>3. That molecular karyotyping is offered routinely following the diagnosis of a morphologically abnormal pregnancy to aid in appropriate counselling of the parents.<br><br>4. That ongoing education be provided to all maternity care providers with regard to prenatal testing for fetal conditions. This should include the efficacy and latest recommendations for utilisation of pre-pregnancy screening for inherited conditions, combined first trimester aneuploidy screening, Non-Invasive Prenatal testing (NIPT), early ultrasound and invasive testing as well as the limitations of each test. Education should also include guidelines for referral to specialty services and/or genetic counselling.<br><br>5. That general practitioners be updated on the benefits of early referral for all pregnant women to antenatal services for triage, ideally by the end of the first trimester (14 weeks) to allow for appropriate time to start aspirin or institute cervical length screening in women who are at risk. |

| | |
|---|---|
| | 6. That women deemed at risk of premature labour are managed by a dedicated team using evidence-based strategies.<br>7. That all women are assessed for risk of preterm delivery at the time of morphology scanning with an appropriate measurement of cervical length.<br>8. That sonographers and radiologists are familiar with the guidelines for measuring cervical length appropriately.<br>9. That hospital funded NIPT should be offered to women who have a prior increased likelihood of Trisomy 21 based on maternal age (>40years) or past history.<br>10. That hospital funded NIPT should be offered as a second line screen for women who have a combined first trimester screen risk result for Trisomy between 1:50 and 1:250, or greater than background risk based on age. Women who have combined first trimester screen risk higher than 1:250 should be given the option of a diagnostic test (chorionic villous sampling or amniocentesis) rather than NIPT.<br>11. That patients considering NIPT as a second line screen should be appropriately counselled on the limitations of NIPT by a medical practitioner experienced in the management of high-risk pregnancies or a genetic counsellor.<br>12. Hospital funded NIPT should not be offered to women who have a fetus with a structural abnormality on ultrasound, Combined First Trimester Screening (cFTS) risk >1:50, nuchal translucency ≥3.5mm, or extremes of biochemistry (PAPP-A < 0.2MoM, BHCG < 0.2MoM or >5MoM). For these women, diagnostic testing with chorionic villous sampling or amniocentesis should be recommended due to the increased likelihood of genetic anomalies not detectable by NIPT.<br>13. That women who test high risk for Trisomy 13 or 18 on cFTS should be referred to a medical practitioner experienced in the management of high-risk pregnancies or a genetic counsellor. Hospital funded NIPT may be offered on a case by case basis<br>14. 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.<br>15. 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.<br>16. That all providers are supported in provision of appropriate investigations for reduced fetal movements.<br>17. That all women who smoke during pregnancy are actively encouraged and supported to stop.<br>18. That there is ongoing research and funding to address maternal obesity and the risks it presents in pregnancy.<br>19. That COVID vaccination be administered to women during pregnancy and to women contemplating pregnancy since pregnant women have an increased risk of serious disease and deaths with COVID-19 infection and their babies are at increased risk of stillbirth and premature delivery. |

| | |
|---|---|
| | 20. 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.<br>21. That Obstetric and Paediatric staff at all Tasmanian hospitals should complete the NPDCAT, either electronically (now also possible via Obstetrix) or in hard copy, at the time of the hospital Mortality and Morbidity meetings. |
| **MATERNAL** | 1. That engagement with appropriate antenatal care is undertaken soon after the diagnosis of pregnancy.<br>2. That perinatal mental health services in Tasmania be funded and supported adequately to ensure effective delivery to all women who require support.<br>3. That there is adequate investment and support for women with complex drug and alcohol presentations during pregnancy.<br>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 2019.

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 2019, 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 2019 include:

## Babies

- The number of live births recorded on the Perinatal Data System in 2019 was **5 704**, an increase of 224 (4.0 per cent) since 2018 (5 480). The total number of births including stillbirths was **5 736.**
- Males accounted for 52.1 per cent of livebirths and females 47.9 per cent.
- 54.3 per cent of babies were delivered by unassisted vaginal birth and 10.9 per cent delivered by instrumental birth.
- 34.8 per cent of babies were delivered via caesarean section (compared to 27.3 per cent in 2006).
- There were 83 episodes of multiple births, including 81 sets of twins and 2 sets of triplets.
- The proportion of low birth weight babies (less than 2 500 grams) in Tasmania was 7.5 per cent, which is higher than national figures reported in 2019 (i.e., 7.2 per cent).
- 8.9 per cent of deliveries were preterm (less than 37 weeks gestation) compared to national figures reported in 2019 of 8.6 per cent.

## Mothers

- 71.3 per cent of mothers were public patients, 27.8 per cent were private patients and 0.9 per cent were home births.
- 52.7 per cent of mothers were aged over 30 years; 3.0 per cent of mothers were under the age of 20 years, a higher proportion than the national average of 1.9 per cent in 2019.
- 42.3 per cent of mothers had their first baby and 34.5 per cent had their second baby.
- 5.7 per cent of mothers were identified as Indigenous in Tasmania compared to 4.8 per cent nationally in 2019.
- Of all women who gave birth and had a caesarean section, 50.3 per cent were elective and 49.7 per cent were emergencies.
- 86.3 per cent of mothers were breastfeeding (including partially) at maternal discharge.

# Antenatal factors

## Smoking during pregnancy

- Smoking while pregnant was reported by 16.7 per cent of all mothers and 40.7 per cent of teenage mothers.
- The smoking rate was lower in the first 20 weeks of pregnancy (13.7 per cent) than after 20 weeks of pregnancy (15.5 per cent).
- 8.9 per cent of women who reported smoking during the first 20 weeks of pregnancy did not report smoking during the last 20 weeks.
- The proportion of Tasmanian women who reported that they had smoked tobacco during pregnancy has fallen significantly since 2010 (2010: 23.0%; 2019: 16.7%; $p<0.001$).
- In 2019, 16.7 per cent of Tasmanian women reported smoking whilst pregnant, which was similar to the 2018 figure of 17.2 per cent ($p=0.491$), with 13.9 per cent reporting to have smoked 10 cigarettes or fewer per day, 2.5 per cent reporting to have smoked more than 10 cigarettes daily and 0.3 per cent reporting to have smoked an unknown number of 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 has declined significantly ($p=0.041$) since 2015 from 50.8 per cent to 40.7 per cent in 2019, with the 2019 rate being statistically similar ($p=0.293$) to that reported for 2018 (46.3 per cent). The latter was also the case for each of the other age-groups, with the respective smoking rates for mothers remaining statistically similar to the previous year.
- The maternal smoking rate for public patients has remained unchanged since 2018 at 22.0 per cent, whilst the rate for private patients was similar to that for 2018 (2018: 1.9%; 2019: 2.1%; $p=0.716$).
- 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 2019, a total of 13.3 per cent of all women who had smoked in pregnancy had an LBW baby compared to 3.9 per cent of women who reported not to have smoked, 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 2019 was 3.38 (95 per cent CI: 2.71, 4.22) in women who smoked in pregnancy compared with those who reported not to smoke.

## Alcohol consumption

- 2.5 per cent of mothers reported that they had consumed alcohol during pregnancy, statistically significantly higher ($p=0.035$) than the 2018 figure of 1.9 per cent, but similar to the 2017 rate of 2.3 per cent ($p>0.05$), with the rate being the greatest for mothers aged over 35-39 years (4.4 per cent).
- The proportion of women aged 40 years and over who reported to have consumed alcohol during pregnancy has decreased from 3.6 per cent in 2018 to 0.6 per cent in 2019; however, the difference fell just short of being statistically significant ($p=0.051$). It is important to note that the decrease from 2018 to 2019 reversed the significant increase observed from 2017 to 2018, with the 2019 figure being similar to that for 2017 (1.0 per cent).

- For 2019, the proportion of mothers electing to be private patients who reported consumption of alcohol during pregnancy was, in contrast to previous years, similar to public patients (2.4 per cent vs. 2.5 per cent), and significantly higher than in the previous 4 years.
- From the data available in 2019, overall 2.5 per cent of Tasmanian women indicated that they had consumed alcohol during their pregnancy with 2.3 per cent reporting to have consumed one or fewer standard alcoholic drinks per day and 0.2 per cent reporting to have consumed more than one alcoholic drink per day.
- Maternal alcohol consumption remains generally higher for women aged 30-39 years, but no longer for mothers aged 40 years and over.
- For women aged under 20 years, 2.3 per cent reported consuming alcohol whilst pregnant in 2019, similar to the 2018 figure of 2.9 per cent.
- In 2019, a total of 13.6 per cent of all women who had consumed alcohol during pregnancy had a LBW baby compared to 5.3 per cent of women who reported not to have consumed alcohol, a difference which was statistically significant ($p<0.001$). The relative risk of having an associated LBW baby in 2019 was 2.57 (95 per cent CI: 1.65, 4.01) in women who consumed alcohol in pregnancy compared to those who reported not having consumed alcohol. In this year, it was therefore clearly found that a strong association exits between maternal alcohol consumption and delivery of a LBW baby.

## Antenatal visits

- 86.4 per cent of women attended at least one antenatal visit before 14 weeks gestation, although 4.0 per cent of women did not receive antenatal care until after 20 weeks.

## Body Mass Index

- Based on self-reported height and weight at the first antenatal visit, over half (53.3 per cent) of the 5 651 women who gave birth in a Tasmanian facility in 2019 had a body mass index (BMI) in the overweight or obese range (25 and above) and one-quarter (27.0 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 aged 18 years and over.

## Vitamins

- Women who gave birth in a public hospital were the least likely to have taken an iodine supplement whilst pregnant (4.8 per cent). This proportion was significantly lower ($p<0.001$) than for women who gave birth in a private hospital (11.9 per cent) or outside of hospital (28.0 per cent).
- It should be noted that multivitamins which potentially contain iodine, iron, folic acid and Vitamin D might not be reported by mothers, resulting in an under-estimate of the intake for each type of supplement.
- Higher numbers of women who gave birth in Tasmania in 2019 reported to have taken an iron supplement when pregnant compared to an iodine supplement, with 13.4 per cent overall reporting to have taken supplemental iron whilst pregnant, and the highest proportions reported amongst women who gave birth outside of hospital (88.0 per cent) or in a private facility (14.8 per cent).
- In 2019, 17.8 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 outside

of hospital (24.0 per cent), compared with 19.9 per cent for women giving birth in a private facility and 16.5 per cent of women who gave birth in a public facility.

- A significant number of mothers (65.5 per cent) in 2019 reported not taking folic acid supplements at some point during pregnancy or pre-conceptually, with mothers who gave birth in a public facility or outside of 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 ($p<0.001$) proportion of those who gave birth in a public setting reported taking folic acid both pre- and post-conceptually (7.9 per cent), compared to 39.7 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 2019 (5 736) | Tasmanian rate per 1 000[(a)] in 2019 |
|---|---|---|
| Perinatal mortality | 42 | 7.3 |
| Stillbirths | 32 | 5.6 |
| Neonatal deaths | 10 | 1.8 |
| Total infant mortality (from birth to 1 year) | 17 | 3.0 |
| Non-neonatal infant mortality (>28 days post-delivery to 1 year) | 7 | 1.2 |
| Paediatric mortality | 16 | 0.14 per 1 000 children[(b)] |

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

(b) Australian Bureau of Statistics estimates no. of children <18 years in Tasmania to be 112 482 in June 2019 (Australian Bureau of Statistics 2011-2020, Australian Demographic Statistics, 'Table 56 Estimated Resident Population by Single Year of Age, Tasmania', time series spreadsheet, cat. no. 3101.0, viewed 31 May 2021, [https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/3101.0Main+Features1Jun%2020?OpenDocument]. 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 42 deaths in 2019. Ten of these deaths were neonatal deaths (liveborn infants who did not live beyond 28 days of age) and thirty-two were stillbirths. The overall perinatal mortality rate was 7.3 per 1 000 births. The neonatal mortality rate was 1.8 per 1 000 live births, with a stillbirth rate of 5.6 per 1 000 births.

In Tasmania, the perinatal mortality rate in 2019 was lower than the previous year and the reported national rate for 2019. In 2019, the national stillbirth rate was 7.2 per 1 000 births; the neonatal death rate was 2.2 per 1 000 live births; and the perinatal death rate was 9.4 per 1 000 births.

The neonatal mortality rate of 1.8 per 1 000 live births reported in Tasmania in 2019 was the lowest rate reported for Tasmania since 2010, and lower than the reported national rate for 2019.

The stillbirth rate of 5.6 per 1 000 births reported in Tasmania in 2019 was lower than the rate reported for Tasmania in 2018 (6.5 per 1 000 births), and also lower than the 2019 national rate.

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 2019 was 16 (with an estimated paediatric mortality rate of 0.14 per 1 000 persons aged 0-17 years). This rate was significantly lower ($p<0.001$) than the 2019 national paediatric mortality rate (estimated to be 0.31 per 1 000 persons aged 0-17 years).

The number of paediatric deaths in Tasmania reported in 2019 was significantly lower than reported over the last decade despite evidence of a slight (non-significant) rise in rate since 2018 (from 8.9 to 14.2 per 1 000 population).

It is concerning that one of the paediatric death cases was 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 cases of unexplained infant deaths associated with risk factors in this year highlights the need to continue to ensure that all parents and the community receive a consistent message about safe sleeping. The dangers of co-sleeping and bed-sharing with adults must be highlighted in education and messaging.

Council recommendations based on the reported paediatric death cases in 2019 are highlighted within the *COPMM Key Recommendations.*

## Maternal deaths

There was one ***late maternal death-indirect*** reported in Tasmania in 2019.

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

## 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 encourage the refinement of this system to better assist its data extraction for review and classification processes.

The public and public contracted private hospitals advised that the smoking status and pattern collected at the time of labour onset/admission or after the birth occurs was inaccurate in some records from 2011. Statewide agreement has been sought from those hospitals to use the smoking information collected from antenatal visits for reporting. Therefore, the smoking figures have been updated retrospectively and differ from the figures published in the previous reports.

The NPDCAT continues to be the preferred form to use to collect detailed information on reported stillbirths and neonatal deaths. Council has discovered that the forms that have been integrated into *ObstetrixTas* system are unfortunately out-of-date and not consistent with the NPDACT forms currently used. All Tasmanian hospitals (including all public and North 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 (https://www.health.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, Clinical Quality, Regulation and Accreditation, 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, Clinical Quality, Regulation and Accreditation, DoH;
- Obstetricians, Paediatricians and Midwives working in all parts of Tasmania;
- The State Coroner's Office and Staff;
- Statewide Forensic Medical Services;
- Office of Commissioner for Children and Young People (CCYP) Tasmania;
- The Australian Bureau of Statistics;
- Births, Deaths and Marriages;
- Health Information, Policy, Purchasing, Performance and Reform Group, DoH;
- Epidemiology Unit, Policy, Purchasing, Performance and Reform Group, DoH;
- Legal Services, DoH;
- Communications Unit, DoH;
- Neonatal Services;
- Medical Record Departments and staff in all Tasmanian hospitals;
- Royal Hobart Hospital;
- Launceston General Hospital;
- North West Private Hospital;
- Mersey Community Hospital;
- North Eastern Soldiers Memorial Hospital (Scottsdale);
- Smithton District Hospital;
- Hobart Private Hospital;
- Calvary Healthcare - Lenah Valley Campus;
- Australian and New Zealand Child Death Review and Prevention Group (ANZCDR&PG);
- 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]

---

[3] Australian Institute of Health and Welfare 2020. Stillbirth (fetal death), Canberra. Viewed 28 June 2021, https://meteor.aihw.gov.au/content/index.phtml/itemId/733271.

[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 where the cause was not immediately apparent at the time of death. 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] NSW Government Health 2019. Policy Directive #PD2019_035: *Death-Management of Sudden Unexpected Death in Infancy*. Viewed 2 July 2021, https://www1.health.nsw.gov.au/pds/ActivePDSDocuments/PD2019_035.pdf.

[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 2019 | Current Membership as of June 2021[(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<br>Dr Anagha Jayakar | Assoc. Prof Amanda Dennis<br>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** | Dr Scott McKeown | 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<br>Vacant - Commissioner for Children | Ms Kate Cuthbertson<br>Ms Leanne McLean - Commissioner for Children & Young People (CCYP) |

(a) Please note that the 3-year term (2019-2022) commenced in May 2019 with new membership reflected under “current membership”.

# Members of Committees and Support Services

| Name of Committee | Membership as of June 2019 | Current Membership as of June 2021 |
|---|---|---|
| **Maternal Mortality & Morbidity Committee** | Assoc. Prof Amanda Dennis (Chair)<br>Dr Tania Hingston<br>Ms Sue McBeath<br>Dr Kristine Barnden<br>Dr Jill Camier<br>Dr Jo Jordan (Manager, COPMM) | Assoc. Prof Amanda Dennis (Chair)<br>Dr Tania Hingston<br>Ms Sue McBeath<br>Dr Kristine Barnden<br>Dr Jill Camier<br>Dr Jo Jordan (Manager, COPMM) |
| **Paediatric Mortality & Morbidity Committee** | Dr Michelle Williams (Chair)<br>Dr Anagha Jayakar<br>Dr Chris Lawrence<br>Dr Jillian Camier<br>Dr Chris Williams<br>CCYP - Vacant<br>Dr Jo Jordan (Manager, COPMM) | Dr Michelle Williams (Chair)<br>Dr Anagha Jayakar<br>Dr Don Ritchey<br>Dr Jillian Camier<br>Dr Chris Williams<br>CCYP – Ms Leanne McLean<br>Dr Andrew Reid<br>Dr Jo Jordan (Manager, COPMM) |
| **Perinatal Mortality & Morbidity Committee** | Prof Peter Dargaville (Chair)<br>Dr Tony De Paoli<br>Dr Tania Hingston<br>Assoc. Prof Amanda Dennis<br>Ms Sue McBeath<br>Dr Kristine Barnden<br>Dr Jillian Camier<br>Dr Jo Jordan (Manager, COPMM) | Prof Peter Dargaville (Chair)<br>Dr Tony De Paoli<br>Dr Tania Hingston<br>Assoc. Prof Amanda Dennis<br>Ms Sue McBeath<br>Dr Kristine Barnden<br>Dr Jillian Camier<br>Dr Jo Jordan (Manager, COPMM) |
| **Data Management Committee** | Prof Peter Dargaville (Chair)<br>Dr Tania Hingston (RANZCOG rep)<br>Dr Michelle Williams (RACP-Paediatric Rep)<br>Mr Michael Long (Epidemiology Unit)<br>Dr Scott McKeown (DoH rep)<br>Mr Peter Mansfield (Health Information)<br>Ms Peggy Tsang (Health Information)<br>Dr Jo Jordan (Manager, COPMM) | Prof Peter Dargaville (Chair)<br>Dr Tania Hingston (RANZCOG rep)<br>Dr Michelle Williams (RACP-Paediatric Rep)<br>Dr Scott McKeown (DoH rep)<br>Mr Michael Long (Epidemiology Unit)<br>Mr Peter Mansfield (Health Information)<br>Ms Peggy Tsang (Health Information)<br>Dr Jo Jordan (Manager, COPMM) |
| **National Perinatal Data Development Committee** | Mr Peter Mansfield | Mr Peter Mansfield |
| **Executive** | Dr Jo Jordan | Dr Jo Jordan |
| **Support staff** | Ms Peggy Tsang (Health Information)<br>Mr Michael Long (Epidemiology Unit)<br>Mr Peter Mansfield (Health Information)<br>Ms Cynthia Rogers (Health Information) | Ms Peggy Tsang (Health Information)<br>Mr Michael Long (Epidemiology Unit)<br>Mr Peter Mansfield (Health Information)<br>Ms Cynthia Rogers (Health Information) |

Compilation of this 2019 Annual Report by:

Executive support staff: **Dr Jo Jordan (Clinical Quality, Regulation & Accreditation, Clinical Governance, DoH)**
**Ms Peggy Tsang, Mr Peter Mansfield and Ms Cynthia Rogers (Health Information Team, PPPR-Monitoring, Reporting & Analysis, DoH)**
**Mr Michael Long (Epidemiology Unit, PPPR-Monitoring, Reporting & Analysis, DoH)**

# 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 **42** perinatal deaths reported in Tasmania in 2019. Ten of these deaths were neonatal deaths (liveborn infants who did not live beyond 28 days of age) and thirty-two were stillbirths. The overall perinatal mortality rate was 7.3 per 1 000 births. The neonatal mortality rate was 1.8 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 has been updated from version 2.2[7] to version 3.4[8] in 2019. Table 2 shows the classification of perinatal deaths from 2015-2018 using version 2.2 and the classification perinatal deaths in 2019 using version 3.4.

[7] Flenady V, King J, Charles A, Gardener G, Ellwood D, Day K, McCowan L, Kent A, Tudehope D, Richardson R, Conway L, Chan A, Haslam R, Khong Y for the Perinatal Society of Australia and New Zealand (PSANZ) Perinatal Mortality Group 2009. PSANZ Clinical Practice Guideline for Perinatal Mortality. Version 2.2 April 2009. Viewed 30 June 2021, https://sanda.psanz.com.au/assets/Uploads/Section-7-Version-2.2-April-2009.pdf.

[8] Flenady V, Oats J, Gardener G, Masson Vicki, McCowan Lesley, Kent A, Tudehope David, Middleton P, Donnolley N, Boyle F, Horey D, Ellwood D, Gordon A, Sinclair L, Humphrey M, Zuccollo J, Dahlstrom J, Mahomed K, Henry S, Khong Y for the PSANZ Care around the time of stillbirth and neonatal death guidelines group 2020. Clinical Practice Guideline for Care Around Stillbirth and Neonatal Death. Version 3.4, NHMRC Centre of Research Excellence in Stillbirth. Brisbane, Australia, January 2020. Viewed 30 June 2021, https://stillbirthcre.org.au/wp-content/uploads/2021/03/Clinical-Practice-Guidelines-for-Care-Around-Stillbirth-and-Neonatal-Death2-2.pdf.

**Table 2: Number of perinatal deaths by PSANZ perinatal mortality classification 2015-2019[(a)]**

| Perinatal mortality classification (V2.2) | 2015 | 2016 | 2017 | 2018 | Perinatal mortality classification (V3.4) | 2019 |
|---|---|---|---|---|---|---|
| 1 Congenital anomaly | 10+9 | 20+6 | 5+9 | 14+5 | 1 Congenital anomaly | 5+2 |
| 2 Perinatal infection | 3+0 | 2+1 | 1+0 | 1+1 | 2 Perinatal infection | 0+0 |
| 3 Hypertension | 1+1 | 1+1 | 0+1 | 1+1 | 3 Hypertension | 3+0 |
| 4 Antepartum haemorrhage (APH) | 2+3 | 0+1 | 3+0 | 3+3 | 4 Antepartum haemorrhage (APH) | 1+0 |
| 5 Maternal conditions | 1+0 | 2+1 | 0+0 | 0+0 | 5 Maternal conditions | 2+0 |
| 6 Specific perinatal conditions | 5+0 | 2+1 | 0+1 | 4+3 | 6 Complications of multiple pregnancy | 1+1 |
| | | | | | 7 Specific perinatal conditions | 2+0 |
| 7 Hypoxic peripartum death | 0+3 | 2+0 | 0+0 | 0+0 | 8 Hypoxic peripartum death | 1+2 |
| 8 Fetal Growth Restriction (FGR) | 4+0 | 4+0 | 6+1 | 2+0 | 9 Placental dysfunction or causative placental pathology | 2+1 |
| 9 Spontaneous preterm | 0+7 | 3+8 | 7+4 | 8+4 | 10 Spontaneous preterm labour or rupture of membranes | 8+4 |
| 10 Unexplained antepartum deaths | 7+0 | 7+0 | 7+0 | 3+0 | 11 Unexplained antepartum fetal death | 3+0 |
| 11 No obstetric antecedent | 0+0 | 0+0 | 0+0 | 0+0 | 12 Neonatal death without obstetric antecedent | 0+0 |
| Not classified due to insufficient information | 1+0 | - | 2+0 | - | Not classified due to insufficient information | 4+0 |
| **Total** | **57** | **62** | **47** | **53** | | **42** |

(a) The + symbol indicates stillbirths plus neonatal deaths

## Basic information on stillbirths for 2019

There were **32** stillbirths for 2019 which was slightly lower than 36 stillbirths reported in the previous year. Over half of these occur in the 20-24-week gestational period. Many of these at 20 to 24 weeks gestation are associated with significant or lethal fetal malformations. 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 2011-2019**

| Gestation (weeks) | 2011 % | 2012 % | 2013 % | 2014 % | 2015 % | 2016 % | 2017 % | 2018 % | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | % | Number |
| **20-27** | 61.8 | 64.4 | 71.4 | 55.1 | 61.8 | 65.1 | 67.7 | 72.2 | **59.4** | **19** |
| **28-31** | 14.7 | 13.3 | 4.8 | 4.1 | 26.5 | 16.3 | 6.5 | 8.3 | **12.5** | **4** |
| **32-36** | 5.9 | 13.3 | 7.1 | 22.4 | 8.8 | 7.0 | 3.2 | 11.1 | **18.8** | **6** |
| **37-41** | 17.6 | 8.9 | 14.3 | 18.4 | 2.9 | 4.7 | 16.1 | 8.3 | **9.4** | **3** |
| **42 and over** | 0.0 | 0.0 | 2.4 | 0.0 | 0.0 | 7.0 | 6.5 | 0.0 | **0.0** | **0** |

**Table 4: Stillbirths reported by gestation period and PSANZ perinatal mortality classification 2019**

| Perinatal mortality classification V3.4 | 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 anomaly | 4 (83.3) | 0 (0) | 1 (2.4) | 0 (0) | 0 (0) |
| 2 Perinatal infection | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| 3 Hypertension | 0 (0) | 2 (43.5) | 1 (2.4) | 0 (0) | 0 (0) |
| 4 Antepartum haemorrhage (APH) | 1 (20.8) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| 5 Maternal conditions | 0 (0) | 0 (0) | 1 (2.4) | 1 (0.2) | 0 (0) |
| 6 Complications of multiple pregnancy | 0 (0) | 1 (21.7) | 0 (0) | 0 (0) | 0 (0) |
| 7 Specific perinatal conditions | 1 (20.8) | 0 (0) | 1 (2.4) | 0 (0) | 0 (0) |
| 8 Hypoxic peripartum death | 0 (0) | 0 (0) | 0 (0) | 1 (0.2) | 0 (0) |
| 9 Placental dysfunction or causative placental pathology | 2 (41.7) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| 10 Spontaneous preterm labour or rupture of membranes | 8 (166.7) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| 11 Unexplained antepartum fetal death | 0 (0) | 0 (0) | 2 (4.8) | 1 (0.2) | 0 (0) |
| 12 Neonatal death without obstetric antecedent | 0 (0) | 0 (0) | 0 (0) | 0 (0) | 0 (0) |
| Not classified due to insufficient information | 4 (83.3) | 0 (0) | 1 (2.4) | 0 (0) | 0 (0) |
| **Total number of stillbirths** | **19 (395.8)** | **4 (87)** | **6 (14.4)** | **3 (0.6)** | **0 (0)** |
| **Total number of babies** | **48** | **46** | **418** | **5 209** | **15** |

The data in Table 4 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. Such congenital anomalies require expert review by fetal maternal specialists or other specialists (neonatologists, paediatric cardiologists and neurosurgeons) for adequate assessment and prognosis. Some of these cases are associated with 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.

