

Victorian perinatal services performance indicators

2015-2016





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About this report

Monitoring and reporting on the outcomes and experiences of women and their babies during pregnancy and childbirth in Victorian health services is a key commitment of the Victorian Government.

This report presents data on 10 key performance areas of perinatal care in Victorian health services that span the antenatal, intrapartum (labour and birth) and postnatal periods (see Figure 1). The performance indicators in this report are currently accepted as key areas for monitoring the quality of care provided to women and babies. Consumer information is included for each indicator.

Benchmarking for quality and safety

The benchmarking data in this report are to assist Victorian public and private¹ health services, community and private maternity care providers (midwives, obstetricians and general practitioners) and the Department of Health and Human Services to identify best practice in relation to maternity and newborn care. It provides important information on the safety and quality of maternity and newborn care across Victorian health services.

Postnatal Antenatal Intrapartum Apgar score Outcomes for first-time First antenatal visit Breastfeeding mothers Vaginal birth after Readmission during Fetal growth restriction caesarean section postnatal period Smoking in pregnancy Term baby needing additional care Five-year gestation standardised perinatal mortality ratio (GSPMR)

Figure 1: Schema of perinatal performance indicators

1 For the first time, data for individual Victorian private hospitals for indicators 7 and 8 is included in this report.



Benchmarking is used to evaluate quality and safety in healthcare and can be either internal (to identify best practice within a health service and/or to compare practice over time) or externally focused. External benchmarking (or "competitive benchmarking") such as this report allows health services to assess their performance relative to peer-group organisations, identify best practice in their field, and discover improvements that have been successful in other organisations and that will in turn, improve their own performance.

The statewide rates (provided separately for either public or private hospitals or as a combined result) in this report **do not represent a desired target or expectation**. In most cases, further improvements in performance are achievable and expected. Table 1 provides a summary of the purpose and expected outcomes of each indicator.

To highlight variation across hospitals, results are displayed using interquartile ranges. This approach draws attention to the best performing services (green), those requiring further investigation or improvement (red) and where the majority of services lie (orange).

To deliver better health outcomes for all Victorians, a culture of continuous improvement in the healthcare sector is needed. Benchmarking can be a valuable tool for health services to achieve best practice but only when it is coupled with performance improvement activities. Therefore, health services, irrespective of their size, should review and examine their performance to understand the factors contributing to their results, and implement local initiatives to improve the outcomes and care provided. Safer Care Victoria will work with the least performing health services to understand the drivers for their reported performance, identify opportunities for improvement, and share positive examples of good practice where appropriate. Health services that are achieving best practice are expected to share their understanding and practices with others.

During 2015–16, many health services reported undertaking local quality improvement initiatives in response to previous publications of this report including: a review of clinical guidelines, practices and policies; targeted clinical audits; implementation of 'dashboards' to monitor selected maternity outcome data as close to real time as possible; and a greater commitment to work with clinical governance committees.

Indicator	Short description	Desired outcome
Indicator 1a	Rate of inductions in standard primiparae	Rates should be low and consistent for this low-risk group of women.
Indicator 1b	Rate of caesarean sections in standard primiparae	Variation in rates may indicate that clinical practice and/ or system processes may not be supported by evidence
Indicator 1c	Rate of third- and fourth-degree perineal tears in standard primiparae	for best clinical practice.
Indicator 2	Rate of term babies without congenital anomalies who require additional care	 Rates should be low and consistent across peer-group hospitals, reflecting differing casemix. High rates may indicate quality-of-care issues during labour and childbirth or suboptimal identification and/or management of complications during pregnancy.
Indicator 3	Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks	 Rates should be low and consistent across peer-group hospitals, reflecting differing casemix. Health services should aim to improve methods for identifying and managing severe FGR.
Indicator 4a	Rate of women who planned a vaginal birth after a primary caesarean section	Rates should be moderately high, with little variation across peer-group hospitals.
Indicator 4b	Rate of women who had a planned vaginal birth after a primary caesarean section	• Unless contraindicated, women should be provided with the opportunity for vaginal birth after caesarean section (VBAC) and information to support decision making.
Indicator 5	Perinatal mortality ratio for babies born at 32 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies)	 Variation among peer-group hospitals is expected to be small. Hospitals with higher ratios must understand the extent of suboptimal performance issues and will be expected to work with Safer Care Victoria to address.
Indicator 6a	Readmissions during the postnatal period (mother) – <i>new</i>	Rates should be low and consistent among peer-group hospitals.
Indicator 6b	Readmissions during the postnatal period (baby) – <i>new</i>	 As these indicators are new, health services should develop systems to explore the factors influencing results.
Indicator 7	Smoking cessation rate	 Rates should be high. Services should ensure the data submitted against this indicator is reliable.
Indicator 8a	Rate of breastfeeding initiation for babies born at 37+ weeks' gestation	Rates should be high and consistent among peer-group hospitals.
Indicator 8b	Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation	Rates should be low and consistent among peer-group hospitals.

Indicator	Short description	Desired outcome
Indicator 8c	Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation	 Rates should be high and consistent among peer-group hospitals.
Indicator 9	Rate of women attending their first antenatal visit prior to 12 weeks' gestation	 Rates should be high. Services should ensure data submitted against this indicator is reliable and meets the Victorian Perinatal Data Collection business rules. The large variation among Victorian hospitals should be a focus for improvement (data quality and performance) at the local, regional or system level.
Indicator 10	Rate of term babies without congenital anomalies with an Apgar score < 7 at five minutes	 Rates should be low and consistent among peer-group hospitals, reflecting differing casemix. Clinicians should ensure the Apgar assessment, scoring and reporting is accurate. This is an important indicator for longer term infant outcomes, and poorer results should be a priority area for performance improvement.

Data sources and reporting rules

The data for this report is derived from:

- the Victorian Perinatal Data Collection (VPDC) by calendar year (2015): Indicators 1, 3, 4, 5, 7, 8, 9 and 10
- the Victorian Admitted Episodes Dataset (VAED) by financial year (2015–16): Indicators 2 and 6.

The VPDC² and the VAED³ are routine health data collections managed by the Department of Health and Human Services. Public and private health services are required to submit data to both collections. Further information on the data sources and the business rules for each indicator can be found in Appendix 1.

There is an unavoidable time lag between data submission by health services and performance reporting. It is therefore important that health services regularly monitor their own performance and use this report to supplement evaluation of their performance relative to best practice and peer-group organisations.

When interpreting the data in this report, it is important to note the following:

 Apart from Indicator 5, data are only reported when a health service has had a *minimum* of 10 occasions for an event (denominator).⁴ Therefore, data from smaller health services should be interpreted with caution as it can be highly volatile. The interpretation of the gestation standardised perinatal mortality ratio (GSPMR) (Indicator 5) is complex and a detailed explanation is provided on pages 41–42. Separate reporting rules apply for the GSPMR as shown in Appendix 2.

2 The <u>VPDC manual</u>, including data definitions, business rules and submission guidelines, is available at https://www2.health.vic.gov.au/hospitals-and-health-services/qualitysafety-service/consultative-councils/council-obstetric-paediatric-mortality/perinatal-data-collections.

4 For example, a hospital that has not had 10 standard primiparae women birth in the given year (denominator) will not be included in the results for Indicator 1.

³ The <u>VAED</u> manual including data definitions, business rules and submission guidelines, is available at <a href="https://www.health.vic.gov.au/hospitals-and-bealth-services/data-collections/xaed-bealth-services/xaed-bealth-services/xaed-bealth-services/xaed-

- Private patients admitted to a public health service are reported in the results for the relevant public health service.
- Public health services' outcomes are presented in order of maternity service capability,⁵ as defined in the *Capability framework for Victorian maternity and newborn services* (Department of Health 2010) and then by the number of women who gave birth at each health service in 2015–16. An overview of the capability levels is provided at Figure 2. A detailed list of health service capability and the total number of women who gave birth in 2015–16 is provided at Appendix 3.
- Private health services' outcomes are presented according to the number of women who gave birth at each health service in 2015–16.
- Although the statewide rates provided for each indicator are a suitable measure for comparing health services, they do not necessarily represent the optimal or target rate.

The performance indicators in this report are reviewed periodically to ensure that they are fit for purpose,⁶ robust and feasible (Health Information and Quality Authority 2013). New indicators are added in response to current or emerging issues. Long-standing indicators may be retired when high levels of performance across Victorian health services are sustained for a period of time rendering that indicators are functionally redundant. The majority of indicators are outcome-focused (in the short term) and reflect 'the impact of services on the status of an individual or group' (Productivity Commission 2016, p. 10.50).

As part of the review process undertaken by the Victorian Perinatal Safety and Quality Committee, work is underway to develop a new performance indicator measuring access to antenatal care to replace the current Indicator 9. In addition, Indicator 1 and Indicator 2 are being considered for revision, and a new patient experience indicator is being prepared for inclusion in the 2016–17 reporting period.

What's new?

This 2015–16 report includes the following changes:

- Indicator 3 (severe fetal growth restriction) now excludes births before 32 weeks' gestation to better measure undetected fetal growth restriction in later pregnancy. This change means that the overall rate of undetected severe FGR will be marginally higher in this report compared with previous years. However, the effect is small, allowing health services to compare results with previous years.
- Indicator 6, the rate of women referred to postnatal domiciliary care, has been replaced by a new indicator to measure potentially preventable unplanned readmission of the mother and neonate during the postnatal period. This aims to reflect the quality of intrapartum and/or postnatal care provided by health services or transfer of care processes to other providers such as maternal and child health services.
- Indicator 7 is presented as the rate of women who smoked after 20 weeks' gestation compared with the rate of women who smoked before 20 weeks' gestation. This provides a measure of the 'smoking cessation rate' for each health service.
- Indicators 7 and 8 now include individual data for the 16 private hospitals that provide maternity care in Victoria. This is the first time that data for individual private hospitals has been publicly reported, and these indicators are the first to be publicly reported, with other indicators to follow in future reports as the department works in partnership with these private hospitals on public reporting of data.
- 5 The maternity capability levels used in this report are based on levels of care at the time of the reporting period.
- 6 'Fit for purpose' includes an assessment of whether each indicator is valid, reliable, evidence-based, sensitive, specific, relevant and timely.

Figure 2: Levels of maternity / neonatal care



Complex pregnancies, births and neonatal intensive care. Management of labour, birth and puerperium at all gestations.

Levels 4 and 5 Maternity service

Medium-complexity pregnancies and babies and moderate complications. Management of labour, birth and puerperium at 34 weeks' gestation (level 4) or 32 weeks' gestation (level 5).

Levels 2 and 3 Maternity service

Normal and low-complexity pregnancies and babies. Management of labour, birth and puerperium at 37 weeks' gestation or more.

About maternity and newborn capability levels

The Capability framework for Victorian maternity and newborn services (Department of Health 2010) and Defining levels of care for Victorian newborn services (Department of Health and Human Services 2015) describe the minimum standards for six levels of care from least complex (level 1) to most complex (level 6). Each level identifies the workforce, infrastructure and clinical support services recommended for health services to deliver safe, effective and appropriate maternity and newborn care (see Figure 2).

Capability levels are used in this report to create peer-hospital groups for benchmarking.

Benchmarking for performance improvement

Variation in hospitals may be due to a number of factors including differences in casemix, models of service delivery, data collection and reporting processes. Therefore, understanding a health service's performance should take into account outcomes across all indicators.

Health service managers and clinicians should use this report to:

- track their organisation's performance and trends
- compare their results with health services of a similar profile (capability and size)
- undertake ongoing local audits including adverse event reviews through their perinatal mortality and morbidity committees
- perform local analyses of specific groups or cohorts of cases (such as age profiles)
- identify priority areas for focus and plan for performance improvement within a continuous quality framework
- · evaluate improvement programs and provide feedback to relevant stakeholders
- · disseminate results internally to build engagement with the maternity team
- provide education and support to staff and the local community
- collaborate with neighbouring health services and community-based healthcare providers to improve local practice, referral systems and performance.



Each indicator has a list of recommended actions that should be undertaken by health services, particularly services with rates above their peers, to ensure ongoing performance improvement. These include:

- an assessment of their local capability, processes to support regular clinical audits and the provision of performance data feedback to clinicians
- a multidisciplinary review of local clinical practice guidelines and protocols to ensure they are based on current evidence and research
- a review of organisational barriers that constrain continual practice improvement
- benchmarking against peer-group services
- engaging with health services achieving better outcomes to support local and regional improvement (this may include referral of results to their regional perinatal morbidity and mortality committee for expert multidisciplinary consideration)
- identifying improvement goals including timelines, and working with the Department of Health and Human Services to monitor performance and improvement initiatives over time.

Data and results

Key strengths

The following indicators have improved in the 2015-16 reporting period.

Indicator 1b: The statewide rate of standard primiparae who gave birth by caesarean section in public hospitals has decreased slightly from 16.1 per cent in 2014 to 15.9 per cent in 2015.

Indicator 3: The statewide proportion of severely growth-restricted singleton babies who were not born by 40 weeks' gestation in public hospitals reduced from 34.6 per cent in 2014 to 33.5 per cent in 2015. This comparison is based on the definition for severe FGR used in previous reports. See 'What's new' section on page 6.

Indicator 4a: The proportion of women planning a VBAC in public hospitals has increased from 27.4 per cent in 2014 to 29.3 per cent in 2015.

Indicator 4b: The proportion of women in public hospitals who had a planned VBAC increased from 54.2 per cent in 2014 to 57.7 per cent in 2015.

Indicator 7: The smoking cessation rate in public hospitals has increased slightly from 38.1 per cent in 2014 to 39.0 per cent in 2015.

Key learnings and opportunities

The following outcomes suggest the need for health services to review their practices to identify opportunities for performance improvement including improvements to data collection for example for Indicator 9 'Rate of women attending their first antenatal visit prior to 12 weeks' gestation'.

Indicator 1a: The statewide public hospital rate of inductions of labour in standard primiparae increased slightly from 2.9 per cent in 2014 to 3.0 per cent in 2015.

Indicator 1c: The statewide rate of standard primiparae with third- or fourth-degree perineal tears increased slightly from 6.2 per cent in 2014 to 6.5 per cent in 2015.

Indicator 2: The rate of term babies without congenital anomalies who required additional care increased slightly from 8.5 per cent in 2014–15 to 8.6 per cent in 2015–16.

Indicator 9: Though the statewide public hospital rate of women attending their first antenatal visit by 12 weeks' gestation increased from 20.0 per cent to 20.2 per cent in 2015, it remains less The rate is significantly higher for private hospitals (85.4 per cent in 2015).

Indicator 10: In 2015 a five-minute Apgar score less than 7 was reported for 1.5 per cent of singleton, term babies without congenital anomalies in statewide public hospitals and 0.9 per cent in private hospitals. These rates have remained the same as in 2014. Data for 2015 regarding the rate of 'Apgar score < 7 at five minutes' showed significant variation between public hospitals.

Summary of statewide outcomes

Table 2 (on pages 11–12) summarises the statewide public and private hospital rates for the 2015–16 reporting period and the interquartile cut off rates (most favourable and least favourable). The statewide public hospital rates for the 2014–15 reporting period have also been provided for comparison.



Table 2: Summary of statewide results, 2015–16

Perinatal indicator	Statewide public 2015-16	Statewide private 2015-16	Least favourable quartile cut- off	Most favourable quartile cut- off	Statewide public 2014-15
Indicator 1a : Rate of inductions in standard primiparae (page 27)	3.0%	13.6%	≥ 4.1%	≤ 0%	2.9%
Indicator 1b: Rate of caesarean sections in standard primiparae (page 28)	15.9%	33.6%	≥ 21.7%	≤ 11.6%	16.1%
Indicator 1c : Rate of third- and fourth- degree perineal tears in standard primiparae giving birth vaginally (page 29)	6.5%	2.7%	≥ 8.7%	≤ 0%	6.2%
Indicator 2 : Rate of term babies without congenital anomalies who require additional care ⁷ (page 32)	8.6%	N/A	≥ 8.4%	≤ 2.7%	8.5%
Indicator 3 : Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks (page 35)	34.9%	36.3%	≥ 40.7%	≤ 27.3%	N/A
Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section (page 38)	29.3%	15.8%	≤ 19.8%	≥ 34.5%	27.4%
Indicator 4b : Rate of women who had a planned vaginal birth following a primary caesarean section (page 39)	57.7%	50.8%	≤ 53.0%	≥ 71.4%	54.2%
Indicator 5 : Perinatal mortality ratio for babies born at 32 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years' pooled data (2011–2015) (page 44)	1.00	0.69	≥ 1.24	≤ 1.02	1.00
Indicator 6a: Potentially preventable readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public hospital (pages 57–58)	2.4%	N/A	≥ 3.0%	≤ 1.9%	N/A
Indicator 6b : Potentially preventable readmission of a neonate within 28 days of discharge from a birthing episode admission in a Victorian public hospital (pages 59–60)	4.0%	N/A	≥ 3.9%	≤ 1.5%	N/A
Indicator 7 : Smoking cessation rate (page 63)	39.0%	76.9%	≤ 21.4%	≥ 50.0%	38.1%

7 Indicator 2 is derived from data collected in the VAED and is reported by financial year (2015–16).

Perinatal indicator	Statewide public 2015-16	Statewide private 2015–16	Least favourable quartile cut- off	Most favourable quartile cut- off	Statewide public 2014–15
Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks' gestation (page 67)	94.8%	96.7%	≤ 92.6%	≥ 97.5%	94.7%
Indicator 8b : Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation (page 68)	25.2%	38.7%	≥ 32.6%	≤ 14.7%	25.2%
Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37 ⁺ weeks' gestation (page 69)	79.7%	72.9%	≤ 77.6%	≥ 91.6%	80.0%
Indicator 9 : Rate of woman attending their first antenatal visit prior to 12 weeks' gestation (page 73)	20.2%	85.6%	≤ 8.8%	≥ 42.9%	20.0%
Indicator 10 : Rate of term babies without congenital anomalies with an Apgar score of < 7 at five minutes (page 76)	1.5%	0.9%	≥ 1.9%	≤ 0.9%	1.5%

N/A - not applicable (new indicator (6a and 6b) or refinement of the indicator (7) has resulted in rates that are not comparable with previous years).

Statewide outcomes



This section displays the combined results for selected indicators to allow comparison across a number of related measures.

Figure 3 on page 14 charts the outcomes for standard primiparae in 2015.

Figure 4 on page 16 shows hospital breastfeeding rates in 2015.

