1.1 Early planned caesarean section without medical or obstetric indication – special report

Why is this important?

Planned early birth is an important intervention in maternity care, but the timing of birth should be carefully considered to optimise the outcome for mother and child. Birth before 39 weeks' gestation is associated with higher risks of short-term adverse effects on the baby, such as respiratory distress, hypoglycaemia and jaundice, and an increased likelihood of admission to a neonatal intensive care unit. There is also emerging evidence of potential long-term adverse developmental effects, such as poorer educational outcomes in childhood.[1-6] Until recently, neonatal outcomes were generally thought to be the same whether planned birth occurred at 37, 38 or 39 weeks' gestation – but this is not the case. Pregnant women may not be aware that waiting until 39 weeks is best for their baby if there are no medical reasons for earlier birth.[7]

What did we find?

In 2015, the percentage of planned caesarean sections performed at less than 39 weeks' gestation without an obstetric or medical indication ranged from 42% to 60% in the four states/territories with presented data. The percentage of planned caesarean sections performed at less than 37 weeks' gestation without an obstetric or medical indication ranged from 10% to 22% in the four states/territories with presented data. Rates were generally higher for privately funded patients than for publicly funded patients for planned caesareans done before both gestational ages.

These findings should be seen in the context that Australian states and territories began routinely collecting standardised data on the main reason for caesarean section relatively recently, and the quality of data was sufficient for publication for four states/territories only. Of the reporting states/territories, data collection processes may be at different stages of maturity, so rates are not comparable across states/territories.

Early planned caesarean section without medical or obstetric indication

What can be done?

The emerging data on long-term adverse effects show that practices need to be reconsidered. Outcomes for babies could be improved by reducing rates of planned caesarean section without obstetric or medical indication at less than 39 weeks' gestation. Strategies to reduce rates should include:

- Providing parents with information about short and long-term adverse effects of early-term births
- Clinician education
- Improving data collection and monitoring
- Hospital-level public reporting.

Why a special report?

This report presents data on rates of planned caesarean section at less than 39 weeks', and at less than 37 weeks', gestation, without an obstetric or medical indication – that is, caesarean section when there was no established labour or other obstetric or medical reason for not waiting until 39 weeks.

Collection of data for this indicator is relatively new in Australia, and many states and territories do not yet collect the data required to calculate this national indicator. Therefore, the mapping and data analyses presented for other items in the Atlas are not possible for this item. Among the reporting states/territories, data collection processes may be at different stages of maturity, so rates are not comparable across states/territories. In addition, the difference between the gestational age recommended in the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) position statement and the indicator for this data item ('approximately 39 weeks' versus '39 weeks', respectively) may increase the rates reported for this item.[8] For example, deliveries at 38 weeks and 6 days' gestation are appropriate according to the RANZCOG position statement, but are included in the data for this indicator.[8] The additional analysis with 37 weeks as the cut-off gestation period was included to clarify the proportion of planned caesarean sections that occurred well before the RANZCOG recommended minimum gestational age.

Given the emerging evidence of what appears to be high rates of early planned caesarean section without a medical indication, a discussion of the issue and the available data are presented despite these limitations.

The timing of planned caesarean section, in light of the potential effects on the child's subsequent health, is the focus of this report. A broader discussion about rates of caesarean section was presented in the *Second Australian Atlas of Healthcare Variation*.[9]

Risks of early-term birth

Until recently, birth at any time between 37 and 41 weeks' gestation was considered full term, and neonatal outcomes were generally thought to be uniform during this period.[10,11] Evidence of poorer outcomes for babies born before 39 weeks prompted a re-evaluation of this definition, and, from 2010, the descriptor 'early term' began to be used for 37 and 38 weeks' gestation, and 'full term' for 39–41 weeks' gestation.[10,11]

Where there are certain obstetric or medical complications, such as pre-eclampsia or foetal growth restriction, earlier planned caesarean section may be necessary because the risks of waiting until 39 weeks' gestation outweigh the benefits.[8] If serious complications develop in the mother or baby, caesarean section may be performed regardless of gestation (that is, an emergency caesarean section).