Table 4 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 have been investigated further.

**Table 5: Stillbirths by PSANZ perinatal mortality classification 2011-2019**

| Perinatal mortality classification (V2.2) | 2015 % | 2016 % | 2017 % | 2018 % | Perinatal mortality classification (V3.4) | 2019 % | 2019 Number |
|---|---|---|---|---|---|---|---|
| 1 Congenital anomaly | 29.4 | 46.5 | 16.1 | 38.9 | 1 Congenital anomaly | **15.6** | **5** |
| 2 Perinatal infection | 8.8 | 4.7 | 3.2 | 2.8 | 2 Perinatal infection | **0.0** | **0** |
| 3 Hypertension | 2.9 | 2.3 | 0.0 | 2.8 | 3 Hypertension | **9.4** | **3** |
| 4 Antepartum haemorrhage | 5.9 | 0.0 | 9.7 | 8.3 | 4 Antepartum haemorrhage (APH) | **3.1** | **1** |
| 5 Maternal conditions | 2.9 | 4.7 | 0.0 | 0.0 | 5 Maternal conditions | **6.3** | **2** |
| 6 Specific perinatal conditions | 14.7 | 4.7 | 0.0 | 11.1 | 6 Complications of multiple pregnancy | **3.1** | **1** |
| | | | | | 7 Specific perinatal conditions | **6.3** | **2** |
| 7 Hypoxic peripartum death | 0.0 | 4.7 | 0.0 | 0.0 | 8 Hypoxic peripartum death | **3.1** | **1** |
| 8 Fetal growth restriction (FGR) | 11.8 | 9.3 | 19.4 | 5.6 | 9 Placental dysfunction or causative placental pathology | **6.3** | **2** |
| 9 Spontaneous preterm labour | 0.0 | 7.0 | 22.6 | 22.2 | 10 Spontaneous preterm labour or rupture of membranes | **25.0** | **8** |
| 10 Unexplained antepartum deaths | 20.6 | 16.3 | 22.6 | 8.3 | 11 Unexplained antepartum fetal death | **9.4** | **3** |
| 11 No obstetric antecedent | 0.0 | 0.0 | 0.0 | 0.0 | 12 Neonatal death without obstetric antecedent | **0.0** | **0** |
| Not classified due to insufficient information | 2.9 | 0.0 | 6.5 | 0.0 | Not classified due to insufficient information | **12.5*** | **4** |

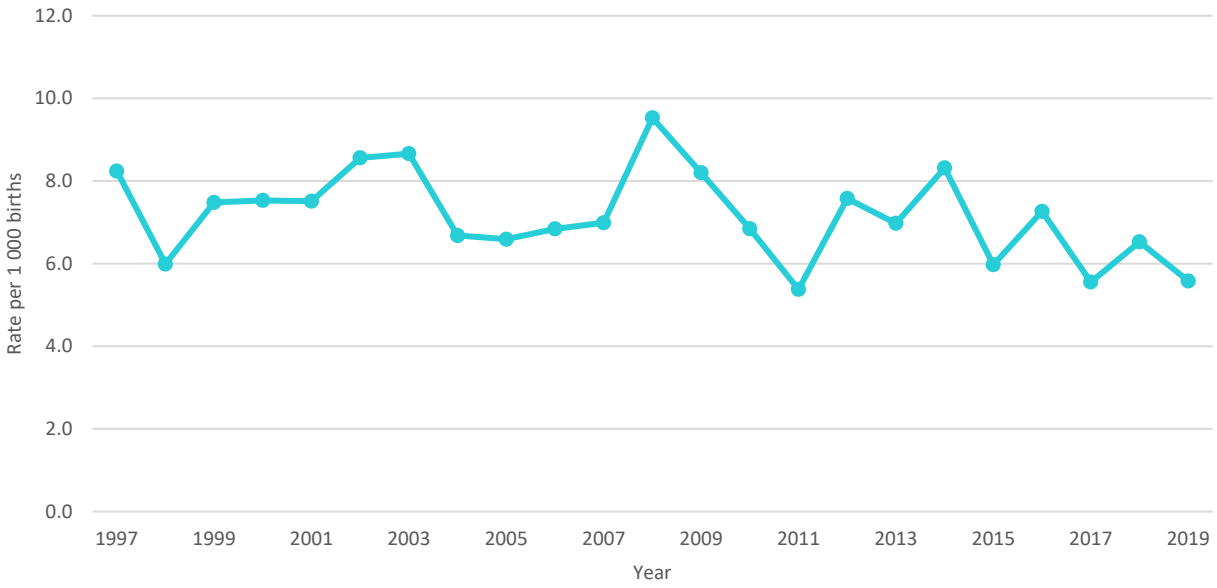
***COPMM seeks to encourage primary carers to submit completed NPDCATs to improve the case classification process**

Over the period of 1997 to 2019 the stillbirth rate has dropped from 8.2 to 5.6 per 1 000 births, corresponding to a non-statistically significant average annual decrease of 0.86 per cent (p=0.074).

**Table 6: Number of stillbirths and stillbirth rate per 1 000 births 1997-2019**

| Year | Number | Births | Rate per 1 000 births |
|---|---|---|---|
| 1997 | 52 | 6 309 | 8.2 |
| 1998 | 37 | 6 171 | 6.0 |
| 1999 | 46 | 6 145 | 7.5 |
| 2000 | 45 | 5 975 | 7.5 |
| 2001 | 43 | 5 726 | 7.5 |
| 2002 | 49 | 5 714 | 8.6 |
| 2003 | 48 | 5 545 | 8.7 |
| 2004 | 37 | 5 540 | 6.7 |
| 2005 | 42 | 5 965 | 6.6 |
| 2006 | 45 | 6 184 | 6.8 |
| 2007 | 46 | 6 337 | 7.0 |
| 2008 | 60 | 6 461 | 9.5 |
| 2009 | 56 | 6 381 | 8.2 |
| 2010 | 42 | 6 137 | 6.8 |
| 2011 | 34 | 6 323 | 5.4 |
| 2012 | 45 | 5 940 | 7.6 |
| 2013 | 42 | 6 021 | 7.0 |
| 2014 | 49 | 5 892 | 8.3 |
| 2015 | 34 | 5 693 | 6.0 |
| 2016 | 43 | 5 920 | 7.3 |
| 2017 | 31 | 5 581 | 5.6 |
| 2018 | 36 | 5 516 | 6.5 |
| **2019** | **32** | **5 736** | **5.6** |

**Figure 1: Stillbirth rate per 1 000 births for Tasmania 1997-2019**




## Recommendations

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 ongoing education be provided to all maternity care providers with regard to prenatal testing for fetal conditions. (This should include the efficacy and latest recommendations for utilisation of pre-pregnancy screening for inherited conditions, combined first trimester aneuploidy screening, Non-Invasive Prenatal testing (NIPT), early ultrasound and invasive testing as well as the limitations of each test. Education should also include guidelines for referral to specialty services and/or genetic counselling).
5. That general practitioners be updated on the benefits of early referral for all pregnant women to antenatal services for triage, ideally by the end of the first trimester (14 weeks) to allow for appropriate time to start aspirin or institute cervical length screening in women who are at risk.
6. That women deemed at risk of premature labour are managed by a dedicated team using evidence-based strategies.
7. That all women are assessed for risk of preterm delivery at the time of morphology scanning with an appropriate measurement of cervical length.
8. That sonographers and radiologists are familiar with the guidelines for measuring cervical length appropriately.
9. That hospital funded NIPT should be offered to women who have a prior increased likelihood of Trisomy 21 based on maternal age (>40years) or past history.

10. That hospital funded NIPT should be offered as a second line screen for women who have a combined first trimester screen risk result for Trisomy between 1:50 and 1:250, or greater than background risk based on age. Women who have combined first trimester screen risk higher than 1:250 should be given the option of a diagnostic test (chorionic villous sampling or amniocentesis) rather than NIPT.
11. That patients considering NIPT as a second line screen should be appropriately counselled on the limitations of NIPT by a medical practitioner experienced in the management of high-risk pregnancies or a genetic counsellor.
12. Hospital funded NIPT should not be offered to women who have a fetus with a structural abnormality on ultrasound, Combined First Trimester Screening (cFTS) risk >1:50, nuchal translucency ≥3.5mm, or extremes of biochemistry (PAPP-A < 0.2MoM, BHCG < 0.2MoM or >5MoM). For these women, diagnostic testing with chorionic villous sampling or amniocentesis should be recommended due to the increased likelihood of genetic anomalies not detectable by NIPT.
13. That women who test high risk for Trisomy 13 or 18 on cFTS should be referred to a medical practitioner experienced in the management of high-risk pregnancies or a genetic counsellor. Hospital funded NIPT may be offered on a case by case basis.
14. 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.
15. 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.
16. That all providers are supported in provision of appropriate investigations for reduced fetal movements.
17. That all women who smoke during pregnancy are actively encouraged and supported to stop.
18. That there is ongoing research and funding to address maternal obesity and the risks it presents in pregnancy.
19. That COVID vaccination be administered to women during pregnancy and to women contemplating pregnancy since pregnant women have an increased risk of serious disease and deaths with COVID-19 infection and their babies are at increased risk of stillbirth and premature delivery.
20. 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.
21. That Obstetric and Paediatric staff at all Tasmanian hospitals should complete the NPDCAT, either electronically (now also possible via Obstetrix) or in hard copy, at the time of the hospital Mortality and Morbidity meetings.

## Basic information on neonatal deaths for 2019

There was a total of **10** neonatal deaths.

**Table 7: Neonatal deaths by PSANZ perinatal mortality classification 2015-2019**

| Perinatal mortality classification (V2.2) | 2015 % | 2016 % | 2017 % | 2018 % | Perinatal mortality classification (V3.4) | 2019 | |
|---|---|---|---|---|---|---|---|
| | | | | | | % | Number |
| 1 Congenital anomaly | 39.1 | 31.6 | 56.3 | 29.4 | 1 Congenital anomaly | **20.0** | **2** |
| 2 Perinatal infection | 0.0 | 5.3 | 0.0 | 5.9 | 2 Perinatal infection | **0.0** | **0** |
| 3 Hypertension | 4.3 | 5.3 | 6.3 | 5.9 | 3 Hypertension | **0.0** | **0** |
| 4 Antepartum haemorrhage | 13.0 | 5.3 | 0.0 | 17.6 | 4 Antepartum haemorrhage (APH) | **0.0** | **0** |
| 5 Maternal conditions | 0.0 | 5.3 | 0.0 | 0.0 | 5 Maternal conditions | **0.0** | **0** |
| 6 Specific perinatal conditions | 0.0 | 5.3 | 6.3 | 17.6 | 6 Complications of multiple pregnancy | **10.0** | **1** |
| | | | | | 7 Specific perinatal conditions | **0.0** | **0** |
| 7 Hypoxic peripartum death | 13.0 | 0.0 | 0.0 | 0.0 | 8 Hypoxic peripartum death | **20.0** | **2** |
| 8 Fetal growth restriction (FGR) | 0.0 | 0.0 | 6.3 | 0.0 | 9 Placental dysfunction or causative placental pathology | **10.0** | **1** |
| 9 Spontaneous preterm labour | 30.4 | 42.1 | 25.0 | 23.5 | 10 Spontaneous preterm labour or rupture of membranes | **40.0** | **4** |
| 10 Unexplained antepartum deaths | 0.0 | 0.0 | 0.0 | 0.0 | 11 Unexplained antepartum fetal death | **0.0** | **0** |
| 11 No obstetric antecedent | 0.0 | 0.0 | 0.0 | 0.0 | 12 Neonatal death without obstetric antecedent | **0.0** | **0** |
| Not classified due to insufficient information | 13.0 | 0.0 | 0.0 | 0.0 | Not classified due to insufficient information | **0.0** | **0** |

**Table 8: Neonatal deaths by PSANZ neonatal mortality classification 2015-2019**

| Neonatal death classification (V2.2) | 2015 % | 2016 % | 2017 % | 2018 % | Neonatal death classification (V3.4) | 2019 | |
|---|---|---|---|---|---|---|---|
| | | | | | | % | Number |
| 1 Congenital anomaly | 43.5 | 31.6 | 56.3 | 29.4 | 1 Congenital anomaly | **20.0** | **2** |
| 2 Extreme prematurity | 30.4 | 42.1 | 37.5 | 47.1 | 2 Periviable infants | **0.0** | **0** |
| 3 Cardio-respiratory disorders | 0.0 | 0.0 | 0.0 | 17.6 | 3 Cardio-respiratory disorders | **10.0** | **1** |
| 4 Infection | 4.3 | 10.5 | 0.0 | 0.0 | 4 Infection | **20.0** | **2** |
| 5 Neurological | 13.0 | 10.5 | 0.0 | 5.9 | 5 Neurological | **20.0** | **2** |
| 6 Gastrointestinal | 8.7 | 0.0 | 6.3 | 0.0 | 6 Gastrointestinal | **20.0** | **2** |
| 7 Other | 0.0 | 5.3 | 0.0 | 0.0 | 7 Other | **10.0** | **1** |

## CONGENITAL ABNORMALITIES

In 2019 the two congenital abnormalities were comprised of congenital diaphragmatic hernia and genetic condition (achondrogenesis type II - autosomal dominant lethal condition).

## EXTREME PREMATURITY

Extreme prematurity was classified as the neonatal cause of death in no cases in 2019.

## ISSUES

The review of neonatal mortality identified the following issues:

- Tasmania's neonatal mortality rate in 2019 was 1.8 per 1 000 live births (2018 Tasmanian rate, 3.1 per 1 000 live births). The 2019 national neonatal mortality rate was 2.2 per 1 000 live births with a range across states and territories from 1.4 per 1 000 live births to 3.9 per 1 000 live births[9].
- In 2020 additional junior medical staff and nursing staff have been employed via funding to Ambulance Tasmania to improve the quality of care and the time to retrieval for the Newborn Emergency Transport Service. This will reduce the risks to infants requiring retrieval to neonatal tertiary care centres, mostly the RHH Neonatal and Paediatric ICU.
- Ongoing efforts are underway to improve communication pathways between Obstetric and Paediatric staff statewide in the management of difficult perinatal cases in order to optimise care and facilitate the delivery of very preterm and other high-risk babies in a tertiary centre whenever feasible and safe.
- There remains a high rate of smoking amongst pregnant women, including mothers of preterm infants.

[9] Australian Institute of Health and Welfare 2021. Australia's mothers and babies. Cat. no. PER 101. Canberra: AIHW. Viewed 28 June 2021, https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies.

## Recommendations

1. As in previous years, smoking and other substance abuse remains an adverse risk factor in several neonatal deaths following extremely preterm birth. As always pregnant women should be encouraged to stop smoking cigarettes and taking other substances of abuse at all opportunities.
2. Evidence based endeavours to reduce the rate of preterm birth (e.g., the Australian Preterm Birth Prevention Alliance), and thus reduce perinatal morbidity and mortality, should be supported and funded.
3. Obstetric and Paediatric staff at all Tasmanian hospitals should complete the NPDCAT, either electronically or in hard copy, at the time of the hospital Mortality and Morbidity meetings.

# Paediatric Mortality & Morbidity Committee

## Paediatric deaths for 2019

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 2019 was **16**, with an estimated paediatric mortality rate of 0.14 per 1 000 persons aged 0-17 years. Due to the relatively small number of paediatric deaths, paediatric mortality is classified using a broad four category classification system. Deaths are classified as being due to a condition determined at birth, an acquired condition, a sudden unexplained infant death (SUDI) or due to an injury.

The total number of deaths due to sudden unexplained infant deaths continued to remain stable 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 2019 was **five (**noting that one case had been a subject of a Child Protection Order made by a court in Victoria**)**. 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 2010 to 2019 have been classified below.

**Table 9: Paediatric deaths 2010-2019**

| Cause of death | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019[b] |
|---|---|---|---|---|---|---|---|---|---|---|
| Conditions determined at birth | 7 | 5 | 5 | 4 | 5 | 1 | 1 | 4 | 1 | **4** |
| Acquired conditions | 10 | 4 | 9 | 8 | 6 | 4 | 8 | 2 | 4 | **7** |
| Unexplained Infant Deaths | 7 | 5 | 2 | 6 | 3 | 2 | 2[a] | 2[a] | 3[a] | **2** |
| Injuries | 12 | 3 | 5 | 7 | 10 | 5 | 9 | 14 | 2 | **3**[c] |
| Unknown/Indeterminate | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **0** |
| Still under investigation | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **0** |
| **TOTAL** | **37** | **18** | **21** | **26** | **24** | **12** | **20** | **22** | **10** | **16** |

(a) All cases having been identified as being associated with risk factors such as unsafe sleeping.

(b) Includes one child not resident of Tasmania, dying in Tasmania.

(c) Note that an extra case not recorded in the Tasmanian death list was that of a 13 years old male adolescent who died as a result of severe abdominal injuries following a motorcycle accident in Tasmania where this adolescent had been transferred to Launceston General Hospital for surgery but later transferred to Royal Children's Hospital in Melbourne, Victoria where he died.

**Table 10: Origin of injury leading to paediatric death 2019**

| Origin of injury | Number |
|---|---|
| Motor Vehicle Accident | 2 |
| Suspected suicide | 1 |

In 2018, infants (children under one year) had the highest rates of child deaths in all jurisdictions accounting for 60 per cent of all child deaths nationally. While the child mortality rates were found to decrease substantially after infancy, mortality rates increased during adolescent years with the second highest mortality rates recorded for young people aged 15 to 17 years. The Northern Territory recorded the highest child mortality rate (67.1 deaths per 100 000 children aged 0-17 years), followed by the Australian Capital Territory (43.9 per 100 000). Tasmania had the lowest child mortality rate (24.1 per 100 000) in this year[10].

Deaths from diseases and morbid conditions accounted for 70.7 per cent of all child deaths in 2018 (excluding New Zealand), with infants (children aged less than one year) exhibiting the highest mortality rate from diseases and morbid conditions in all jurisdictions. In 2018, suicide was the leading external cause of death in Queensland, Victoria, and New Zealand. Suicide and transport-related incidents were the equal leading external causes of death in South Australia and transport-related incidents was the leading external cause of death in New South Wales and Western Australia. In 2018, New Zealand had the highest rate of external-cause deaths (9.7 per 100 000), followed by Northern Territory (8.0 per 100 000). In 2018, it was also found that Northern Territory had the highest rate of infant deaths from Sudden Infant Death Syndrome (SIDS) and undetermined causes (1.0 per 1000 livebirths), followed by New Zealand (0.5 per 1000 livebirths)[10].

Overall, the number of infant (less than 1 year old) deaths in Australia in 2019 where the cause of death was ill-defined and unknown, including deaths due to SIDS, was 112 or a rate of 0.4 deaths per 1 000 livebirths[11].

## CONDITIONS DETERMINED AT BIRTH

In 2019 there were 3 deaths reported in children ranging from 1 month to 14 years. These include:

- One case due to an identified congenital abnormality of the brain and subsequent respiratory failure (age 1 month).
- One case of an infant who suffered from trisomy 18 (age 9 months).
- One case due to myoclonic epilepsy with ragged red fibres in an adolescent (age 14 years).

[10] The State of Queensland (Queensland Family and Child Commission), 2020, Australian and New Zealand Child Death Statistics, 2018. Supplementary Chapter, Annual Report: Deaths of Children and Young People, Queensland, 2019-20. Viewed 3 August 2021, https://www.qfcc.qld.gov.au/sites/default/files/2021-03/AustraliaandNewZealandchilddeathstatistics2018.PDF.

[11] Australian Bureau of Statistics, 2020, *Causes of Death, Australia, 2019*, cat.no. 3303.0 Canberra: ABS. Viewed 28 June 2021, https://www.abs.gov.au/statistics/health/causes-death/causes-death-australia/2019.

## ACQUIRED CONDITIONS

In 2019 there were 8 deaths in children ranging from 2 months to 13 years. These included:

- One case due to a septic shock, bone marrow suppression, CMV infection, past necrotising enterocolitis and extreme prematurity (GA 26 weeks) (age 2 months).
- One case due to relapse of acute lymphoblastic leukaemia, febrile neutropenia (age 6 years).
- One case due to hypoxic brain injury, cardiorespiratory arrest and presumed sepsis (E. coli) in a child who had multiple congenital abnormalities (VACTERL sequence) (age 3 years).
- One case due to effects of three different viruses including parainfluenza, rhinovirus and viral pneumonia where myocarditis had also been identified (age 5 months).
- One case due to metastatic bone tumour (age 13 years).
- One case due to infantile glioblastoma (GBM-brain tumour) (age 2 years).
- One case known to have had a congenital abnormality condition with splenic stricture and subsequent bowel obstruction and septic shock but whose death culminated from complications following surgery (1 month).
- One case of a child visiting from Victoria who had died as a result of acute exacerbation of chronic asthma (age 8 years).

## UNEXPLAINED INFANT DEATH

In 2019, the number of reported 'unexplained infant deaths' remained steady with recent years with a total of two infants reported in this category aged between 1 month to 4 months. Both cases were found to have been 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 particular, one infant had also been identified as possibly suffering from probable asphyxia due to overlaying by a co-sleeping adult following bed-sharing.

## INJURY

The number of children dying in 2019 as a result of injury remained low with a total of three paediatric death cases having been reviewed in this year.

The first case involved a 9-year-old who died as a result of suffering from mechanical asphyxia after having been trapped beneath an all-terrain vehicle (ATV) quad bike following a rollover crash. Similarly, a 17-year-old adolescent died from severe injuries sustained following a fatal motorcycle accident.

It continues to remain a concern to find a paediatric death 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.

## CASES STILL UNDER INVESTIGATION

Nil.

## UNKNOWN/INDETERMINATE

Nil.

## SUMMARY

The number of paediatric deaths in Tasmania reported in 2019, although higher than the previous year, was still at a lower level than previously reported in the past decade. The report of a case associated with injuries arising from self-harm remains a concern and the recommendations outlined previously in relation to youth suicide continue to be supported reiterated in this report.

Furthermore, the finding of two additional cases of unexplained infant death associated with risk factors in this year highlights the need 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.

## Recommendations

### 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 recommended the following: (1) Take the statement 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 contact 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/
2. Youth Beyond Blue have also developed the check in app (https://www.beyondblue.org.au/about-us/about-our-work/young-people/the-check-in-app), to assist young people who are concerned about a friend but worried about saying the wrong thing.
3. 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.
4. COPMM supports the Coroner's recommendation that the Media, in publishing articles and editorial on suicide, ensure complete compliance with Mindframe Guidelines.
5. That the Media clearly outline appropriate and available support helplines at the time of reporting on paediatric deaths that have been related to suicidal behaviour.
6. 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.

7. That age-appropriate and accessible mental health services and facilities be established and resourced for adolescents as part of an improved Mental Health Service.
8. That all jurisdictions consider using a consistent national classification system for review of paediatric deaths.

### 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 forensic death scene examinations be undertaken to establish whether the cause of death is due to overlying[12].

### 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.
2. 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.
3. That recommendations from the Royal Children's Hospital (Melbourne)[13] be supported where it is suggested that children be encouraged to sit in the back seat of the car until they reach the age of 13 years and that a child should be taller than 145cm before transitioning out of a booster seat where they will need to pass a five-step test before they are big enough to use an adult seatbelt. The five-step test includes:
    - 3.1 Sit with their backs firmly against the seat back
    - 3.2 Bend knees comfortably over the front of the seat cushion
    - 3.3 Sit the sash belt across their mid-shoulder
    - 3.4 Sit with the lap belt across the top of their thighs
    - 3.5 Stay in this position for the whole car trip.
4. 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.

[12] 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.

[13] The Royal Children's Hospital Melbourne (15 May 2019), Car Seat safety: are Australian children safe? https://www.rchpoll.org.au/polls/car-seat-safety-are-australian-children-safe/

5. 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.
6. That COPMM support the Royal Australasian College of Surgeons view that quad bikes/ATVs and kids are a deadly mix, and all Australian children need to be banned from using these “death traps” with the support and action by all Australian jurisdictions.

### Children and Asthma:

1. That a statewide protocol for children and young people with acute severe asthma be developed for Tasmania.
2. That Council supports the Coroner’s recommendation that when administering salbutamol to children, it is important to ensure that the drug is administered correctly using a spacer. Guidance in this regard is available from chemists and Asthma Australia’s website.