Figure 5 on page 18 shows the 32-week gestation standardised perinatal mortality ratio with results for FGR and Apgar in 2015.

Figures 6-11 on pages 19-23 compare statewide performance for Indicators 1, 2, 4, 5, 9 and 10 over time.

Figure 3: Outcomes for standard primiparae, 2015 (Indicators 1a, b and c)





How to interpret this chart

This radar plot displays performance relating to the three sub-indicators of Indicator 1: Outcomes for standard primiparae. Each wedge of the radar provides individual public hospitals' results for 2015 for:

- Indicator 1a rate of inductions of labour
- · Indicator 1b rate of caesarean sections
- · Indicator 1c rate of third- and fourth-degree perineal tears

Public hospitals are ordered clockwise by their capability level (from level 6 to level 2), then by the number of births that occurred at each hospital in 2015. The statewide rates for public and private hospitals are also presented.

Results for each hospital are shown as a point on the radial axis, with increasingly better outcomes moving towards the centre. Each indicator is represented by a different coloured point, provided at the top of the radar. The three coloured solid lines represent the least favourable quartile for each respective indicator (upper quartile). The arrows highlight the direction of the desired outcome; therefore, results outside the corresponding upper quartile indicate a least performing hospital relative to its peers and the statewide average.

Figure 4: Breastfeeding in hospital, 2015 (Indicators 8a, b and c)





How to interpret this chart

This radar plot displays performance relating to the three sub-indicators of Indicator 8: Breastfeeding in hospital. Each wedge of the radar provides individual public hospitals' results for 2015 for:

- Indicator 8a rate of breastfeeding initiated
- Indicator 8b rate of infant formula given
- Indicator 8c rate of last feed from the breast.

Public hospitals are ordered clockwise by their capability level (from level 6 to level 2), then by the number of births that occurred at each hospital in 2015. Private hospitals are ordered clockwise after public hospitals by their number of births. The statewide rates for public and private hospitals are also presented.

Results for each hospital are shown as a point on the radial axis. Each indicator is represented by a different coloured point. The three coloured solid lines represent the least favourable quartile for each respective indicator (8a lower quartile; 8b upper quartile; and 8c lower quartile). The arrows highlight the direction of the desired outcome; therefore, results outside the relevant quartile and not in the desired direction indicate a least performing hospital relative to its peers and the statewide average.

Figure 5: 32-week gestation standardised perinatal mortality ratio with results for fetal growth restriction and Apgar, 2015 (Indicators 3, 5 and 10)



How to interpret this chart

This bubble plot displays individual public hospitals' performance against the following three indicators:

- Indicator 3 Babies with severe FGR born at 40 or more weeks' gestation
- Indicator 5 Gestation standardised perinatal mortality ratio for 2011–15 (GSPMR)
- Indicator 10 Apgar score of < 7 at five minutes.

Each hospital is represented by a bubble, the size of which represents their performance against Indicator 5 (32-week gestation GSMPR). Hospitals with a higher mortality ratio (less favourable outcome) have a larger bubble, while hospitals with a lower mortality ratio (more favourable outcome) have a smaller bubble.

The position of each hospital in relation to the horizontal axis represents the percentage of babies with severe FGR who are born at 40 or more weeks' gestation (Indicator 3). Hospitals with a higher rate (less favourable outcome) are shifted further to the right.

The position of each hospital to the vertical axis represents the proportion of term babies without congenital anomalies with an Apgar score < 7 at five minutes (Indicator 10). Hospitals with a less favourable Apgar score appear towards the top of the chart.

Figure 6: Statewide comparison of performance for outcomes for standard primiparae (Indicators 1a, 1b and 1c), 2010 and 2015





Figure 7: Statewide comparison of performance for term babies without congenital anomalies who require additional care (Indicator 2), 2010–2011 and 2015–2016





Figure 8: Statewide comparison of performance for vaginal births after primary caesarean section (Indicators 4a and 4b), 2010 and 2015



Figure 9: Statewide comparison of performance for gestation standardised perinatal mortality ratio at 32 weeks (Indicator 5), 2006–2010 and 2011–2015





Figure 10: Statewide comparison of performance for first antenatal visit before 12 weeks' gestation (Indicator 9), 2010 and 2015

Figure 11: Statewide comparison of performance for Apgar score < 7 at five minutes (Indicator 10), 2012 and 2015



Indicators 1a, b and c:

Outcomes for standard primiparae

Purpose and rationale

The 'standard primipara' is the cohort of women with uncomplicated or low-risk pregnancies. The intervention and complication rates for this group of women should be low and broadly consistent across hospitals.

This suite of measures shows the outcomes for standard primiparae in relation to:

- Indicator 1a the rate of inductions
- Indicator 1b the rate of caesarean sections
- · Indicator 1c the rate of third- and fourth-degree perineal tears.

Comparing the rates between hospitals of the outcomes for standard primiparae (rather than all women giving birth) controls for differences in complexity of caseloads and therefore increases the validity of those comparisons.

The standard primipara definition and inclusion criteria for the indicator are outlined in Appendix 1.

Clinical significance

Intervention(s) during labour and birth, particularly for women having their first baby, can occur at different stages and should be limited to women who have a clear medical or psychosocial indication.

For primiparous women, a caesarean section limits the potential to birth vaginally in future pregnancies and has other important consequences following birth and for future pregnancies. Given that 'standard primiparae' are expected to experience an uncomplicated or low-risk pregnancy, it is also expected that the rate of induction and caesarean section should, in most cases, be close to zero.

Some of the variation between hospitals may reflect incomplete reporting of pre-existing maternal medical conditions or complications of pregnancy. However, health services that are consistently above the statewide average for inductions of labour or caesarean section, especially for 'standard primiparae', should audit their policies, procedures and practices to identify the underlying reasons and areas for improvement.

Third- and fourth-degree perineal tears are a significant birth-related complication that may lead to longterm disability or morbidity. Third- and fourth-degree tear rates may reflect the quality of intrapartum care or differences in how this data is reported and captured. There is evidence that improved care in second stage of labour is associated with reduction in third and fourth degree tear rates. Hospitals with high rates are encouraged to review their intrapartum practices, while those with very low rates may need to ensure staff are appropriately trained to identify and classify perineal tears.

Observations on the data

Indicator 1a: Inductions in standard primiparae

The statewide rate of standard primiparae having an induced labour in a public hospital increased slightly in 2015 (3.0 per cent) from 2.9 per cent in 2014 (see Figure 12).

Variation in the rate of inductions in standard primiparae was observed between individual public hospitals.



While some of the highest rates were reported in rural hospitals, this data should be interpreted with caution due to the small number of standard primiparae being cared for at these facilities.

Standard primiparae who gave birth in a private hospital were also more likely to have labour induced than those who gave birth in a public hospital. This is reflected in the significantly higher statewide rate for private hospitals of 13.6 per cent in 2015, which increased from 12.3 per cent in 2014. There is no apparent satisfactory explanation for this.

Indicator 1b: Caesarean section in standard primiparae

The statewide rate of standard primiparae who gave birth by caesarean section in a public hospital in 2015 was 15.9 per cent (Figure 13). This rate slightly decreased from 16.1 per cent in 2014.

The statewide rate of standard primiparae who gave birth by caesarean section in a private hospital increased from 31.5 per cent in 2014 to 33.6 per cent in 2015. Standard primiparae who gave birth in a private hospital were more likely than those in public hospitals to give birth by caesarean section. There is no apparent satisfactory explanation for this.

Indicator 1c: Third- and fourth-degree perineal tears in standard primiparae

Figure 14 shows that the statewide rate of standard primiparae with third- or fourth-degree perineal tears who gave birth in a public hospital increased slightly from 6.2 per cent in 2014 to 6.5 per cent in 2015. Fewer thirdand fourth-degree perineal tears for standard primiparae were reported in private hospitals in 2015 (2.7 per cent). There is significant variation in the rate of standard primiparae with third- or fourth-degree perineal tears between hospitals. This signifies opportunity for improvement.

Expectations for performance improvement

Hospitals are expected to:

- undertake regular multidisciplinary audit and review of the indications for induction of labour and caesarean section (weekly or monthly depending on the size of the service)
- ensure the information (verbal and written) provided to women regarding the benefits and risks of induction of labour and caesarean section are based on evidence
- undertake a review of the local booking, prioritisation and authorisation processes for induction of labour and caesarean section including escalation in the absence of clinical indication
- · consider processes to have a second peer-review process for interventions
- ensure clinicians are competent in avoiding as well as identifying and classifying perineal tears
- verify a sample of unit records with the Department of Health and Human Services to ensure local coding of standard primipara is correct (when local data varies from rates published in this report)
- ensure systems are in place to provide clinical follow-up to women affected post-discharge and to monitor their outcomes over time.

The Department of Health and Human Services' Maternity and Newborn Clinical Network has published the *Victorian standard for induction of labour*, which is available on the department's website at <<u>https://www2</u>. health.vic.gov.au/about/publications/policiesandguidelines/victorian-standard-for-induction-of-labour>.

Consumer summary

Indicators 1a, 1b and 1c: Outcomes for standard primiparae

A 'standard primipara' represents healthy woman aged 20–34 years who is giving birth for the first time to a single baby at term. (37 – 40 weeks).

This indicator focuses on low-risk and uncomplicated pregnancies. Therefore, medical intervention and the rate of complications during labour and birth for this group of women are expected to be low.

Induced labour and caesarean section can increase the risk of complications, lead to longer recovery times for women and adversely affect future pregnancies. Therefore, hospitals with higher levels of medical intervention are encouraged to review their practices and processes.

Complications such as third- and fourth-degree perineal tears after vaginal birth can cause long-term problems for women. Therefore, a low rate of third- and fourth-degree perineal tears after vaginal birth is desirable.

The data presented in this report indicate variation in practice across Victorian hospitals. Overall, private hospitals had higher rates of medical intervention (13.6 per cent for induction of labour; 33.6 per cent for caesarean section) than public hospitals (3.0 per cent for induction of labour; 15.9 per cent for caesarean section) but a lower rate of third- and fourth-degree tears after vaginal birth (2.7 per cent) than public hospitals (6.5 per cent).

Ask your health service about the level of organisational and clinical support provided to low-risk women to avoid unnecessary interventions and complications.

Figure 12: Indicator 1a: Rate of inductions of labour in standard primiparae in Victorian public hospitals, 2015

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	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	3.0% (0.0%; 4.1%)	2.9%	2.9%	2.9%
Private hospitals	13.6%	12.3%	13.8%	12.6%

Note: Health services that do not meet the reporting threshold of \ge 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \ge 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting. Only those services that had a published result in the 2014–15 reporting period will have a direction of change dot shown on the graph.

Figure 13: Indicator 1b: Rate of caesarean sections in standard primiparae in Victorian public hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	15.9% (11.6%; 21.7%)	16.1%	15.5%	15.5%
Private hospitals	33.6%	31.5%	33%	29.6%

Note: Health services that do not meet the reporting threshold of \ge 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \ge 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting. Only those services that had a published result in the 2014–15 reporting period will have a direction of change dots shown on the graph.

Figure 14: Indicator 1c: Rate of third- and fourth-degree perineal tears in standard primiparae giving birth vaginally in Victorian public hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	6.5% (0.0%; 8.7%)	6.2%	5.7%	6.8%
Private hospitals	2.7%	3.3%	3.2%	2.9%

Note: Health services that do not meet the reporting threshold of \ge 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \ge 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting. Only those services that had a published result in the 2014–15 reporting period will have a direction of change dots shown on the graph.

Indicator 2: Term babies without congenital anomalies who require additional care

Purpose and rationale

This indicator aims to report the care required for term babies without congenital anomalies, as an indirect measure of the quality of perinatal care provided during labour, birth and/or the immediate neonatal period.

Term babies without congenital anomalies reflected in this measure include those with low five-minute Apgar scores, birth trauma, early seizures, hypoxic ischaemic encephalopathy, FGR and sepsis. It also includes babies with minor conditions such as hyperbilirubinaemia.

The indicator is derived from newborn diagnostic-related groups and Australian Classification of Health Interventions procedure codes (National Centre for Classification in Health 2007) to identify the term babies requiring more than normal care. This may include babies who were admitted to a special care nursery or neonatal intensive care unit (see Appendix 1 for further information on the data specifications for this indicator).

Some of the variation occurring between health services may be due to differences in reporting to the VAED, therefore health services should ensure they have accurate capture and reporting of newborn diagnostic and treatment codes.

Clinical significance

The babies included in this indicator are at least 37 weeks 0 days' gestation, have a birthweight of 2,500 grams or more, and are born without congenital anomalies. Therefore, their need for additional medical care and treatment should be low. Higher rates may indicate quality-of-care issues during labour, birth and/or the immediate neonatal period.

Observations on the data

The rate of term babies born in a public hospital without congenital anomalies who required additional care in 2015–16 was 8.6 per cent. This was a slight increase from 8.5 per cent in 2014–15. Data show wide variation between public hospitals, ranging from a rate of 0.0 to 20.2 per cent (see Figure 15).

Expectations for performance improvement

Health services should ensure there are adequate mechanisms to capture, review and report on adverse intrapartum events and outcomes.

Hospitals are expected to:

- undertake multidisciplinary reviews of adverse events and outcomes to identify areas for clinical practice or system improvement
- monitor the competency and confidence of their clinicians in fetal surveillance during labour and in neonatal resuscitation
- review the availability of senior clinicians to both supervise junior staff and be available to rapidly escalate care after hours.
Consumer summary

Indicator 2: Term babies without congenital anomalies who require additional care

Following birth, some babies will develop problems that require more than normal care. This may include admission to a special care nursery or neonatal intensive care unit.

This indicator focuses on the quality of care during labour, birth and immediately following birth for babies born after 37 weeks' gestation without congenital anomalies. In 2015–16, 8.6 per cent of babies born in public hospitals at more than 37 weeks' gestation and without congenital anomalies required additional care.

Health services should review their performance to determine whether there may be avoidable reasons for the higher care needs of babies.

Ask your health service how they review unexpected events during labour and childbirth, how often this review is undertaken, and how they report on service improvement.

Figure 15: Indicator 2: Rate of term babies without congenital anomalies who required additional care in Victorian public hospitals, 2015–16



Statewide rates

	2015–16 (quartiles: lower; upper)	2014-15	2013-14	2012-13
Public hospitals	8.6% (2.7%; 8.4%)	8.5%	8.4%	8.0%

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \geq 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting.

Indicator 3: Severe fetal growth restriction (FGR)



Purpose and rationale

The purpose of this indicator is to identify the proportion of **severely** growth-restricted singleton babies who were not born by 40 weeks' gestation.

For this indicator, a baby is considered to be **severely** growth-restricted when their birthweight is **less than the third centile for gestation, sex and plurality** (Dobbins et al. 2012), which gives the tables for birthweight percentiles according to the gestational week for live singleton babies in Australia. For example, if a male singleton baby weighing 1,700 grams is born at 35 weeks, it falls below the third centile for gestation, sex and plurality and hence is severely growth restricted. Severe FGR is associated with adverse perinatal outcomes, including perinatal mortality (Unterscheider et al. 2013). The detection of sever FGR allows timely delivery reducing perinatal mortality rate.

The rate of severe FGR in singleton babies who were not born by 40 weeks' gestation has been chosen as the performance indicator for quality of antenatal

In this report, the indicator now excludes births prior to 32 weeks to better measure undetected fetal growth restriction in later pregnancy

For further information on the data specifications for this indicator, refer to Appendix 1.

Clinical significance

Severe FGR is associated with increased risk of perinatal mortality and morbidity, admission to a special care nursery or neonatal intensive care unit, and long-term health consequences (Ismail & Chang 2012; Liu et al. 2014). The risk of mortality for a severely growth-restricted baby increases as the pregnancy advances.

Growth-restricted babies should be identified during the antenatal period to allow medical management and appropriate timing of the birth before 40 weeks' gestation. Detection of severe FGR, and active monitoring and management during pregnancy is expected to reduce the increased risk of mortality and morbidity.

Observations on the data

In 2015, 34.9 per cent of singleton babies with severe FGR were born at 40 or more weeks' gestation in Victorian public hospitals and there is wide variation between hospitals with performance ranging from 21.4 per cent to 64.3 per cent (Figure 16).

In 2015 there was a slightly higher proportion of severely growth-restricted babies undelivered at 40 weeks' gestation in private (36.3 per cent) compared with public hospitals.

Expectations for performance improvement

Improved detection of severe FGR, and improved monitoring and management during pregnancy, is important, therefore health services (and in particular those with higher results are expected to:

- monitor their rates at a regular interval (monthly or quarterly depending on the size of the service) including the possible reasons for the lack of detection
- the detection of sever FGR allows timely delivery reducing perinatal mortality rate
- provide direct feedback to clinicians following multidisciplinary case review monitor the competency and confidence of clinicians in assessing fetal wellbeing during pregnancy
- review and update local fetal surveillance procedures and FGR policies to ensure there is a clear and evidence-based course of action
- ensure obstetric ultrasound procedures to monitor fetal wellbeing and growth are of high quality and according to current clinical standards
- ensure women with higher risk pregnancies are referred to the most appropriate level of service, within or outside of the organisation.

Consumer summary

Indicator 3: Rate of Severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks

FGR refers to poor growth of a baby during pregnancy. Severe FGR is associated with increased risk of death and long-term health consequences for babies; therefore, it is recommended that severely growth-restricted babies are identified and born before 40 weeks' gestation.

This indicator is concerned with babies with severe FGR who were not born before 40 weeks' gestation, reflecting poor identification or management.

The data presented in this report indicates that a high number of severely growth-restricted babies were not born before 40 weeks' gestation in both private (36.3 per cent) and public hospitals (34.9 per cent).

Although this is a challenging issue for healthcare providers, the data suggests an immediate need for Victorian hospitals to improve methods for identifying and managing severe FGR.

Ask your health service about the risk factors for FGR, and let them know if you are concerned about your baby's growth, movement or wellbeing during pregnancy.

Figure 16: Indicator 3: Rate of severe fetal growth restriction (FGR) in a singleton pregnancy undelivered by 40 weeks in Victorian public hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	34.9% (27.3%; 40.7%)	N/A	N/A	N/A
Private hospitals	36.3%	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on only those public health services that meet the criteria for public reporting.