Waiting until 39 weeks' gestation for a planned caesarean section, if there are no medical reasons for earlier birth, is now recommended by several international organisations and some Australian states.[12-16] A position statement from RANZCOG states: 'On balance, weighing up the risk of respiratory morbidity following elective caesarean section and the risk of labouring prior to caesarean section, it is recommended that elective caesarean section in women without additional risks should be carried out at approximately 39 weeks gestation'.[8]

Short-term risks

The increased risk of respiratory problems and of admission to neonatal intensive care for babies born by planned caesarean section at early term rather than full term is well established.[17-19] The risk of serious neonatal respiratory morbidity is significantly higher in babies delivered by elective caesarean section at 37–38 weeks than in those delivered at 39–41 weeks (1.2% compared with 0.5%).[20] The risks of hypoglycaemia, jaundice and admission to a neonatal intensive care unit are also increased in babies delivered by elective caesarean section at 37 or 38 weeks' gestation rather than at 39 to 41 weeks' gestation.[18,20]

The risk of hospitalisation for infections in the first five years of life is also higher among children delivered by planned caesarean section performed at 37–38 weeks' gestation rather than at 39 weeks' gestation.

Long-term risks

Evidence of longer-term effects of early-term birth has also grown recently. Children born at early term are at increased risk of poorer school performance and attention deficit hyperactivity disorder compared with those born at full term.[1-4]

In some cases, poorer developmental outcomes may be explained by the maternal or foetal factors that prompted the earlier birth. Studies that accounted for these factors still found poorer outcomes with birth at early term rather than full term. This suggests that harm is associated with the earlier timing, regardless of the effect of the factors that prompted it.[5]

For example, a United States study of 128,050 children in third grade found that those born at early term had significantly worse performance in maths than those born at full term.[5] This effect remained even after accounting for the effect of obstetric factors such as caesarean birth, birth weight and maternal age, as well as socioeconomic disadvantage.[5]

Although developmental risks are greater for babies born before 37 weeks' gestation, the greater frequency of births at 37 or 38 weeks' gestation means that these births have larger implications at a population level.[2,6] In a Scottish study, early-term births were estimated to account for a higher proportion of special educational needs in school-aged children than were preterm (less than 37 weeks' gestation) births (5.5% and 3.6%, respectively).[6]

Risks of waiting until 39 weeks

A United States study of the effect of policies to reduce planned births before 39 weeks' gestation did not find an increase in adverse outcomes. The prospective study of outcomes in 27 hospitals reported no significant increase in stillbirths when the rate of planned births at less than 39 weeks' gestation without an obstetric or medical indication was reduced from 9.6% to 4.3% of all births.[21] (Note that these rates are not directly comparable with the data presented in this report.)

A common concern about waiting until 39 weeks' gestation for a planned caesarean section is the risk of the mother going into spontaneous labour beforehand, and possibly requiring an emergency caesarean section.[22] Emergency caesarean section is associated with higher risks of complications and higher costs.[23,24] If caesarean section is planned for 39 weeks' gestation, an estimated 13–25% of women will end up having a caesarean section after labour has started, compared with 8–11% if it is planned for 38 weeks' gestation.[22]

Early planned caesarean section without medical or obstetric indication

Trends in Australia

Caesarean section rates

Rates of caesarean section overall have risen steadily in Australia since the early 1990s. In 2016, 34% of births in Australia were by caesarean section, compared with 31% in 2006 and 18% in 1990.[25,26]

Planned caesarean section and early-term planned birth

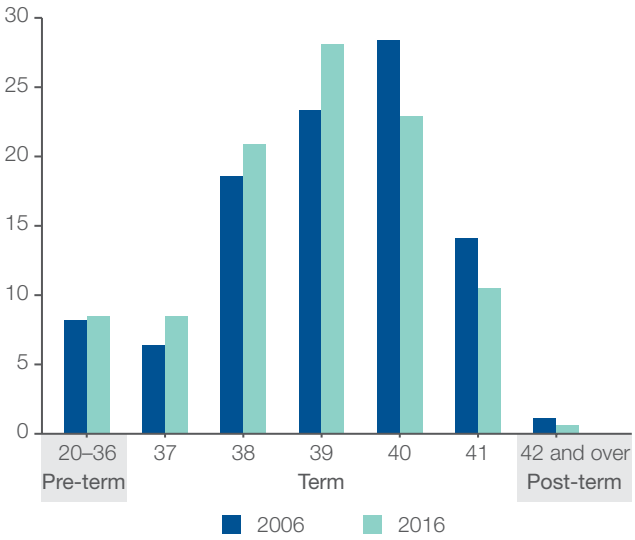
Few Australian data are available on trends in the proportion of caesarean sections that are planned and occur at early term. In New South Wales, between 1994 and 2009, the contribution of all (pre-labour) planned caesarean sections to all singleton births almost doubled, increasing from 9.1% to 17.1% over this period.[27]