# Maternal Mortality & Morbidity Committee

## Maternal deaths for 2019

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 case of a 30-year-old ***late maternal death-Indirect*** (as it was not puerperal psychosis) reported in Tasmania in 2019. This death was in a patient with a history of pre-pregnancy depression, suicide attempt/self-harm and illicit drug use. Cause of death was hanging, an action sadly taken by this woman alone with the intention of ending her life 8 months after delivery of her baby.

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 2019, 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 (https://www.amoss.com.au/index.html) became operational at the end of July 2009.

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

**Recommendations**

1. That 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 2019 and beyond.

***Data collection form***

The NPDCAT continues to be the preferred form to use to collect detailed information on reported stillbirths and neonatal deaths in view of the current deficiencies in stillbirth and neonatal death forms on the *ObstetrixTas* system. Council has been advised that the old 2012 version of the NPDCAT form that had been recently integrated into the *ObstetrixTas* system, unfortunately does not include some of the key questions in Section 2 that are required for national reporting. As such, clinicians have opted to continue to use the hard copy of the later version of the NPDACT and not the *ObstetrixTas* electronic version. Unfortunately, this matter remains unresolved.

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 continued 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 of hospital). 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.health.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 2019. 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 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 2019 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 11: Live births and birth rates in Tasmania 2015-2019**

| Year[a] | Number of live births | Birth rate per 1 000 population[b] | Number of total births | Number of total pregnancies |
|---|---|---|---|---|
| 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** |
| 2018 | 5 480 | 10.4 | 5 516 | **5 436** |
| **2019** | **5 704** | **10.7** | **5 736** | **5 651** |

(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 534 575 in June 2019 (Australian Bureau of Statistics, 2020, Australian Demographic Statistics, 'Table 56 Estimated Resident Population by Single Year of Age, Tasmania, cat. no. 3101.0, viewed 28 April 2021, https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release#data-download).

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 2019, this trend reversed, with a statistically significant (p<0.001) annual decline of 1.8 per cent per annum from 12.9 to 10.7 per 1 000 population. The 2019 birth rate was similar (p=0.138) to the 2018 figure of 10.4 per 1 000 population, following a statistically significant decline (p=0.002) from 2015 to 2018.

**Figure 2: Birth rate for Tasmania per 1 000 head of population 2005-2019**

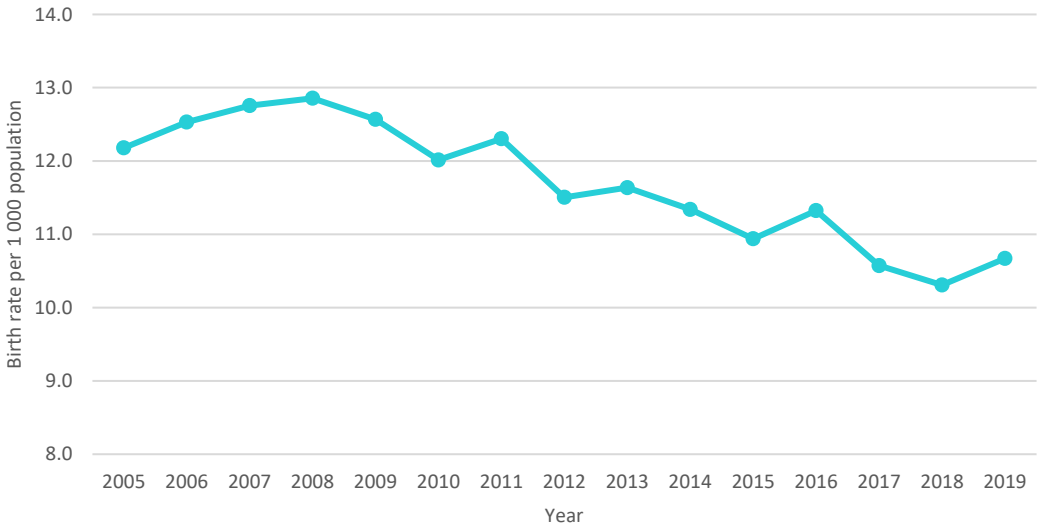


**Table 12: Live births by region 2015-2019**

| Year | South | | North | | Northwest | | Interstate | | Total live births |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | |
| 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** |
| 2018 | 2 878 | 52.5 | 1 495 | 27.3 | 1 101 | 20.1 | 6 | 0.1 | **5 480** |
| **2019** | **3 068** | **53.8** | **1 499** | **26.3** | **1 129** | **19.8** | **8** | **0.1** | **5 704** |

An increase in the number of births was reported in all three Tasmanian regions in 2019, with the Southern region reporting the greatest increase (6.6 per cent) since 2018, followed by the North West region at 2.5 per cent. The number of births in the Northern region was essentially the same as last year.

**Table 13: Live births by birth setting 2015-2019**

| Year | Royal Hobart (QAH) | Launceston General (QVH) | District hospitals | Mersey Community | Private hospitals[(a)] | Others (including homebirths) | Total live births |
|---|---|---|---|---|---|---|---|
| **Number** | | | | | | | |
| 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** |
| 2018 | 1 891 | 1 589 | 2 | 0 | 1 951 | 47 | **5 480** |
| **2019** | **1 984** | **1 585** | **5** | **0** | **2 080** | **50** | **5 704** |
| **Percentage** | | | | | | | |
| 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** |
| 2018 | 34.5 | 29.0 | 0.0 | 0.0 | 35.6 | 0.9 | **100.0** |
| **2019** | **34.8** | **27.8** | **0.1** | **0.0** | **36.5** | **0.9** | **100.0** |

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

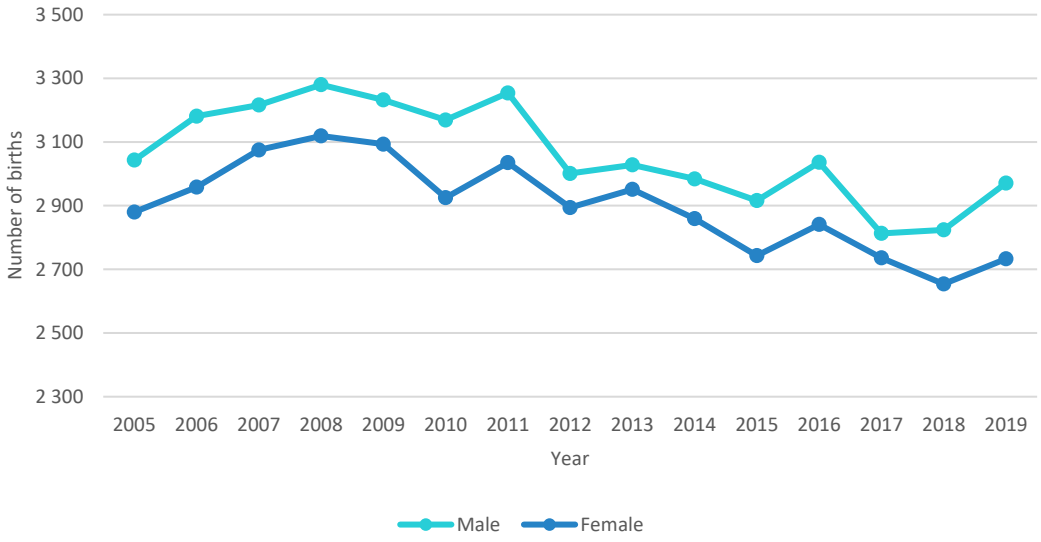
# Sex of livebirths

**Table 14: Live births by sex 2015-2019**

| Year | Male | | Female | | Indeterminate | | Total live births |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | |
| 2015 | 2 916 | 51.5 | 2 743 | 48.5 | 0 | 0.0 | **5 659** |
| 2016 | 3 036 | 51.7 | 2 841 | 48.3 | 0 | 0.0 | **5 877** |
| 2017 | 2 813 | 50.7 | 2 736 | 49.3 | 1 | ^ | **5 550** |
| 2018 | 2 824 | 51.5 | 2 654 | 48.4 | 2 | ^ | **5 480** |
| **2019** | **2 971** | **52.1** | **2 733** | **47.9** | **0** | **0.0** | **5 704** |

^ Less than 0.1 per cent.

**Figure 3: Live births by sex 2005-2019**




Male births continue to exceed female births, accounting for 52.1 per cent of all Tasmanian livebirths in 2019 compared to 47.9 per cent (sex ratio: 108.7). This finding is comparable to national trends reported in 2019 with the national sex ratio for live births being 105.9 male liveborn babies for every 100 female liveborn babies.

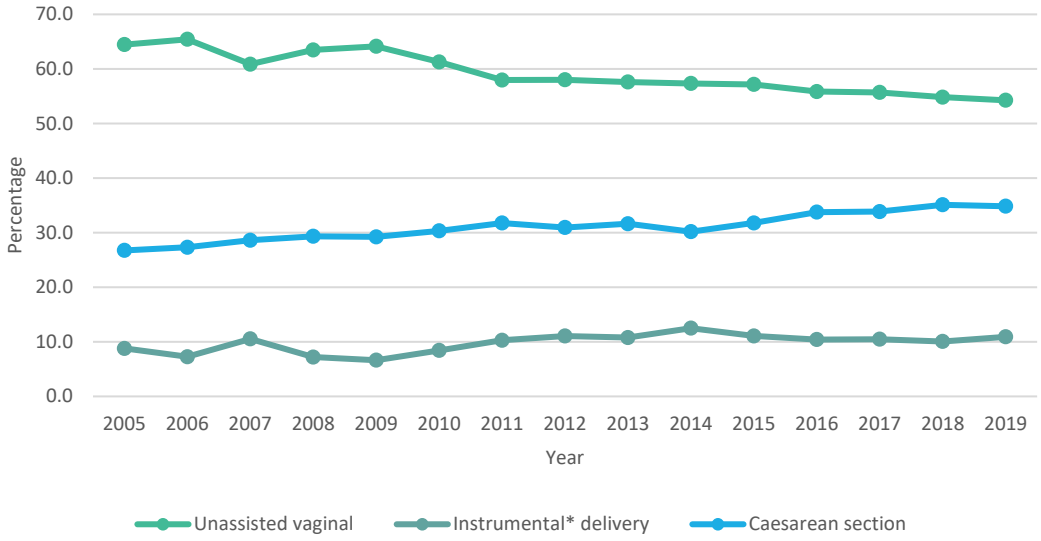
# Mode of delivery

**Table 15: Births by mode of delivery 2015-2019**

| Year | Unassisted vaginal | | Instrumental[(a)] delivery | | Caesarean section | | Total births |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | |
| 2015 | 3 254 | 57.2 | 630 | 11.1 | 1 809 | 31.8 | **5 693** |
| 2016 | 3 306 | 55.8 | 616 | 10.4 | 1 998 | 33.8 | **5 920** |
| 2017 | 3 108 | 55.7 | 584 | 10.5 | 1 889 | 33.8 | **5 581** |
| 2018 | 3 024 | 54.8 | 555 | 10.1 | 1 937 | 35.1 | **5 516** |
| **2019** | 3 112 | 54.3 | 626 | 10.9 | 1 998 | 34.8 | **5 736** |

(a) Instrumental delivery includes forceps, forceps rotation, vacuum extraction and vaginal breech with forceps to the after coming head.

**Figure 4: Births by mode of delivery 2005-2019**




* Instrumental delivery includes forceps, forceps rotation, vacuum extraction and vaginal breech with forceps to the after coming head.

**Table 16: Births by mode of delivery and gestation 2015-2019[(a)]**

| Gestation in weeks | Year | Vaginal delivery | | Caesarean section | | Total |
|---|---|---|---|---|---|---|
| | | n | % | n | % | n |
| 20 – 27 | 2015 | 38 | 67.9 | 18 | 32.1 | **56** |
| | 2016 | 56 | 77.8 | 16 | 22.2 | **72** |
| | 2017 | 37 | 68.5 | 17 | 31.5 | **54** |
| | 2018 | 47 | 81.0 | 11 | 19.0 | **58** |
| | **2019** | **26** | **55.3** | **21** | **44.7** | **47** |
| 28 – 31 | 2015 | 32 | 45.7 | 38 | 54.3 | **70** |
| | 2016 | 18 | 28.6 | 45 | 71.4 | **63** |
| | 2017 | 12 | 30.8 | 27 | 69.2 | **39** |
| | 2018 | 14 | 25.0 | 42 | 75.0 | **56** |
| | **2019** | **25** | **53.2** | **22** | **46.8** | **47** |
| 32 - 36 | 2015 | 245 | 48.4 | 261 | 51.6 | **506** |
| | 2016 | 249 | 46.8 | 283 | 53.2 | **532** |
| | 2017 | 250 | 48.0 | 271 | 52.0 | **521** |
| | 2018 | 191 | 42.8 | 255 | 57.2 | **446** |
| | **2019** | **200** | **47.8** | **218** | **52.2** | **418** |
| 37 - 41 | 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** |
| | 2018 | 3 314 | 67.1 | 1 625 | 32.9 | **4 939** |
| | **2019** | **3 478** | **66.8** | **1 731** | **33.2** | **5 209** |
| 42 and over | 2015 | 21 | 84.0 | 4 | 16.0 | **25** |
| | 2016 | 11 | 84.6 | 2 | 15.4 | **13** |
| | 2017 | 9 | 69.2 | 4 | 30.8 | **13** |
| | 2018 | 13 | 76.5 | 4 | 23.5 | **17** |
| | **2019** | **9** | **60.0** | **6** | **40.0** | **15** |

(a) A vaginal birth had unknown gestation in 2015.

**Table 17: Births by caesarean section following induction of labour 2015-2019**

| Year | Births by caesarean section | Induction of labour with caesarean section delivery | |
|---|---|---|---|
| | | n | % |
| 2015 | 1 809 | 343 | 19.0 |
| 2016 | 1 998 | 429 | 21.5 |
| 2017 | 1 889 | 404 | 21.4 |
| 2018 | 1 937 | 402 | 20.8 |
| **2019** | **1 998** | **409** | **20.5** |

The percentage of CS deliveries that followed induction of labour has remained relatively steady over the years from 19.0 per cent in 2015 to 20.5 per cent in 2019 (see Table 17).

**Table 18: Births by caesarean section following augmentation of labour 2015-2019**

| Type of augmentation | Year | Primary | Repeat | Proportion of all augmentations |
|---|---|---|---|---|
| ARM[(a)] only | 2015 | 34 | 26 | 8.8 |
| | 2016 | 38 | 22 | 9.4 |
| | 2017 | 48 | 21 | 12.7 |
| | 2018 | 41 | 25 | 12.4 |
| | **2019** | **42** | **27** | **11.9** |
| Oxytocin only | 2015 | 6 | 1 | 17.5 |
| | 2016 | 36 | 2 | 27.0 |
| | 2017 | 29 | 0 | 21.2 |
| | 2018 | 23 | 1 | 18.9 |
| | **2019** | **21** | **0** | **22.3** |
| Oxytocin and ARM[(a)] | 2015 | 63 | 3 | 20.4 |
| | 2016 | 62 | 2 | 19.3 |
| | 2017 | 51 | 0 | 16.0 |
| | 2018 | 57 | 1 | 20.6 |
| | **2019** | **85** | **7** | **24.5** |

(a) ARM = Artificial Rupture of Membranes

## Presentation at birth

Table 19 below shows that the number of vaginal breech presentations in 2019 was similar to that reported in the previous years.

**Table 19: Births by presentation at vaginal delivery only 2015-2019**

| Year | Vertex | | Face and brow | | Breech | | Other | | Total vaginal births |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n |
| **2015** | 3 823 | 98.4 | 8 | 0.2 | 35 | 0.9 | 18 | 0.5 | **3 884** |
| **2016** | 3 866 | 98.6 | 6 | 0.2 | 29 | 0.7 | 21 | 0.5 | **3 922** |
| **2017** | 3 637 | 98.5 | 1 | ^ | 27 | 0.7 | 27 | 0.7 | **3 692** |
| **2018** | 3 529 | 98.6 | 6 | 0.2 | 32 | 0.9 | 12 | 0.3 | **3 579** |
| **2019** | **3 682** | **98.5** | **4** | **0.1** | **27** | **0.7** | **25** | **0.7** | **3 738** |

^ Less than 0.1 per cent

**Table 20: Births by presentation via caesarean section delivery 2015-2019**

| Year | Vertex | | Face and brow | | Breech | | Other | | Total CS births |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n |
| 2015 | 1 601 | 88.5 | 9 | 0.5 | 175 | 9.7 | 24 | 1.3 | **1 809** |
| 2016 | 1 757 | 87.9 | 5 | 0.3 | 202 | 10.1 | 34 | 1.7 | **1 998** |
| 2017 | 1 671 | 88.5 | 11 | 0.6 | 181 | 9.6 | 26 | 1.4 | **1 889** |
| 2018 | 1 704 | 88.0 | 5 | 0.3 | 190 | 9.8 | 38 | 2.0 | **1 937** |
| **2019** | **1 762** | **88.2** | **11** | **0.6** | **207** | **10.4** | **18** | **0.9** | 1 998 |

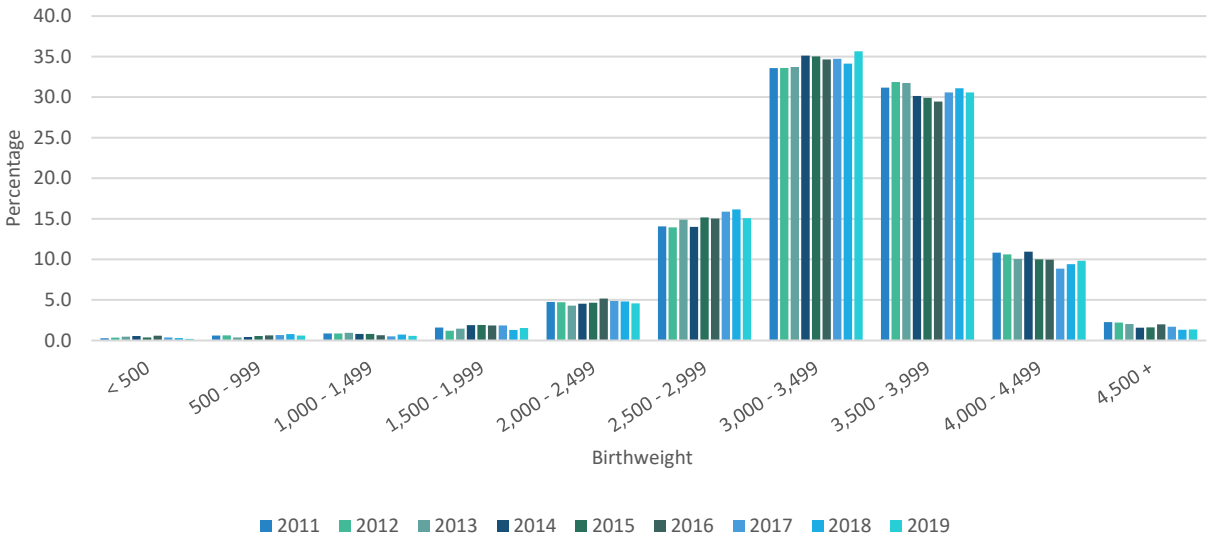
The percentage of caesareans in 2019 at which the presenting part was breech was 10.4 percent, which is the highest in the most recent 5 years but remains generally similar to previous years.

# Birthweight

**Table 21: Births by birthweight groups 2015-2019**

| Birthweight groups | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| < 500 | 21 | 0.4 | 35 | 0.6 | 21 | 0.4 | 16 | 0.3 | 11 | 0.2 |
| 500 - 999 | 31 | 0.5 | 37 | 0.6 | 37 | 0.7 | 43 | 0.8 | 35 | 0.6 |
| 1,000 - 1,499 | 46 | 0.8 | 39 | 0.7 | 29 | 0.5 | 40 | 0.7 | 33 | 0.6 |
| 1,500 - 1,999 | 109 | 1.9 | 110 | 1.9 | 103 | 1.8 | 72 | 1.3 | 88 | 1.5 |
| 2,000 - 2,499 | 265 | 4.7 | 306 | 5.2 | 272 | 4.9 | 265 | 4.8 | 263 | 4.6 |
| 2,500 - 2,999 | 864 | 15.2 | 890 | 15.0 | 886 | 15.9 | 891 | 16.2 | 865 | 15.1 |
| 3,000 - 3,499 | 1 993 | 35.0 | 2 051 | 34.6 | 1 938 | 34.7 | 1 882 | 34.1 | 2 045 | 35.7 |
| 3,500 - 3,999 | 1 703 | 29.9 | 1 744 | 29.5 | 1 706 | 30.6 | 1 715 | 31.1 | 1 754 | 30.6 |
| 4,000 - 4,499 | 569 | 10.0 | 590 | 10.0 | 494 | 8.9 | 519 | 9.4 | 564 | 9.8 |
| 4,500 + | 92 | 1.6 | 118 | 2.0 | 95 | 1.7 | 73 | 1.3 | 78 | 1.4 |
| **Total** | **5 693** | **100.0** | **5 920** | **100.0** | **5 581** | **100.0** | **5 516** | **100.0** | **5 736** | **100.0** |

**Figure 5: Births by birthweight groups 2011-2019**



## 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 22: Incidence of low and very low birthweight 2015-2019**

| Year | Very low birthweight (< 1 500 grams) | | Low birthweight[a] (< 2 500 grams) | | Total births |
|---|---|---|---|---|---|
| | n | % | n | % | |
| 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** |
| 2018 | 99 | 1.8 | 436 | 7.9 | **5 516** |
| **2019** | **79** | **1.4** | **430** | **7.5** | **5 736** |

(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 2019 has decreased slightly since 2015. In 2019, the Tasmanian incidence of very low birthweight infants was 1.4 per cent of all births (including stillbirths) and the incidence of low birthweight infants was 7.5 per cent of all births.

**Table 23: Survival to hospital discharge by gestation 1996-2019[a]**

| Year | % Survival (total number admitted) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 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 |
| **2004-2008** | 20 | 46 | 72 | 86 | 91 | **79** | 93 | 100 | 98 |
| **2009-2013** | 0 | 54 | 58 | 87 | 83 | **73** | 92 | 98 | 98 |
| **2014-2018** | 30 | 100 | 81 | 91 | 95 | **91** | 94 | 98 | 97 |
| **ANZNN 2019[b] [c]** | 63 | 70 | 83 | 92 | 95 | 87 | 96 | 97 | 98 |

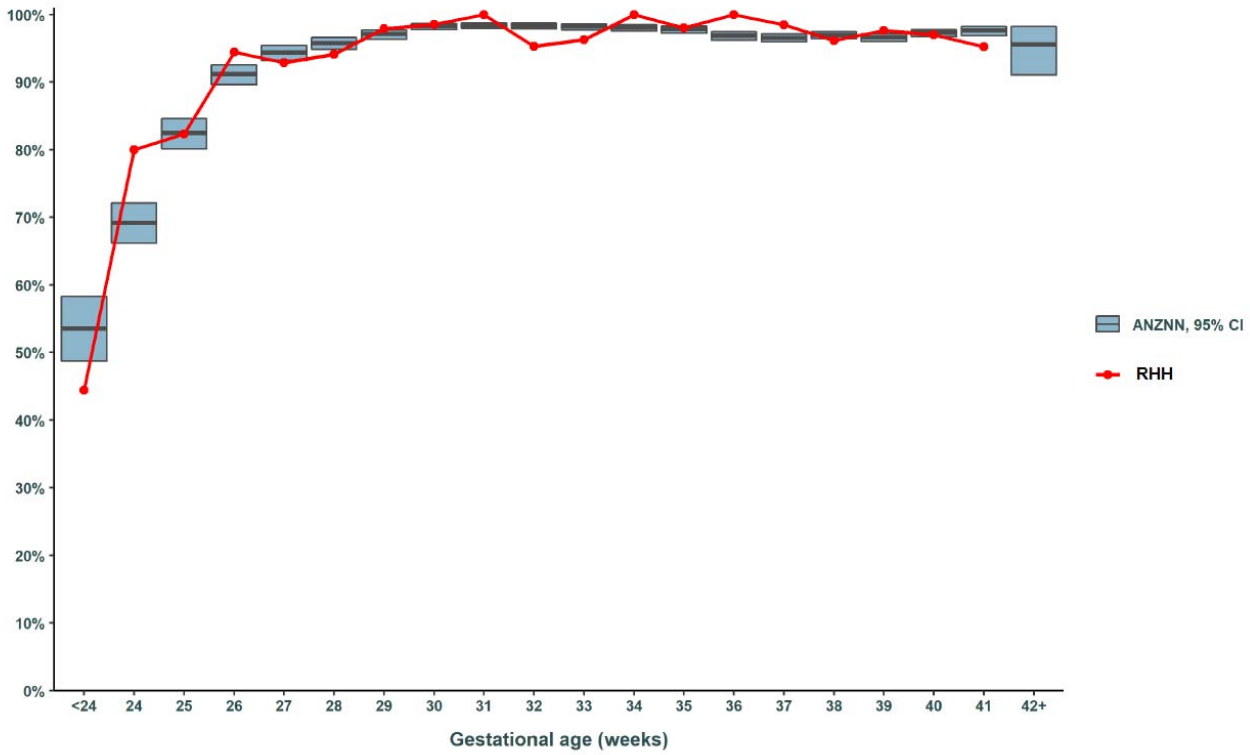
(a) Percent survival for infants admitted to the Tasmanian Neonatal and Paediatric Intensive Care Unit at the Royal Hobart Hospital. Lethal congenital anomalies are included.

(b) Chow, S.S.W. et al 2021. Report of the Australian and New Zealand Neonatal Network 2019. Sydney: ANZNN.