Indicators 4a and 4b: Vaginal births after

primary caesarean section

Purpose and rationale

This indicator identifies the proportion of women who planned for a vaginal birth after a primary caesarean section (VBAC) (Indicator 4a) of those, who had term VBAC (Indicator 4b).

Each woman who has had a previous caesarean section must be assessed by their maternity care provider to determine if there are any contraindications to her planning a VBAC for subsequent births. If there are none, and appropriate clinical support can be provided by the hospital, women should be encouraged to consider or plan a VBAC and be offered factual information about the risks and benefits.

A planned VBAC should be conducted in a suitability staffed and equipped delivery suite with continuous intrapartum care and monitoring, and with available resources for urgent caesarean section and advanced neonatal resuscitation in case complications occur (Royal Australian and New Zealand College of Obstetricians and Gynaecologists 2015). Not all hospitals in Victoria offer VBAC. Those that do not, have been excluded from the indicator.

Clinical significance

Approximately one-third of all babies in Victoria are born by caesarean section (Consultative Council on Obstetric and Paediatric Mortality and Morbidity 2016). While many of these procedures are necessary and improve outcomes for women and babies, having a caesarean section can prolong recovery from the birth, increase the small risk of serious morbidity after the birth and increase the risk of major complications in subsequent pregnancies (particularly problems with implantation of the placenta). For health services, caesarean section procedures require additional resources and costs.

Reducing the number of avoidable caesarean sections minimises these problems. There are two main strategies to achieve this:

- preventing a woman's first caesarean section (having a caesarean section for the first birth greatly increases the risk of needing a caesarean in subsequent births)
- encouraging women who have had a prior caesarean section to safely attempt a subsequent VBAC and supporting them to achieve this (Royal Australian and New Zealand College of Obstetricians and Gynaecologists 2015).

The safety of women and babies is paramount. Sound clinical judgement is required to differentiate the avoidable from the unavoidable first caesarean section and to assess women with a prior caesarean section for whom a plan for a VBAC is appropriate.

Observations on the data

Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section

The proportion of women planning a VBAC in public hospitals increased from 27.4 per cent in 2014 to 29.3 per cent in 2015. However, wide variation was observed between public hospitals, ranging from a rate of 0.0 per cent to 58.5 per cent.

Similarly to previous years, fewer women attending private hospitals planned a VBAC (15.8 per cent) when compared with women attending public hospitals (see Figure 17).



Indicator 4b: Rate of women who had a planned vaginal birth following a primary caesarean section

In 2015 there was an increase in the proportion of women who had a planned VBAC compared with the previous year in both public (57.7 per cent in 2015; 54.2 per cent in 2014) and private hospitals (50.8 per cent in 2015; 48.9 per cent in 2014). Again, wide variation in rates between public hospitals was observed (see Figure 18).

Expectations for performance improvement

Health services are expected to:

- report on the capability of the health service to offer a VBAC to women without contraindications
- undertake a review of the VBAC pathway offered and report on identified deficiencies to assessing facilities, specialists or standards of care
- ensure the information (verbal and written) provided to women regarding the benefits and risks of VBAC are evidence-based.

Consumer summary

Indicator 4: Vaginal births after primary caesarean section

Caesarean section can be a life-saving procedure. However, it is associated with greater health risks for both the woman and her baby and should only be considered when medically indicated. Having a caesarean section for the first birth greatly increases the risk of needing a caesarean section in subsequent births. Additionally, the risk of severe complications increases significantly with each caesarean section. For women who have had a previous caesarean section, it is important to determine whether it is medically safe to attempt a vaginal birth.

This indicator looks at the rate of women who have had one prior birth that was a caesarean section and who plan a VBAC (Indicator 4a), as well as the proportion of those who plan a VBAC who actually do give birth vaginally (Indicator 4b).

The data presented in this report indicates variation in practice across Victorian hospitals. Overall, the number of women who planned a VBAC was greater in public (29.3 per cent) than private hospitals (15.8 per cent). Of these women, 57.7 per cent compared with 50.8 per cent who gave birth in a public and private hospital respectively had a VBAC.

Ask your health service about the level of organisational and clinical support provided to women wishing to safely follow the VBAC pathway.

Figure 17: Indicator 4a: Rate of women who planned for vaginal birth following a primary caesarean section in Victorian public hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	29.3% (19.8%; 34.5%)	27.4%	27.9%	29.1%
Private hospitals	15.8%	15.4%	15.6%	16.0%

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting.

Figure 18: Indicator 4b: Rate of women who had a planned vaginal birth following a primary caesarean section in Victorian public hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	57.7% (53.0%; 71.4%)	54.2%	53.2%	53.9%
Private hospitals	50.8%	48.9%	50.5%	51.7%

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting.

Indicator 5: Five-year (2011–2015) gestation

standardised perinatal mortality ratio (GSPMR)

Purpose and rationale

This indicator measures the rate of perinatal mortality including fetal deaths (stillbirths) and deaths of liveborn babies within the first 28 days after birth (neonatal deaths).

Victoria and Australia have one of the lowest maternal and perinatal mortality rates internationally. Although the perinatal mortality rate has fallen since 2009, women with a higher risk of losing a baby include:

- Aboriginal and Torres Strait Islander women
- women born in North Africa, the Middle East or southern and central Asia
- women with multiple pregnancies
- women whose babies are born pre-term or with fetal growth restriction (FGR).

Other important risk factors for perinatal mortality include maternal weight, substance abuse, cigarette smoking, low socioeconomic status, access to antenatal care, pre-existing illness such as diabetes and hypertension and advanced maternal age.

Contributing or preventable factors may occur in a small number of cases. High-quality, expert review of all perinatal deaths by health services is important to improve the overall safety and quality of care provided to women and babies and to share the lessons learnt.

Clinical significance

Variation in the GSPMR may be due to differences in the health or socioeconomic status of women but may also relate to the quality of care and care delivery systems. While the cause of a persistently high GSPMR is likely to be multifactorial, it is expected that hospitals will closely analyse their relative performance and investigate possible causes to optimise the outcomes for women and babies.

Observations on the data

Based on pooled data from 2011 to 2015, the GSPMR for babies born at 32 weeks or more ranged from 0.49 to 1.81, more than

two-fold variation.

The statewide private hospital perinatal mortality ratio result is about 30 per cent less than the statewide public hospital perinatal mortality ratio from 32 weeks' gestation. This likely reflects, at least in part, the difference in casemix and patient risk profile between the public and private hospital systems.

The GSPMR is complex, has limitations and should be interpreted with caution. For that reason the following additional information is provided to more fully explain it.

More about the GSPMR

The GSPMR rate cannot tell us about the avoidability of perinatal deaths. Instead, this is a role that must be undertaken by a multidisciplinary panel, formed locally to consider individual circumstances.

Publishing the GSPMR allows hospitals to learn from each other and improves the transparency of reporting of outcomes for Victorian public hospitals.

What is the gestation standardised perinatal mortality ratio (GSPMR?

The gestation standardised perinatal mortality ratio (GSPMR) is a measure of perinatal mortality that compares the observed perinatal mortality rate at individual hospitals with what would be expected, taking into account the number and gestation of the babies born there. It is a partially risk-adjusted calculation, enabling hospitals with higher proportions of babies born at lower gestations (and therefore higher likelihood of perinatal mortality) to be validly compared with hospitals that have a different casemix.

Pooling the data over five-year periods adds stability to the data and reduces the risk of over interpretation of chance fluctuations.

The indicator provides a broad comparative measure of perinatal mortality rates across hospitals. It captures the rate of those babies born at 32 or more weeks' gestation, which is relevant for the majority of hospitals that do not normally care for babies born before 32 weeks' gestation beyond the provision of immediate emergency care and transfer to a higher capability service.

Any deaths related to congenital anomalies and terminations of pregnancy are excluded from these data to better represent deaths that may be avoidable.

A high GSPMR warrants hospitals to identify preventable factors related to care that may have contributed to adverse outcomes.

A GSPMR of 1 indicates that the observed number of perinatal deaths at that hospital is exactly what would be expected, considering the gestation of babies born there.

It is important to note that the statewide rate does not necessarily represent the optimal or clinically appropriate rate for perinatal mortality and that conclusions about whether perinatal deaths were avoidable or the safety of a maternity service cannot be determined from the GSPMRs.

Figure 19 provides a visual representation of the variation in perinatal mortality occurring across Victorian public hospitals when compared with the statewide public hospital rate.

The GSPMR compares the perinatal mortality rates at individual public hospitals with the overall statewide public hospital rate. Due to the overall small number of perinatal deaths, it is calculated over a five-year period. While this may be considered a fairly crude statistic, it is valuable because it provides a 'first look' into perinatal mortality patterns across Victoria.

How to interpret the rate

The statewide public hospital rate (the reference population) is by definition '1'. Therefore, a ratio (or rate) over 1 indicates that the service had more deaths than the statewide rate. A rate below 1 indicates the perinatal mortality is less than the statewide rate. For example, an individual hospital with a rate of:

- 0.5 has a perinatal mortality that is half the statewide rate
- 1 has a perinatal mortality that is equal to the statewide rate
- 1.5 has a perinatal mortality that is 50 per cent above the statewide rate
- 2 represents perinatal mortality that is double the statewide rate.
- These rates are about babies who died after 32 weeks' gestation, as most of the state maternity services have a maternity capability level below 5 or a newborn level below 4, and do not provide planned services for babies born before 32 weeks' gestation.

What is included or excluded in the GSPMR?

The GSPMR data is reported by the birth hospital and:

- includes babies who died after 32 weeks' gestation (stillbirths or babies who died within the first 28 days of life)
- excludes deaths from congenital anomalies and all terminations of pregnancy
- takes into account the gestation of the babies born at each service.

What does the GSPMR tell us?

The GSPMR:

- identifies the public hospitals in Victoria where stillborn babies and babies who die within the first 28 days of life are born (however, this may not be where the baby died)
- · allows comparison of public hospitals of similar capability and size
- indicates the difference between the statewide private hospital average and the statewide public hospital average (however, the differences in casemix between the two sectors should be noted)
- adjusts for the most important risk of perinatal death, which is gestation
- · shows where there is variation in perinatal mortality rates for hospitals of similar capability or size
- provides a focus for maternity services to undertake detailed reviews of the outcomes for the babies born in their service, and to identify opportunities to improve their care
- attributes the death to the birth hospital, even if the baby died outside of the hospital or if the mother received pregnancy care elsewhere.

What can't the GSPMR tell us?

The GSPMR does not include:

- statewide or individual hospital perinatal mortality rates
- the reasons for the deaths or how the babies died (a baby may have died before arriving at the birth hospital, while in the hospital or following discharge from hospital, for example, due to sudden infant death syndrome, a car accident or injury)
- · whether the death could have been avoided
- if the care around the time of death was provided by a different hospital (transfer) or health professional than the birth hospital
- where the baby died (it only tells us where the baby was born)
- the safety of a maternity service
- the contribution of important risk factors associated with perinatal mortality, such as obesity, smoking or pre-existing illness of the mother, low socioeconomic status and some ethnic groups (in this year's report, population attributable risk for the GSPMR has been calculated to provide this information).
- Additional information on population-attributable risks associated with the GSPMR is provided on page 45.



Expectations for performance improvement

All health services are expected to:

- have formal processes to review all perinatal deaths and identify avoidable factors and opportunities for improvement in care processes and organisational systems such as staff availability, supervision and skill mix⁸
- ensure all perinatal deaths are reported to the Consultative Council on Obstetric and Paediatric Mortality and Morbidity (CCOPMM) within the time period specified by the CCOPMM
- develop organisation-wide strategies approved by the health service executive to address contributing factors (if identified) and report on their implementation
- report their mortality review findings and recommendations to the CCOPMM (in the case of services with higher than expected perinatal mortality a GSPMR greater than 1).

In addition, rural and regional public hospitals are expected to actively participate in the six regional perinatal mortality and morbidity committees established in 2016.9

It is important to note that GSPMR is derived from data pooled for five-year periods, therefore improvements in the ratio may not be observed until three to four years later.

Consumer summary

Indicator 5: Five-year (2011–2015) gestation standardised perinatal mortality ratio

Victoria and Australia have one of the lowest perinatal mortality rates internationally. However, having a robust system for identifying contributing or preventable factors and sharing lessons learnt is important for improving the safety and quality of hospitals. Hospitals are required to review all perinatal deaths.

Gestation is an important risk factor for perinatal mortality. GSPMR provides a broad and impartial method of comparing the rate of death of babies born in hospitals based on their age (in weeks) at birth. The ratio allows hospitals to consistently compare the rate of death of babies born at their service with the rate at all other hospitals in Victoria.

It is important to note that there are many factors that can lead to the death of a baby. It is also important to note that the GSPMR does not take into account all risk factors that can lead to the death of a baby. This and other limitations to the indicator mean that it should be interpreted with caution.

The data presented in this report indicates there is variability in the rate of death of babies born in public hospitals from 32 weeks. A GSPMR of 1 indicates that the observed number of perinatal deaths at a hospital is what would be expected. A higher GSPMR warrants hospitals to review each case so that they can identify and address contributing or preventable factors.

⁸ The Department of Health and Human Services policy and funding guidelines 2016 (Department of Health and Human Services 2016) requires all health services to review perinatal deaths in accordance with the Perinatal Society of Australia and New Zealand's (2009) Clinical practice guideline for perinatal mortality.

⁹ Six regional perinatal mortality and morbidity committees were established in 2016 across Victoria to systematically review and audit all deaths and other clinical outcomes for mothers and babies in their region. The regional committees do not replace the existing requirements of health services to investigate and report adverse outcomes. Instead, they act as another layer of review for rural health services, which will benefit those that do not have the critical mass and expertise to undertake this work independently. The Royal Women's Hospital is supporting and facilitating the establishment of the committees.

Figure 19: Indicator 5: Perinatal mortality ratio for babies born at 32 weeks or more (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years' pooled data in Victorian public hospitals, 2011–2015

	Most favourable Least favourable	
	0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 ;	2.0
Statewide public hospitals	1.00	Statewide
Statewide private hospitals	0.69	
The Royal Women's Hospital	0.84 •	Level 6 hospitals
Mercy Hospital for Women	0.49	
Monash Medical Centre Clayton	1.03 •	
Sunshine Hospital	1.20	Level 5 and 4 hospitals
The Northern Hospital	1.11 •	
Frankston Hospital	1.33 •	
Barwon Health (Geelong)	1.24 •	
Box Hill Hospital	1.41 •	Number of
Ballarat Health Services	1.09 🔾	births
Goulburn Valley Health	1.04 O	10,000
Dandenong Hospital	1.07	5,000 💽
Angliss Hospital	0.82 💿	2,500 •
Albury Wodonga Health	1.20 •	1,250 •
Latrobe Regional Hospital (Traralgon)	1.61 O	
Mercy Werribee Public Hospital	0.85 •	Level 3 and 2 hospitals
Casey Hospital	0.98 💽	
Djerriwarrh Health Services	1.81 O	
	0.0 0.2 0.4 0.6 0.8 1.0 1.2 1.4 1.6 1.8 2	2.0

Statewide rates

	2011–2015 (quartiles: lower; upper)
Public hospitals	1.0 (1.02; 1.24)
Private hospitals	0.69

Note: Excludes termination of pregnancy, deaths due to congenital anomalies and fetus papyraceus. In interpreting these ratios, conclusions cannot be drawn about the avoidability of any of these deaths. Quartiles for this indicator are calculated based on only those public health services that meet the criteria for public reporting.

Population-attributable risk for perinatal mortality



There are many risk factors for perinatal mortality including: maternal weight; substance abuse including cigarette smoking; socioeconomic status; access to antenatal care; pre-existing illness such as diabetes and hypertension; and ethnicity. Using a statistical method called a population-attributable risk (PAR) calculation can help hospitals to understand which perinatal mortality risk factors are most important for the women who receive care or birthing assistance at their service.

PAR calculations can measure the impact of a risk factor on an outcome of disease or death. In this report, PARs have been calculated to assess how much of a reduction in perinatal mortality (the number of stillbirths and deaths within the first 28 days of life) would occur if the exposure to, and/or prevalence of, a risk factor is eliminated or managed effectively.

Risk factors for perinatal mortality

PAR for perinatal mortality has been calculated for a number of risk factors including:

- maternal obesity (body mass index (BMI) ≥ 35 kg/m2)
- mothers who are smokers in the second half of pregnancy
- mothers who are younger than 20 years old
- mothers who are 35 years or older
- the mother's country of birth
- twin or higher order births
- · lowest socioeconomic quintile (based on the mother's place of residence)
- birthweight below the third centile (severe FGR) that remains undetected before birth
- extreme prematurity (< 32 weeks' gestation) and prematurity (< 37 weeks' gestation)
- mothers who have pre-existing diabetes (type 1 and type 2 diabetes)
- indigenous status of the mother.

Benefits of PAR

PAR identifies the risk factors that contributed most to the perinatal deaths and can be used to provide a focus for quality improvement activities to reduce perinatal mortality.

Limitations of PAR

The PAR only relates to the direct and unilateral relationship or contribution of the specific risk factor in relation to the outcome (perinatal mortality) and does not adjust for other associated risk factors. For example, the effect of prematurity on perinatal mortality is not adjusted for twin births.

The following PARs for 2013–2015 are provided below:

- all private hospitals compared with the statewide public hospital PAR (see Figure 20)
- all metropolitan public hospitals compared with the statewide public hospital PAR (see Figure 21)
- all regional/rural public hospitals compared with the statewide public hospital PAR (see Figure 22)
- all level 5 and 6 public hospitals compared with the statewide public hospital PAR (see Figure 23)
- all level 3 and 4 public hospitals compared with the statewide public hospital PAR (see Figure 24)
- an example hospital (de-identified) compared with the statewide public hospital PAR (see Figure 25).

Figure 20: Population-attributable risks for selected perinatal mortality risk factors for all private hospitals compared with the statewide public hospital population-attributable risk, 2013–2015



All public hospitals

All private hospitals

Note: Excludes terminations of pregnancy, deaths due to congenital anomalies and babies with birthweight < 150 grams. No result is reported if fewer than 10 deaths were identified in the risk group. The GSPMR (Indicator 5) forms the basis for the calculation of the PAR.

Observations on the data

Figure 20 shows that in 2013–2015, prematurity, multiple births, obesity (BMI > 35 kg/m³) and maternal age (≥ 35 years) were the most significant contributors to perinatal mortality in private hospitals overall. For public hospitals statewide, prematurity, multiple births, undetected severe FGR (< third centile), smoking after 20 weeks' gestation, maternal age (< 20 years and ≥ 35 years) and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality.