Another study of New South Wales data showed that, between 2001 and 2009, the rate of planned caesarean section at 38 weeks' gestation increased by 25%, and at 39 weeks' gestation by 68%.[28] The proportion of all caesarean sections or inductions reported with established medical indications, such as maternal hypertension or foetal distress, decreased between 2001 and 2009, while the proportion increased for conditions in which evidence is equivocal (for example, diabetes mellitus).[28]

Gestational age at birth

The proportion of babies born at early term has increased in the past decade in Australia. Between 2006 and 2016, the proportion of babies born between 37 and 39 weeks' gestation increased, while the proportion born from 40 weeks onwards decreased (Figure 1.1).[25] Between 2006 and 2016, the average gestational age for all babies born in Australia fell from 38.9 weeks to 38.6 weeks.[25,29] A number of factors may have contributed to this shift.

Figure 1.1: Percentage of babies, by gestational age in weeks, 2006 and 2016



Note:
Pre-term births include a small number of births of less than 20 weeks' gestation.
Source: *Australia's Mothers and Babies 2016.*[25]

Important notes on the data used in this report

The draft National Core Maternity Indicator 18 – 'Caesarean sections <39 completed weeks (273 days) without obstetric or medical indication' – was created to benchmark practice and to reduce neonatal respiratory morbidity by minimising early birth. However, this indicator has not yet been submitted for endorsement by the National Health Data and Information Standards Committee. While the indicator was developed by the Expert Commentary Group responsible for the National Core Maternity Indicators, it was not further tested for reporting because the data were not available, and it is not currently reported by the Australian Institute of Health and Welfare (AIHW).

There are a number of limitations with the data quality for one of the data elements: 'main reason for caesarean section'. This data element is new to the National Perinatal Data Collection, and data that meet its specification are only available for some states and territories. Of the reporting states, data collection processes may be at different stages of maturity, so rates are not comparable across states/territories. For this reason, the reporting states/territories have not been identified.

In addition, state health departments that reviewed their data found that recording of the main reason for caesarean section was not always updated as the clinical situation evolved. For example, medical indications for early birth, such as foetal compromise, were not always recorded as the main indication for early caesarean section if a caesarean section had already been planned for other reasons. Similarly, clinical events such as pre-labour rupture of membranes may lead to an unplanned early caesarean section, but these were not always recorded if the caesarean section had already been planned for other reasons. Data on the original planned date are not available in these cases, and a proportion are likely to have been planned for 39 weeks. This means that the count of planned caesarean sections performed before 39 weeks without medical or obstetric indication is an overestimate for some states. For example, data from one state/territory are overestimated by approximately 3%; another state/territory was unable to distinguish between the main and additional reasons for caesarean section. In this instance, the reason reported as the main reason is the first-listed reason. Another state/territory was unable to collect data for this item (main reason for caesarean section) according to revised specifications introduced from 1 July 2015. Data were mapped by the AIHW to the revised specifications, where possible, and remaining data have been included in the 'Other, not further defined' category.

Data on the main indication for caesarean section are published at the state and territory level in the supplementary tables for the AIHW report *Australia's Mothers and Babies*.[25] It is anticipated that, as clinicians start to use the data for quality improvement purposes, more states and territories will be able to report according to the specifications.

The numerator of the indicator contains caesarean sections 'without obstetric/medical indication' where the caesarean section occurred in the absence of labour and at less than 39 completed weeks for the following reasons:

- Maternal choice in the absence of any obstetric, medical, surgical or psychological indication
- Previous caesarean section
- Previous severe perineal trauma
- Previous shoulder dystocia.

While these may be indications for planned caesarean section, they were not considered reasons for early planned caesarean section – that is, before 39 weeks.

The denominator is the total number of women who gave birth by caesarean section at less than 39 completed weeks' gestation and where there was no established labour.