(c) Survival to discharge home (%) from the Australian and New Zealand Neonatal Network registry for the calendar year 2019. 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 by the ANZNN in 2021 (Chow et al, 2021), survival for very preterm infants admitted to the RHH NPICU in the epoch 2015-2019 approximates that of the ANZNN as a whole (see Figure 6), with an adjusted standardized mortality ratio for infants born at 23-28 weeks gestation of just under 1.

**Figure 6: Survival by gestational age 2012-2019[(a)]**




(a) Chow, S.S.W. et al 2021. Report of the Australian and New Zealand Neonatal Network 2019. Sydney: ANZNN.

# 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 24: Live births by Apgar score at five minutes 2015-2019**

| Apgar score | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| **0** | 2 | ^ | 3 | ^ | 3 | ^ | 5 | ^ | **2** | **^** |
| **1** | 6 | 0.1 | 6 | 0.1 | 2 | ^ | 5 | ^ | **2** | **^** |
| **2** | 4 | ^ | 7 | 0.1 | 6 | 0.1 | 5 | ^ | **4** | **^** |
| **3** | 3 | ^ | 11 | 0.2 | 10 | 0.2 | 6 | 0.1 | **7** | **0.1** |
| **4** | 6 | 0.1 | 15 | 0.3 | 13 | 0.2 | 16 | 0.3 | **11** | **0.2** |
| **5** | 44 | 0.8 | 24 | 0.4 | 33 | 0.6 | 34 | 0.6 | **36** | **0.6** |
| **6** | 66 | 1.2 | 75 | 1.3 | 83 | 1.5 | 94 | 1.7 | **67** | **1.2** |
| **7** | 117 | 2.1 | 139 | 2.4 | 111 | 2.0 | 133 | 2.4 | **156** | **2.7** |
| **8** | 249 | 4.4 | 290 | 4.9 | 289 | 5.2 | 242 | 4.4 | **277** | **4.9** |
| **9** | 4 058 | 71.7 | 4 052 | 68.9 | 4 049 | 73.0 | 4 083 | 74.5 | **4 307** | **75.5** |
| **10** | 1 078 | 19.0 | 1 233 | 21.0 | 939 | 16.9 | 835 | 15.2 | **817** | **14.3** |
| **Not observed** | 26 | 0.5 | 22 | 0.4 | 12 | 0.2 | 22 | 0.4 | **18** | **0.3** |
| **Total livebirths** | **5 659** | **100.0** | **5 877** | **100.0** | **5 550** | **100.0** | **5 480** | **100.0** | **5 704** | **100.0** |

^ Less than 0.1 per cent

**Figure 7: Live births with Apgar score less than 6 at five minutes 2005-2019**

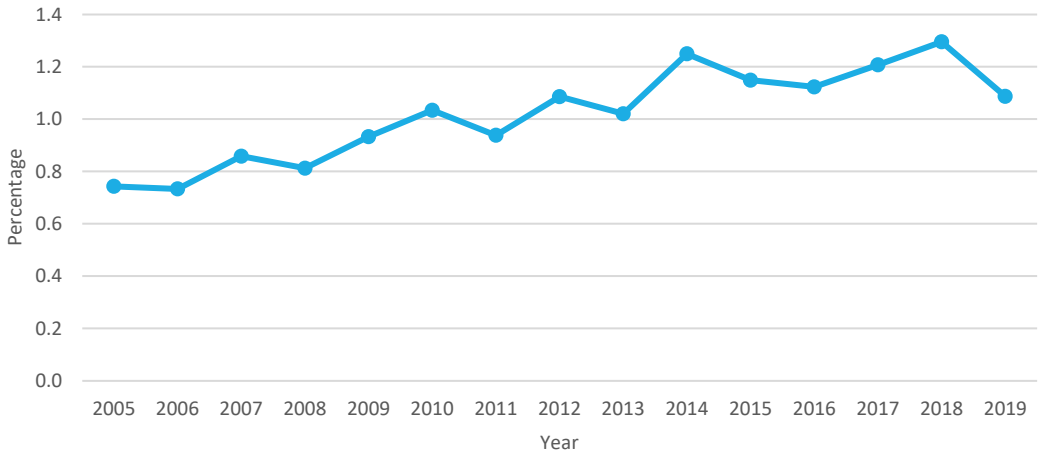



Figure 7 reflects that there has been a steady increase in the number of births associated with low Apgar scores at five minutes since 2005.

## 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 2019 was essentially unchanged from that reported for the previous year, having decreased steadily from 0.9 per cent in 2010.

**Table 25: Live births by active intubation and resuscitation at birth 2015-2019**

| Year | Intubation | | Resuscitation | | Total live births |
|---|---|---|---|---|---|
| | n | % | n | % | |
| 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** |
| 2018 | 17 | 0.3 | 810 | 14.8 | **5 480** |
| **2019** | **15** | **0.3** | **861** | **15.1** | **5 704** |

## Perinatal mortality

The Tasmanian perinatal mortality rate per 1 000 births in 2019 (7.3 deaths per 1 000 births) was the lowest since 2005 (8.9 deaths per 1 000 births) and also less than the 2019 national perinatal mortality rate of 9.4 deaths per 1 000 births. Causes of perinatal mortality are outlined previously in Table 2.

**Table 26: Perinatal outcome 2015-2019**

| Year | Stillbirth | | Liveborn and survived[a] | | Neonatal death | | Other (post-neonatal death) | | Total births |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n[b] | %[c] | n | % | |
| 2015 | 34 | 0.6 | 5 642 | 99.1 | 17 (+6[d]) | 0.3 | 0 | 0.0 | **5 693** |
| 2016 | 43 | 0.7 | 5 858 | 99.0 | 19 (+0) | 0.3 | 0 | 0.0 | **5 920** |
| 2017 | 31 | 0.6 | 5 533 | 99.1 | 15 (+1) | 0.3 | 2 | ^ | **5 581** |
| 2018 | 36 | 0.7 | 5 464 | 99.1 | 15 (+2) | 0.3 | 1 | ^ | **5 516** |
| **2019** | **32** | **0.6** | **5 697** | **99.3** | **7 (+3)** | **0.1** | **0** | **0.0** | **5 736** |

^ 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 numbers in parentheses.

(d) Five babies were born and died in Tasmania and one baby was not born in Tasmania but died in Tasmania.

**Figure 8: Stillbirths and neonatal deaths per 1 000 births 2005-2019**

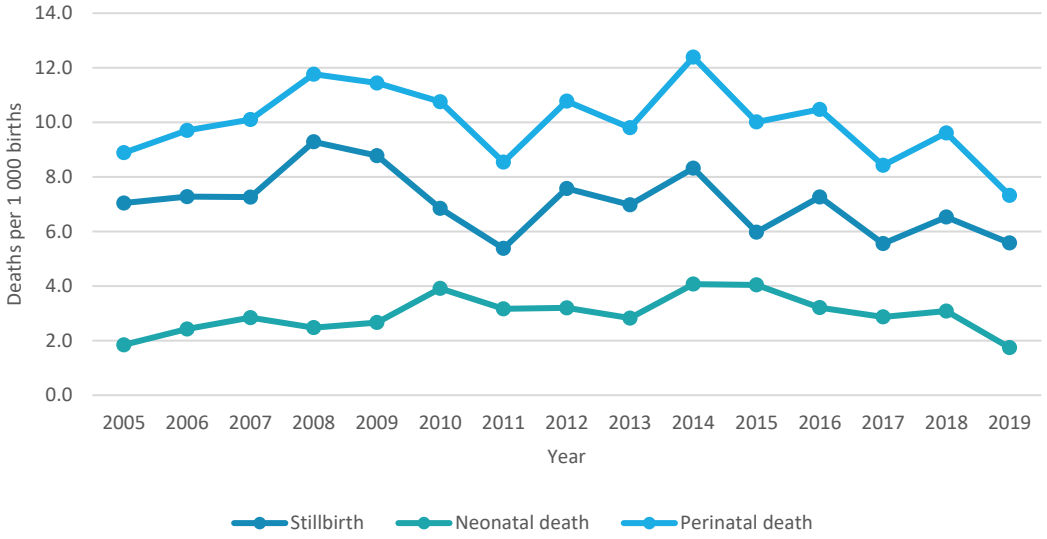
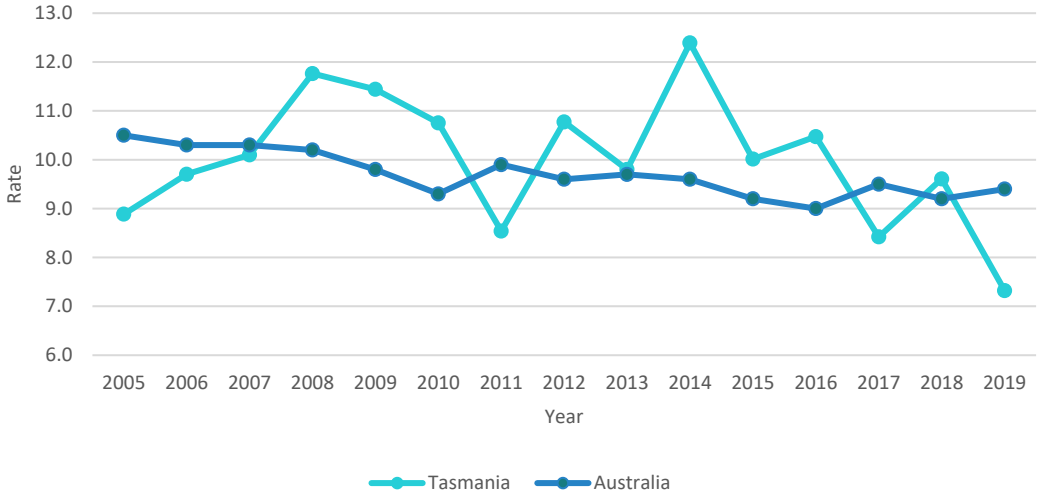



**Table 27: Perinatal mortality rates 2015-2019**

| Year | Number of perinatal deaths | Percentage of perinatal deaths | Number of total births | Rate of perinatal mortality per 1 000 births |
|---|---|---|---|---|
| 2015 | 57 | 1.0 | 5 693 | **10.0** |
| 2016 | 62 | 1.0 | 5 920 | **10.5** |
| 2017 | 47 | 0.8 | 5 581 | **8.4** |
| 2018 | 53 | 1.0 | 5 516 | **9.6** |
| **2019** | **42** | **0.7** | **5 736** | **7.3** |

The Tasmanian annual perinatal mortality rates have fluctuated over the period 2005 to 2019 without displaying any clear trend, with the 2019 rate being the lowest since 2005. In 2019, the national stillbirth rate was 7.2 per 1 000 births; the neonatal death rate was 2.2 per 1 000 live births; and the perinatal death rate was 9.4 per 1 000 births.

**Figure 9: Perinatal mortality rate per 1 000 births in Tasmania and Australia 2005-2019**




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

**Table 28: Perinatal mortality in multiple pregnancies 2015-2019**

| Year | Twin deaths | | Births born from a twin pregnancy | Triplet deaths | | Births born from a triplet pregnancy |
|---|---|---|---|---|---|---|
| | n | % | n | n | % | n |
| 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 |
| 2018 | 7 | 4.7 | 148 | 0 | 0.0 | 9 |
| **2019** | **3** | **2.3** | **128** | **0** | **0.0** | **6** |

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[14], hence consultant associated management is necessary. There is a widespread trend towards delivering term twins by caesarean section.

[14] 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 29: Perinatal mortality in multiple pregnancies by birth order 2015-2019**

| Year | Twin 1 | | Twin 2 | | Triplet Stillbirth | | |
|---|---|---|---|---|---|---|---|
| | Stillbirth | Neonatal death | Stillbirth | Neonatal death | Triplet 1 | Triplet 2 | Triplet 3 |
| 2015 | 1 | 2 | 1 | 2 | 0 | 0 | 0 |
| 2016 | 1 | 1 | 2 | 1 | 0 | 0 | 0 |
| 2017 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| 2018 | 3 | 0 | 2 | 2 | 0 | 0 | 0 |
| **2019** | **1** | **1** | **0** | **1** | **0** | **0** | **0** |

## Perinatal mortality in Tasmania over the period 2010-2018, a regional analysis

Over the period 2011-2019 there were 576 perinatal deaths in Tasmania, which equates to a perinatal mortality rate of 9.8 per 1 000 births. As shown in Table 30, 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 (130).

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 30: Perinatal [(a)] mortality by region, Tasmania 2011-2019**

| Region | 2011-2019 | | |
|---|---|---|---|
| | n | rate[(b)] | 95% CI |
| South | 299 | 9.8 | [8.7,10.9] |
| North | 140 | 8.8 | [7.4,10.4] |
| North West | 130 | 10.6 | [8.9,12.6] |
| Tasmania | **576** | **9.8** | **[9,10.6]** |

(a) Includes neonatal deaths and stillbirths

(b) Rate per 1 000 births

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 31 and Figure 10). 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 2011 and 2019.

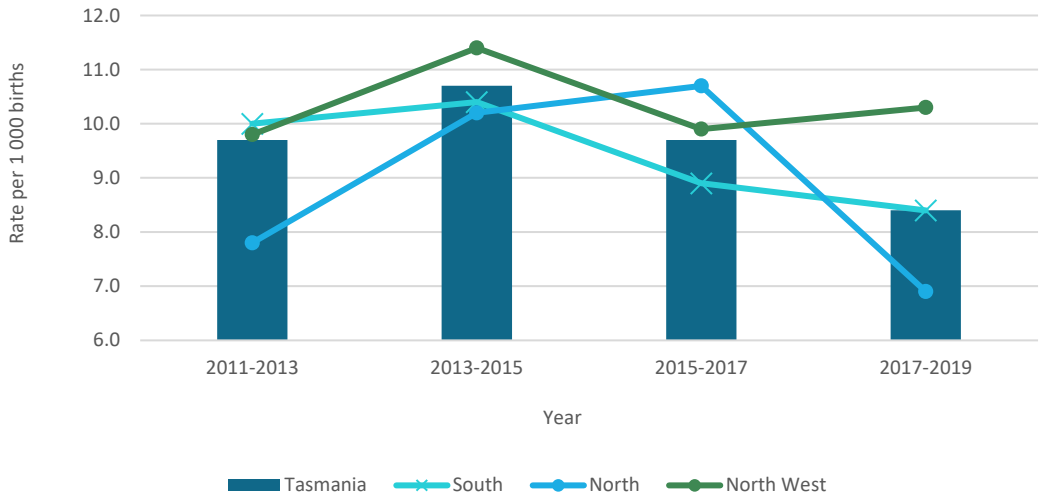
**Table 31: Perinatal [a] mortality by region and year, Tasmania 2011-2019**

| Region | | South | North | North West | Tasmania |
|---|---|---|---|---|---|
| 2011-2013 | n | 94 | 39 | 38 | **177** |
| | rate[b] | 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[b] | 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[b] | 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]** |
| 2017-2019 | N | 75 | 31 | 35 | **142** |
| | rate[b] | 8.4 | 6.9 | 10.3 | **8.4** |
| | 95% CI | [6.6,10.6] | [4.7,9.8] | [7.1,14.3] | **[7.1,9.9]** |

(a) Includes neonatal deaths and stillbirths

(b) Rate per 1 000 births

**Figure 10: Perinatal mortality rate per 1 000 births by region, Tasmania 2011-2019**



## 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 1.8 per 1 000 births reported in Tasmania in 2019 was lower than last year (3.1 per 1 000 births) (see Table 34), and also lower than the rate reported nationally in 2019 (i.e., 2.2 per 1 000 births).

**Table 32: Neonatal mortality per 1 000 births in infants over 28 weeks gestation 2015-2019**

| Year | Number of neonatal deaths | Rate of neonatal mortality per 1 000 births[(a)] |
|---|---|---|
| 2015 | 10 | 1.8 |
| 2016 | 5 | 0.8 |
| 2017 | 4 | 0.7 |
| 2018 | 3 | 0.5 |
| **2019** | **5** | **0.9** |

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

**Table 33: Neonatal mortality per 1 000 births in infants over 1 000 grams birthweight 2015-2019**

| Year | Number of neonatal deaths | Rate of neonatal mortality per 1 000 births[(a)] |
|---|---|---|
| 2015 | 11 | 1.9 |
| 2016 | 5 | 0.8 |
| 2017 | 4 | 0.7 |
| 2018 | 3 | 0.5 |
| **2019** | **5** | **0.9** |

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

**Table 34: Fetal, neonatal and perinatal death rate per 1 000 births by state and territory 2015-2019**

| Year | NSW | VIC | QLD | WA | SA | TAS | ACT | NT | AUS |
|---|---|---|---|---|---|---|---|---|---|
| **Fetal** | | | | | | | | | |
| 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 |
| 2018 | 6.2 | 8.6 | 6.0 | 6.7 | 6.9 | 6.5 | 7.8 | 11.9 | 7.0 |
| **2019** | **5.9** | **9.0** | **7.7** | **6.6** | **5.8** | **5.6** | **6.7** | **11.1** | **7.2** |
| **Neonatal** | | | | | | | | | |
| 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 |
| 2018 | 1.8 | 2.6 | 2.4 | 1.6 | 2.2 | 3.1 | 3.2 | 4.6 | 2.2 |
| **2019** | **2.0** | **2.3** | **3.1** | **1.4** | **1.4** | **1.8** | **1.8** | **3.9** | **2.2** |
| **Perinatal** | | | | | | | | | |
| 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 |
| 2018 | 8.0 | 11.1 | 8.4 | 8.3 | 9.2 | 9.6 | 10.9 | 16.4 | 9.2 |
| **2019** | **7.9** | **11.2** | **10.7** | **7.9** | **7.2** | **7.3** | **8.4** | **15.0** | **9.4** |

Source: Australian Institute of Health and Welfare 2021. Australia's mothers and babies. Cat. no. PER 101. Canberra: AIHW. Viewed 28 June 2021, https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies.

## Autopsy rates

Autopsy rate provides important information that can change recorded cause of death in 22 to 76 per cent of cases[15]. 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 was significantly lower in 2019 than reported in more recent years.

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

**Table 35: Rate of autopsies on perinatal deaths 2015-2019**

| Year | Autopsy rate (%) |
|---|---|
| 2015 | 33.3 |
| 2016 | 30.6 |
| 2017 | 31.9 |
| 2018 | 41.5 |
| **2019** | **26.2** |

In 2019, 11/42 had autopsy; 17 had no autopsy; 5 had external examination of the body and growth parameters; 9 had no autopsy stated.

[15] Gordijn, S.J., Erwich, J.J., Khong, T.Y. Value of the perinatal autopsy: critique. Pediatric Developmental Pathology. 2002; 5(5): 480-8.

# Mothers' statistics

## Maternal age

**Table 36: Women who gave births by maternal age groups 2015-2019**

| 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** | | | | | | |
| 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 |
| 2018 | 177 | 917 | 1 572 | 1 725 | 868 | 177 |
| **2019** | **172** | **827** | **1 675** | **1 858** | **931** | **188** |
| **Percentage** | | | | | | |
| 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 |
| 2018 | 3.3 | 16.9 | 28.9 | 31.7 | 16.0 | 3.3 |
| **2019** | **3.0** | **14.6** | **29.6** | **32.9** | **16.5** | **3.3** |

In Tasmania, the ages of mothers in the various groups reported in 2019 are consistent with those reported in 2018. 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 2019, 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 ($p<0.001$), whilst nationally the proportion has remained relatively stable. Nationally, the mean age in 2019 was 30.8 years, compared with 29.7 years in 2004. Mothers aged 40 years and over constituted 4.5 per cent of women giving birth nationally in 2019 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 25.0 per cent in 2019, while the proportion of mothers 24 years and under has decreased from 19.0 per cent to about 12.7 per cent[16] over the same period.

[16] Australian Institute of Health and Welfare 2021. Australia's mothers and babies. Cat. no. PER 101. Canberra: AIHW. Viewed 28 June 2021, https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies.

**Figure 11: Proportion of women who gave birth, by maternal age in Tasmania and Australia 2019**

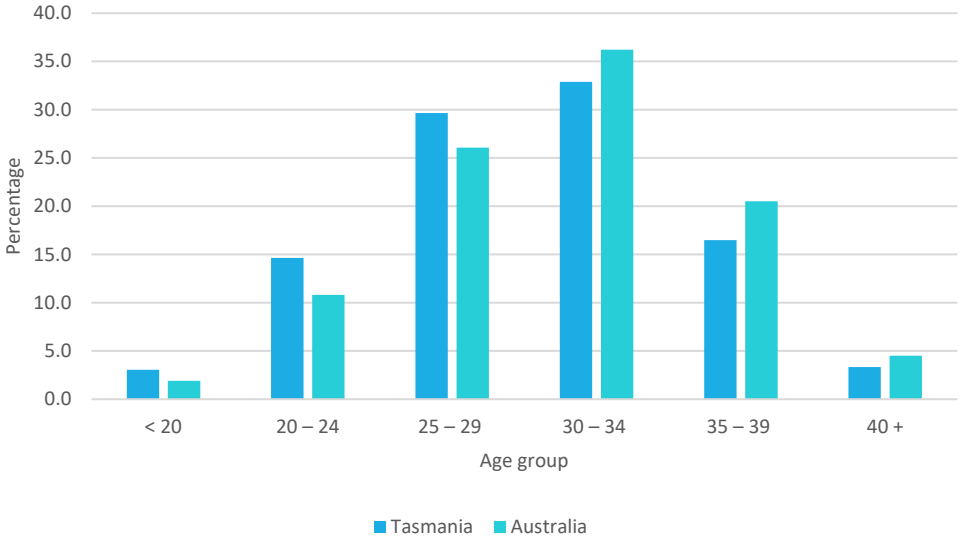



**Table 37: Rates of birth per 1 000 female population by maternal age 2015-2019**

| Maternal age in years | Year | Estimated Tasmanian female population[(a)] | Rate of births per 1 000 female population | Total births[(b)] |
|---|---|---|---|---|
| 15 – 19 | 2015 | 16 135 | 15.3 | 247 |
| | 2016 | 15 504 | 16.3 | 252 |
| | 2017 | 15 241 | 13.3 | 202 |
| | 2018 | 15 203 | 11.6 | 176 |
| | **2019** | **15 004** | **11.6** | **174** |
| 20 – 24 | 2015 | 15 026 | 67.9 | 1 021 |
| | 2016 | 15 329 | 70.0 | 1 073 |
| | 2017 | 15 162 | 60.7 | 921 |
| | 2018 | 15 170 | 61.0 | 925 |
| | **2019** | **15 341** | **54.5** | **836** |
| 25 – 29 | 2015 | 14 437 | 110.4 | 1 594 |
| | 2016 | 15 363 | 106.2 | 1 632 |
| | 2017 | 15 546 | 101.4 | 1 577 |
| | 2018 | 16 020 | 99.8 | 1 599 |
| | **2019** | **16 494** | **102.9** | **1 698** |
| 30 – 34 | 2015 | 15 083 | 118.6 | 1 789 |
| | 2016 | 15 394 | 118.2 | 1 820 |
| | 2017 | 15 559 | 114.1 | 1 775 |
| | 2018 | 15 994 | 109.8 | 1 756 |
| | **2019** | **16 361** | **115.2** | **1 884** |

| Maternal age in years | Year | Estimated Tasmanian female population[a] | Rate of births per 1 000 female population | Total births[b] |
|---|---|---|---|---|
| 35 – 39 | 2015 | 14 527 | 58.6 | 852 |
| | 2016 | 14 783 | 62.4 | 922 |
| | 2017 | 15 222 | 57.8 | 880 |
| | 2018 | 15 476 | 56.9 | 881 |
| | **2019** | **15 945** | **59.6** | **950** |
| 40 – 44 | 2015 | 17 121 | 10.2 | 174 |
| | 2016 | 16 445 | 12.5 | 206 |
| | 2017 | 15 720 | 13.4 | 210 |
| | 2018 | 15 474 | 11.2 | 173 |
| | **2019** | **15 411** | **11.7** | **180** |
| 45 –49 | 2015 | 17 314 | 0.6 | 11 |
| | 2016 | 17 770 | 0.7 | 12 |
| | 2017 | 18 006 | 0.4 | 8 |
| | 2018 | 18 120 | 0.3 | 5 |
| | **2019** | **17 849** | **0.7** | **12** |

(a) Australian Bureau of Statistics 2011-2020, Australian Demographic Statistics, 'Table 56 Estimated Resident Population by Single Year of Age, Tasmania', time series spreadsheet, cat. no. 3101.0, viewed 20 May 2021, https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/sep-2020#data-download.

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

It is positive to note that there is a downward trend in the number of pregnancies amongst young women aged 15-19 years, but the 2019 rate of births per 1 000 female population in this age group was the same as the previous year.

## Indigenous status

Reporting of Indigenous status is by self-identification and mothers are asked if they are of Aboriginal and/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 Indigenous has increased markedly since 2005.

Nationally in 2019, 14 241 women identified as being Indigenous gave birth in Australia, representing 4.8 per cent of all women who gave birth.