Figure 21: Population-attributable risks for selected perinatal mortality risk factors for all metropolitan public hospitals compared with the statewide public hospital population-attributable risk, 2013–2015



All public hospitals

Metropolitan public hospitals

Note: Excludes terminations of pregnancy, deaths due to congenital anomalies and babies with birthweight < 150 grams. No result is reported if fewer than 10 deaths were identified in the risk group. The GSPMR (Indicator 5) forms the basis for the calculation of the PAR.

Observations on the data

Figure 21 shows that in 2013–2015 prematurity, multiple births, obesity (BMI > 35 kg/m²), undetected severe FGR (< third centile), mothers born in South Asia or Sub-Saharan Africa, smoking after 20 weeks' gestation, maternal age (≥ 35 years) and low socioeconomic status were the most significant contributors to perinatal mortality in metropolitan public hospitals overall.

For public hospitals statewide, prematurity, multiple births, undetected severe FGR (< third centile), smoking after 20 weeks' gestation, maternal age (< 20 years and ≥ 35 years) and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality.



Figure 22: Population-attributable risks for selected perinatal mortality risk factors for all rural and regional public hospitals compared with the statewide public hospital population-attributable risk, 2013–2015



All public hospitals

Rural and regional public hospitals

Note: Excludes terminations of pregnancy, deaths due to congenital anomalies and babies with birthweight < 150 grams. No result is reported if fewer than 10 deaths were identified in the risk group. The GSPMR (Indicator 5) forms the basis for the calculation of the PAR.

Observations on the data

Figure 22 shows that in 2013–2015, prematurity, multiple births, obesity (BMI > 35 kg/m²), smoking after 20 weeks, maternal age (< 20 years and ≥ 35 years) and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality in rural and regional public hospitals overall.

For public hospitals statewide, prematurity, multiple births, undetected severe FGR (< third centile), smoking after 20 weeks' gestation, maternal age (< 20 years and \geq 35 years) and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality.



Figure 23: Population-attributable risks for selected perinatal mortality risk factors for all level 5 and 6 public hospitals compared with the statewide public hospital population-attributable risk, 2013–2015



All public hospitals

Level 5 and 6 public hospitals

Note: Excludes terminations of pregnancy, deaths due to congenital anomalies and babies with birthweight < 150 grams. No result is reported if fewer than 10 deaths were identified in the risk group. The GSPMR (Indicator 5) forms the basis for the calculation of the PAR.

Observations on the data

Figure 23 shows that in 2013–2015, prematurity, multiple births, undetected severe FGR (< third centile), obesity (BMI > 35 kg/m²), smoking after 20 weeks, older mothers (≥ 35 years), mothers born in South Asia, and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality in level 5 and 6 public maternity services overall.

For public hospitals statewide, prematurity, multiple births, undetected severe FGR (< third centile), smoking after 20 weeks' gestation, maternal age (< 20 years and ≥ 35 years) and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality.



Figure 24: Population-attributable risks for selected perinatal mortality risk factors for all level 3 and 4 public hospitals compared with the statewide public hospital population-attributable risk, 2013–2015



All public hospitals

Level 3 and 4 public hospitals

Note: Excludes terminations of pregnancy, deaths due to congenital anomalies and babies with birthweight < 150 grams. No result is reported if fewer than 10 deaths were identified in the risk group. The GSPMR (Indicator 5) forms the basis for the calculation of the PAR.

Observations on the data

Figure 24 shows that in 2013–2015, prematurity, multiple births, undetected severe FGR (< third centile), obesity (BMI > 35 kg/m²), smoking after 20 weeks, maternal age (< 20 years and ≥ 35 years), mothers born in sub-Saharan Africa, Aboriginal mothers and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality in level 3 and 4 public maternity services overall.

For public hospitals statewide, prematurity, multiple births, undetected severe FGR (< third centile), smoking after 20 weeks' gestation, maternal age (< 20 years and > 35 years) and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality.



Figure 25: Population-attributable risks for selected perinatal mortality risk factors for 'Hospital X' (mock) compared with the statewide public hospital population-attributable risk, 2013–2015



All public hospitals

Hospital X

Note: Excludes terminations of pregnancy, deaths due to congenital anomalies and babies with birthweight < 150 grams. No result is reported if fewer than 10 deaths were identified in the risk group. The GSPMR (Indicator 5) forms the basis for the calculation of the PAR.

Observations on the data

Figure 25 shows that in 2013–2015, prematurity, multiple births, obesity (BMI > 35 kg/m²), undetected severe FGR (< third centile), smoking after 20 weeks, mothers born in South Asia or sub-Saharan Africa and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality in 'Hospital X'.

For public hospitals statewide, prematurity, multiple births, undetected severe FGR (< third centile), smoking after 20 weeks' gestation, maternal age (< 20 years and ≥ 35 years) and low socioeconomic status (lowest quintile) were the most significant contributors to perinatal mortality.



Indicator 6: Readmissions during the postnatal period (mother or baby) – new

Purpose and rationale

This indicator measures the rate of unplanned readmissions of potential women and babies within 28 days of discharge from hospital is being reported for the first time.

While not all unplanned readmissions are a result of poor quality of care, nor all complications avoidable; higher readmissions rates are also associated with increased healthcare costs and can affect outcomes for mothers and babies – for example, with bonding and breastfeeding (Independent Hospital Pricing Authority 2016; Lain et al. 2015). Preliminary evidence suggests that higher readmission rates are associated with inconsistent discharge procedures, poorer postnatal care and limited support in the community.

The intersection of hospital-based maternity and newborn services and the community-based maternal and child health service system is a key point of care transition within the first six weeks after the birth of a child in Victoria (depending on the needs of the woman and baby). The *Postnatal care program guidelines for Victorian health services* (Department of Health 2012) outline the Victorian Government's expectations regarding the delivery of postnatal care by public hospitals. For most women and babies, transition from hospital-based care to community-based maternal child health services usually occurs after at least one domiciliary postnatal visit by a hospital midwife (within 48 hours of discharge). After discharge, effective transition and ongoing care relies on careful planning and a tailored response to meet the individual mothers and their babies (Department of Education and Early Childhood Development 2011; Department of Human Services 2004).

This indicator is designed to monitor the effectiveness of postnatal care and is consistent with similar indicators established internationally, most notably in the United Kingdom (Royal College of Obstetricians and Gynaecologists 2016). Design of the indicator will enable health services and community-based maternal child health services to better monitor the quality of postnatal care including care transition and coordination by the key providers (Health Information and Quality Authority 2013).

Unplanned readmission is limited to a defined list of diagnosis codes (Appendix 1) where it is determined that, with high-quality postnatal care, readmission could have been prevented. Planned readmission and transfer to another health service following the birth are excluded for this indicator.

Unplanned readmissions are calculated for the hospital that discharged the woman after the birth episode. The rate includes readmission to any Victorian health service after birth, not just a readmission to the birthing service.

Clinical significance

Unplanned readmission is commonly used as an indicator for hospital performance.¹⁰ In this instance, unplanned readmission represents a deviation from the normal course of postnatal recovery. Australian and international studies demonstrate that many maternity-related readmissions, particularly of newborns, are preventable with effective discharge procedures and early access to home and community-based support

10 Readmission indicators, including acute cardiac, orthopaedic and mental health, are part of the established performance framework for Victorian public health services.

(Lain et al. 2014; Young et al. 2013). Higher rates of readmission are also expected in women who have had primary or repeat caesarean sections compared with vaginal deliveries (Liu et al. 2005; Lydon-Rochelle et al. 2000).

Internationally reported readmission rates after childbirth range from 1.5 to 5.0 per cent (notwithstanding differences in the definitions, readmission period inclusions and exclusions) (Liu et al. 2000; Royal College of Obstetricians and Gynaecologists 2016; Young et al. 2013).

Presentation of funnel plots

The funnel plot presentation of this indicator enables health services to review the anticipated rate of readmission for hospitals of different sizes and to monitor the extent to which their performance varies from the statewide average and the anticipated rate of readmission for a hospital of their size.

Other Victorian readmission indicators often use funnel plots to graphically present the distribution of health service rates. The advantage of using a funnel plot is that it allows the size and number of births that occurred at the health service to be taken into account. The control limits used in the funnel plots allow the reader to note services that vary from the expected statewide mean to such an extent that the variance is beyond that which could be accredited to chance alone.

Although unexpected results could be identified in this way, the intention of the graph presented at Figures 26 and 28 is to observe substantial systematic (non-random) differences between Victorian public maternity services.

The upper and lower quartile range for newborn readmissions ranges, calculated without factoring in the size of the health service, have also been presented alongside the funnel plots. The methodology for this approach is the same as the other indicators in this report that utilise upper and lower quartile ranges. The presentation of this data in such a way will allow peer to peer comparison.

Observations on the data

Indicator 6a: Readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public hospital

In 2015–16 the statewide average public hospital rate of unplanned maternal readmissions within 28 days of discharge was 2.8 per cent. Readmission rates at individual health services ranged between 0.0 and 6.3 per cent.

Figure 26 indicate that one health service (4.8 per cent) was found to perform above the upper limit and one health service (4.8 per cent) performed below the lower limit of the expected range of readmission rates, given the number of births at each.

In Figure 27, the health services with a readmission rate less than the lower quartile range (<1.9%) and above upper quartile range (<3%) have been highlighted. Unlike the control limits used above, the ranges do not account for the health service size.



Indicator 6b: Admission of a baby within 28 days of discharge from a birthing episode admission in a Victorian public hospital

In 2015–16 the statewide average public hospital rate of unplanned neonatal readmissions within 28 days of discharge was 4.0 per cent. Unadjusted rates at individual health services ranged between 0.0 and 7.9 per cent.

Figure 28 indicate that three health services (7.1 per cent) performed above the upper limit and five health services (11.9 per cent) performed below the lower limit of the expected range of readmission rates, given the number of

births at each.

The data indicates that the level of variance from the statewide rate is greatest for health services that discharged more than 3,000 neonates in 2015–16. These larger health services include the three that performed above the expected rates of readmission.

In Figure 29, the health services with a readmission rate less than the lower quartile range (<1.5%) and above upper quartile range (<3.9%) have been highlighted. Unlike the control limits used above, the ranges do not account for the health service size.

Expectations for performance improvement

The primary use of this indicator is to identify variance across the state's public health services. The reasons for variation can be multifactorial and encompass population differences, the influence of care in the community, readmission thresholds and deviation from good practice (discharge and transfer of care procedures) following the birth episode.

Health services should use the data and their own local analysis to review and improve their postnatal care programs and their linkages with community-based providers including general practitioners and maternal and child health services. The review should focus on women and babies at higher risk of readmission to ensure they are receiving tailored and responsive programs. Specifically, health services should consider:

- whether the postpartum length of stay in hospital is appropriate
- which cohorts of women and babies have higher readmission rates
- providing information and education tools for women and their families when they leave hospital
- the number of home-based visits and the extent of care different cohorts of women can expect from hospital midwives
- a cohort analysis of the common reasons for readmission of women and newborns discharged from their service
- a review of how their postnatal program is targeted to reduce risks and how effective it is
- how well their postnatal care program and local maternity service providers evaluate the transfer of care processes and outcomes, and monitor this indicator (and others like it such as referral to specialist services).

If health services wish to explore their readmission rates further, the following additional information can be provided by the department (on request):

- a breakdown of the diagnoses of the women and neonates readmitted
- the time between discharge from hospital and readmission
- an overview of the birth episodes of women and neonates who are readmitted including delivery method, diagnosis codes that are associated with higher risk pregnancies and postpartum length of stay.

Consumer summary

Indicator 6: Readmissions during the postnatal period (mother or baby) - new

Once a woman and her baby leave hospital after the birth, it is expected that most will recover at home with support from hospital midwives, their local maternal and child health service and their general practitioner. It is unusual that women and babies need to return to hospital for further treatment.

This indicator measures the proportion of women and babies who unexpectedly return to hospital and are admitted for care within 28 days. Unexpected admissions to hospital are for reasons where a condition could have been prevented or treated in the community by a midwife, maternal and child health nurse or doctor.

The data show that, in 2015–16, more babies were unexpectedly admitted to hospital than women in the 28 days following the birth. The difference between hospitals was greater in relation to newborn readmissions, particularly at the larger services.

Ask your health service for information/advice to help you at home and about what postnatal care is arranged for your specific needs.



error of deliveries

Figure 26: Indicator 6a: Funnel plot for the potentially preventable readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public hospital, 2015–16

99.7 per cent upper and lower limits

- 95 per cent upper and lower limits
- Statewide rate for public hospital maternity services
- 28-day maternal readmission rates for public hospital maternity services

Figure 27: Indicator 6a: Potentially preventable readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public hospital, 2015–16

		Most fav	ourable	Least fav	vourable –		
	0%	2%	4%	6%	8%	10%	
Statewide public hospitals (n = 1,386 / 58,039)							Statewide
The Royal Women's Hospital		-					Level 6
Mercy Hospital for Women							hospitals
Monash Medical Centre Clayton							
Sunshine Hospital							Level 5 and 4
The Northern Hospital							hospitals
Frankston Hospital							
Box Hill Hospital		:					
University Hospital Geelong							
Bendigo Health Care Group		:					
Ballarat Health Services		-					
Goulburn Valley Health							
Central Gippsland Health Service							
Dandenong Hospital							
Angliss Hospital							
Albury Wodonga Health							
West Gippsland Healthcare Group							
Mildura Base Hospital							
Latrobe Regional Hospital (Traralgon)							
South West Healthcare Warrnambool		:					
Northeast Health Wangaratta		:					
Wimmera Health Care Group							
Mercy Werribee Hospital							Level 3 and 2
Casey Hospital							hospitals
women's at Sandringnam							
Djerriwarrn Health Services							
Bairnsdale Regional Health Service							
Echuca Regional Health		:					
Swan Hill District Health							
Kilmore and District Hospital							
Bass Coast Regional Health		:					
Gippstand Southern Health Service (Leongatha)		:					
Western District Health Service (Hamilton)							
East Grampians Realth Service (Ararat)							
South Cippeland Hospital	_						
Mansfeld District Hospital							
Cohuna District Hospital							
Torang and Mortlako Hoalth Sonvice							
Maryborough District Health Service	0.0%						
Yarrawonga District Health Service	0.070						
Kyneton District Health Service	0.0%						
Castlemaine Health	0.0%						2015–16 result
Portland District Health	0.070						Most favourable
South West Healthcare Camperdown							
Orbost Regional Health	0.0%						Inter-quartile range
	0%	2%	1%	6%	8%	10%	Least favourable
	370	270	-+/0	070	070	1070	

Statewide rates

	2015 (quartiles: lower; upper)
Public hospitals	2.4% (1.9%; 3.0%)
Private hospitals	N/A

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \geq 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on **all** public health services, regardless of whether they meet the criteria for public reporting.

Figure 28: Indicator 6b: Funnel plot for a potentially preventable readmission of a neonate within 28 days of discharge from a birthing episode admission in a Victorian public hospital, 2015–16



- 99.7 per cent upper and lower limits
- —— 95 per cent upper and lower limits
- Statewide rate for public hospital maternity services
- 28-day newborn readmission rates for public hospital maternity services

Figure 29: Indicator 6b: Potentially preventable readmission of a neonate within 28 days of discharge from a birthing episode admission in a Victorian public hospital, 2015–16

		Most fa	vourable	Least fav	ourable•		
	0%	2%	4%	6%	8%	10%	
Statewide public hospitals (n = 2,335 / 57,821)							Statewide
The Royal Women's Hospital							Level 6
Mercy Hospital for Women							hospitals
Monash Medical Centre Clayton							
Sunshine Hospital							Level 5 and 4
The Northern Hospital		:					hospitals
Frankston Hospital							
Box Hill Hospital		:	:				
University Hospital Geelong		:					
Bendigo Health Care Group		:					
Ballarat Health Services							
Goulburn Valley Health							
Central Gippsland Health Service							
Dandenong Hospital							
Angliss Hospital							
Albury Wodonga Health							
West Gippsland Healthcare Group		:					
Mildura Base Hospital		:					
Latrobe Regional Hospital (Traralgon)		:					
South West Healthcare Warrnambool		:					
Northeast Health Wangaratta		:					
Wimmera Health Care Group							
Mercy Werribee Hospital							Level 3 and 2
Casey Hospital							hospitals
Women's at Sandringham							
Djerriwarrh Health Services							
Bairnsdale Regional Health Service							
Echuca Regional Health							
Swan Hill District Health							
Kilmore and District Hospital		:					
Bass Coast Regional Health	0.0%		-				
Gippsland Southern Health Service (Leongatha)	0.0%						
Western District Health Service (Hamilton)							
East Grampians Health Service (Ararat)	0.0%						
Benalla and District Memorial Hospital	. 0.0%						
South Gippsiand Hospital	0.0%						
Mansfield District Hospital	. 0.076		_				
Conuna District Hospital	0.0%		-				
Terang and Mortlake Health Service	0.0%						
Colac Area Health							
Maryborough District Health Service							
ranawonga District Health Service	0.0%						
	0.0%						2015–16 result
Portland District Health	0.0%						Most favourable
South West Healthcare Camperdown	0.0%						
Orbost Regional Health	0.0%						Inter-quartile range
	0%	2%	4%	6%	8%	10%	Least favourable

Statewide rates

	2015 (quartiles: lower; upper)
Public hospitals	4.0% (1.5%; 3.9%)
Private hospitals	N/A

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \geq 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on **all** public health services, regardless of whether they meet the criteria for public reporting.

Indicator 7: Smoking cessation



Purpose and rationale

This indicator **indirectly** assesses the performance of health services in providing smoking cessation advice, assistance and follow-up during the antenatal period to reduce both the rate of smoking among pregnant women and the risk of smoking-associated adverse health outcomes for babies.

The data presented in this report relates to the rate of women who smoked after 20 weeks' gestation as compared with before 20 weeks' gestation at each hospital. Data is presented as the relative reduction between these two rates – the 'smoking cessation rate'.

Clinical significance

Women who smoke while pregnant have an increased risk of ectopic pregnancy, miscarriage, placenta praevia and pre-term labour, and are more likely to give birth to a low-birthweight baby compared with non-smokers.