Early planned caesarean section without medical or obstetric indication

Data source and subanalyses

Data are sourced from the National Perinatal Data Collection, which includes births that occur in hospitals, birth centres and the community (such as home births), for public and private patients. Because of small numbers, data are reported only at state/territory level. Reporting by smaller geographical area, remoteness and socioeconomic disadvantage is not possible.

Data availability

Data of sufficient quality for publication were available from four states/territories. Data on 'main reason for caesarean section' did not meet the specification for the remaining four states and territories. The states/territories with publishable data are leaders in data usage for exploring this issue; the other states and territories are developing their capabilities in this area.

Nationally, there were 36,757 caesarean sections before 39 weeks' gestation without established labour (denominator of the indicator) in 2015. Of these, 15,236 caesarean sections (41%) were from the four reporting states/territories; 21,521 (59%) were from other states and territories, and are not included in the data for this item.

What do the data show?

In 2015 in the four states/territories for which data were published, there were 8,547 caesarean sections without obstetric or medical indication at less than 39 weeks' gestation, out of a total of 15,236 caesarean sections at less than 39 weeks' gestation. There were 510 caesarean sections without obstetric or medical indication at less than 37 weeks, out of a total of 3,045 caesarean sections at less than 37 weeks' gestation in the four states/territories with published data.

In 2015 in the four states/territories for which data were published, the percentage of planned caesarean sections performed at less than 39 weeks' gestation without an obstetric or medical indication ranged between 42% and 60%. The percentage of planned caesarean sections performed at less than 37 weeks' gestation without an obstetric or medical indication ranged between 10% and 22%.

Analysis by patient funding status

In 2015 in the four states/territories with published data, the percentage of caesarean sections at less than 39 weeks' gestation without an obstetric or medical indication was 51.6% for publicly funded patients, compared with 60.1% for privately funded patients,. The percentage of caesarean sections performed at 39 weeks' gestation without an obstetric or medical indication was higher for privately funded patients in three of the four states/territories for which data are published.

At 37 weeks' gestation, the percentage of caesarean sections without an obstetric or medical indication for publicly funded patients was 14.3%, compared with 20.3% for privately funded patients. The percentage was higher for privately funded patients in the three states/territories for which both public and private data could be presented.

Analysis by Aboriginal and Torres Strait Islander status

Data analysed by Aboriginal and Torres Strait Islander status were available from two states/territories for caesarean section without obstetric or medical indication at less than 39 weeks' gestation, and from one state/territory at less than 37 weeks' gestation. The denominators are low for this category (for example, for one state/territory, the denominator is 163 for less than 39 weeks' gestation), so caution should be exercised in judging whether differences are significant.

The percentage of caesarean sections performed at less than 39 weeks' gestation without an obstetric or medical indication in one state/territory was lower among Aboriginal and Torres Strait Islander women (53.4%) than among other Australian women (56.1%). Percentages were similar for both groups in the other state/territory with publishable data (61.3% for Aboriginal and Torres Strait Islander women and 59.6% for other Australian women). The rate of caesarean section at less than 37 weeks' gestation without an obstetric or medical indication in the state/territory with published data in this category was higher among Aboriginal and Torres Strait Islander women (19.8%) than among other Australian women (15.2%).

Interpretation

Data from the four published states/territories showed that between 42.2% and 59.6% of planned caesarean sections performed before 39 weeks' gestation did not have an obstetric or medical indication, and between 9.6% and 22.2% performed before 37 weeks' gestation did not have an obstetric or medical indication. The variation between states was relatively small, but the reported rates suggest that the opportunity to improve outcomes in Australia is substantial.

Reported rates could be influenced by a number of factors, such as adherence to guidelines, differences in guidelines (for example, whether clinicians follow recommendations for planned caesarean no earlier than 39 weeks or at approximately 39 weeks)[8,15,16,31-33], and rates of private health insurance.

The need to avoid an emergency caesarean section is greater in settings without rapid access to 24-hour obstetric care. Rates of caesarean section before 39 weeks' gestation may be higher in some non-metropolitan areas for this reason.