**Table 38: Women who gave birth, by Indigenous status 2015-2019**

| Year | Aboriginal | | Torres Strait Islander | | Aboriginal and Torres Strait Islander | | Non-indigenous | | Not stated | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | n |
| 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** |
| 2018 | 271 | 5.0 | 8 | 0.1 | 25 | 0.5 | 5 015 | 92.3 | 117 | 2.2 | **5 436** |
| **2019** | **289** | **5.1** | **14** | **0.2** | **20** | **0.4** | **5 205** | **92.1** | **123** | **2.2** | **5 651** |

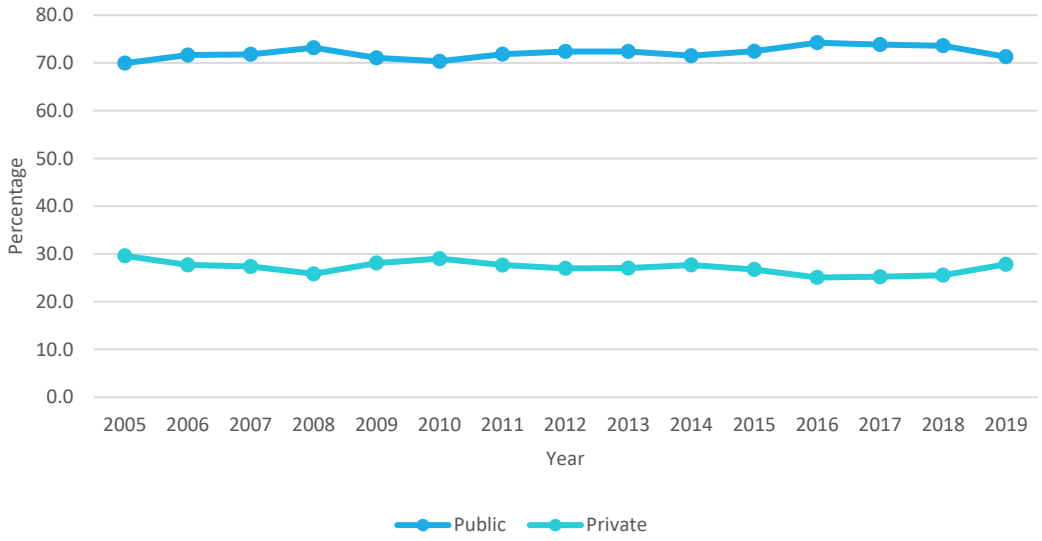
## In-patient election status

In Tasmania, the proportion of private patients in 2019 (27.8 per cent) was the highest in the most recent 5 years; conversely, the proportion of public patients (71.3 per cent) in Tasmania in 2019 was the lowest in the most recent 5 years.

**Table 39: Women who gave birth, by admitted patient election status 2015-2019**

| Year | Public | | Private | | Not stated | | Total |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | |
| 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** |
| 2018 | 4 001 | 73.6 | 1 388 | 25.5 | 47 | 0.9 | **5 436** |
| **2019** | **4 028** | **71.3** | **1 573** | **27.8** | **50** | **0.9** | **5 651** |

**Figure 12: Women who gave birth, by admitted patient election status 2005-2019**




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, at a gestation 20 weeks or beyond. A multiple birth (giving birth to >1 infant in a delivery) contributes one to parity. A woman is considered nulliparous (i.e., parity = zero) prior to the first delivery ≥20 weeks gestation.

**Table 40: Women who gave birth, by parity 2015-2019**

| Year | Zero | | One | | Two | | Three | | Four and over | | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % | |
| 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 |
| 2018 | 2 232 | 41.1 | 1 891 | 34.8 | 812 | 14.9 | 303 | 5.6 | 198 | 3.6 | 5 436 |
| **2019** | **2 391** | **42.3** | **1 950** | **34.5** | **804** | **14.2** | **295** | **5.2** | **211** | **3.7** | **5 651** |

For Tasmania in 2019, 42.3 per cent of mothers gave birth for the first time and 34.5 per cent had their second baby. This trend is similar to that reported nationally in 2019, where 42.7 per cent of mothers gave birth for the first time and 35.1 per cent had their second baby.

# Antenatal visits

**Table 41: Women who gave birth, by gestational age at first antenatal visit 2015-2019**

| Year | Less than 14 weeks | 14-19 weeks | 20 weeks and over | No antenatal care or unknown gestation at first antenatal visit |
|---|---|---|---|---|
| **Number** | | | | |
| 2015 | 4 947 | 449 | 194 | 20 |
| 2016 | 5 119 | 474 | 195 | 30 |
| 2017 | 4 903 | 393 | 185 | 15 |
| 2018 | 4 750 | 451 | 213 | 22 |
| **2019** | **4 881** | **527** | **225** | **18** |
| **Percentage** | | | | |
| 2015 | 88.2 | 8.0 | 3.5 | 0.4 |
| 2016 | 88.0 | 8.1 | 3.4 | 0.5 |
| 2017 | 89.2 | 7.2 | 3.4 | 0.3 |
| 2018 | 87.4 | 8.3 | 3.9 | 0.4 |
| **2019** | **86.4** | **9.3** | **4.0** | **0.3** |
| **Australia 2019[17]** | **76.6** | **14.6** | **8.6** | **0.1** |

**Table 42: Women who gave birth, by number of antenatal visits 2015-2019**

| Year | One | Two to four | Five or more | No antenatal care |
|---|---|---|---|---|
| **Number** | | | | |
| 2015 | 196 | 261 | 4 976 | 177 |
| 2016 | 182 | 246 | 5 249 | 141 |
| 2017 | 193 | 209 | 5 077 | 17 |
| 2018 | 179 | 204 | 5 033 | 20 |
| **2019** | **191** | **215** | **5 224** | **21** |
| **Percentage** | | | | |
| 2015 | 3.5 | 4.7 | 88.7 | 3.2 |
| 2016 | 3.1 | 4.2 | 90.2 | 2.4 |
| 2017 | 3.5 | 3.8 | 92.4 | 0.3 |
| 2018 | 3.3 | 3.8 | 92.6 | 0.4 |
| **2019** | **3.4** | **3.8** | **92.4** | **0.4** |
| **Australia 2019[17]** | **1.2** | **4.5** | **94.2** | **0.1** |

[17] Australian Institute of Health and Welfare 2021. Australia's mothers and babies. Cat. no. PER 101. Canberra: AIHW. Viewed 28 June 2021, https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies.

Almost all mothers (99.6 per cent) who gave birth in Tasmanian in 2019 had at least one antenatal visit – 86.4 per cent of women attended at least one antenatal visit in the first trimester (less than 14 weeks) and 4.0 per cent did not begin antenatal care until 20 weeks' gestation or beyond.

## 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) at first antenatal visit 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, pre-term birth, stillbirth and neonatal death compared with pregnant women who are not obese[18]. 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 43 shows findings for maternal BMI by birth setting in Tasmania from 2015 to 2019.

**Table 43: Women who gave birth, by maternal body mass index and birth setting 2015-2019**

| BMI (kg/m$^2$) | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | %[(a)] | n | %[(a)] | n | %[(a)] | n | %[(a)] | n | %[(a)] |
| **Public** | | | | | | | | | | |
| **Less than 18.5** | 138 | 3.9 | 155 | 4.3 | 108 | 3.4 | 146 | 4.4 | **112** | **3.3** |
| **18.5–24.9** | 1 621 | 45.9 | 1 611 | 45.1 | 1 388 | 43.9 | 1 457 | 44.4 | **1 459** | **42.9** |
| **25.0–29.9** | 880 | 24.9 | 840 | 23.5 | 793 | 25.1 | 772 | 23.5 | **868** | **25.6** |
| **30.0–39.9** | 727 | 20.6 | 759 | 21.2 | 702 | 22.2 | 709 | 21.6 | **759** | **22.3** |
| **40.0–49.9** | 145 | 4.1 | 185 | 5.2 | 150 | 4.7 | 171 | 5.2 | **170** | **5.0** |
| **50 and over** | 19 | 0.5 | 26 | 0.7 | 21 | 0.7 | 29 | 0.9 | **29** | **0.9** |
| **Not stated** | 252 | - | 306 | - | 254 | - | 162 | - | **139** | **-** |
| **Total** | **3 782** | **100.0** | **3 882** | **100.0** | **3 416** | **100.0** | **3 446** | **100.0** | **3 536** | **100.0** |
| **Private** | | | | | | | | | | |
| **Less than 18.5** | 52 | 3.1 | 47 | 2.6 | 51 | 2.6 | 43 | 2.2 | **46** | **2.2** |
| **18.5–24.9** | 857 | 50.5 | 869 | 48.7 | 909 | 45.5 | 854 | 44.2 | **921** | **44.8** |
| **25.0–29.9** | 446 | 26.3 | 463 | 25.9 | 561 | 28.1 | 558 | 28.9 | **566** | **27.5** |
| **30.0–39.9** | 292 | 17.2 | 337 | 18.9 | 402 | 20.1 | 401 | 20.8 | **441** | **21.4** |
| **40.0–49.9** | 46 | 2.7 | 63 | 3.5 | 68 | 3.4 | 73 | 3.8 | **80** | **3.9** |
| **50 and over** | 5 | 0.3 | 6 | 0.3 | 8 | 0.4 | 2 | 0.1 | **2** | **0.1** |
| **Not stated** | 84 | - | 112 | - | 29 | - | 12 | - | **9** | **-** |
| **Total** | **1 782** | **100.0** | **1 897** | **100.0** | **2 028** | **100.0** | **1 943** | **100.0** | **2 065** | **100.0** |

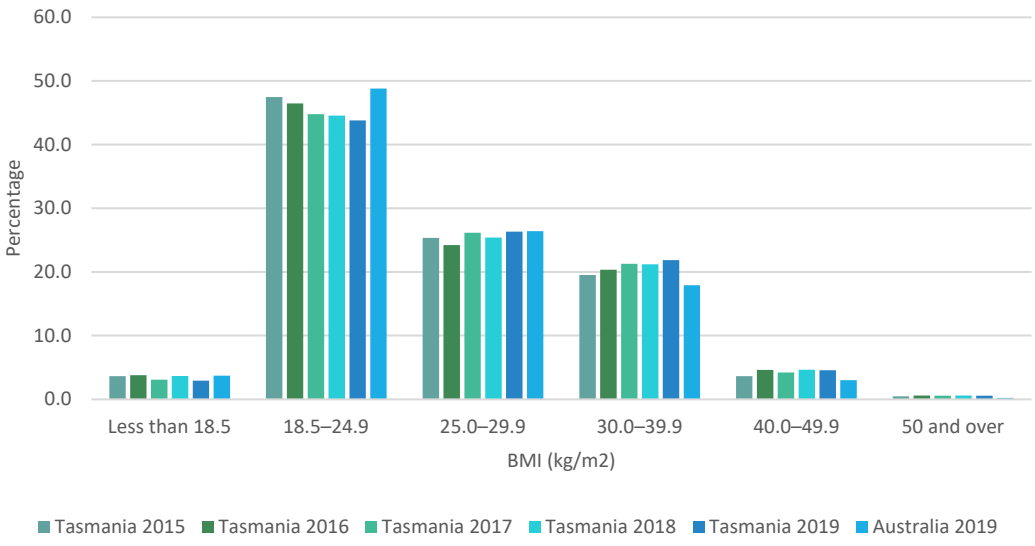
(a) Percentages calculated after excluding records with missing values.

[18]Royal College of Obstetricians and Gynaecologists (RCOG) 2018. Care of women with obesity in pregnancy. Green-top Guideline no. 72. London: RCOG. Viewed 5 July 2021, https://obgyn.onlinelibrary.wiley.com/doi/full/10.1111/1471-0528.15386.

| BMI (kg/m²) | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | %[a] | n | %[a] | n | %[a] | n | %[a] | n | %[a] |
| **Homebirths / Birth Centre** | | | | | | | | | | |
| **Less than 18.5** | 1 | 2.4 | 2 | 5.7 | 1 | 2.5 | 3 | 6.4 | **3** | **6.4** |
| **18.5–24.9** | 23 | 54.8 | 27 | 77.1 | 31 | 77.5 | 33 | 70.2 | **29** | **61.7** |
| **25.0–29.9** | 9 | 21.4 | 4 | 11.4 | 6 | 15.0 | 6 | 12.8 | **13** | **27.7** |
| **30.0–39.9** | 9 | 21.4 | 2 | 5.7 | 2 | 5.0 | 5 | 10.6 | **2** | **4.3** |
| **40.0–49.9** | 0 | 0.0 | 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 | **0** | **0.0** |
| **Not stated** | 4 | - | 4 | - | 12 | - | 0 | - | **3** | **-** |
| **Total** | **46** | **100.0** | **39** | **100.0** | **52** | **100.0** | **47** | **100.0** | **50** | **100.0** |
| **Total** | | | | | | | | | | |
| **Less than 18.5** | 191 | 3.6 | 204 | 3.8 | 160 | 3.1 | 192 | 3.6 | **161** | **2.9** |
| **18.5–24.9** | 2 501 | 47.5 | 2 507 | 46.5 | 2 328 | 44.8 | 2 344 | 44.5 | **2 409** | **43.8** |
| **25.0–29.9** | 1 335 | 25.3 | 1 307 | 24.2 | 1 360 | 26.1 | 1 336 | 25.4 | **1 447** | **26.3** |
| **30.0–39.9** | 1 028 | 19.5 | 1 098 | 20.3 | 1 106 | 21.3 | 1 115 | 21.2 | **1 202** | **21.9** |
| **40.0–49.9** | 191 | 3.6 | 248 | 4.6 | 218 | 4.2 | 244 | 4.6 | **250** | **4.5** |
| **50 and over** | 24 | 0.5 | 32 | 0.6 | 29 | 0.6 | 31 | 0.6 | **31** | **0.6** |
| **Not stated** | 340 | - | 422 | - | 295 | - | 174 | - | **151** | **-** |
| **Total** | **5 610** | **100.0** | **5 818** | **100.0** | **5 496** | **100.0** | **5 436** | **100.0** | **5 651** | **100.0** |

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

**Figure 13: Proportion of women who gave birth, by body mass index in Tasmania 2015-2019 and Australia 2019**



Based on self-reported height and weight at the first antenatal visit, over half (53.3 per cent) of the 5 651 women who gave birth in a Tasmanian facility in 2019 had a BMI in the overweight or obese range (25.0 and above), and more than one-quarter (27.0 per cent) had a BMI in the obese range (30.0 and over). However, it is somewhat reassuring to note that these figures are lower than recorded in 2017-2018 for Tasmanian women 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[19], with the one caution that the 2017-2018 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 (BMI ≥ 25.0) women giving birth in public facilities (53.8 per cent) was significantly higher ($p<0.001$) than for those giving birth at home or in a birth centre (31.9 per cent), or when compared to Australia as a whole for 2019 (47.5 per cent), but similar to women giving birth in private facilities (53.0 per cent). 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 2019 who reported to be obese (BMI ≥ 30.0) (28.2 per cent) was statistically significantly higher ($p=0.024$) than for those giving birth in a private facility (25.4 per cent). Both the public and private facility obesity proportions were significantly higher ($p<0.001$) than for women who gave birth outside of hospital (4.3 per cent). Also, both the public and private facility obesity (BMI ≥ 30.0) levels were statistically significantly higher ($p<0.001$) than reported for Australian mothers overall in 2019 (21.1 per cent).

# Maternal iodine/iron/vitamin D intake by birth setting

## Iodine

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[20]. However, very few women (7.6 per cent) giving birth in a Tasmanian facility in 2019 reported to have taken an iodine supplement whilst pregnant, similar ($p=0.734$) to 2018 at 7.8 per cent, and significantly lower ($p<0.001$) than in both 2017 (9.9 per cent) and 2016 (9.6 per cent), but statistically significantly higher ($p<0.001$) than for 2015 (5.5 per cent).

As shown in Table 44, women who gave birth in a public hospital were the least likely to have taken an iodine supplement whilst pregnant (4.8 per cent). This proportion was statistically significantly lower ($p<0.001$) than for women who gave birth in a private hospital (11.9 per cent or outside of hospital (28.0 per cent). This might reflect a higher level of health awareness amongst women who choose to give birth in a private facility or outside of hospital.

Women who gave birth in a private facility in 2019 were significantly less likely ($p<0.003$) to have taken an iodine supplement whilst pregnant (11.9 per cent) than in either 2018 (15.2 per cent), 2017 (21.7 per cent) or 2016 (19.7 per cent) but were significantly more likely ($p=0.044$) to do so than in 2015 (9.9 per cent).

---

[19] 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].

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

The proportion of women who gave birth in a public facility in 2019 and took supplemental iodine (4.8 per cent) was significantly higher than for both 2018 (3.4 per cent, p=0.003) and 2017 (2.7 per cent, p<0.001), but similar (p=0.472) to 2016 at 4.5 per cent. It should again be noted here that multivitamins which potentially contain iodine might not be reported by mothers, resulting in an under-estimate of the number who took supplemental iodine.

The proportion of women giving birth outside of hospital in 2019 who took supplemental iodine whilst pregnant (28.0 per cent) was statistically similar to previous years (p>0.05).

## Iron

Higher numbers of women who gave birth in Tasmania in 2019 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, 305 reported taking an iron supplement, higher than the number who reported taking supplemental iodine (246).

Overall, in 2019, 13.4 per cent of women reported to have taken supplemental iron whilst pregnant, with the highest proportions being amongst women who gave birth outside of hospital (88.0 per cent) or in a private facility (14.8 per cent); both of which were significantly higher (p<0.001) than for women who gave birth in a public facility (11.5 per cent). Additionally, the difference in iron supplementation between private hospital patients (14.8 per cent) and those who gave birth outside of hospital (88.0 per cent) was statistically significant (p<0.001). Compared to 2018, a significantly (p<0.001) lower proportion of women who gave birth in a private facility reported having taken supplemental iron whilst pregnant (14.8 vs. 20.2 per cent). By contrast, the proportion of women giving birth outside of hospital and who reported taking supplemental iron whilst pregnant was significantly (p<0.001) higher in 2019 than in 2018 (88.0 vs. 57.4 per cent). For women who gave birth in a public facility, the 2019 maternal supplemental iron proportion was similar to 2018 (11.5 vs. 10.3 per cent, p=0.114). Again, it should be noted that there is a potential to underestimate the number of mothers who took supplemental iron in view of multivitamin consumption that may contain iron not being specifically reported by mothers.

## Vitamin D

In 2019, about one in six (17.8 per cent) women reported to have taken a Vitamin D supplement whilst pregnant, statistically similar (p>0.05) to the level reported in 2018 (18.9 per cent).

The highest level of maternal Vitamin D supplementation was amongst women giving birth outside of hospital (24.0 per cent), statistically similar to women who gave birth in a private hospital (19.9 per cent, p>0.05), but significantly higher than for those women who gave birth in a public facility (16.5 per cent, p=0.002).

Compared to 2018, significantly fewer mothers who gave birth in a private hospital reported to have taken a Vitamin D supplement whilst pregnant (19.9 vs. 23.5 percent, p=0.006), whilst for women giving birth in a public hospital or outside of hospital the 2019 figures were statistically similar (p>0.05) to 2018 (16.5 vs. 16.3 per cent and 24.0 vs. 17.0 per cent, respectively). Again, it should be noted that there is a potential to underestimate the number of mothers who took Vitamin D in view of multivitamin consumption that may contain Vitamin D not being specifically reported by mothers.

**Table 44: Women who gave birth and had iodine / iron / vitamin D intake, by birth setting 2015-2019**

| Vitamin | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n | % |
| **Iodine** | | | | | | | | | | |
| **Public** | 120 | 3.2 | 173 | 4.5 | 92 | 2.7 | 117 | 3.4 | **170** | **4.8** |
| **Private** | 176 | 9.9 | 374 | 19.8 | 440 | 21.7 | 296 | 15.2 | **246** | **11.9** |
| **Homebirths / Birth Centre** | 14 | 30.4 | 10 | 26.3 | 11 | 21.2 | 10 | 21.3 | **14** | **28.0** |
| **Total** | **310** | **5.5** | **557** | **9.6** | **543** | **9.9** | **423** | **7.8** | **430** | **7.6** |
| **Iron** | | | | | | | | | | |
| **Public** | 339 | 9.0 | 410 | 10.6 | 358 | 10.5 | 356 | 10.3 | **407** | **11.5** |
| **Private** | 288 | 16.2 | 398 | 21.1 | 437 | 21.5 | 392 | 20.2 | **305** | **14.8** |
| **Homebirths / Birth Centre** | 24 | 52.2 | 22 | 57.9 | 38 | 73.1 | 27 | 57.4 | **44** | **88.0** |
| **Total** | **651** | **11.6** | **830** | **14.3** | **833** | **15.2** | **775** | **14.3** | **756** | **13.4** |
| **Vitamin D** | | | | | | | | | | |
| **Public** | 504 | 13.3 | 471 | 12.1 | 479 | 14 | 561 | 16.3 | **585** | **16.5** |
| **Private** | 391 | 21.9 | 399 | 21.1 | 489 | 24.1 | 457 | 23.5 | **411** | **19.9** |
| **Homebirths / Birth Centre** | 10 | 21.7 | 10 | 26.3 | 6.0 | 11.5 | 8 | 17.0 | **12** | **24.0** |
| **Total** | **905** | **16.1** | **880** | **15.2** | **974** | **17.7** | **1 026** | **18.9** | **1 008** | **17.8** |

## 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 45, it is therefore of some concern to note that a significant number of mothers (65.5 per cent) in 2019 reported not taking supplemental folic acid either pre-conceptually or whilst pregnant. Mothers who gave birth outside of hospital were less likely to take folic acid, with mothers giving birth in a public or 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 (7.9 per cent), compared to 39.7 per cent of mothers who gave birth in a private facility. Both of these figures were statistically similar ($p>0.05$) to the proportion of mothers who gave birth outside of hospital and who reported taking supplemental folic acid both pre-and-post-conceptually (22.2 per cent).

Over one-third (38.0 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 (57.8 per cent, $p<0.001$), but statistically similar ($p>0.05$) to women who gave birth outside of hospital (66.7 per cent).

A significantly higher ($p<0.001$) proportion of women who gave birth in a public facility reported taking supplemental folate only pre-conceptually (34.3 per cent) compared to mothers who gave birth in a private facility (22.3 per cent). The proportion of women who gave birth outside of hospital reporting to take supplemental folate only pre-conceptually (11.1 per cent) was statistically similar ($p>0.05$) to those who gave birth in either a public or private hospital.

**Table 45: Women who gave birth and had folic acid consumption, by birth setting 2015-2019**

| Folic acid consumption | 2015 | | 2016 | | 2017 | | 2018 | | 2019 | |
|---|---|---|---|---|---|---|---|---|---|---|
| | n | %[(a)] | n | %[(a)] | n | %[(a)] | n | %[(a)] | n | %[(a)] |
| **Pre-conceptually only** | | | | | | | | | | |
| **Public** | 296 | 24.9 | 413 | 31.1 | 464 | 36.4 | 394 | 32.9 | 410 | 34.3 |
| **Private** | 126 | 15.8 | 126 | 14.5 | 127 | 13.9 | 111 | 15.7 | 166 | 22.3 |
| **Homebirths / Birth Centre** | 1 | 7.7 | 4 | 36.4 | 0 | 0.0 | 2 | 25.0 | 1 | 11.1 |
| **Total** | **423** | **21.1** | **543** | **24.6** | **591** | **26.9** | **507** | **26.5** | **577** | **29.6** |
| **Post-conceptually only** | | | | | | | | | | |
| **Public** | 808 | 67.8 | 824 | 62.1 | 734 | 57.6 | 714 | 59.5 | 692 | 57.8 |
| **Private** | 282 | 35.3 | 318 | 36.7 | 330 | 36.2 | 270 | 38.2 | 282 | 38.0 |
| **Homebirths / Birth Centre** | 5 | 38.5 | 3 | 27.3 | 7 | 77.8 | 6 | 75.0 | 6 | 66.7 |
| **Total** | **1 095** | **54.6** | **1 145** | **52.0** | **1 071** | **48.8** | **990** | **51.8** | **980** | **50.3** |
| **Pre- and post-conceptually** | | | | | | | | | | |
| **Public** | 87 | 7.3 | 90 | 6.8 | 77 | 6.0 | 91 | 7.6 | 95 | 7.9 |
| **Private** | 392 | 49.0 | 422 | 48.7 | 454 | 49.8 | 325 | 46.0 | 295 | 39.7 |
| **Homebirths / Birth Centre** | 7 | 53.8 | 4 | 36.4 | 2 | 22.2 | 0 | 0.0 | 2 | 22.2 |
| **Total** | **486** | **24.3** | **516** | **23.4** | **533** | **24.3** | **416** | **21.7** | **392** | **20.1** |
| **Not taken** | | | | | | | | | | |
| **Public** | 2 591 | - | 2 555 | - | 2 141 | - | 2 247 | - | 2 339 | - |
| **Private** | 982 | - | 1 031 | - | 1 117 | - | 1 237 | - | 1 322 | - |
| **Homebirths / Birth Centre** | 33 | - | 28 | - | 43 | - | 39 | - | 41 | - |
| **Total** | **3 606** | **-** | **3 614** | **-** | **3 301** | **-** | **3 523** | **-** | **3 702** | **-** |
| **Total** | | | | | | | | | | |
| **Public** | 3 782 | 100.0 | 3 882 | 100.0 | 3 416 | 100.0 | 3 446 | 100.0 | 3 536 | 100.0 |
| **Private** | 1 782 | 100.0 | 1 897 | 100.0 | 2 028 | 100.0 | 1 943 | 100.0 | 2 065 | 100.0 |
| **Homebirths / Birth Centre** | 46 | 100.0 | 39 | 100.0 | 52 | 100.0 | 47 | 100.0 | 50 | 100.0 |
| **Total** | **5 610** | **100.0** | **5 818** | **100.0** | **5 496** | **100.0** | **5 436** | **100.0** | **5 651** | **100.0** |

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

## Multiple pregnancies

The proportion of multiple pregnancies in Tasmania was very similar to the national average, with 14.7 multiple pregnancies per 1 000 mothers recorded in Tasmania in 2019 and 14.8 multiple pregnancies per 1 000 mothers in 2019 nationally. Multiple pregnancy in 2019 accounted for 1.5 per cent of pregnancies.

**Table 46: Women who gave birth, by plurality 2015-2019**

| Year | Singleton pregnancy | | Twin[(a)] pregnancy | | Triplet[(a)] pregnancy | | Total pregnancies |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | |
| 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** |
| 2018 | 5 359 | 98.6 | 74 | 1.4 | 3 | ^ | **5 436** |
| **2019** | **5 568** | **98.5** | **81** | **1.4** | **2** | **^** | **5 651** |

^ Less than 0.1 per cent

(a) All birth orders >1 are multiple.