Low-birthweight babies are more vulnerable to infection and other short- and long-term health problems. The damaging effects of maternal cigarette smoking on an unborn baby include reduction of oxygen supply, restricted growth and development, increased risk of cleft lip and cleft palate, and increased heart rate and disruption of the baby's breathing movements in utero (Quit Victoria 2013).

Smoking in pregnancy is a preventable cause of significant obstetric and perinatal complications, and adverse outcomes. Pregnancy is therefore an important time for health professionals to implement strategies and interventions to help women quit smoking, particularly given that women are motivated to protect their baby's health.

Effective interventions are multifaceted and based on individual needs and circumstances. Pregnant women should be regularly assessed and counselled on the serious health impact of smoking (Gross 2016; Passey et al. 2013). Support services including advice and targeted activities such as telephonic counselling for smoking cessation (Cummins et al. 2016) and incentive-based smoking cessation programs (Zhang et al. 2016) have also been found to be effective.

Observations on the data

Figure 30 shows that in 2015 the statewide public and private hospitals combined rate of smoking cessation during pregnancy was 40.2 per cent.

All public and private hospitals achieved smoking cessation, except one in which more women smoked in the latter half of pregnancy as compared with the first half. The smoking cessation rate showed wide variation between hospitals, which warrants attention by health services and health professionals providing antenatal care (general practitioners, obstetricians and midwives).

This is the first year that the statewide public and private hospital combined rate of smoking has been presented. As such, the data for 2015 is not directly comparable with data from previous years.

Expectations for performance improvement

Health services are expected to undertake regular multidisciplinary reviews of smoking cessation interventions provided to women including:

- examining the smoking cessation interventions they provide to women during pregnancy and identifying gaps in their service provision including the intensiveness of their interventions/programs
- monitoring the competency and confidence of clinicians in providing smoking cessation advice and interventions
- developing and reporting on evidence-based strategies to improve rates to the health service executive.

Consumer summary

Indicator 7: Smoking cessation

Smoking during pregnancy is strongly associated with poor health outcomes for women and their babies. Sustained interventions through education and support programs offered by hospitals, general practitioners and other healthcare providers can help pregnant women stop smoking.

This indicator measures the difference in the rate of women who smoked in early pregnancy (before 20 weeks' gestation) compared with later pregnancy (after 20 weeks' gestation) at Victorian hospitals. The data is presented as this difference, which we call the 'smoking cessation rate'. The smoking cessation rate is used as a measure of the effectiveness of smoking cessation interventions offered by hospitals and to recognise services that are making the greatest impact towards smoking cessation, regardless of the number of women who smoke at their service.

Overall, the smoking cessation rate in public hospitals was 39.0 per cent, and the overall smoking cessation rate in private hospitals was 79.6 per cent.

Previous reports displayed separate data for smoking rates before and after 20 weeks' gestation, so the rates reported in this report are not directly comparable with previous reports.

Ask your health service about the level of support or programs they provide throughout pregnancy to help women stop smoking.

Figure 30: Indicator 7: Smoking cessation rate during pregnancy in Victorian public and private hospitals, 2015

		Least	tavoura	ole Mo	ost favol	irable 🗕		
	-20%	0%	20%	40%	60%	80%	100%	
Statewide public & private hospitals	5							Statewide
The Royal Women's Hospita Mercy Hospital for Womer Monash Medical Centre Clavtor	l n			-				_evel 6 nospitals
Sunshine Hospita Sunshine Hospita Frankston Hospita Box Hill Hospita University Hospital Geelong Bendigo Health Care Group Ballarat Health Services Goulburn Valley Health Central Gippsland Health Services Dandenong Hospita								Level 5 and 4
Angliss Hospita Angliss Hospita Albury Wodonga Health West Gippsland Healthcare Group Mildura Base Hospita Latrobe Regional Hospital (Traralgon South West Healthcare Warrnamboo Northeast Health Wangaratta Wimmera Health Care Group				-				
Mercy Werribee Hospita Casey Hospita Women's at Sandringham Djerriwarrh Health Services Bairnsdale Regional Health Service Echuca Regional Health Swan Hill District Health								Level 3 and 2 nospitals
Kilmore and District Hospita Bass Coast Regional Health Gippsland Southern Health Service (Leongatha Western District Health Service (Hamilton East Grampians Health Service (Ararat Benalla and District Memorial Hospita South Gippsland Hospita	l :)) l :	0.0%						
Mansheld District Hospita Cohuna District Hospita Kerang District Hospita Terang and Mortlake Health Service Colac Area Health Maryborough District Health Service Yarrawonga District Health Service		0.0% 0.0%		•				
Kyneton District Health Service Castlemaine Health Portland District Health South West Healthcare Camperdowr Orbost Regional Health		0.0%						
Epworth Healthcare - Freemasons [East Melbourne St Vincents Private Hospital [Fitzroy Saint Frances Xavier Cabrini Hospital - Cabrini Malverr Mitcham Private Hospital Waverley Private Hospital [Mt Waverley	 							nospitals
St John of God Healthcare - Geelong Jessie McPherson Private Hospital [Clayton St John of God Healthcare - Berwick Northpark Private Hospital [Bundoora Knox Private Hospital [Wantirna	 							
St Jonn of God Healthcare - Ballara Bays Hospital, The - Mornington Campus	C							2015–16 result
Peninsula Private Hospital (Frankston St John of God Healthcare - Bendigo			:					Most favourable
Shepparton Private Hospita	il*						(Inter-quartile range
	-20%	0%	20%	40%	60%	80%	100%	Least favourable

* Smoking rate was 0.0 per cent before and after 20 weeks' gestation.

Statewide rates

	2015 (lower quartile; upper quartile)	2014
Public hospitals	39.0%	38.1%
Private hospitals	79.6%	N/A
Public and private hospitals combined	40.2% (21.4%; 50.0%)	N/A

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published.

Indicators 8a, 8b and 8c:

Breastfeeding in hospital

Purpose and rationale

This suite of measures assesses the initiation of breastfeeding in Victorian hospitals during the birthing episode, namely:

- Indicator 8a rate of breastfeeding initiation in term babies
- Indicator 8b rate of use of infant formula in term breastfed babies
- Indicator 8c rate of final feed exclusively from the breast for term breastfed babies.

There are short- and long-term health benefits for women and their babies associated with breastfeeding, and health services are responsible for promoting, protecting and supporting breastfeeding. The World Health Organization (2011) encourages exclusive breastfeeding for babies to six months of age and continued breastfeeding for up to two years or beyond.

The Australian national breastfeeding strategy 2010–2015 (Australian Health Ministers' Conference 2009) encourages the monitoring of breastfeeding initiation and duration rates. The 2010 Australian National Infant Feeding Survey (Australian Institute of Health and Welfare 2011) reported that 96 per cent of babies were initially breastfed; however, by one month only 61 per cent were fully breastfed and exclusive breastfeeding reduced to 15 per cent at six months. This indicates the need for ongoing breastfeeding support for women following discharge from hospital.

This indicator is limited by its focus on breastfeeding rates during the hospital admission and does not capture data on whether breastfeeding is maintained in the longer term.

Clinical significance

Breastfeeding provides optimal nourishment for a growing baby's physical, cognitive and immunological development and is best for both mother and baby. Babies who are breastfed have a reduced risk of respiratory illnesses and infections of the ear and gastrointestinal tract. Breastfeeding has also been shown to protect babies from sudden infant death syndrome, diabetes and heart disease later in life (Ip et al. 2007; Victoria et al. 2016). Women who have breastfed have lower rates of cancer of the breast and ovaries, type 2 diabetes and obesity (Ip et al. 2007; Neville et al. 2014).

Clinicians should encourage women to recognise when their babies need feeding and offer help if required. In addition, providing women with accurate information about the importance of breastfeeding to their health and the health of their baby can result in changes in infant feeding decisions (Oliveira et al. 2016). The Baby Friendly Hospital Initiative (World Health Organization 2009) provides information and support to hospitals and community healthcare facilities to encourage exclusive breastfeeding and improve infant health.



There are a variety of reasons why women are less likely to breastfeed.

Pre-term babies (those born at less than 37 weeks' gestation) can experience difficulties breastfeeding and hence have been excluded from this indicator suite. Some obstetric interventions may affect a baby's ability to suck effectively from the breast, which may in turn be associated with early cessation of breastfeeding. **Providing infant formula as an alternative to breast milk is also associated with early cessation of breastfeeding.**

It is important to note that some health services provide care to a greater number of babies who have a sound medical indication for the use of infant formula than other services, and this will influence their breastfeeding rates.

Observations on the data

Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks' gestation

In 2015, 95.2 per cent of women who gave birth at 37 or more weeks' gestation in public and private hospitals combined put the baby to the breast or attempted to express breast milk at least once. This rate has been relatively consistent across public and private hospitals over time (see Figure 31).

Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation

In 2015 a high proportion of term breastfed babies were given infant formula in hospital (28.6 per cent in public and private hospitals combined) (see Figure 32). This rate varies significantly between hospitals including those providing a similar level of care.

Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation

Figure 33 shows that 78.0 per cent of term breastfed babies in public and private hospitals combined had their last feed before discharge entirely from the breast with no complementary expressed breast milk or infant formula. This rate varies markedly between hospitals.

Expectations for performance improvement

Hospitals are expected to:

- examine where their policies and practices do not align with the Department of Education and Early Childhood Development's (2014) *Promoting breastfeeding Victorian breastfeeding guidelines*
- analyse the factors associated with reduced rates of breastfeeding in hospital and ensure additional support is available or accessible, particularly for vulnerable groups of women
- regularly audit the rationale for using formula with breastfed babies in hospital
- ensure the use of formula for breastfed babies is limited to those who have a clear medical indication, and educate women on the reasons for this
- assess and monitor the competency and confidence of clinicians in providing breastfeeding support and
 education
- ensure women, including those of linguistically diverse backgrounds, are provided with educational opportunities for, and ready access to, accurate and appropriately translated (verbal and written) information about the importance of breastfeeding to their health and the health of their baby
- · develop and report on strategies to improve breastfeeding rates to the health service executive.

Consumer summary

Indicators 8a, 8b and 8c: Breastfeeding in hospital

Breastfeeding is important for a baby's growth and development. It is also important for the long-term health of mothers.

The World Health Organization encourages exclusive breastfeeding for babies to six months of age and continued breastfeeding up to two years or beyond. Health professionals are responsible for encouraging and supporting breastfeeding, wherever possible.

This indicator aims to identify whether women choose to breastfeed but, more importantly, the effectiveness of infant feeding support provided by hospitals in the immediate postnatal period.

The data presented in this report shows that the vast majority of women in Victorian hospitals initiate breastfeeding (95.2 per cent for public and private hospitals combined); however, there are clear differences in the results between public and private hospitals for the use of infant formula for breastfed babies (25.2 per cent in public hospitals compared with 38.7 per cent in private hospitals) and women fully breastfeeding at the time of discharge from hospital (79.7 per cent in public hospitals compared with 72.9 per cent in private hospitals.

Health services should review their strategies to provide optimal support for women wishing to breastfeed.

Ask your health service about the evidence-based policies they have in place to support successful long-term breastfeeding.
Figure 31: Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks' gestation in Victorian public and private hospitals, 2015

		Least fa	vourable	Most fav	ourable		
	0%	20%	40%	60%	80%	100%	
Statewide public and private hospitals							Statewide
The Royal Women's Hospital							Level 6
Mercy Hospital for Women (Monash Medical Centre Clavton		:		:	:		hospitals
Sunshine Hospital							t avail a such a
The Northern Hospital		:	:	:	:		Level 5 and 4
Frankston Hospital	ŏ —						hospitals
Box Hill Hospital							
University Hospital Geelong		:					
Bendigo Health Care Group		:	:	:	:		
Goulburn Valley Health							
Central Gippsland Health Service		:	:	:	:		
Dandenong Hospital	i —						
Angliss Hospital	•						
Albury Wodonga Health		:	:	:	:		
West Gippsland Healthcare Group		:	:	:	:	-	
Mildura Base Hospitalr			-				
South West Healthcare Warrhambool	K 💳	:	:				
Northeast Health Wangaratta		:	:	:	:		
Wimmera Health Care Group	i —						
Mercy Werribee Hospital) —					_	Lovel 2 and 2
Casey Hospital () <u> </u>					-	bospitals
Women's at Sandringham (nospitats
Djerriwarrh Health Services		:					
Bairnsdale Regional Health Service		:	:	:	:		
Swan Hill District Health		:	:	:	:		
Kilmore and District Hospital							
Bass Coast Regional Health (j <u> </u>		:	:	:		
Gippsland Southern Health Service (Leongatha)	ŏ —						
Western District Health Service (Hamilton)							DOAT AG woould
East Grampians Health Service (Ararat)		:	:	:	:		2015–10 result
Benalla and District Memorial Hospital	< <u> </u>						Most favourable
Souch Gippstand Hospital Mansfield District Hospital		:	:	:	:		
Cohuna District Hospital		:	:	:	:		Inter-quartile rang
Kerang District Hospital) —						
Terang and Mortlake Health Service) —		· · ·	· ·			Least favourable
Colac Area Health							
Maryborough District Health Service							
Yarrawonga District Health Service		:	:		:		
Kyneton District Health Service		:	:	:	:		
Portland District Health		:	1	:	:		
South West Healthcare Camperdown							
Orbost Regional Health	š —						
Alpine (Bright, Myrtleford and Mt Beauty)							
Frances Perry Private Hospital [Carlton]					-		Private
pworth Healthcare - Freemasons [East Melbourne]		:	:	:	:		bospitals
St Vincents Private Hospital [Fitzroy]		:	1	1	1		nospitats
Saint Frances Xavier Cabrini Hospital - Cabrini Malvern Mitcham Privato Hospital		:	:	:	:		
Waverley Private Hospital [Mt Waverley]		:	:				
St John of God Healthcare - Geelong		:	:	:	:		
Jessie McPherson Private Hospital [Clayton]							
St John of God Healthcare - Berwick							Change from
Northpark Private Hospital [Bundoora]							Change from
Knox Private Hospital [Wantirna]							2014–15
St Jonn of God Healthcare - Ballarat Bays Hospital The Mornington Computer		:	:	:	:		
Peninsula Private Hospital (Frankston)		:	:	:	:		
St John of God Healthcare - Bendido							Unchanged
Shepparton Private Hospital							
	0%	20%	40%	60%	80%	100%	Poorer

Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	94.8%	94.7%	94.2%	93.9%
Private hospitals	96.7%	96.7%	96.3%	96.5%
Public and private hospitals combined	95.2% (92.6%; 97.5%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of ≥ 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting.

Figure 32: Indicator 8b: Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation in Victorian public and private hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	25.2%	25.2%	25.3%	25.2%
Private hospitals	38.7%	39.5%	38.6%	36.7%
Public and private hospitals combined	28.6% (13.1%; 32.6%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of \ge 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \ge 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting.

Figure 33: Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation in Victorian public and private hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	79.7%	80%	79.7%	80.1%
Private hospitals	72.9%	73.3%	74.5%	75.2%
Public and private hospitals combined	78.0% (77.8%; 92.1%)	N/A	N/A	N/A

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. Quartiles for this indicator are calculated based on all public and private health services, regardless of whether they meet the criteria for public reporting.

Indicator 9:

Access to antenatal care

Purpose and rationale

This indicator explores the rate of women who had their first antenatal visit with a maternity care provider prior to 12 weeks' gestation. This first antenatal visit may occur in the community or at a public hospital.

The first antenatal visit is defined as the first visit to a midwife or doctor arranged specifically for the purpose of providing maternity care. It excludes visits to confirm a pregnancy and medical visits for incidental problems

while pregnant.

A range of healthcare may provide antenatal care including general practitioners (often as shared care providers with a public health service), private obstetricians or private midwives and public hospital staff (obstetricians and midwives).

This indicator measures access to antenatal care for all women who gave birth at a particular health service irrespective of whom the visit was with (i.e GP, obstetrician, midwife or other). It does not identify if the right women accessed the most appropriate care at the right time.

Health services should refer to Appendix 1 of this report and the Victorian perinatal data collection manual (sections 1–5),¹¹ for further information on the business rules for this indicator.

Clinical significance

The *Clinical practice guidelines: antenatal care – module II* (Australian Health Ministers' Advisory Council 2014) recommend women attend their first antenatal care visit within the first 10 weeks of pregnancy. Early care ensures that a tailored care plan to meet the individual health and social needs of the woman throughout her pregnancy and the postnatal period can be developed. Early screening for infectious diseases is important for appropriate management throughout the pregnancy, with the effectiveness of fetal anomaly screening also determined by timely access

to care.

Late access to antenatal care is shown to impact pregnancy outcomes, for both women and their babies, including increased risk of neonatal and maternal mortality (Confidential Enquiry into Maternal and Child Health 2007; Mbuagbaw et al. 2015). Therefore, early engagement of women in antenatal care, in particular those who are more vulnerable, is important (National Collaborating Centre for Women's and Children's Health 2010).

11 Available by searching the department's website at <<u>https://www2.health.vic.gov.au></u>



Observations on the data

In 2015, only 20.2 per cent of women who gave birth in a public hospital had their first antenatal visit recorded as occurring before 12 weeks' gestation. This rate increased slightly from 2014 (20.0 per cent). The data indicate wide variation between public hospitals (Figure 34).

Markedly more women who gave birth in a private hospital (85.6 per cent) had their first visit before 12 weeks' gestation.

The data reported to the VPDC for this measure is significantly underreported. Of the Victorian women who gave birth in 2015–16, 65 per cent accessed the first-trimester combined screening test in 2015. Accessing this screening test requires a referral from a medical practitioner (general practitioner or obstetrician) prior to 12 weeks' gestation. Given this, hospitals should review and subsequently improve their data collection processes to ensure accurate capture of care provided in the community.

Expectations for performance improvement

While the statewide public hospital rate of women who attended their first antenatal appointment before 12 weeks' gestation slightly increased in 2015 compared with 2014, there is an imperative for all hospitals to:

- review their processes for capturing and recording reliable data, particularly where antenatal care is provided in the community
- improve education of maternity staff about how to record this data accurately by asking about antenatal care by a general practitioner
- develop strategies to address the factors impeding access to early antenatal care and report on this to the health service executive
- identify high-risk women who may require a more focused approach to ensure early and ongoing access to antenatal care
- agree on local targets to guide incremental improvement and monitor progress
- explore links between access to and quality of antenatal care to outcomes on other indicators of performance.