## Onset of labour

**Table 47: Women who gave birth, by onset of labour 2015-2019**

| Year | Spontaneous | | Spontaneous and augmentation | | Induced | | No labour | | Total pregnancies |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n |
| 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** |
| 2018 | 1 560 | 28.7 | 801 | 14.7 | 1 908 | 35.1 | 1 167 | 21.5 | **5 436** |
| **2019** | **1 755** | **31.1** | **840** | **14.9** | **1 862** | **32.9** | **1 194** | **21.1** | **5 651** |

Just under half (45.9 per cent) of women who gave birth in 2019 had a spontaneous labour (including those that were augmented), more than one-quarter had induced labour (32.9 per cent) and 21.1 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 5.0 per cent in spontaneous labour (including those that were augmented) and corresponding increases for the induction of labour (3.5 per cent) and no labour onset (1.5 per cent).

Higher maternal age is strongly linked to an increased likelihood of 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 2019, of all women who gave birth, 42.5 per cent had a spontaneous onset of labour; 22.7 per cent of mothers had no labour; and 34.7 per cent of mothers had induced labour. Out of all women who had spontaneous onset of labour (with WA excluded as the data were not provided), 67.7 per cent did not have augmentation. Of all women who gave birth nationally in 2019, 51.3 per cent had a non-instrumental vaginal birth; forceps delivery accounted for 5.1 per cent of mothers; while vacuum extraction accounted for 7.5 per cent of women who gave birth.

## Induction of labour

**Table 48: Women who gave birth after induction of labour, by method of birth and hospital sector 2015-2019**

| | Vaginal delivery | | | | Caesarean section | | | | Induction rate | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Public | | Private | | Public | | Private | | Public | Private |
| Year | n | % | n | % | n | % | n | % | % | % |
| 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 |
| 2018 | 937 | 77.2 | 571 | 82.2 | 276 | 22.8 | 124 | 17.8 | 35.2 | 35.8 |
| **2019** | **873** | **77.3** | **580** | **79.2** | **257** | **22.7** | **152** | **20.8** | **32.0** | **35.4** |

Induced labour rates have risen for both the public and private sectors since 2015, with the public sector induction rate (32.0 per cent) being significantly lower (p=0.007) than for the private sector at 35.4 per cent, in keeping with 2016 and previous years. For 2017 and 2018 the private and public sector induction rates were statistically similar.

There has been a continued increase in the caesarean section rate reported nationally over the last decade with 36.0 per cent of mothers undergoing caesarean section deliveries in 2019 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[21]. Again in 2019, national data have shown that caesarean section rates increase with advancing maternal age and continue to be higher among older mothers (e.g., 44.2 per cent for mothers aged between 35 to 39 years old; 54.8 per cent for mothers aged 40 years and over) and those who gave birth in private hospitals (48.4 per cent) compared to the public sector (33.6 per cent).

[21] Australian Institute of Health and Welfare 2021. Australia's mothers and babies. Cat. no. PER 101. Canberra: AIHW. Viewed 28 June 2021, https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies.

## Augmentation of labour

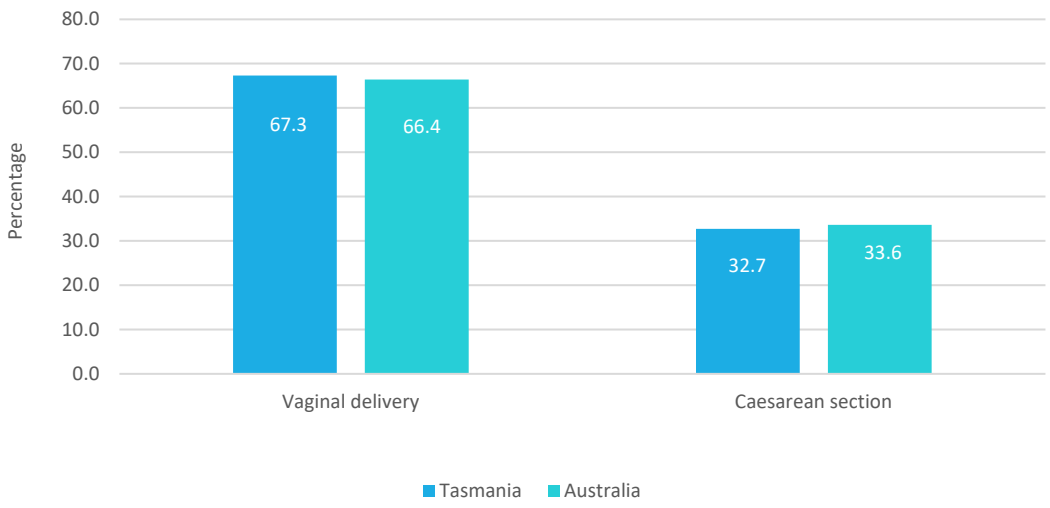
**Table 49: Women who gave birth and had augmentation of labour, by type of augmentation 2015-2019**

| Year | Artificial Rupture of Membranes | | Oxytocin | | Other | | Total augmentation | Augmentation rate | Total pregnancies |
|---|---|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | n | % | n |
| 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** |
| 2018 | 499 | 62.3 | 37 | 4.6 | 265 | 33.1 | 801 | 14.7 | **5 436** |
| **2019** | **501** | **59.6** | **35** | **4.2** | **304** | **36.2** | **840** | **14.9** | **5 651** |

In Tasmania, 14.9 per cent of mothers were reported in 2019 to have had augmentation of spontaneous labour, similar to 2017 and 2018, but statistically significantly lower ($p<0.013$) than for 2015 and 2016. Nationally in 2019, 32.3 per cent of all mothers who had spontaneous onset of labour (with WA excluded as the data were not provided) were reported to have had their labour augmented. Furthermore, in 2019 nationally, the onset of labour was spontaneous for 42.5 per cent of all mothers giving birth and 34.7 per cent of mothers had their labour induced.

## Mode of delivery

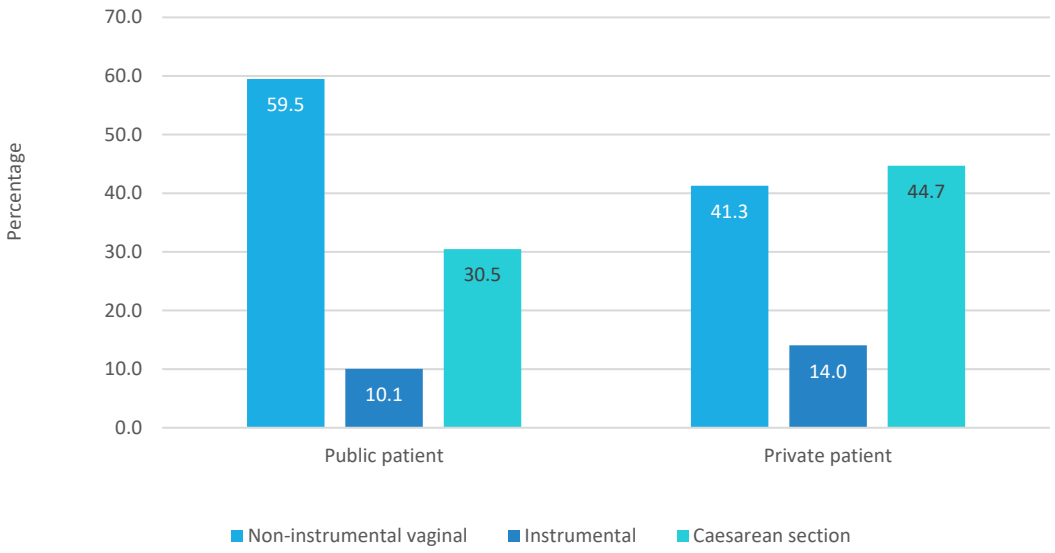
**Figure 14: Proportion of women who gave birth in public hospitals, by mode of delivery in Tasmania and Australia 2019**




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 in public hospitals has remained relatively unchanged over recent years, with Tasmania recording 67.3 per cent in 2019, and Australia recording a similar rate of 66.4 per cent, for vaginal deliveries in 2019 compared to 66.7 per cent for Tasmania in 2018. Furthermore, caesarean sections (CS) were reported at 32.7 per cent for Tasmania in 2019 and 33.6 per cent nationally in 2019 compared with 33.3 per cent for Tasmania in 2018.

**Figure 15: Proportion of women who gave births, by mode of delivery and admitted patient election status in Tasmania 2019**




Again, private patients in Tasmania in 2019 continued to undergo more caesarean sections and instrumental vaginal deliveries than public patients (see Figure 15), 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 2019. For each mode of delivery, the difference between public and private patients was statistically significant ($p<0.001$). Overall, in Tasmania in 2019, the total CS rate was 34.2 per cent; the total unassisted vaginal delivery rate was 54.8 per cent and the total instrumental delivery rate was 11.1 per cent.

In further detail:

- The higher caesarean section rates reported in 2019 in Tasmanian *private* hospitals is a trend consistent with national findings reported in 2019. National figures derived from 2019 have shown caesarean section rates to be higher in *private* hospitals (48.4 per cent) compared with *public* hospitals (33.6 per cent) across all age groups;
- Of the vaginal deliveries nationally reported in *public* hospitals in 2019, 54.0 per cent were spontaneous, 5.6 per cent were forceps deliveries and 6.8 per cent were vacuum extraction; and
- Of the vaginal deliveries nationally reported in *private* hospitals in 2019, 37.0 per cent were spontaneous, 4.2 per cent were forceps deliveries and 10.3 per cent were vacuum extraction.

# Caesarean section

**Table 50: Women who gave birth, by emergency / elective caesarean section 2015-2019**

| Year | Emergency | | Elective | | Total CS |
|---|---|---|---|---|---|
| | n | % | n | % | n |
| 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** |
| 2018 | 963 | 51.3 | 916 | 48.7 | **1 879** |
| **2019** | **960** | **49.7** | **970** | **50.3** | **1 930** |

**Table 51: Women who gave birth, by emergency / elective caesarean section and hospital sector 2015-2019**

| Year | Emergency | | | | Elective | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Public | | Private | | Public | | Private | | Public | Private |
| | n | % | n | % | n | % | n | % | n | n |
| 2015 | 604 | 55.5 | 287 | 42.6 | 485 | 44.5 | 386 | 57.4 | 1 089 | 673 |
| 2016 | 685 | 56.6 | 331 | 46.3 | 525 | 43.4 | 384 | 53.7 | 1 210 | 715 |
| 2017 | 626 | 57.1 | 335 | 46.2 | 471 | 42.9 | 390 | 53.8 | 1 097 | 725 |
| 2018 | 655 | 57.2 | 308 | 42.0 | 491 | 42.8 | 425 | 58.0 | 1 146 | 733 |
| **2019** | **643** | **56.0** | **317** | **40.6** | **506** | **44.0** | **464** | **59.4** | **1 149** | **781** |

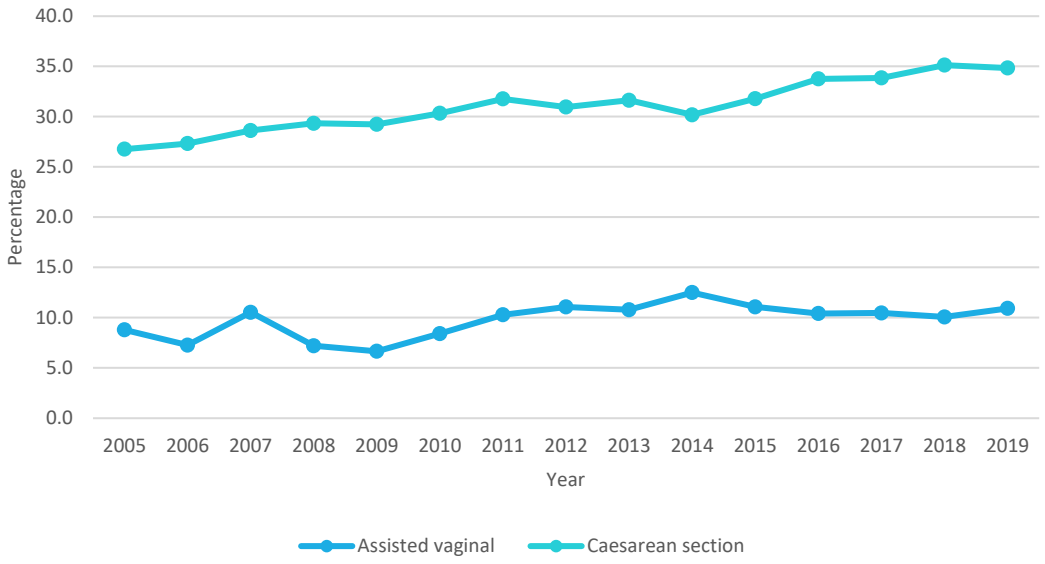
**Table 52: Women who gave birth, by primary / repeat caesarean section 2015-2019**

| Year | Primary | | Repeat | | Total CS |
|---|---|---|---|---|---|
| | n | % | n | % | n |
| 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** |
| 2018 | 1 103 | 58.7 | 776 | 41.3 | **1 879** |
| **2019** | **1 148** | **59.5** | **782** | **40.5** | **1 930** |

**Table 53: Women who gave birth, by primary / repeat caesarean section and hospital sector 2015-2019**

| Year | Primary | | | | Repeat | | | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Public | | Private | | Public | | Private | | Public | Private |
| | n | % | n | % | n | % | n | % | n | n |
| 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 | 44.5 | 1 210 | 715 |
| 2017 | 670 | 61.1 | 432 | 59.6 | 427 | 38.9 | 293 | 40.4 | 1 097 | 725 |
| 2018 | 694 | 60.6 | 409 | 55.8 | 452 | 39.4 | 324 | 44.2 | 1 146 | 733 |
| **2019** | **673** | **58.6** | **475** | **60.8** | **476** | **41.4** | **306** | **39.2** | **1 149** | **781** |

**Figure 16: Proportion of babies born by caesarean section and assisted vaginal 2005-2019**




The incidence of caesarean section (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 proportion of babies born by CS was 34.8 per cent in 2019, and was slightly lower than for the previous year in Tasmania (35.1 per cent in 2018), and also lower than the nationally reported figure for 2019 (36.6 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 [22] 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 54 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.

[22] 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 54: 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.*[23]

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 16 shows data from year 2015 until current. There has been an increasing trend overall to deliver babies by CS involving gestation ranges 28 weeks and above.

   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.

[23] 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. Women are much less accepting of risk and much more aware of the increased risks attributable to emergency over elective CS. 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***. Induction from the thirty-ninth week has not been shown to increase caesarean section rates and women and their maternity care providers should be assessing the proposed length of all pregnancies according to risk factors and the desires of the woman. 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 55: Women who gave birth and had pregnancy-induced hypertension 2015-2019**

| Year | Pre-existing | | Pregnancy-induced hypertension[(a)] | | Total |
|---|---|---|---|---|---|
| | n | % | n | % | |
| 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** |
| 2018 | 389 | 7.2 | 355 | 6.5 | **5 436** |
| **2019** | **438** | **7.8** | **392** | **6.9** | **5 651** |

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

The proportion of mothers in Tasmania reported to have pregnancy-induced hypertension in 2019 (6.9 per cent) was statistically significantly higher ($p<0.001$) than in 2015 (5.4 per cent), but statistically similar ($p>0.05$) to every other year from 2016 to 2018. Also, whilst the proportion of mothers in 2019 with pre-existing hypertension was similar to the previous year ($p=0.231$), overall, there has been a significant increase in both the number and percentage of mothers presenting with pre-existing hypertension over the eleven-year period since 2006 ($p<001$).

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

## Antepartum haemorrhage

**Table 56: Women who gave birth and had antepartum haemorrhage 2015-2019**

| Year | Placenta praevia | | Abruptio placenta | | APH undetermined | | Total |
|---|---|---|---|---|---|---|---|
| | n | % | n | % | n | % | |
| 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** |
| 2018 | 14 | 0.3 | 23 | 0.4 | 114 | 2.1 | **5 436** |
| **2019** | **25** | **0.4** | **19** | **0.3** | **128** | **2.3** | **5 651** |

## Postpartum haemorrhage

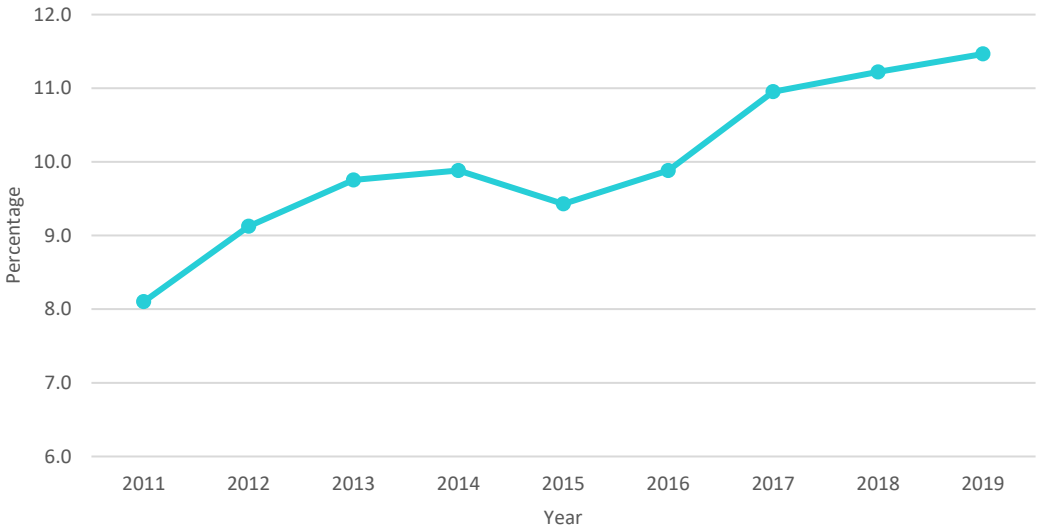
**Table 57: Women who gave birth and had postpartum haemorrhage 2015-2019**

| Year | Number | Incidence % | Total |
|---|---|---|---|
| 2015 | 529 | 9.4 | **5 610** |
| 2016 | 575 | 9.9 | **5 818** |
| 2017 | 602 | 11.0 | **5 496** |
| 2018 | 610 | 11.2 | **5 436** |
| **2019** | **648** | **11.5** | **5 651** |

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 or 1 000 ml or more after caesarean delivery, is considered to be PPH. The incidence of PPH rose from 9.4 per cent in 2015 to 11.5 per cent in 2019.

Factors contributing to this rise may include increased maternal obesity; increased induction of labour rates; increased CS rate (if there is no distinction made between maximum normal blood loss for vaginal births and CS where anything 500mls and over is recorded as PPH regardless of mode of delivery), increased awareness and reporting; and increased proportion of birth occurring in primiparous women. Other factors may include increased incidence of prolonged second stage (following the publication of new *American College of Obstetricians and Gynecologists* (ACOG) guidelines[24] suggesting 2 hours in a multi and 3 hours in a primiparous woman is normal). Also, no distinction between "mild" (500-1 000 ml) PPH, that may have less clinical significance and greater degrees of blood loss, and no data on blood transfusion or iron infusion requirements postnatally.

**Figure 17: Proportion of women who gave birth and had postpartum haemorrhage 2011-2019**




## Breastfeeding

Trends reported in Tasmania (see tables below) indicate that the percentage of women who gave birth and were 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[25]. The percentage of public hospital patients breastfeeding at discharge in 2019 was the highest in the most recent 5 reporting years, and also 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[26]. 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.

[24] Safe prevention of the primary cesarean delivery. Obstetric Care Consensus No. 1. American College of Obstetricians and Gynaecologists, Society for Materno-Fetal Medicine. Obstet Gynecol 2014;123:693–711. Reaffirmed 2016 and 2019.

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

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

**Table 58: Women who gave birth, by breastfeeding status (including partially) at maternal discharge 2015-2019**

| Year | Yes | | No | | Total women delivered live births |
|---|---|---|---|---|---|
| | n | % | n | % | |
| 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** |
| 2018 | 4 593 | 85.0 | 809 | 15.0 | **5 402** |
| **2019** | **4 850** | **86.3** | **769** | **13.7** | **5 619** |

**Table 59: Women who gave birth and were breastfeeding (including partially) at maternal discharge, by parity 2015-2019**

| Year | Primiparae | | Multiparae | | Total women breastfeeding |
|---|---|---|---|---|---|
| | n | % | n | % | |
| 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** |
| 2018 | 1 931 | 87.2 | 2 662 | 83.5 | **4 593** |
| **2019** | **2 129** | **89.6** | **2 721** | **83.9** | **4 850** |

**Table 60: Women who gave birth and were breastfeeding (including partially) at maternal discharge, by hospital sector 2015-2019**

| Year | Public | | Private | | Total women breastfeeding in hospital |
|---|---|---|---|---|---|
| | n | % | n | % | |
| 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** |
| 2018 | 2 822 | 82.3 | 1 724 | 89.5 | **4 546** |
| **2019** | **2 943** | **83.7** | **1 857** | **90.4** | **4 800** |

# Smoking and pregnancy

Data exploring the smoking status of Tasmanian women during pregnancy continue to be available for review in 2019, supplementing previous work conducted in the 1980's by the late Professor Joe Correy (Obstetric and Neonatal Report, Tasmania 1982) and Dr Neville Newman.

***Please note that***

1. ***the smoking status has been updated (apart from the figures in Table 62) for mothers who gave birth at the public and public contracted private hospitals from 2011. Those hospitals advised that the smoking status and pattern collected at the time of labour onset/admission or after the birth occurs was inaccurate in some records. Statewide agreement has been sought from those hospitals to use the smoking information collected from antenatal visits for reporting.***

   ***Therefore, the smoking figures in this report are not comparable to the figures published in the previous reports.***

2. ***the percentages in this section are calculated after excluding records with missing values (i.e. unknown smoking status or no antenatal visit). Care must therefore be taken when interpreting these percentages.***

**Table 61: Proportion of women who gave birth, by tobacco smoking status during pregnancy, maternal age and election status; 1982 and 2015-2019**

| Year | Age (Years) | | | | | | | Election status | |
|---|---|---|---|---|---|---|---|---|---|
| | Overall | Less than 20 | 21-25 | 26-30 | 30 and 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** |
| 2015 | **20.5** | 50.8 | 31.2 | 20.4 | 13.4 | 14.5 | 11.4 | 26.4 | 3.3 |
| 2016 | **19.4** | 48.0 | 35.1 | 18.1 | 11.3 | 12.4 | 10.3 | 24.7 | 2.0 |
| 2017 | **18.4** | 48.8 | 34.0 | 16.8 | 12.1 | 11.9 | 5.5 | 23.3 | 2.3 |
| 2018 | **17.2** | 46.3 | 31.2 | 17.3 | 9.9 | 11.3 | 9.0 | 22.0 | 2.1 |
| **2019** | **16.7** | **40.7** | **31.8** | **17.9** | **10.0** | **10.6** | **9.6** | **22.0** | **1.9** |

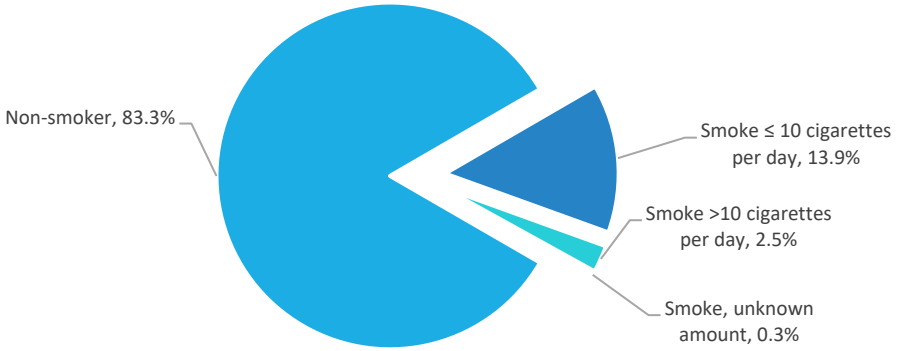
(a) Obstetric and Neonatal Report – Tasmania 1982

The data on smoking prevalence during pregnancy are derived from self-reported information obtained by clinicians from the mother and reported to the Perinatal Data Collection.

Smoking during pregnancy is regarded as one of the key preventable causes of low birthweight and pre-term birth. Low birthweight (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 2019, 16.7 per cent of Tasmanian women reported smoking whilst pregnant, which was similar to the 2018 figure of 17.2 per cent ($p=0.491$), with 13.9 per cent reporting to have smoked 10 cigarettes or fewer per day, 2.5 per cent reporting to have smoked more than 10 cigarettes daily and 0.3 per cent reporting to have smoked an unknown number of cigarettes daily.

**Figure 18: Women who gave birth, by tobacco smoking status during pregnancy in Tasmania 2019**




Number of mothers who reported smoking during pregnancy = 5 441 out of 5 651

As shown in the table below, 16.7 per cent of Tasmanian women who reported their smoking status stated that they had smoked during pregnancy in 2019[(a)]. This was the second highest maternal smoking proportion of all the jurisdictions following the Northern Territory (see Table 62). Overall, nationally, 10.2 per cent of women in these states and territories who reported their smoking status had smoked during pregnancy[27].

**Table 62: Proportion of women who gave birth, by tobacco smoking status during pregnancy and state and territory 2010-2019**[27]

| Jurisdiction | NSW | VIC | QLD | WA | SA | TAS | ACT | NT | AUS |
|---|---|---|---|---|---|---|---|---|---|
| 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 |
| 2018[(a)] | 9.2 | 8.3 | 11.3 | 8.0 | 10.9 | 17.2 | 5.7 | 24.9 | 9.6 |
| **2019[(a)]** | **8.9** | **11.3** | **11.6** | **7.9** | **9.0** | **16.7** | **5.6** | **20.7** | **10.2** |

(a) The Tasmanian smoking data for 2018 and 2019 are not comparable to the previous years as a different collection method was used from 2018.

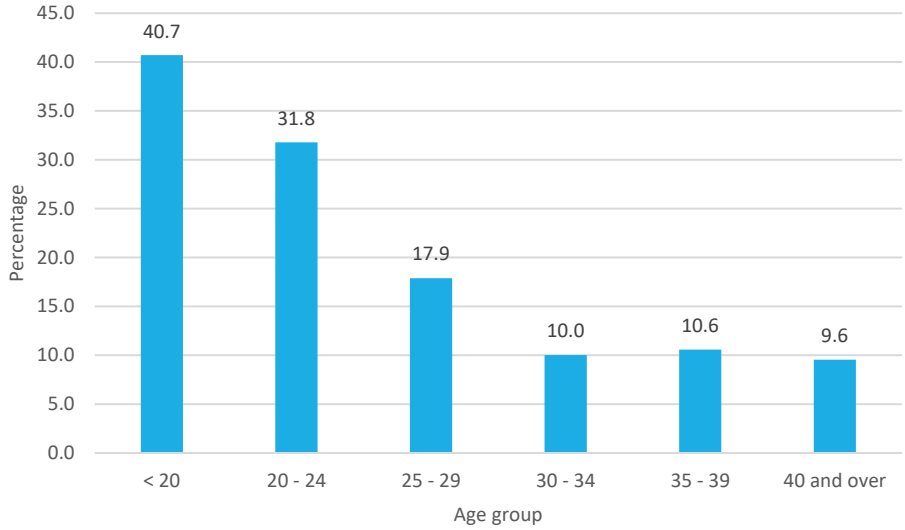
[27] Australian Institute of Health and Welfare 2021. Australia's mothers and babies. Cat. no. PER 101. Canberra: AIHW. Viewed 28 June 2021, https://www.aihw.gov.au/reports/mothers-babies/australias-mothers-babies.

Table 63 and Figure 19 show that maternal smoking continues to be more prevalent amongst younger women in Tasmania, particularly those aged less than 20 years. However, the proportion of maternal smokers in this age group has declined significantly (p=0.041) since 2015 from 50.8 per cent to 40.7 per cent in 2019, with the 2019 rate being statistically similar (p=0.293) to that reported for 2018 (46.3 per cent). The latter was also the case for-each of the other age-groups, with the respective smoking rates for mothers remaining statistically similar to the previous year.

**Table 63: Women who gave birth, by tobacco smoking status during pregnancy and maternal age 2015-2019**

| Maternal age in year | Year | Did not smoke during pregnancy | | Smoked during pregnancy | | Total reported smoking status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| Under 20 | 2015 | 121 | 49.2 | 125 | 50.8 | 246 | 100.0 | 1 | 247 |
| | 2016 | 127 | 52.0 | 117 | 48.0 | 244 | 100.0 | 4 | 248 |
| | 2017 | 105 | 51.2 | 100 | 48.8 | 205 | 100.0 | 0 | 205 |
| | 2018 | 94 | 53.7 | 81 | 46.3 | 175 | 100.0 | 2 | 177 |
| | **2019** | **102** | **59.3** | **70** | **40.7** | **172** | **100.0** | **0** | **172** |
| 20 - 24 | 2015 | 690 | 68.8 | 313 | 31.2 | 1 003 | 100.0 | 14 | 1 017 |
| | 2016 | 677 | 64.9 | 366 | 35.1 | 1 043 | 100.0 | 10 | 1 053 |
| | 2017 | 600 | 66.0 | 309 | 34.0 | 909 | 100.0 | 4 | 913 |
| | 2018 | 625 | 68.8 | 283 | 31.2 | 908 | 100.0 | 9 | 917 |
| | **2019** | **558** | **68.2** | **260** | **31.8** | **818** | **100.0** | **9** | **827** |
| 25 - 29 | 2015 | 1 216 | 79.6 | 312 | 20.4 | 1 528 | 100.0 | 45 | 1 573 |
| | 2016 | 1 285 | 81.9 | 284 | 18.1 | 1 569 | 100.0 | 41 | 1 610 |
| | 2017 | 1 262 | 83.2 | 255 | 16.8 | 1 517 | 100.0 | 40 | 1 557 |
| | 2018 | 1 269 | 82.7 | 265 | 17.3 | 1 534 | 100.0 | 38 | 1 572 |
| | **2019** | **1 336** | **82.1** | **291** | **17.9** | **1 627** | **100.0** | **48** | **1 675** |
| 30 - 34 | 2015 | 1 442 | 86.6 | 224 | 13.4 | 1 666 | 100.0 | 93 | 1 759 |
| | 2016 | 1 500 | 88.7 | 192 | 11.3 | 1 692 | 100.0 | 92 | 1 784 |
| | 2017 | 1 451 | 87.9 | 200 | 12.1 | 1 651 | 100.0 | 89 | 1 740 |
| | 2018 | 1 473 | 90.1 | 162 | 9.9 | 1 635 | 100.0 | 90 | 1 725 |
| | **2019** | **1 589** | **90.0** | **177** | **10.0** | **1 766** | **100.0** | **92** | **1 858** |
| 35 - 39 | 2015 | 666 | 85.5 | 113 | 14.5 | 779 | 100.0 | 48 | 827 |
| | 2016 | 749 | 87.6 | 106 | 12.4 | 855 | 100.0 | 53 | 908 |
| | 2017 | 713 | 88.1 | 96 | 11.9 | 809 | 100.0 | 54 | 863 |
| | 2018 | 729 | 88.7 | 93 | 11.3 | 822 | 100.0 | 46 | 868 |
| | **2019** | **787** | **89.4** | **93** | **10.6** | **880** | **100.0** | **51** | **931** |
| 40 and over | 2015 | 156 | 88.6 | 20 | 11.4 | 176 | 100.0 | 11 | 187 |
| | 2016 | 182 | 89.7 | 21 | 10.3 | 203 | 100.0 | 12 | 215 |
| | 2017 | 188 | 94.5 | 11 | 5.5 | 199 | 100.0 | 19 | 218 |
| | 2018 | 151 | 91.0 | 15 | 9.0 | 166 | 100.0 | 11 | 177 |
| | **2019** | **161** | **90.4** | **17** | **9.6** | **178** | **100.0** | **10** | **188** |

**Figure 19: Women who gave birth, by tobacco smoking status during pregnancy and age in Tasmania 2019**

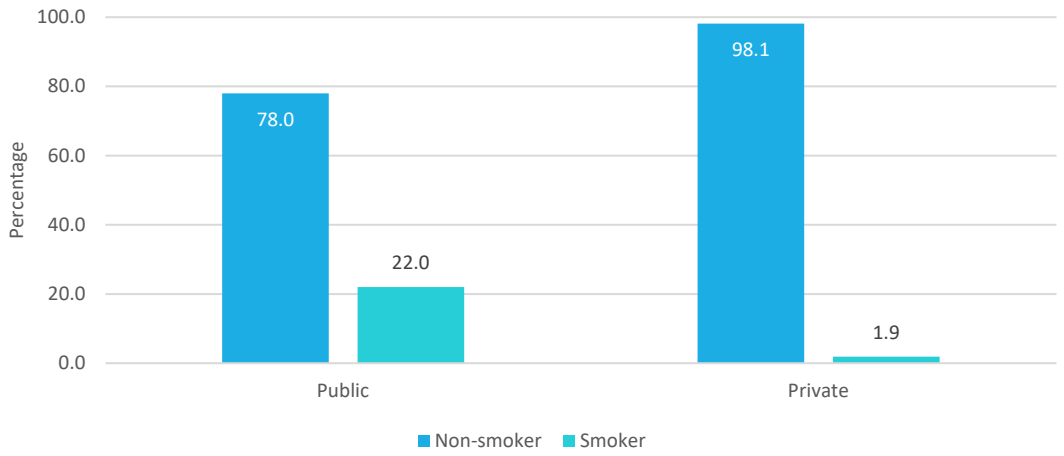



The maternal smoking rate for public patients has remained unchanged since 2018 at 22.0 per cent, whilst the rate for private patients was similar to that for 2018 (1.9 per cent vs. 2.1 per cent in 2018, p=0.716). Smoking during pregnancy continues to be significantly more prevalent for public patients (22.0 per cent) compared to private patients (1.9 per cent) (Table 64 and Figure 20). As reported in previous years, this trend continues to reflect the higher prevalence of smoking amongst lower socio-economic groups.

**Table 64: Women who gave birth, by tobacco smoking status during pregnancy and admitted patient election status 2015-2019**

| Admitted patient election status | Year | Did not smoke during pregnancy | | Smoked during pregnancy | | Total reported smoking status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| Public | 2015 | 2 971 | 73.6 | 1 063 | 26.4 | 4 034 | 100.0 | 30 | 4 064 |
| | 2016 | 3 222 | 75.3 | 1 059 | 24.7 | 4 281 | 100.0 | 39 | 4 320 |
| | 2017 | 3 101 | 76.7 | 943 | 23.3 | 4 044 | 100.0 | 14 | 4 058 |
| | 2018 | 3 105 | 78.0 | 874 | 22.0 | 3 979 | 100.0 | 22 | 4 001 |
| | **2019** | **3 123** | **78.0** | **882** | **22.0** | **4 005** | **100.0** | **23** | **4 028** |
| Private | 2015 | 1 274 | 96.7 | 44 | 3.3 | 1 318 | 100.0 | 182 | 1 500 |
| | 2016 | 1 260 | 98.0 | 26 | 2.0 | 1 286 | 100.0 | 173 | 1 459 |
| | 2017 | 1 167 | 97.7 | 27 | 2.3 | 1 194 | 100.0 | 192 | 1 386 |
| | 2018 | 1 189 | 97.9 | 25 | 2.1 | 1 214 | 100.0 | 174 | 1 388 |
| | **2019** | **1 360** | **98.1** | **26** | **1.9** | **1 386** | **100.0** | **187** | **1 573** |

**Figure 20: Women who gave birth, by tobacco smoking status during pregnancy and admitted patient election status in Tasmania 2019**

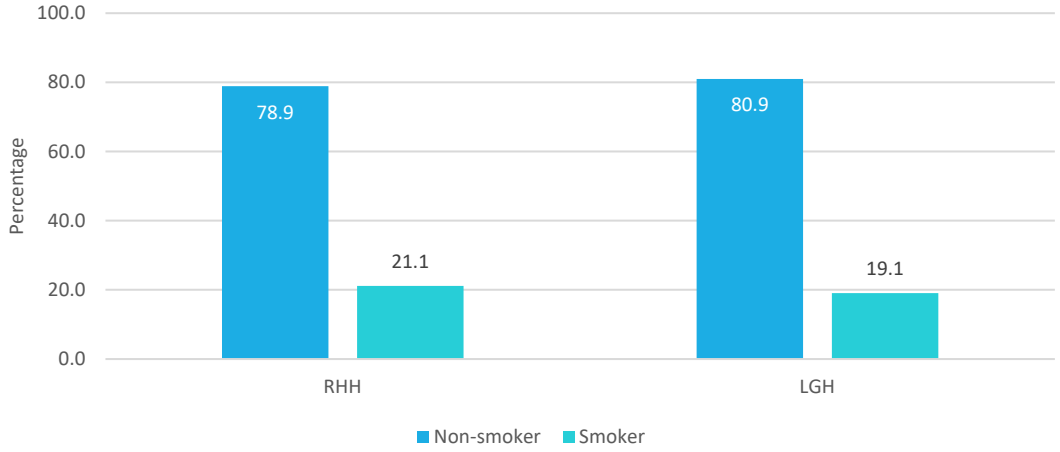



For patients delivering in public hospitals, as shown in Table 65 and Figure 21, smoking during pregnancy was reported in 2019 most frequently by patients at the Royal Hobart Hospital (21.1 per cent) - continuing the decrease observed since 2012 - compared with 19.1 per cent of patients at the Launceston General Hospital, which was slightly higher than the reported level for the previous year (18.4 per cent). However, neither of these changes were statistically significant (p>0.05). 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.

**Table 65: Women who gave birth, by tobacco smoking status during pregnancy and public hospital 2015-2019**

| Public hospital | Year | Did not smoke during pregnancy | | Smoked during pregnancy | | Total reported smoking status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| RHH | 2015 | 1 384 | 73.0 | 512 | 27.0 | 1 896 | 100.0 | 24 | 1 920 |
| | 2016 | 1 408 | 74.1 | 492 | 25.9 | 1 900 | 100.0 | 24 | 1 924 |
| | 2017 | 1 394 | 75.8 | 445 | 24.2 | 1 839 | 100.0 | 21 | 1 860 |
| | 2018 | 1 435 | 77.8 | 410 | 22.2 | 1 845 | 100.0 | 23 | 1 868 |
| | **2019** | **1 518** | **78.9** | **407** | **21.1** | **1 925** | **100.0** | **35** | **1 960** |
| LGH | 2015 | 982 | 76.6 | 300 | 23.4 | 1 282 | 100.0 | 180 | 1 462 |
| | 2016 | 1 142 | 78.5 | 313 | 21.5 | 1 455 | 100.0 | 181 | 1 636 |
| | 2017 | 1 096 | 79.1 | 289 | 20.9 | 1 385 | 100.0 | 168 | 1 553 |
| | 2018 | 1 181 | 81.6 | 267 | 18.4 | 1 448 | 100.0 | 128 | 1 576 |
| | **2019** | **1 194** | **80.9** | **281** | **19.1** | **1 475** | **100.0** | **97** | **1 572** |

**Figure 21: Women who gave birth, by tobacco smoking status during pregnancy and public hospital in Tasmania 2019**



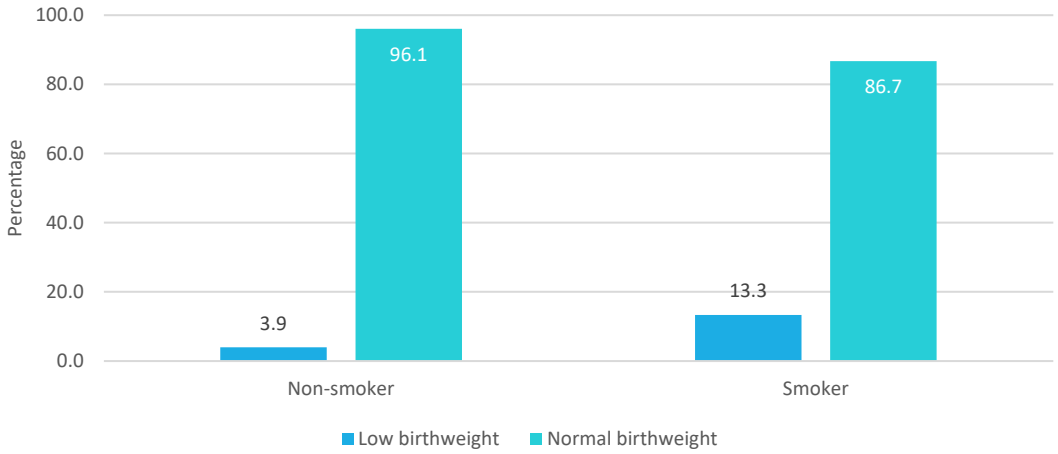

Low birthweight (LBW) is defined as a weight of less than 2 500 grams and includes babies that are small for gestational age as well as premature.

Based on the number of births (excluding multiple births, as multiparous births often result in low birthweight babies regardless of the mother's smoking status) whose mothers answered **Yes** to the smoking questions, a total of 118 babies in 2019 had a birthweight of less than 2 500 grams. Of these, 12.7 per cent had a birthweight of less than 1 500 grams (very LBW). In 2019, a total of 13.3 per cent of all women who had smoked in pregnancy had an LBW baby compared to 3.9 per cent of women who reported not to have smoked (see Table 66 and Figure 22), a difference which is statistically significant ($p<0.001$). This figure representing the proportion of low birthweight 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 2019 was 3.38 (95 per cent CI: 2.71, 4.22) in women who smoked in pregnancy compared with those who reported not to have smoked.

**Table 66: Women who gave birth, by tobacco smoking status during pregnancy and birthweight category 2015-2019**

| Birthweight category | Year | Did not smoke during pregnancy | | Smoked during pregnancy | | Total reported smoking status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| Low birthweight | 2015 | 207 | 4.9 | 150 | 13.7 | 357 | 100.0 | 25 | 382 |
| | 2016 | 221 | 5.0 | 145 | 13.6 | 366 | 100.0 | 26 | 392 |
| | 2017 | 212 | 5.0 | 137 | 14.3 | 349 | 100.0 | 21 | 370 |
| | 2018 | 208 | 4.9 | 120 | 13.5 | 328 | 100.0 | 22 | 350 |
| | **2019** | **176** | **3.9** | **118** | **13.3** | **294** | **100.0** | **37** | **331** |
| Normal birthweight | 2015 | 4 018 | 95.1 | 947 | 86.3 | 4 965 | 100.0 | 179 | 5 144 |
| | 2016 | 4 223 | 95.0 | 921 | 86.4 | 5 144 | 100.0 | 181 | 5 325 |
| | 2017 | 4 038 | 95.0 | 823 | 85.7 | 4 861 | 100.0 | 180 | 5 041 |
| | 2018 | 4 073 | 95.1 | 768 | 86.5 | 4 841 | 100.0 | 168 | 5 009 |
| | **2019** | **4 299** | **96.1** | **769** | **86.7** | **5 068** | **100.0** | **169** | **5 237** |

**Figure 22: Women who gave birth, by tobacco smoking status during pregnancy and birthweight category in Tasmania 2019**




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 3.38 may be an overestimate due to confounding (Epidemiology Unit, 2021).

## Smoking status during the first 20 weeks and after 20 weeks of pregnancy

In 2019, 16.7 per cent of women who gave birth smoked at some time during their pregnancy, with the smoking rate being lower in the first 20 weeks of pregnancy (13.7 per cent) than after 20 weeks of pregnancy (15.5 per cent); this was also observed in 2018.

The smoking during pregnancy trend in women in Tasmania remains a concern. The higher smoking rate in the last 20 weeks than the first 20 weeks could be explained by the following:

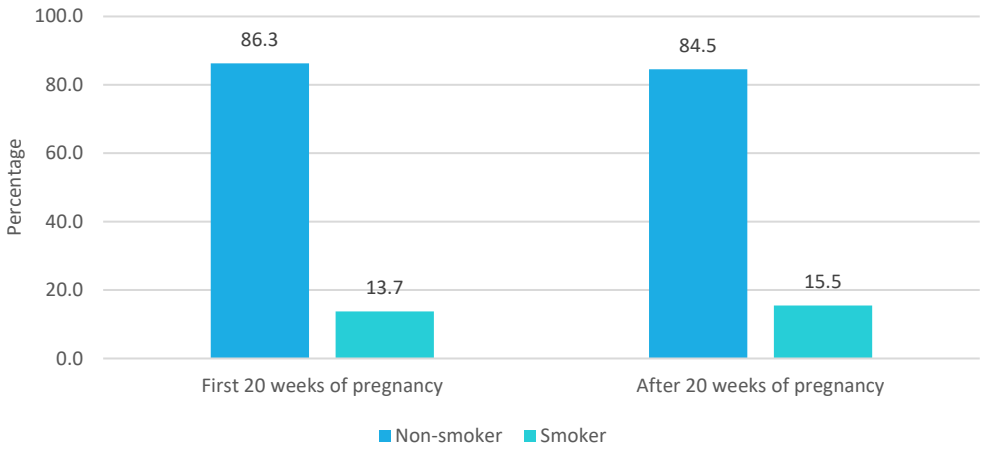
- Smoking status was assessed at each antenatal visit, 1-2 antenatal visits in the first 20 weeks and at least 8 visits in the last 20 weeks. The increased frequency of visits in the last 20 weeks of pregnancy may have provided a greater opportunity to capture smoking status in women who may have been more comfortable to disclose this information to their health care provider over time.
- Some women may not be booked until after 20 weeks when smoking status would be recorded. If women elect to attend a general practice setting in their early stages of pregnancy, smoking data is not recorded and therefore would be missed from the collection.

- While women are more likely to be motivated to quit/reduce smoking in the early stages of their pregnancy, these efforts may subside without effective smoking cessation support to help alleviate addiction/life stressors etc. As with any addiction, relapse is common despite being motivated to quit when pregnant.
- With the commencement of a 12-month Midwifery Group Practice Antenatal Routine Carbon Monoxide Monitoring project from July 2018 at the RHH, there was evidence to suggest that this routine monitoring led to better disclosure and identification of smoking status in pregnant women.

**Table 67: Women who gave birth, by tobacco smoking status during first and last 20 weeks of pregnancy 2015-2019**

| Gestational weeks | Year | Did not smoke during pregnancy | | Smoked during pregnancy | | Total reported smoking status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| First 20 weeks of pregnancy | 2015 | 4 402 | 84.5 | 806 | 15.5 | 5 208 | 100.0 | 402 | 5 610 |
| | 2016 | 4 642 | 85.1 | 814 | 14.9 | 5 456 | 100.0 | 362 | 5 818 |
| | 2017 | 4 382 | 84.9 | 781 | 15.1 | 5 163 | 100.0 | 333 | 5 496 |
| | 2018 | 4 414 | 86.0 | 721 | 14.0 | 5 135 | 100.0 | 301 | 5 436 |
| | **2019** | **4 601** | **86.3** | **733** | **13.7** | **5 334** | **100.0** | **317** | **5 651** |
| Last 20 weeks of pregnancy | 2015 | 4 367 | 81.0 | 1 024 | 19.0 | 5 391 | 100.0 | 219 | 5 610 |
| | 2016 | 4 612 | 82.3 | 989 | 17.7 | 5 601 | 100.0 | 217 | 5 818 |
| | 2017 | 4 392 | 83.1 | 893 | 16.9 | 5 285 | 100.0 | 211 | 5 496 |
| | 2018 | 4 417 | 84.3 | 821 | 15.7 | 5 238 | 100.0 | 198 | 5 436 |
| | **2019** | **4 598** | **84.5** | **842** | **15.5** | **5 440** | **100.0** | **211** | **5 651** |

**Figure 23: Women who gave birth, by tobacco smoking status during first and last 20 weeks of pregnancy in Tasmania 2019**

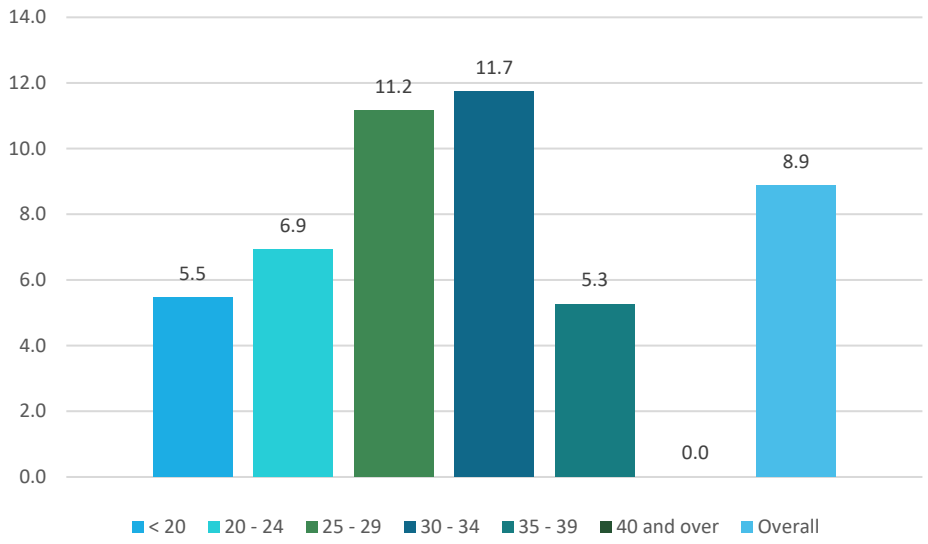


In 2019, nearly one in 10 women (8.9 per cent) smoked during the first 20 weeks but later quit. Mothers aged between 25 and 34 were the most likely to quit after 20 weeks, with more than 11 per cent doing so in 2019.

**Table 68: Percentage of women who gave birth, by tobacco smoking status during the first 20 weeks and did not continue to smoke after 20 weeks 2015-2019**

| Year | Overall | Less than 20 | 20-24 | 25-29 | 30-34 | 35-39 | 40 and over |
|---|---|---|---|---|---|---|---|
| 2015 | 9.4 | 10.3 | 11.8 | 6.4 | 9.1 | 10.7 | 11.1 |
| 2016 | 11.2 | 7.8 | 11.6 | 12.9 | 8.1 | 14.6 | 7.1 |
| 2017 | 9.3 | 5.6 | 7.5 | 10.2 | 12.3 | 10.5 | 9.1 |
| 2018 | 10.5 | 12.7 | 10.4 | 11.7 | 7.1 | 11.7 | 8.3 |
| **2019** | **8.9** | **5.5** | **6.9** | **11.2** | **11.7** | **5.3** | **0.0** |

**Figure 24: Percentage of women who gave birth, by tobacco smoking status during the first 20 weeks and did not continue to smoke after 20 weeks 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)[28]. *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[29]. 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)[30]. In fact, fetal alcohol exposure has been found to be a primary cause of neurological problems and mental retardation[31].

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[32].

High level and/or frequent intake of alcohol in pregnancy has also been associated with increased risk of miscarriage, stillbirth and premature birth[33]. In addition, there is new evidence to suggest that prenatal alcohol exposure may increase the risk of alcohol dependence in adolescence[34].

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

---

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

[29] 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.

[30] 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.

[31] 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.

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

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

[34] 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.