Consumer summary

Indicator 9: Initiation of antenatal care

Antenatal care refers to the period between conception and birth. It is recommended that women attend their first antenatal appointment within the first 10 weeks of pregnancy. Early access to antenatal care is important to identify and manage risks to the health of a woman and the development of her baby.

This indicator measures the rate of women who attended an antenatal appointment within the first 12 weeks of their pregnancy.

The data presented in this report indicates that 20.2 per cent of women who gave birth in a public hospital attended their first antenatal appointment before 12 weeks compared with 85.6 per cent of women who gave birth in a private hospital. Accurate data collection relating to antenatal care occurring outside of the hospital and in the community appears to be a factor that requires hospitals' attention and action.

Understanding a hospital's performance should take into account outcomes across all indicators.

Figure 34: Indicator 9: Rate of women attending their first antenatal visit prior to 12 weeks' gestation in Victorian public hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	20.2% (8.8%; 42.9%)	20.0%	21.8%	25.6%
Private hospitals	85.6%	85.4%	84.1%	84.4%

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \geq 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting.

Indicator 10:

Apgar score less than 7 at five minutes

Purpose and rationale

This indicator measures the wellbeing of babies at birth. It is used as a proxy for the quality of intrapartum care and neonatal resuscitation, where necessary, following birth. The Apgar score is a validated measure of adverse long-term outcomes.

Clinical significance

Singleton babies who are more than 37 weeks' gestation and without congenital anomalies are expected to be born in good condition, show healthy transition at birth and not require resuscitation. The Apgar score is an assessment of a newborn's wellbeing at birth based on five physiological attributes at one and five minutes (and longer if applicable): colour (circulation), breathing, heart rate, muscle tone and reflexes.

Each attribute is given a score of 0, 1 or 2, with a total minimum score of 0 (indicating no or greatly diminished signs of life) and a maximum score of 10. An Apgar score below 7 at five minutes indicates a baby who requires ongoing resuscitation measures or additional care that may be due to avoidable factors during labour, childbirth or resuscitation.

Observations on the data

In 2015 a five-minute Apgar score less than 7 was reported for 1.5 per cent of singleton, term babies without congenital anomalies in public hospitals overall and 0.9 per cent in private hospitals. These rates have remained stable since reporting of this indicator began in 2012.

Twelve individual public hospitals reported rates of 1.9 per cent or more, with some rural hospitals reporting higher rates than metropolitan hospitals (see Figure 35).

Expectations for performance improvement

Hospitals should ensure there are adequate mechanisms to capture, review and report on adverse intrapartum and neonatal resuscitation events and outcomes.

Hospitals are expected to:

- undertake multidisciplinary reviews of low Apgar (< 7) events and outcomes to identify areas for clinical practice or system improvement
- · monitor the competency and confidence of clinicians in fetal surveillance during labour
- monitor the competency and confidence of clinicians in neonatal resuscitation
- review the availability of senior clinicians to both supervise junior staff and be available to rapidly escalate care after hours
- ensure women with a higher risk of complications are referred to appropriate specialist services antenatally
- ensure clinicians are correctly and consistently identifying and reporting Apgar scores to the VPDC.

Consumer summary

Indicator 10: Singleton, term babies without congenital anomalies with an Apgar score less than 7 at five minutes

The Apgar score is an assessment of a baby's health at one minute and five minutes after birth. The maximum score is 10. An Apgar score of less than 7 at five minutes after birth indicates a baby who requires resuscitation and may experience poor health outcomes longer term.

The data presented in this report indicates that 1.5 per cent of singleton babies born after 37 weeks' gestation in public hospitals had an Apgar score below 7 at five minutes after birth compared with 0.9 per cent of babies born after 37 weeks' gestation in private hospitals.

Ask your health service how they review unexpected events during labour and childbirth, how often this review is undertaken and how they report on service improvements.

Figure 35: Indicator 10: Rate of term babies without congenital anomalies with an Apgar score less than 7 at five minutes in Victorian public hospitals, 2015



Statewide rates

	2015 (quartiles: lower; upper)	2014	2013	2012
Public hospitals	1.5% (0.9%; 1.9%)	1.5%	1.6%	1.6%
Private hospitals	0.9%	0.9%	0.9%	0.8%

Note: Health services that do not meet the reporting threshold of \geq 10 cases in the denominator are not published. An indicator result of 0.0% indicates that a health service met the reporting threshold of \geq 10 cases in the denominator but did not have any cases in the numerator. Quartiles for this indicator are calculated based on all public health services, regardless of whether they meet the criteria for public reporting.

Appendix 1: Definitions and data sources



Indicator 1: Outcomes for standard primiparae

Definition:

The standard primipara is defined as a woman who is 20–34 years of age, giving birth for the first time, free of obstetric and specified medical complications and pregnant with a singleton pregnancy of gestation 37 weeks and 0 days to 40 weeks and six days, with a not-small-for-gestational-age (greater than the 10th centile) infant and a vertex presentation.

Data source:

Victorian Perinatal Data Collection (VPDC)

Data from the VPDC is reported by calendar year from 1 January 2015 to 31 December 2015.

This data is routinely submitted by each health service on each birth.

The indicators are derived using the following VPDC variables: 'Parity', 'Maternal age', 'Plurality', 'Estimated gestational age', 'Birth presentation', 'Obstetric complications-ICD-10-AM code', 'Maternal medical conditions-ICD-10-AM code', 'Indication for induction-ICD-10-AM code', 'Indications for operative delivery-ICD-10-AM code', 'Birthweight', 'Labour type', 'Method of birth', 'Perineal/genital laceration – degree/type'.

The inclusion criteria for the standard primipara are revised each year based on the data reported to the VPDC as code or text. This review ensures that some women who would have been identified as standard primiparae, but in fact have a condition that should exclude them, are accounted for.

Indicator	Numerator	Denominator
Indicator 1a : Rate of inductions in standard primiparae in Victorian public hospitals	The number of standard primiparae who give birth undergoing induction of labour	The number of standard primiparae
Indicator 1b : Rate of caesarean sections in standard primiparae in Victorian public hospitals	The number of standard primiparae who give birth undergoing a caesarean section	The number of standard primiparae
Indicator 1c : Rate of third- and fourth- degree perineal tears in standard primiparae giving birth vaginally in Victorian public hospitals	The number of standard primiparae who give birth vaginally and sustain a third- or fourth-degree tear	The number of standard primiparae who give birth vaginally

Indicator 2: Rate of term babies without congenital anomalies who require additional care

Definition:

An inborn term baby is an infant born at the reporting hospital at gestational age of 37 weeks or more. Term babies without congenital anomalies who require additional care are defined as newborns that:

- are not less than 37 weeks and 0 days' gestation
- weigh not less than 2,500 grams
- are without congenital anomalies
- are grouped to Victorian diagnostic-related groups (VIC-DRGs) representing the need for more than normal care (see list of VIC-DRGs provided below).

The exclusions are:

- babies born at another hospital
- pre-term newborn babies
- infants with congenital anomalies
- birthweight less than 2,500 grams
- stillborn babies
- readmission (separation not related to the birth episode).

The denominator for 2015–16 reporting period is episodes grouped to the Version 7.0 VIC-DRGs :

- P68A (v7): Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W Mult Major Probs
- P68B (v7): Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W Major Problem
- P68C (v7) Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W Other Problem
- P68D (v7) Neonate, AdmWt >=2500g W/O Sig OR Proc >=37 Comp Wks Gest W/O Problem
- P06A Neonate, Admission weight > 2499g with Significant Operating Room Procedure with Multi Major Problems
- P06B Neonate, Admission weight > 2499g with Significant Operating Room Procedure without Multi Major Problems
- P60A Neonate, Died or Transferred < 5 days of admission, without Significant Operating Room Procedure, Newborn
- P60B Neonate, Neonate W/O Sig OR Proc, Died or Transferred to Acute Facility Sameday.

Data source:

Victorian Admitted Episodes Dataset (VAED)

Data from the VAED is reported by financial year from 1 July 2015 to 30 June 2016.



Numerator/denominator:

Indicator	Numerator	Denominator
Indicator 2: Rate of term babies	The number of inborn term babies	The number of inborn term babies
without congenital anomalies who	without birth defects grouped to VIC-	without congenital anomalies grouped
require additional care in Victorian	DRG P68A, P68B, P68C, P06A, P06B,	to VIC-DRG P68A, P68B, P68C, P68D,
public hospitals	P60A [#] and P60B [#]	P06A, P06B, P60A [#] and P60B [#]

All newborns initially grouped to P6oA and P6oB were regrouped to the next logical VIC-DRG following removal of the separation mode 'Died or Transferred' and replaced with the separation mode of 'Home'. This was done so that only those babies in P6oA and P6oB who require additional care are counted in the numerator. To include the whole of P6oA and P6oB in the numerator would overestimate the rate of newborns requiring additional care, as some healthy newborns are transferred for other reasons.

Indicator 3: Severe fetal growth restriction (FGR)

Definition:

Severe FGR is defined as a birthweight less than the third centile for gestation and sex whether liveborn or stillborn.

Exclusions are:

- babies without severe FGR
- multiple births
- births at earlier gestations (less than 32 weeks).

Data source:

Victorian Perinatal Data Collection.

Data from the VPDC is reported by calendar year from 1 January 2015 to 31 December 2015.

The indicator is derived using the following VPDC variables: 'Baby sex', 'Gestation', 'Birth weight', 'Plurality' and 'Birth status'.

Numerator/denominator:

veeks' gestation of n severe FGR Singleton births (live and stillborn) with severe FGR born at and beyond 32
tl

The Australian national birthweight percentiles by sex and gestational age, 1998–2007 (Dobbins et al. 2012) is used to calculate the birthweight percentiles for this indicator (see Table 3 and Table 4 below).

Table 3: Birthweight percentiles for live singleton male infants, Australia, 1998–2007

Costational	Number	Maar (CD)					Birthwe	ight percen	tile (g)				
age (weeks)	of births	birthweight (g)	1st	3rd	5th	10th	25th	50th	75th	90th	95th	97th	99th
20	230	349 (60)	210	248	254	273	310	340	390	430	450	470	500
21	335	418 (66)	270	290	300	335	375	420	460	500	540	542	575
22	401	505 (76)	350	370	390	410	460	500	554	600	630	650	690
23	395	595 (82)	390	450	470	500	540	588	650	700	730	756	800
24	640	681 (105)	426	470	500	550	618	684	750	810	850	875	970
25	715	783 (131)	440	505	530	620	700	785	865	944	995	1030	1100
26	937	894 (152)	500	576	621	680	802	900	996	1078	1130	1155	1210
27	1069	1016 (194)	510	605	660	752	904	1030	1138	1250	1320	1352	1440
28	1 345	1146 (217)	591	680	735	844	1030	1165	1295	1395	1470	1522	1640
29	1 524	1301 (252)	662	782	860	964	1150	1 311	1463	1620	1700	1757	1860
30	2105	1474 (283)	774	900	984	1091	1300	1498	1650	1800	1920	1980	2182
31	2576	1666 (304)	915	1055	1126	1270	1480	1680	1855	2028	2142	2230	2435
32	3895	1867 (331)	1075	1214	1294	1430	1659	1880	2080	2270	2405	2503	2710
33	5599	2106 (371)	1200	1381	1473	1638	1880	2106	2340	2560	2710	2845	3070
34	9824	2340 (385)	1400	1580	1690	1860	2100	2340	2580	2810	2990	3120	3343
35	16 054	2585 (408)	1600	1795	1920	2080	2330	2578	2835	3095	3275	3410	3665
36	32 747	2826 (428)	1805	2015	2120	2295	2550	2820	3095	3360	3550	3690	3930
37	73 986	3093 (449)	2050	2265	2372	2540	2800	3080	3378	3670	3865	3990	4235
38	230 003	3344 (439)	2340	2540	2640	2800	3050	3330	3625	3910	4090	4215	4445
39	293 109	3486 (430)	2510	2700	2800	2950	3195	3470	3765	4040	4220	4335	4560
40	409 976	3632 (434)	2650	2840	2940	3090	3340	3620	3915	4195	4370	4490	4708
41	192154	3769 (438)	2780	2970	3070	3220	3470	3755	4060	4340	4515	4630	4850
42	19804	3832 (462)	2760	2980	3095	3250	3520	3820	4130	4430	4615	4740	4970
43	797	3761 (540)	2615	2785	2935	3085	3380	3750	4100	4470	4670	4825	5180
44	53	3715 (563)	-	-	-	3110	3300	3620	4070	4415	-	-	-

Source : Dobbins et al. 2012

Table 4: Birthweight percentiles for live singleton female infants, Australia, 1998–2007

Gestational	Number	Mean (SD)	Birthweight percentile (g)										
age (weeks)	of births	birthweight (g)	1st	3rd	5th	10th	25th	50th	75th	90th	95th	97th	99th
20	197	333 (65)	190	210	230	265	290	320	374	410	450	490	525
21	256	386 (69)	210	250	270	300	340	390	433	470	510	515	530
22	333	474 (72)	260	325	355	400	425	480	520	560	589	610	620
23	376	558 (89)	320	375	400	445	506	560	615	660	700	725	800
24	528	637 (95)	380	430	480	520	580	641	700	754	793	815	860
25	599	730 (128)	410	470	498	559	645	740	817	884	940	975	992
26	809	825 (166)	428	490	520	594	717	840	940	1026	1072	1106	1186
27	879	949 (188)	500	568	598	675	840	965	1077	1175	1240	1280	1390
28	1136	1073 (230)	495	622	675	764	928	1090	1230	1347	1410	1470	1610
29	1 188	1215 (252)	572	712	790	870	1055	1240	1380	1494	1595	1680	1840
30	1656	1394 (277)	725	870	918	1030	1220	1400	1571	1715	1840	1920	2130
31	2 052	1582 (302)	880	1000	1060	1190	1385	1590	1780	1948	2065	2146	2338
32	3 1 1 9	1772 (322)	970	1140	1230	1348	1570	1780	1970	2170	2290	2400	2620
33	4 421	2014 (356)	1180	1330	1424	1560	1790	2011	2235	2450	2616	2746	2970
34	8108	2242 (375)	1331	1525	1615	1764	2005	2240	2470	2705	2870	2995	3220
35	13104	2486 (403)	1525	1710	1820	1980	2230	2480	2735	2995	3175	3300	3516
36	28 386	2720 (420)	1750	1940	2040	2198	2445	2710	2980	3250	3450	3575	3810
37	66 928	2979 (439)	1970	2175	2275	2430	2690	2965	3255	3545	3735	3865	4100
38	214 002	3215 (425)	2256	2440	2540	2690	2930	3200	3490	3770	3945	4062	4290
39	282046	3351 (415)	2420	2600	2690	2830	3070	3340	3620	3890	4060	4175	4390
40	398 257	3493 (416)	2566	2740	2830	2975	3210	3480	3765	4030	4200	4316	4525
41	181 434	3619 (424)	2680	2855	2945	3090	3330	3605	3900	4170	4340	4455	4670
42	17 701	3665 (445)	2670	2850	2950	3110	3360	3650	3955	4240	4420	4545	4760
43	801	3579 (463)	2660	2800	2865	3010	3240	3560	3880	4210	4385	4560	4760
44	52	3705 (523)	-	—	_	3070	3403	3695	3965	4230	_	-	-

Source : Dobbins et al. 2012

Indicator 4: Vaginal births after primary caesarean section

Definition:

This indicator definition may differ from other vaginal birth after caesarean (VBAC) indicators. Primary caesarean is often defined as the first ever caesarean regardless of parity, whereas this indicator selects only prior caesareans in primiparae.

The VPDC collects outcomes for women at term whose only previous birth was a caesarean section; any of these woman who entered labour and did not have a subsequent planned caesarean is assumed to have planned a VBAC.

Exclusions:

Not all hospitals in Victoria offer VBAC, and those that do not have been excluded from the indicator.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2014 to 31 December 2014.

The indicators are derived using the following VPDC variables: 'Parity', 'Total number of previous caesareans', 'Plurality', 'Estimated gestational age', 'Labour type' and 'Method of birth'.

Indicator	Numerator	Denominator
Indicator 4a : Rate of women who planned for vaginal birth following a primary caesarean section in Victorian public hospitals	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean section and who enter labour with a plan for a vaginal birth	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean section
Indicator 4b : Rate of women who had a planned vaginal birth following a primary caesarean section in Victorian public hospitals	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean and who enter labour with a plan for a vaginal birth and who had a vaginal birth	The number of women (para 1 and at term with a singleton pregnancy) whose previous birth was a caesarean and who enter labour with a plan for a vaginal birth



Indicator 5: Five-year gestation standardised perinatal mortality ratio (GSMPR)

Definition:

The GSPMR is standardised according to the gestational age-specific perinatal mortality rates of the total population in Victorian public hospitals. The standardisation does not adjust for interhospital transfers, and deaths are ascribed to the birth hospital regardless of the timing of the death in relation to the transfer.

The data in this report:

- is calculated from five years of pooled data between 2010 and 2014
- is standardised using gestational age
- excludes births earlier than 32 weeks and 0 days
- excludes birthweights less than 150 grams regardless of gestation
- excludes all deaths due to congenital anomalies and all terminations of pregnancy.

These exclusions provide a more sensitive indicator to reflect the quality of care. Hospitals are only reported where they have had five or more perinatal deaths in any of the five pooled years.

The GSPMR is presented with data for public hospitals being shown in relation to the statewide public hospital perinatal mortality rate as the standard or reference population.

A GSPMR of 1 indicates that the observed number of perinatal deaths at that hospital is exactly what would be expected, considering the number of births and the gestation of babies born there. The statewide rate (1) does not necessarily represent the optimal or clinically appropriate rate for perinatal mortality.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2011 to 31 December 2015.

Numerator/denominator:

Indicator	Observed	Expected
Indicator 5: Perinatal mortality ratio for babies born at 32 weeks (gestation standardised, excluding all terminations of pregnancy and deaths due to congenital anomalies) using five years' pooled data in Victorian public hospitals (32 weeks or more GSMPR)	Observed perinatal deaths from 32 weeks and 0 days (by weeks' gestation at birth)	Expected perinatal deaths from 32 weeks and 0 days (by weeks' gestation at birth)

The adjusted GSPMR is calculated and applied to all public hospitals having five or more observed perinatal deaths in any of the included calendar years (2010–2014).

Indicator 6a: Readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public hospital

Definition:

Readmissions that meet the criteria for inclusion are attributed to the health service that provided admitted postnatal care to the mother prior to discharge.