***Please note that***

1. ***the alcohol consumption status has been updated for mothers who gave birth at the public and public contracted private hospitals from 2011. Statewide agreement has been sought from those hospitals to use the alcohol consumption information collected from antenatal visits for reporting, same as smoking during pregnancy reporting methodology.***

   ***Therefore, the alcohol consumption figures in this report are not comparable to the figures published in the previous reports.***

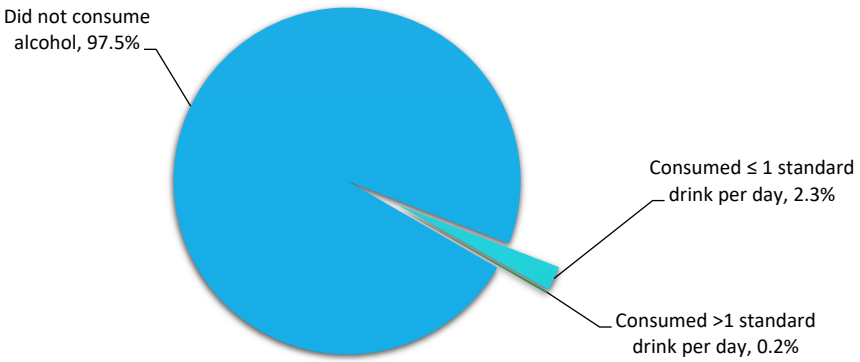
2. ***the percentages in this section are calculated after excluding records with missing values (i.e. unknown alcohol consumption status). Care must therefore be taken when interpreting these percentages.***

Table 69 and Figure 25 below show that overall, 2.5 per cent of Tasmanian women indicated that they had consumed alcohol during their pregnancy with 2.3 per cent reporting to have consumed one or fewer standard alcoholic drinks per day and 0.2 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 2019 was statistically significantly higher (p=0.035) than the 2018 figure of 1.9 per cent. The proportion of women aged 40 years and over who reported to have consumed alcohol during pregnancy has decreased from 3.6 per cent in 2018 to 0.6 per cent in 2019; however, the difference fell just short of being statistically significant (p=0.051). It is important to note that the decrease from 2018 to 2019 reversed the significant increase observed from 2017 to 2018, with the 2019 figure being similar to that for 2017 (1.0 per cent).

**Table 69: Proportion of women who gave birth, by alcohol consumption status during pregnancy, maternal age and election status 2015-2019**

| Year | Age (Years) | | | | | | | Election status | |
|---|---|---|---|---|---|---|---|---|---|
| | Overall | Less than 20 | 20-24 | 25-29 | 30-34 | 35-39 | 40 and over | Public | Private |
| 2015 | 3.6 | 2.8 | 3.1 | 2.7 | 4.0 | 5.2 | 3.4 | 4.5 | 0.7 |
| 2016 | 2.5 | 2.0 | 1.3 | 2.2 | 2.6 | 4.0 | 4.0 | 3.0 | 0.6 |
| 2017 | 2.3 | 2.9 | 2.1 | 1.3 | 2.8 | 3.2 | 1.0 | 2.8 | 0.3 |
| 2018 | 1.9 | 2.9 | 1.3 | 1.1 | 2.2 | 2.9 | 3.6 | 2.3 | 0.7 |
| **2019** | **2.5** | **2.3** | **1.0** | **2.2** | **2.7** | **4.4** | **0.6** | **2.5** | **2.4** |

**Figure 25: Women who gave birth, by alcohol consumption status during pregnancy in Tasmania 2019**




Number of mothers who reported alcohol consumption during pregnancy = 5 415 out of 5 651

NHMRC 2009 definition[35]: 1 standard drink is 10 grams of alcohol which is equivalent to 1 can/stubbie of mid-strength beer OR 100ml of wine (13.5 per cent alcohol) OR 30ml of spirits (1 nip)

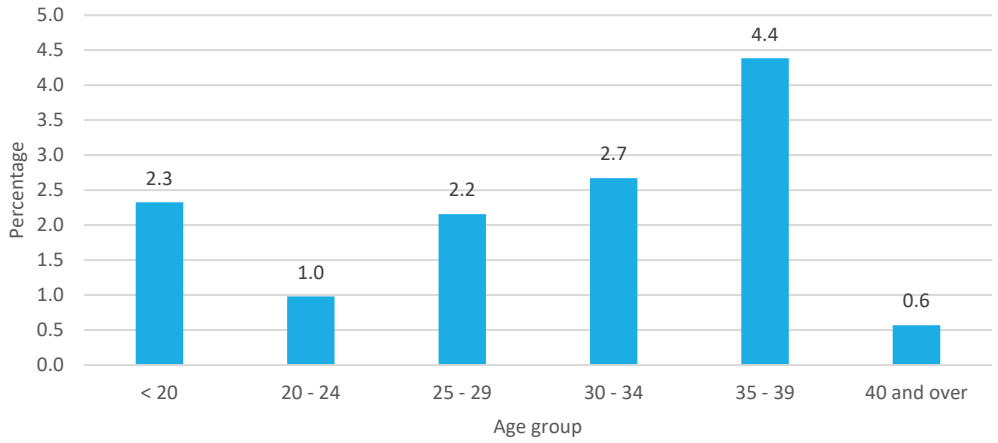
Maternal alcohol consumption remains generally higher for women aged 30-39 years, but no longer for mothers aged 40 years and over. For mothers aged 25-29 years, maternal alcohol consumption has doubled from 1.1 per cent in 2018 to 2.2 per cent in 2019, a difference which was statistically significant (p=0.016). For each of the remaining age groups, the proportion of mothers who reported consuming alcohol whilst pregnant was statistically similar to 2018 (Table 70 and Figure 26).

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

**Table 70: Women who gave birth, by alcohol consumption status during pregnancy and maternal age 2015-2019**

| Maternal age in year | Year | Did not consume alcohol during pregnancy | | Consumed alcohol during pregnancy | | Total reported alcohol consumption status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| Under 20 | 2015 | 239 | 97.2 | 7 | 2.8 | 246 | 100.0 | 1 | 247 |
| | 2016 | 239 | 98.0 | 5 | 2.0 | 244 | 100.0 | 4 | 248 |
| | 2017 | 199 | 97.1 | 6 | 2.9 | 205 | 100.0 | 0 | 205 |
| | 2018 | 170 | 97.1 | 5 | 2.9 | 175 | 100.0 | 2 | 177 |
| | **2019** | **168** | **97.7** | **4** | **2.3** | **172** | **100.0** | **0** | **172** |
| 20 - 24 | 2015 | 972 | 96.9 | 31 | 3.1 | 1 003 | 100.0 | 14 | 1 017 |
| | 2016 | 1 027 | 98.7 | 14 | 1.3 | 1 041 | 100.0 | 12 | 1 053 |
| | 2017 | 889 | 97.9 | 19 | 2.1 | 908 | 100.0 | 5 | 913 |
| | 2018 | 896 | 98.7 | 12 | 1.3 | 908 | 100.0 | 9 | 917 |
| | **2019** | **809** | **99.0** | **8** | **1.0** | **817** | **100.0** | **10** | **827** |
| 25 - 29 | 2015 | 1 482 | 97.3 | 41 | 2.7 | 1 523 | 100.0 | 50 | 1 573 |
| | 2016 | 1 525 | 97.8 | 34 | 2.2 | 1 559 | 100.0 | 51 | 1 610 |
| | 2017 | 1 494 | 98.7 | 20 | 1.3 | 1 514 | 100.0 | 43 | 1 557 |
| | 2018 | 1 513 | 98.9 | 17 | 1.1 | 1 530 | 100.0 | 42 | 1 572 |
| | **2019** | **1 588** | **97.8** | **35** | **2.2** | **1 623** | **100.0** | **52** | **1 675** |
| 30 - 34 | 2015 | 1 591 | 96.0 | 66 | 4.0 | 1 657 | 100.0 | 102 | 1 759 |
| | 2016 | 1 638 | 97.4 | 43 | 2.6 | 1 681 | 100.0 | 103 | 1 784 |
| | 2017 | 1 596 | 97.2 | 46 | 2.8 | 1 642 | 100.0 | 98 | 1 740 |
| | 2018 | 1 595 | 97.8 | 36 | 2.2 | 1 631 | 100.0 | 14 | 1 645 |
| | **2019** | **1 713** | **97.3** | **47** | **2.7** | **1 760** | **100.0** | **98** | **1 858** |
| 35 - 39 | 2015 | 733 | 94.8 | 40 | 5.2 | 773 | 100.0 | 54 | 827 |
| | 2016 | 810 | 96.0 | 34 | 4.0 | 844 | 100.0 | 64 | 908 |
| | 2017 | 777 | 96.8 | 26 | 3.2 | 803 | 100.0 | 60 | 863 |
| | 2018 | 795 | 97.1 | 24 | 2.9 | 819 | 100.0 | 49 | 868 |
| | **2019** | **829** | **95.6** | **38** | **4.4** | **867** | **100.0** | **64** | **931** |
| 40 and over | 2015 | 169 | 96.6 | 6 | 3.4 | 175 | 100.0 | 12 | 187 |
| | 2016 | 191 | 96.0 | 8 | 4.0 | 199 | 100.0 | 16 | 215 |
| | 2017 | 195 | 99.0 | 2 | 1.0 | 197 | 100.0 | 21 | 218 |
| | 2018 | 160 | 96.4 | 6 | 3.6 | 166 | 100.0 | 11 | 177 |
| | **2019** | **175** | **99.4** | **1** | **0.6** | **176** | **100.0** | **12** | **188** |

**Figure 26: Women who gave birth, by alcohol consumption status during pregnancy and maternal age in Tasmania 2019**



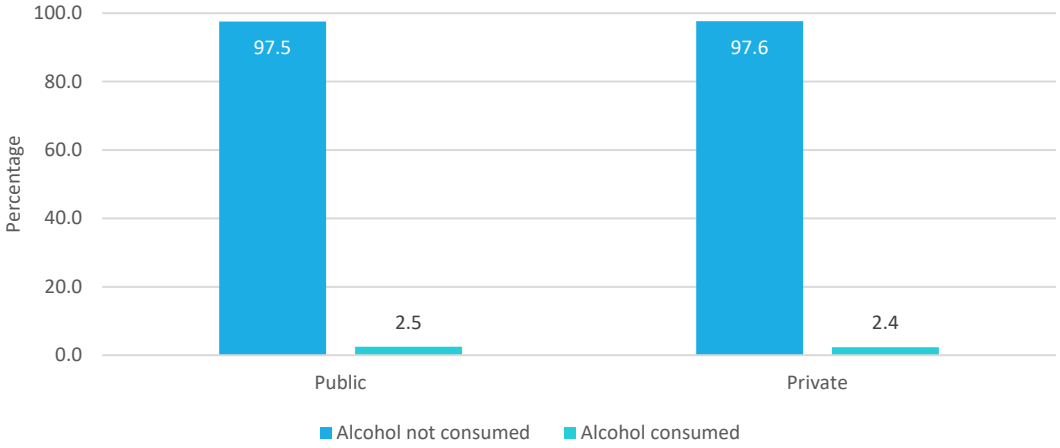

Alcohol consumption during pregnancy by private patients (2.4 per cent) was statistically significantly higher ($p<0.001$) than in the previous four years (2015-2018), and, in contrast to previous years, now similar to that for public patients (2.5 per cent), as shown in Table 71 and Figure 27.

Amongst mothers in 2019 who reported whether they had consumed alcohol whilst pregnant, 0.3 per cent of public patients reported consuming more than one alcoholic drink per day, compared to zero per cent of private patients.

**Table 71: Women who gave birth, by alcohol consumption status during pregnancy and admitted patient election status 2015-2019**

| Admitted patient election status | Year | Did not consume alcohol during pregnancy | | Consumed alcohol during pregnancy | | Total reported alcohol consumption status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| Public | 2015 | 3 849 | 95.5 | 182 | 4.5 | 4 031 | 100.0 | 33 | 4 064 |
| | 2016 | 4 144 | 97.0 | 130 | 3.0 | 4 274 | 100.0 | 46 | 4 320 |
| | 2017 | 3 929 | 97.2 | 115 | 2.8 | 4 044 | 100.0 | 14 | 4 058 |
| | 2018 | 3 886 | 97.7 | 92 | 2.3 | 3 978 | 100.0 | 23 | 4 001 |
| | **2019** | **3 908** | **97.5** | **99** | **2.5** | **4 007** | **100.0** | **21** | **4 028** |
| Private | 2015 | 1 292 | 99.3 | 9 | 0.7 | 1 301 | 100.0 | 199 | 1 500 |
| | 2016 | 1 247 | 99.4 | 8 | 0.6 | 1 255 | 100.0 | 204 | 1 459 |
| | 2017 | 1 169 | 99.7 | 4 | 0.3 | 1 173 | 100.0 | 213 | 1 386 |
| | 2018 | 1 196 | 99.3 | 8 | 0.7 | 1 204 | 100.0 | 184 | 1 388 |
| | **2019** | **1 325** | **97.6** | **32** | **2.4** | **1 357** | **100.0** | **215** | **1 572** |

**Figure 27: Women who gave birth, by alcohol consumption status during pregnancy and admitted patient election status in Tasmania 2019**



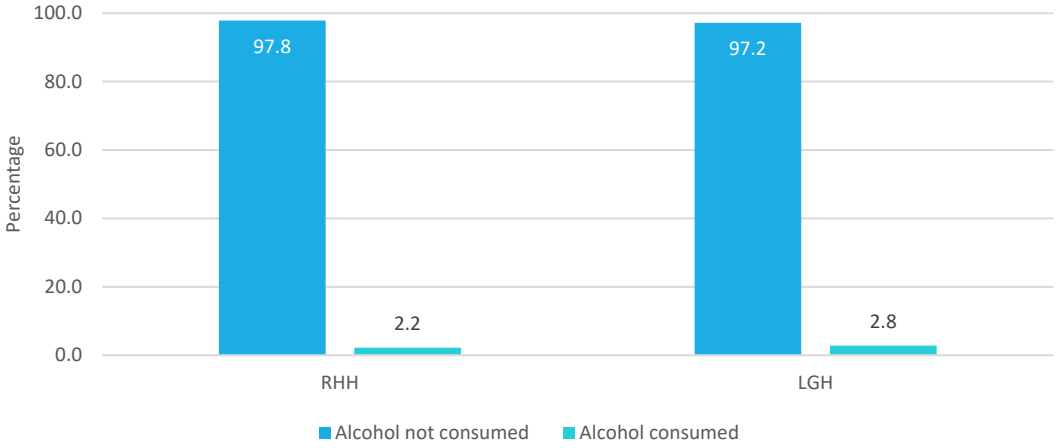

With regard to the proportion of Tasmanian mothers from public hospitals reporting to have consumed alcohol during pregnancy, Table 72 and Figure 28 show that in 2019, alcohol consumption during pregnancy was reported most frequently by patients at the Launceston General Hospital (2.8 per cent), followed by 2.2 per cent of patients at the Royal Hobart Hospital. Compared to 2018, a significantly higher proportion of mothers at the Launceston General Hospital reported that they had consumed alcohol whilst pregnant (2.8 per cent vs. 1.7 per cent, p=0.046), whilst for mothers at the Royal Hobart Hospital the maternal alcohol consumption figure was similar to the previous year (2.2 per cent vs. 2.8 per cent, p=0.238).

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.

**Table 72: Women who gave birth, by alcohol consumption status during pregnancy and public hospital in Tasmania 2015-2019**

| Public hospital | Year | Did not consume alcohol during pregnancy | | Consumed alcohol during pregnancy | | Total reported alcohol consumption status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| RHH | 2015 | 1 800 | 94.9 | 96 | 5.1 | 1 896 | 100.0 | 7 | 1 903 |
| | 2016 | 1 838 | 96.8 | 60 | 3.2 | 1 898 | 100.0 | 19 | 1 917 |
| | 2017 | 1 785 | 97.1 | 54 | 2.9 | 1 839 | 100.0 | 11 | 1 850 |
| | 2018 | 1 793 | 97.2 | 52 | 2.8 | 1 845 | 100.0 | 9 | 1 854 |
| | **2019** | **1 883** | **97.8** | **42** | **2.2** | **1 925** | **100.0** | **12** | **1 937** |
| LGH | 2015 | 1 216 | 95.4 | 59 | 4.6 | 1 275 | 100.0 | 6 | 1 281 |
| | 2016 | 1 392 | 96.9 | 45 | 3.1 | 1 437 | 100.0 | 7 | 1 444 |
| | 2017 | 1 327 | 96.9 | 42 | 3.1 | 1 369 | 100.0 | 2 | 1 371 |
| | 2018 | 1 414 | 98.3 | 25 | 1.7 | 1 439 | 100.0 | 7 | 1 446 |
| | **2019** | **1 408** | **97.2** | **41** | **2.8** | **1 449** | **100.0** | **4** | **1 453** |

**Figure 28: Women who gave birth, by alcohol consumption status during pregnancy and public hospital in Tasmania 2019**




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 birthweight babies regardless of the mother's smoking status) whose mothers answered **Yes** to the alcohol consumption questions, a total of 18 babies had a birthweight of less than 2 500 grams. Of these, 16.7 per cent (3) had a birthweight of less than 1 500 grams (very LBW).

In 2019, a total of 13.6 per cent of all women who had consumed alcohol during pregnancy had an LBW baby compared to 5.3 per cent of women who reported not to have consumed alcohol (Table 73 and Figure 29), a difference which is statistically significant ($p<0.001$).

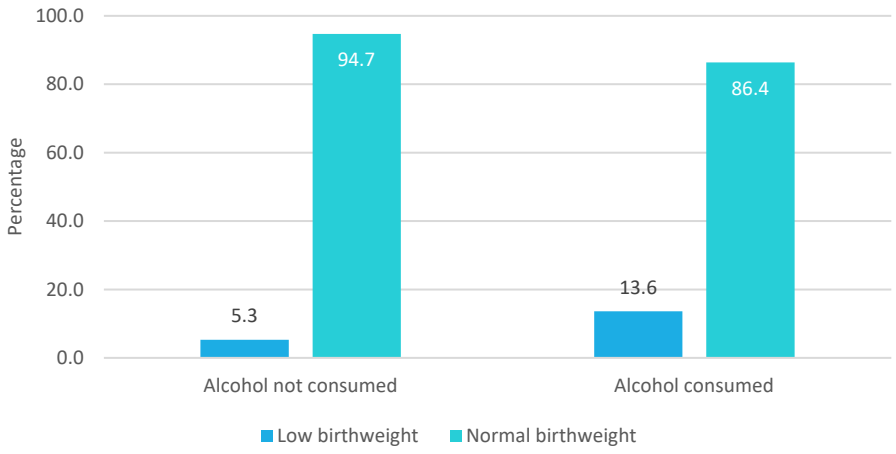
The relative risk of having an associated LBW baby in 2019 was 2.57 (95 per cent CI: 1.65, 4.01) in women who consumed alcohol in pregnancy compared to those who reported not having consumed alcohol, a ratio which is statistically significant ($p<0.001$). As such, this finding suggests that there is a proper association between maternal alcohol consumption and LBW babies.

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. 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 alcohol consumption. That is, the relative risk (RR) estimate of 2.57 may be an overestimate due to confounding (Epidemiology Unit, 2021).

**Table 73: Women who gave birth, by alcohol consumption status during pregnancy and birthweight category 2015-2019**

| Birthweight category | Year | Did not consume alcohol during pregnancy | | Consumed alcohol during pregnancy | | Total reported alcohol consumption status | | Not stated | Total |
|---|---|---|---|---|---|---|---|---|---|
| | | n | % | n | % | n | % | n | n |
| Low birthweight | 2015 | 342 | 6.7 | 12 | 6.3 | 354 | 100.0 | 28 | 382 |
| | 2016 | 354 | 6.6 | 9 | 6.7 | 363 | 100.0 | 29 | 392 |
| | 2017 | 338 | 6.7 | 9 | 7.6 | 347 | 100.0 | 23 | 370 |
| | 2018 | 323 | 6.4 | 4 | 4.0 | 327 | 100.0 | 23 | 350 |
| | **2019** | **276** | **5.3** | **18** | **13.6** | **294** | **100.0** | **37** | **331** |
| Normal birthweight | 2015 | 4 771 | 93.3 | 178 | 93.7 | 4 949 | 100.0 | 59 | 5 008 |
| | 2016 | 4 985 | 93.4 | 126 | 93.3 | 5 111 | 100.0 | 60 | 5 171 |
| | 2017 | 4 734 | 93.3 | 109 | 92.4 | 4 843 | 100.0 | 39 | 4 882 |
| | 2018 | 4 735 | 93.6 | 96 | 96.0 | 4 831 | 100.0 | 57 | 4 888 |
| | **2019** | **4 928** | **94.7** | **114** | **86.4** | **5 042** | **100.0** | **64** | **5 106** |

**Figure 29: Women who gave birth, by alcohol consumption status during pregnancy and birthweight category in Tasmania 2019**




Note: Multiple births have been omitted

## 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 (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 2019

Reset Form

**CONFIDENTIAL** *Obstetric and Paediatric Mortality and Morbidity Act 1994*

***Data submission timeline:** within 7 days of the birth of a baby.*

This form is to be completed for all babies (both liveborn & 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 (ART)?**

☐ 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

☐ Non-invasive prenatal testing

### 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 at all during the first half *(<20 weeks)* of pregnancy?**

**Frequency of drinking:**

☐ Never

☐ Monthly or less ☐ 2-4 times a month

☐ 2-3 times a week ☐ ≥4 times a week

No. of standard drinks on a typical day: ☐☐

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

**Frequency of drinking:**

☐ Never

☐ Monthly or less ☐ 2-4 times a month

☐ 2-3 times a week ☐ ≥4 times a week

No. of standard drinks on a typical 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

### ANTENATAL SCREENING

| | Yes | Not offered | Declined |
|---|---|---|---|
| **Mental health cond?** | ☐ | ☐ | ☐ |
| **Domestic violence?** | ☐ | ☐ | ☐ |

### VITAMIN SUPPLEMENTS **

**Did the mother take vitamin supplements during the pregnancy?**

☐ None ☐ Vitamin D

☐ Iron ☐ Folate, pre-conceptually

☐ Iodine ☐ Folate, post-conceptually

☐ Multi vitamins (pregnancy)

☐ Multi vitamins (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
☐ Antiprogestogen ☐ Other

**Indication for induction of labour** *(max 5 reasons)*
*Rank the reasons from 1 (main) to 5 (least)*

☐ Prolonged pregnancy
☐ Prelabour rupture of membranes
☐ Diabetes
☐ Hypertensive disorders
☐ Multiple pregnancy
☐ Chorioamnionitis (incl suspected)
☐ Cholestasis of pregnancy
☐ Antepartum haemorrhage
☐ Maternal age
☐ Body Mass Index (BMI)
☐ Maternal mental health indication
☐ Previous adverse perinatal outcome
☐ Other maternal obs/med indication
☐ Fetal compromise (incl suspected)
☐ Fetal growth restriction (incl suspected)
☐ Fetal macrosomia (incl suspected)
☐ Fetal death
☐ Fetal congenital anomaly
☐ Administrative/geographical indication
☐ Maternal choice
☐ Other indication not elsewhere classified

**Augmentation of labour**
*Both ARM & Oxytocin may be ticked*

☐ Not augmented
☐ ARM ☐ Oxytocin

**Analgesia during labour ****

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

**Principal accoucheur**

☐ Obstetrician ☐ Midwife
☐ GP Obstetrician
☐ Hospital Medical Officer ☐ 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 _____

## LABOUR & DELIVERY (cont.)

**Perineal status ****

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

**Indication for caesarean section** *(max 5 reasons)*
*Rank the reasons from 1 (main) to 5 (least)*

☐ Fetal compromise
☐ Suspected fetal macrosomia
☐ Malpresentation
☐ Lack of progress ≤3cm
☐ Lack of progress in the 1st stage, 4 to <10cm
☐ Lack of progress in the 2nd stage
☐ Placenta praevia
☐ Placental abruption
☐ Vasa praevia
☐ Antepartum/intrapartum haemorrhage
☐ Multiple pregnancy
☐ Unsuccessful attempt at assisted delivery
☐ Cord prolapse
☐ Previous adverse perinatal outcome
☐ Previous caesarean section
☐ Previous severe perineal trauma
☐ Previous shoulder dystocia
☐ Other indication not elsewhere classified
☐ Maternal choice

**Was the caesarean section:**

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

**Anaesthesia for delivery ****

☐ None ☐ Local anaesthetic
☐ Pudendal ☐ Epidural/caudal
☐ Spinal ☐ 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 ☐ Vacuum extraction
☐ Forceps - mid ☐ Vacuum rotation
☐ Forceps rotation ☐ Caesarean section

**Indigenous status**

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

**Actual place of birth**

☐ Hospital ☐ Birth centre ☐ Home/other

## 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 2
☐ Twin/Triplet 1 ☐ Triplet 3

**Resuscitation at birth ****

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

**Medical admission to SCN/NICU**

☐ No ☐ Yes, number of days ☐☐

## CONGENITAL ABNORMALITIES **

*Please complete the congenital abnormalities notification form*

☐ 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

*Completed by (name):* _____
*Contact details:* _____

# 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 7 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
GPO Box 125
Hobart TAS 7001
Phone : (03) 6166 1012
Email : ppp.perinataldata@health.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 Tasmanian Perinatal Data Collection Services for processing via email.

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

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

# Attachment C: National Perinatal Death Clinical Audit Tool (NPDCAT)

## 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

**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
Clinical Quality, Regulation and Accreditation
Level 2, 22 Elizabeth Street
HOBART TAS 7000

---

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

---

If you require further information please contact the Executive, Clinical Quality, Regulation and Accreditation on 6166 1052.

# Notes

# COUNCIL OF OBSTETRIC & PAEDIATRIC MORTALITY & MORBIDITY (TASMANIA)


Clinical Quality, Regulation and Accreditation
Department of Health

GPO Box 125, Hobart 7001

Phone: 6166 1052

Email: jo.jordan@health.tas.gov.au

Visit: www.health.tas.gov.au