Data source:

Victorian Admitted Episodes Dataset (VAED).

Data from the VAED is reported by financial year 1 July 2015 to 30 June 2016.

The indicator is derived using the primary diagnosis codes (as below).

Inclusion and exclusion criteria Indicator cohort

Women transferred to another health services following a birth separation are excluded from the numerator total, as are women who are readmitted as part of a planned follow-up plan after their birth episode.

The denominator is the total number of birth episodes at a health service. The only exclusion is maternal death. No further exclusions have been made, therefore this total includes birth episodes with DRGs indicating serious complexity, operating procedures or caesarean section delivery.

Readmission diagnosis code

Women who present to an emergency department or urgent care centre, but who are not admitted, are excluded from the numerator total.

Indicator	Numerator	Denominator
Indicator 6a: Potentially preventable readmission of a mother within 28 days of discharge from a birthing episode admission in a Victorian public hospital	The number of women readmitted to any health service with a potentially preventable readmissions diagnosis code within 28 days	The number of women provided with admitted postnatal care prior to discharge



The readmission rate will be calculated for the hospital that discharged the mother from the birth episode. The rate includes admissions to any Victorian health service after birth, not just a readmission to the birthing service.

Women who are readmitted and have a primary diagnosis related to their pregnancy or birth are included in the numerator total. However, diagnosis codes that are associated with a complexity that cannot be prevented (or managed) through postnatal care or that are associated with a condition that manifests after discharge from hospital without any indication of its presence prior to this time are excluded. Potentially preventable readmission primary diagnosis codes are limited to the following:

- 0722 Delayed and secondary postpartum haemorrhage
- 0860 Infection of obstetric surgical wound
- 085 Puerperal sepsis
- · Og120 Non-purulent mastitis without attachment difficulties
- · Z466 Fitting and adjustment of urinary device
- O894 Spinal epidural headache during puerperium
- Og01 Disruption of perineal obstetric wound
- O149 Pre-eclampsia (unspecified)
- O16 Unspecified maternal hypertension
- 09903 Anaemia complicating childbirth and the puerperium
- O731 Retained portion placenta and membranes without haemorrhage
- 0721 Other immediate postpartum haemorrhage
- 0902 Haematoma of obstetric wound
- 0862 Urinary tract infection following delivery
- O900 Disruption of caesarean section wound
- · Z391 Care and examination of lactating mother
- O13 Gestational hypertension
- · N390 Urinary tract infection (site not specified)
- Og121 Non-purulent mastitis with attachment difficulty
- F531 Severe mental and behavioural disorder associated with puerperium (not elsewhere classified)
- F530 Mild mental and behavioural disorder associated with puerperium (not elsewhere classified)
- G971 Other reaction to spinal and lumbar puncture
- R509 Fever (unspecified)
- R33 Retention of urine
- 0152 Eclampsia in the puerperium
- 0720 Third-stage haemorrhage.

Other examples of readmission indicators for other clinical streams used domestically and internationally have adjusted their rates to take account of factors that affect the likelihood of readmission – for example, the exclusion of cases where there is a comorbidity. Other than the exclusions noted above, the results presented here are unadjusted; future versions of this indicator may refine the rules used to create the rates presented.

Indicator 6b: Readmission of a baby within 28 days of discharge from a birthing episode admission in a Victorian public hospital

Definition:

Readmissions that meet the criteria for inclusion are attributed to the health service that provided admitted postnatal care of the baby prior to discharge.

Data source:

Victorian Admitted Episodes Dataset (VAED).

Data from the VAED is reported by financial year 1 July 2015 to 30 June 2016.

The indicator is derived using the primary diagnosis codes (as below).

Inclusion and exclusion criteria Indicator cohort

Neonates transferred to another health services following a birth separation are excluded from the numerator total, as are neonates who are readmitted as part of a planned follow-up plan after their birth episode.

The denominator includes the total number of neonates discharged from a health service. Stillbirths and neonatal deaths prior to discharge are excluded. Qualified and unqualified neonates are included, irrespective of their accommodation type during the birth episode (if they spent time in a neonatal intensive care unit or a special care nursery).

Neonates that are readmitted on the same day of discharge are also excluded. This is because it is not possible to determine from the dataset whether these are genuine readmissions or a new separation following a planned transfer of care.

Indicator	Numerator	Denominator
Indicator 6b: Potentially preventable readmission of a neonate within 28 days of discharge from a birthing episode admission in a Victorian public hospital	The number of neonates readmitted to any health service with a potentially preventable readmissions diagnosis code within 28 days of discharge	The number of neonates provided with admitted postnatal care prior to discharge



Readmission diagnosis code

Neonates who present to an emergency department or urgent care centre, but who are not admitted, are excluded from the numerator total.

The readmission rate is calculated for the hospital that discharged the neonate from the birth episode. The rate includes admissions to any Victorian health service after birth, not just a readmission to the birthing service.

Neonates who are readmitted and have a primary diagnosis related to their pregnancy and/or birth are included in the numerator total. However, diagnosis codes that are associated with a complexity that cannot be prevented (or managed) through postnatal care or that are associated with a condition that manifests after discharge from hospital without any indication of its presence prior to this time are excluded.

Potentially preventable readmissions are limited to the following cohort of primary diagnoses:

- P599 Neonatal jaundice (unspecified)
- R634 Abnormal weight loss
- · P929 Feeding problem of newborn (unspecified)
- · R628 Other lack of expected normal physiological deviation
- · P369 Bacterial sepsis of newborn (unspecified)
- P928 Other feeding problems of newborn
- P590 Neonatal jaundice with pre-term delivery
- P598 Neonatal jaundice from other specific causes
- P0732 Other pre-term infant ≥ 32 weeks' gestation but < 37 completed weeks
- P551 ABO isoimmunisation of fetus and newborn
- · Z0371 Observation of newborn for suspected infectious condition
- P2840 Apnoea of newborn, unspecified
- P282 Cyanotic attacks of newborn
- A870 Enteroviral meningitis
- P38 Omphalitis newborn with or without mild haemorrhage
- P741 Dehydration of newborn
- P809 Hypothermia of newborn unspecified
- Pgo Convulsions of newborn.

Other examples of similar readmission indicators for other clinical streams used domestically and internationally have adjusted their rates. These statistical adjustments are included to take account of factors that affect the likelihood of readmission – for example, the exclusion of cases where there is a comorbidity. Other than the exclusions noted above, the results presented here are unadjusted; future versions of this indicator may refine the rules used to create the rates presented.

Indicator 7: Smoking cessation

Definition:

The rate of women who smoked after 20 weeks' gestation as compared with before 20 weeks' gestation at each hospital. Data is presented as the relative reduction between these two rates – the 'smoking cessation rate' for Victorian public and private hospitals.

Data source:

Victorian Perinatal Data Collection.

Data from the VPDC is reported by calendar year from 1 January 2015 to 31 December 2015.

The indicators are derived using the following VPDC variables: 'Maternal smoking at less than 20 weeks' and 'Maternal smoking at more than or equal to 20 weeks'.

Indicator	Numerator	Denominator
Indicator 7: Smoking cessation rate	Difference between the rate of women who smoked before 20 weeks' gestation and the rate of who smoked after 20 weeks' gestation	Rate of women who smoked before 20 weeks' gestation



Indicator 8: Breastfeeding initiation

Definition:

This suite of measures assesses the initiation of breastfeeding in Victorian hospitals during the birthing episode, namely:

- Indicator 8a rate of breastfeeding initiation in term babies
- Indicator 8b rate of use of infant formula in term breastfed babies
- Indicator 8c rate of final feed exclusively from the breast for term breastfed babies.

Data source:

Victorian Perinatal Data Collection.

Data from the VPDC is reported by calendar year from 1 January 2015 to 31 December 2015.

This data is routinely submitted by each health service on each birth.

The indicators are derived using the following VPDC variables: 'Breastfeeding attempted', 'Formula given in hospital', 'Last feed before discharge taken exclusively from the breast', 'Estimated gestational age' and 'Birth status'.

Indicator	Numerator	Denominator
Indicator 8a: Rate of breastfeeding initiation for babies born at 37+ weeks' gestation in Victorian public and private hospitals	The number of women giving birth at 37 or more weeks' gestation attempting to breastfeed at least once (regardless of the success of the attempt)	The number of women giving birth at 37 or more weeks' gestation
Indicator 8b : Rate of use of infant formula by breastfed babies born at 37+ weeks' gestation in Victorian public and private hospitals	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding and was given infant formula in hospital	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding
Indicator 8c: Rate of final feed being taken exclusively and directly from the breast by breastfed babies born at 37+ weeks' gestation in Victorian public and private hospitals	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding and who fed directly and entirely from the breast at the last feed before discharge	The number of babies born at 37 or more weeks' gestation whose mother initiated breastfeeding

Indicator 9: First antenatal visit

Definition:

The first antenatal visit is the first visit to a midwife or doctor arranged specifically for the purpose of providing maternity care. It excludes visits to confirm a pregnancy unless some maternity care is provided (for example, referral for a first-trimester screening) and medical visits for incidental problems while pregnant.

A maternity or antenatal care provider is defined as the clinician who provides care to pregnant women and includes midwives, general practitioners and obstetricians.

This indicator also includes antenatal visits that may occur in the community (general practitioners, midwives or obstetricians practising privately **or** at a community health centre) and is therefore not necessarily the date of the first antenatal visit at the public health service.

Data source:

Victorian Perinatal Data Collection.

Data from the VPDC is reported by calendar year from 1 January 2015 to 31 December 2015.

The indicator is derived using the VPDC variable: 'Gestational age at first antenatal visit'.

Indicator	Numerator	Denominator
Indicator 9 : Rate of women had antenatal care prior to 12 weeks' gestation	The number of women who had antenatal care prior to 12 weeks' gestation with a maternity care provider (including care in the community by general practitioners) and who birthed at the health service	The number of women who gave birth

Indicator 10: Term babies without birth anomalies with an Apgar score less than 7 at five minutes

Definition:

This in the rate of term babies without congenital anomalies with an Apgar score of less than 7 at five minutes in Victorian public hospitals.

It excludes babies born at less than 37 weeks' gestation, infants born with congenital anomalies, multiple births, stillbirths and babies born before arrival at hospital.

The Apgar score is used to evaluate the fitness of a newborn infant based on heart rate, respiration, muscle tone, reflexes and colour. The maximum score is 10. The Apgar score should be determined consistently and reliably according to best practice guidelines and to ensure babies with a low Apgar (6 or less) receive timely and appropriate resuscitation procedures. Rates for this indicator should show little variation among peer group services and inter-rater reliability should be high within health services. This supports quality reporting of neonatal outcomes for meaningful comparisons.

'Inborn' is defined as a baby born at the reporting hospital.

Data source:

Victorian Perinatal Data Collection

Data from the VPDC is reported by calendar year from 1 January 2015 to 31 December 2015.

This data is routinely collected for every birth at each health service.

The indicator is derived using the following VPDC variables: 'Apgar score at 5 minutes', 'Estimated gestational age', 'Birth status', 'Birth plurality', 'Setting of birth – actual' and 'Congenital anomalies indicator'.

Indicator	Numerator	Denominator
Indicator 10: Rate of term babies	The number of inborn, singleton,	The number of inborn, singleton,
without congenital anomalies with	liveborn, term babies without	liveborn term babies without
an Apgar score of less than 7 at five	congenital anomalies with an Apgar	congenital anomalies
minutes in Victorian public hospitals	score less than 7 at five minutes	

Appendix 2: Key terms

Antenatal	Before birth – the period between conception and birth. Also called 'prenatal'.
Apgar score	A score based on the baby's skin colour, spontaneous activity, reflex activity, pulse rate and respiration at specific times after birth.
Caesarean section	A surgical operation by which the fetus is extracted through an incision in the abdominal and uterine walls.
Centile	A percentile (or a centile) is a measure used in statistics indicating the value below which a given percentage of observations in a group of observations fall. For example, the 10th percentile is the value (or score) below which 10 per cent of the observations may be found.
Congenital anomaly	An anomaly occurring before birth including structural, functional, genetic, chromosomal and biochemical abnormalities. Also called 'birth defect', 'congenital malformation' or 'congenital disorder'.
Fetal growth restriction (FGR)	Birthweight below the 10th centile for gestational age, plurality and sex. Severe FGR is a birthweight less than the third centile.
Fourth-degree tear	A tear of the perineum into the anal sphincter extending into the lining of the anus.
Gestation	The number of weeks of pregnancy calculated from the first day of the mother's last normal menstrual period.
Inborn	Baby born at the reporting hospital.
Induction of labour	Use of interventions (medications, rupture of membranes) to assist the process of labour to begin.
Intrapartum	During labour.
Live birth	The birth of a baby, at any stage of maturity, who has breathed or shown other signs of life after being born.
Maternity care provider	The clinician who provides most occasions of antenatal care and is expected to be primarily responsible for making decisions regarding intrapartum care.
Neonatal	Newborn; from birth until the 28th day.

Perinatal	The period before, during and after birth – that is, the antenatal, intrapartum and postnatal periods.
Perineal tear	A tear or rupture of the pelvic floor and associated structures.
Postnatal	The period after birth (and generally accepted to last for six weeks).
Pre-term	Prior to 37 weeks' gestation.
Primipara	A woman who has given birth for the first time.
Singleton	The birth of only one child during a single delivery.
Standard primipara	A woman, 20–34 years of age, who has given birth for the first time, free of obstetric and specific medical complications and is pregnant with a singleton pregnancy of gestation between 37 weeks and 0 days and 40 weeks and six days, with a non-small-for-gestational-age (greater than 10th centile) infant and a head-first (cephalic) presentation.
Stillbirth	The birth of an infant of at least 20 weeks' gestation or, if gestation is unknown, weighing at least 400 grams, who shows no signs of life at birth.
Term baby	An infant born at 37–42 weeks' gestation.
Third-degree tear	A tear of the perineum into the anal sphincter that does not extend to the lining of the anus.
Vaginal birth	A birth of a baby via the vagina whether or not it was assisted.
Vaginal birth after caesarean (VBAC)	A normal vaginal birth, forceps birth or ventouse birth following a previous caesarean birth.

Appendix 3: Total number of women and babies, by place of birth, 2015

Health service	Maternity capability level of service*	Number of women	Number of babies
The Royal Women's Hospital	6	7,434	7,604
Mercy Hospital for Women	6	5.531	5,648
Monash Medical Centre Clayton	6	3,827	3,978
Sunshine Hospital	5	5,094	5,164
The Northern Hospital	5	3,370	3,398
Frankston Hospital	5	2,695	2,723
Box Hill Hospital	5	2,493	2,523
University Hospital Geelong	5	2,386	2,418
Bendigo Health Care Group	5	1,299	1,323
Ballarat Health Services	5	1,407	1,423
Goulburn Valley Health	5	1,108	1,120
Central Gippsland Health Service	5	457	461
Dandenong Hospital	4	2,589	2,591
Angliss Hospital	4	2,207	2,225
Albury Wodonga Health	4	1,732	1,756
West Gippsland Healthcare Group	4	985	1,003
Mildura Base Hospital	4	877	891
Latrobe Regional Hospital (Traralgon)	4	831	838
South West Healthcare Warrnambool	4	715	728
Northeast Health Wangaratta	4	586	594
Wimmera Health Care Group	4	379	381
Mercy Werribee Hospital	3	3,388	3,410
Casey Hospital	3	2,052	2,052
Women's at Sandringham	3	1,569	1,570
Djerriwarrh Health Services	3	747	747
Bairnsdale Regional Health Service	3	339	339
Echuca Regional Health	3	335	338
Swan Hill District Health	3	255	256

* Self-reported maternity capability levels for period 2015. Capability levels for private hospitals were not determined for that period.

Health service	Maternity capability level of service*	Number of women	Number of babies
Kilmore and District Hospital	3	223	223
Bass Coast Regional Health	3	170	170
Gippsland Southern Health Service (Leongatha)	3	201	201
Western District Health Service (Hamilton)	3	196	199
East Grampians Health Service (Ararat)	3	119	119
Benalla and District Memorial Hospital	3	103	103
South Gippsland Hospital	3	76	76
Mansfield District Hospital	3	77	77
Cohuna District Hospital	3	53	53
Kerang District Hospital	3	15	15
Seymour District Memorial Hospital	3	6	6
Terang and Mortlake Health Service	3	19	20
Colac Area Health	2	185	185
Maryborough District Health Service	2	78	78
Yarrawonga District Health Service	2	60	60
Kyneton District Health Service	2	38	38
Castlemaine Health	2	76	76
Portland District Health	2	86	87
South West Healthcare Camperdown	2	36	36
Orbost Regional Health	2	22	22
Alpine (Bright, Myrtleford and Mt Beauty)	2	12	12
Other public hospitals	-	4	4

* Self-reported maternity capability levels for period 2015. Capability levels for private hospitals were not determined for that period.

Health service	Maternity capability level of service*	Number of women	Number of babies
Frances Perry Private Hospital [Carlton]	-	3,281	3.377
Epworth Healthcare – Freemasons [East Melbourne]		3,018	3,070
St Vincent's Private Hospital [Fitzroy]		2,568	2,607
Saint Frances Xavier Cabrini Hospital – Cabrini Malvern		2,009	2,036
Mitcham Private Hospital	Private hospitals	1,166	1,182
Waverley Private Hospital [Mt Waverley]		1,037	1,047
St John of God Healthcare – Geelong		951	965
Jessie McPherson Private Hospital [Clayton]		874	921
St John of God Healthcare – Berwick		829	836
Northpark Private Hospital [Bundoora]		802	810
Knox Private Hospital [Wantirna]		580	584
St John of God Healthcare – Ballarat		495	499
Bays Hospital, The – Mornington Campus		481	487
Peninsula Private Hospital [Frankston]	Private hospitals	460	461
St John of God Healthcare – Bendigo		382	386
Shepparton Private Hospital		21	21
Private homebirth		255	255
Public hospital total		58,948	59,362
Private hospital total (n = 16)		18,549	19,290
Statewide total		77,752	78,907

* Self-reported maternity capability levels for period 2015. Capability levels for private hospitals were not determined for that period.

Notes: Excludes babies born ≤ 20 weeks' gestation, all terminations of pregnancy and birthweight ≤ 150 grams. Babies born before arrival are counted at the hospital the mother and baby are subsequently transported to. Public hospitals with ≤ five births are included in 'Other public hospitals'. Non-maternity public hospitals with occasional births are also included in 'Other public hospitals'.

Appendix 4:

Overview of 2015–2016 results

Maternity Level		Number of births	Indicators										
			1a	1b	1c	2	3	4a	4b	5			
	Statewide public hospitals		3	16	6.5	8.6	34.9	29.3	57.7	1.00			
	Statewide private hospitals		13.6	34	2.7	N/A	36.3	15.8	50.8	0.69			
	Lower quartile range		0.0	11.6	0.0	2.7	26.6	19.8	53.0	1.02			
	Upper quartile range		4.1	21.7	8.7	8.4	50.0	34.5	71.4	1.24			
6	The Royal Women's Hospital	7,604	2.8	8.5	6.3	8.6	39.9	28.1	72.2	0.84			
6	Mercy Hospital for Women	5,648	3.7	16.7	1.6	6.5	28.3	24.3	53	0.49			
6	Monash Medical Centre Clayton	3,978	1.1	10.9	5.5	20.2	35.6	30.5	59	1.03			
5	Sunshine Hospital	5,164	1.8	13.2	7.6	9.6	23.5	36.2	56.3	1.20			
5	The Northern Hospital	3,398	3.4	22.9	5.9	8.2	23.3	30.7	34.8	1.11			
5	Frankston Hospital	2,723	2.2	21.5	4.5	4.6	35.4	27.5	44.3	1.33			
5	Box Hill Hospital	2,523	2.5	10.8	12.1	9.1	36.8	22.2	72.9	1.41			
5	Barwon Health (Geelong)	2,418	2.4	21.3	8.5	10.2	41.3	24.3	64.2	1.24			
5	Bendigo Health Care Group	1,323	2.4	28.6	20.0	11.4	21.4	28.6	56.7	0.95			
5	Ballarat Health Services	1,423	4.7	18.6	0.0	11.2	26.1	27.0	45.2	1.09			
5	Goulburn Valley Health	1,120	3.2	17.5	3.8	12.9	37.5	47.6	62.5	1.04			
5	Central Gippsland Health Service	461	0.0	11.8	0.0	6.1	45.5	17.6	N/A	N/A			

Maternity Level					Total number of indicators in least favourable quartile	Total number of indicators in most favourable quartile (shaded					
		6a	6b	7	8a	8b	8c	9	10	(shaded red)	green)
	Statewide public hospitals	2.4	4.0	39.0	94.8	25.2	79.7	20.2	1.5		
	Statewide private hospitals	N/A	N/A	76.9	96.7	38.7	72.9	85.6	0.9		
	Lower quartile range	1.9	1.5	21.4	92.6	14.68	77.6	8.8	0.8		
	Upper quartile range	3.0	3.9	50.0	97.5	32.6	91.6	42.9	1.8		
6	The Royal Women's Hospital	2.1	5.0	50.0	98.2	26.9	79.8	24.1	1.5	2	5
6	Mercy Hospital for Women	2.3	2.8	42.9	96.7	27.3	77.9	16.2	1.7	1	1
6	Monash Medical Centre Clayton	3.0	3.7	50.0	94.1	41.4	56.1	21.6	2.2	5	2
5	Sunshine Hospital	1.9	7.9	30.8	94	25.1	78.5	16.1	1	2	2
5	The Northern Hospital	1.7	6.3	45.8	90.7	38.7	70.3	12.5	0.7	6	3
5	Frankston Hospital	2.2	2.7	64.5	92.8	21.6	90.1	3.1	1.3	3	1
5	Box Hill Hospital	2.4	4.6	39.7	98	21	84	8.6	1.7	5	3
5	Barwon Health (Geelong)	3.2	3.3	37.7	94.9	20.4	85.3	13.5	1.6	3	0
5	Bendigo Health Care Group	4.6	3.8	26.2	91.8	32.4	71.3	5.2	3.4	8	2
5	Ballarat Health Services	3.6	5.2	25.1	93.3	17.9	87.1	13.4	2.3	6	2
5	Goulburn Valley Health	2.6	3.3	37.0	92.6	27.2	82.9	4.9	1.3	2	1
5	Central Gippsland Health Service	2.5	2.5	4.7	92.5	32.6	85.5	79.6	1.9	4	3

Maternity Level		Number of births	Indicators									
			1a	1b	1c	2	3	4α	4b	5		
4	Dandenong Hospital	2,591	2.4	11.9	10.8	12.5	35.0	33.2	56.5	1.07		
4	Angliss Hospital	2,225	1.0	14.3	7.8	6.1	47.6	21.8	60.4	1.19		
4	Albury Wodonga Health	1,756	4.6	14.7	7.5	6.5	40.0	19.2	62.5	1.20		
4	West Gippsland Healthcare Group	1,003	2.8	5.6	8.8	8.3	20.0	58.5	55.3	1.15		
4	Mildura Base Hospital	891	3.9	21.1	8.3	7.0	42.1	35.0	52.4	1.20		
4	Latrobe Regional Hospital (Traralgon)	838	0.0	13.9	9.7	10.6	29.2	37.5	76.2	1.61		
4	South West Healthcare Warrnambool	728	3.5	10.5	5.9	8.9	64.3	49.2	69.7	N/A		
4	Northeast Health Wangaratta	594	11.8	15.7	2.3	3.8	N/A	27.1	31.3	N/A		
4	Wimmera Health Care Group	381	5.6	22.2	0.0	5.6	N/A	32.0	N/A	N/A		
3	Mercy Werribee Public Hospital	3,410	4.6	20.7	6.9	6.8	34.1	33.5	57.3	0.85		
3	Casey Hospital	2,052	3.0	17.2	8.1	12.2	27.6	31.4	62.1	0.98		
3	Sandringham and District Memorial Hospital	1,570	1.3	13.6	7.5	2.5	27.0	22.5	81.8	N/A		
3	Djerriwarrh Health Services	747	1.6	18.0	4.0	2.4	N/A	31.2	29.2	1.81		
3	Bairnsdale Regional Health Service	339	6.5	19.4	12.0	2.9	53.8	34.4	54.5			
3	Echuca Regional Health	338	N/A	N/A	N/A	2.6	N/A	29.2	N/A	N/A		
3	Swan Hill District Health	256	0.0	18.9	3.3	7.5	N/A	5.6	N/A	N/A		

Maternity Level					Total number of indicators in least favourable quartile	Total number of indicators in most favourable quartile (shaded					
		6a	6b	7	8a	8b	8c	9	10	(shaded red)	green)
4	Dandenong Hospital	1.9	4.8	58.0	96.3	19.8	75.1	23.5	1.6	4	1
4	Angliss Hospital	2.5	2.9	47.4	94.9	17.5	80.4	20.5	1.8	1	0
4	Albury Wodonga Health	2.5	2.1	14.1	93.4	24.8	88.7	49.5	1.5	3	1
4	West Gippsland Healthcare Group	2.4	4.2	24.9	95.4	19.7	94.5	57	1.3	2	5
4	Mildura Base Hospital	2.2	3.9	28.5	87.6	24.7	78	61.8	3.6	4	2
4	Latrobe Regional Hospital (Traralgon)	2.6	2.5	30.4	88.1	36.4	69.1	24	3.3	7	3
4	South West Healthcare Warrnambool	2.7	2.7	36.9	92.5	11.4	94.6	88.7	2.8	4	5
4	Northeast Health Wangaratta	4.0	4.0	27.5	93.2	29.5	84.4	12.1	1.8	5	0
4	Wimmera Health Care Group	3.8	3.3	20.5	90.6	21.7	88.1	41.5	1.2	5	1
3	Mercy Werribee Public Hospital	1.3	1.9	20.8	95.7	26.1	80.2	5.3	0.9	3	2
3	Casey Hospital	3.0	4.0	60.5	95.6	22.5	75.2	20.4	1.1	4	2
3	Sandringham and District Memorial Hospital	3.0	4.0	40.0	96.8	16.3	93.8	0.6	1.1	3	3
3	Djerriwarrh Health Services	0.8	1.1	11.1	90.1	18.2	84.9	33.3	0.4	4	4
3	Bairnsdale Regional Health Service	2.2	1.1	21.4	97.5	6.7	94.3	9.2	0.9	4	4
3	Echuca Regional Health	4.0	1.6	29.2	94.5	12.7	92.2	18	1.9	2	3
3	Swan Hill District Health	1.9	1.2	14.1	93.1	18.3	88.3	85.1	1.3	2	4

Maternity Level		Number of births	Indicators								
			1a	1b	1c	2	3	4a	4b	5	
3	Kilmore and District Hospital	223	12.5	31.3	0.0	2.1	N/A	0.0	N/A	N/A	
3	Bass Coast Regional Health	170	7.7	15.4	9.1	4.7	N/A	7.7	N/A	N/A	
3	Gippsland Southern Health Service (Leongatha)	201	0.0	15.4	13.6	2.6	N/A	43.8	N/A	N/A	
3	Western District Health Service (Hamilton)	199	N/A	N/A	N/A	2.2	N/A	36.4	N/A	N/A	
3	East Grampians Health Service (Ararat)	119	N/A	N/A	N/A	4.6	N/A	N/A	N/A	N/A	
3	Benalla and District Memorial Hospital	103	0.0	35.7	0.0	3.4	N/A	53.8	N/A	N/A	
3	South Gippsland Hospital	76	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	
3	Mansfield District Hospital	77	N/A	N/A	N/A	1.4	N/A	N/A	N/A	N/A	
3	Cohuna District Hospital	53	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	
3	Kerang District Hospital	15	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	
3	Terang and Mortlake Health Service	20	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	
2	Colac Area Health	185	0.0	20.0	N/A	4.6	N/A	N/A	N/A	N/A	
2	Maryborough District Health Service	78	0.0	45.5	N/A	4.4	N/A	N/A	N/A	N/A	
2	Yarrawonga District Health Service	60	N/A	N/A	N/A	3.5	N/A	N/A	N/A	N/A	
2	Kyneton District Health Service	38	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	
2	Castlemaine Health	76	0.0	0.0	0.0	4.5	N/A	N/A	N/A	N/A	
V											

Maternity Level					Indicators favourable augrtile				Total number of indicators in least favourable	Total number of indicators in most favourable quartile	
		6a	6b	7	8a	8b	8c	9	10	(shaded red)	(shaded green)
3	Kilmore and District Hospital	2.9	2.5	25.6	92.8	13.4	88.3	1.3	1.4	4	2
3	Bass Coast Regional Health	3.8	3.2	21.5	94.5	3.8	95.5	28	1.3	4	2
3	Gippsland Southern Health Service (Leongatha)	2.3	0.0	0.0	97.5	16.1	86.7	10	2.1	3	5
3	Western District Health Service (Hamilton)	2.2	2.7	3.6	93.8	18.6	79.4	0	0.5	2	3
3	East Grampians Health Service (Ararat)	2.8	1.9	46.4	92.2	16.5	91.5	94.9	0.0	1	2
3	Benalla and District Memorial Hospital	1.1	0.0	9.3	98.1	9	91.1	80.6	1.0	2	8
3	South Gippsland Hospital	1.6	3.6	33.1	100	10.7	94.7	44.7	5.6	1	6
3	Mansfield District Hospital	1.4	0.0	40.0	98.7	9.9	89.2	0.0	1.4	1	5
3	Cohuna District Hospital	3.2	3.3	33.6	96.2	31.9	91.7	74.5	4.0	2	3
3	Kerang District Hospital	N/A	N/A	0.0	100	28.6	100	42.9	0.0	1	5
3	Terang and Mortlake Health Service	6.3	0.0	0.0	100	5.6	94.4	26.3	0.0	2	6
2	Colac Area Health	2.8	2.2	24.6	97.8	12.6	89.3	67.9	1.7	0	4
2	Maryborough District Health Service	0.0	1.5	33.3	90.8	28.1	85.5	5.6	1.3	3	2
2	Yarrawonga District Health Service	1.5	5.5	28.3	93	7.7	98.1	21.7	0	1	4
2	Kyneton District Health Service	0.0	0.0	50.9	100	0.0	100	18.4	0.0	0	8
2	Castlemaine Health	0.0	3.0	29.2	98.7	10.2	98.3	78.7	0.0	0	9

Maternity Level		Number of births	Indicators								
			1a	1b	1c	2	3	4a	4b	5	
2	Portland District Health	87	N/A	N/A	N/A	4.1	N/A	N/A	N/A	N/A	
2	South West Healthcare Camperdown	36	N/A	N/A	N/A	5.3	N/A	N/A	N/A	N/A	
2	Orbost Regional Health	22	N/A	N/A	N/A	4.8	N/A	N/A	N/A	N/A	
	Seymour District Memorial Hospital	6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
1	Kyabram and District Health Service	1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
2	Alpine (Bright, Myrtleford and Mt Beauty)	12	N/A	N/A	N/A	0.0	N/A	N/A	N/A	N/A	
	Frances Perry Private Hospital [Carlton]	3.391	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Epworth Healthcare - Freemasons [East Melbourne]	3,088	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	St Vincents Private Hospital [Fitzroy]	2,608	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Saint Frances Xavier Cabrini Hospital - Cabrini Malvern	2,037	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
Private	Mitcham Private Hospital	1,184	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
hospitals	Waverley Private Hospital [Mt Waverley]	1,051	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	St John of God Healthcare - Geelong	965	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Jessie McPherson Private Hospital [Clayton]	934	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	St John of God Healthcare - Berwick	837	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
	Northpark Private Hospital [Bundoora]	822	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	

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Maternity Level			Indicators				Total number of indicators in least favourable	Total number of indicators in most favourable quartile			
		6a	6b	7	8a	8b	8c	9	10	(shaded red)	(shaded green)
2	Portland District Health	2.9	0.0	-7.9	91.8	15.1	80.8	3.5	1.3	3	1
2	South West Healthcare Camperdown	5.6	0.0	0.0	91.4	9.4	93.8	11.1	0.0	3	4
2	Orbost Regional Health	0.0	0.0	19.8	100	0.0	100	42.9	5.0	2	6
	Seymour District Memorial Hospital	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1	Kyabram and District Health Service	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2	Alpine (Bright, Myrtleford and Mt Beauty)	N/A	N/A	N/A	91.7	9.1	90.9	41.7	0.0	1	3
	Frances Perry Private Hospital [Carlton]	N/A	N/A	100.0	97.5	31.1	89.2	N/A	N/A	0	2
	Epworth Healthcare - Freemasons [East Melbourne]	N/A	N/A	25.0	97.2	35.8	66.9	N/A	N/A	2	0
	St Vincents Private Hospital [Fitzroy]	N/A	N/A	83.3	96.6	33.7	73.3	N/A	N/A	2	1
	Saint Frances Xavier Cabrini Hospital - Cabrini Malvern	N/A	N/A	40.0	97.7	32.7	78.7	N/A	N/A	1	1
Private	Mitcham Private Hospital	N/A	N/A	100.0	96.7	45.3	63.5	N/A	N/A	2	1
hospitals	Waverley Private Hospital [Mt Waverley]	N/A	N/A	100.0	97.4	54.7	61.2	N/A	N/A	2	1
	St John of God Healthcare - Geelong	N/A	N/A	46.2	96.4	43.5	77.8	N/A	N/A	1	0
	Jessie McPherson Private Hospital [Clayton]	N/A	N/A	81.5	97.5	61.6	40.2	N/A	N/A	2	2
	St John of God Healthcare - Berwick	N/A	N/A	76.5	94.6	38.1	72.8	N/A	N/A	2	1
	Northpark Private Hospital [Bundoora]	N/A	N/A	65.2	92.1	57.7	60.3	N/A	N/A	3	1

Maternity Level		Number of births	Indicators									
			1a	1b	1c	2	3	4a	4b	5		
Private hospitals	Knox Private Hospital [Wantirna]	585	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	St John of God Healthcare - Ballarat	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Bays Hospital, The - Mornington Campus	488	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Peninsula Private Hospital [Frankston]	461	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	St John of God Healthcare - Bendigo	386	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
	Shepparton Private Hospital	22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		



Maternity Level			Indicators								Total number of indicators in most favourable quartile (shaded
		6a	6b	7	8a	8b	8c	9	10		green)
Private hospitals	Knox Private Hospital [Wantirna]	N/A	N/A	100.0	96.4	51.0	63.5	N/A	N/A	2	1
	St John of God Healthcare - Ballarat	N/A	N/A	80.0	97.6	32.7	84.7	N/A	N/A	1	2
	Bays Hospital, The - Mornington Campus	N/A	N/A	25.0	95.5	34.3	77.3	N/A	N/A	2	0
	Peninsula Private Hospital [Frankston]	N/A	N/A	100.0	92.5	34.7	73.7	N/A	N/A	3	1
	St John of God Healthcare - Bendigo	N/A	N/A	83.3	96.9	30.2	86.3	N/A	N/A	0	1
	Shepparton Private Hospital	N/A	N/A	N/A	90.0	25.0	78.6	N/A	N/A	1	0

Appendix 5: Trends in GSPMR

Table 5: Gestation standardised perinatal mortality ratio for babies born from 32 weeks – moving average trend, 2009–2013 to 2011–2015

Level of service	Health service	2009-2013	2010-2014	2011-2015
6	Mercy Hospital for Women	0.50	0.48	0.49
6	Monash Medical Centre Clayton	0.92	0.99	1.03
6	The Royal Women's Hospital	0.97	0.93	0.84
5	Ballarat Health Services	1.14	1.18	1.09
5	Barwon Health (Geelong)	0.77	1.00	1.24
5	Bendigo Health Care Group	0.89	0.74	0.95
5	Box Hill Hospital	1.12	1.13	1.41
5	Frankston Hospital	1.33	1.27	1.33
5	Goulburn Valley Health	1.08	1.19	1.04
5	Sunshine Hospital	1.21	1.31	1.20
5	The Northern Hospital	1.24	1.23	1.11
4	Albury Wodonga Health	1.15	1.06	1.26
4	Angliss Hospital	0.86	0.90	1.19
4	Dandenong Hospital	1.05	0.95	1.07
4	Mildura Base Hospital	1.20	1.05	1.20
4	Latrobe Regional Hospital (Traralgon)	1.20	1.25	1.61
3	Casey Hospital	1.40	1.23	0.98
3	Djerriwarrh Health Services	2.07	2.03	1.81
3	Mercy Werribee Public Hospital	0.78	0.87	0.85

Note: This table includes GSPMR trends for health services with 5 or more perinatal deaths in at least one year from 2011-15.

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