Public–private partnership models may increase the rate of caesarean sections in some areas; for example, a public–private partnership in Western Australia was associated with a 4% increase in the rate of caesarean section in the catchment area in 2016–17. Social factors may influence rates in some areas – for example, timing to ensure that spouses are present for the birth in areas with military bases or fly-in-fly-out workers. Operating theatre capacity may also influence rates.

Differences in the quality of data collection may also influence rates. See 'Important notes on the data used in this report', page 45.

Policy and guideline differences

Differences in the gestational age used as the cut-off for this indicator ('39 completed weeks and over') versus that recommended in the RANZCOG position statement ('approximately 39 weeks') may have inflated rates reported for this item.[8] For example, births at 38 weeks and 6 days' gestation are appropriate according to the RANZCOG position statement, but are included in the data for this indicator.[8]

Data were available only in completed weeks of gestation. Data reported by days of gestation would provide more information about the proportion of planned caesarean sections without medical or obstetric indication that occurred at 38 weeks and 6 days compared with earlier gestation. However, even if the actual rates of planned caesarean sections without an obstetric or medical indication before 39 weeks' gestation were much lower than the rates reported, the scope to reduce preventable harm by reducing early-term births is still considerable. In addition, the percentage of planned caesarean sections without obstetric or medical indication occurring before 37 weeks' gestation (9.6–22.2%) shows that a substantial number are occurring well before the RANZCOG recommendation of approximately 39 weeks' gestation.[8]

Early planned caesarean section without medical or obstetric indication

Reducing early planned caesarean section

The high rates reported for planned caesarean sections without an obstetric or medical indication occurring before 39 weeks' gestation, and before 37 weeks' gestation, highlight the need for a concerted effort to address this issue.

Many organisations in the United States have worked to reduce rates of preterm and early-term birth without a medical indication, and large improvements have been seen in recent years.[34] Strategies have included publishing data, public awareness campaigns, clinician education and prohibiting bookings for births before full term. At least one state Medicaid agency in the United States has also stopped providing reimbursement for non-indicated births before 39 weeks' gestation.[13]

A multifaceted approach is also needed in Australia. This could include:

- Providing parents with information about short- and long-term adverse effects of early-term births
- Clinician education
- Improving data collection and monitoring
- Hospital-level public reporting.

Informed consent

More than half of pregnant women believe 37–38 weeks' gestation is the earliest time for safe birth, according to a recent Australian survey.[7] Education about the difference in outcomes, and particularly the effects on long-term child development, between early-term and full-term births could be a powerful strategy to reduce early caesarean section where there are no medical or obstetric indications. Prospective mothers who have opted for a planned caesarean section and who have no obstetric or medical indications for an early-term birth should be given information about the optimal time for the caesarean section, and the short- and long-term effects of early-term caesarean section. Prospective mothers should be given this information as far in advance as possible.

Informing mothers about the role of vaginal birth after caesarean section could also reduce the overall planned caesarean section rate, as approximately 58% of caesarean sections are repeat procedures.[28]

Clinician education and hospital policies

Educating clinicians about the most recent evidence for optimal timing of planned caesarean section may be useful for reducing planned caesarean section without medical or obstetric indication, but combining education with changes to hospital policies is more effective.[21] Three different approaches to reducing elective early-term births (inductions and caesarean sections) were compared in a United States study of births in 27 hospitals:[21]

- Education only – physicians were given literature and recommendations against performing purely elective births at less than 39 weeks' gestation
- Education plus a 'soft stop' approach – compliance with a policy of not scheduling purely elective births at less than 39 weeks' gestation was left up to individual physicians, but all exceptions to the policy were referred to a local peer review committee
- Education plus a 'hard stop' approach – purely elective planned births at less than 39 weeks' gestation were prohibited, and the policy was enforced by hospital staff who were empowered to refuse to schedule such births.

During the two-year study period, the hard stop policy was associated with the largest drop in elective births before 39 weeks (from 8.2% to 1.7%).[21] The soft stop approach was associated with a smaller, but still significant, drop (from 8.4% to 3.3%). Clinician education alone was less effective in changing practice, with a non-significant drop in rates (from 10.9% to 6.0%). For all groups combined, the rate of neonatal intensive care unit admission fell significantly during the study (from 8.9% to 7.5%). The study authors suggested that a rate of elective birth at less than 39 weeks' gestation, without medical indication, of less than 5% was a realistic national quality benchmark.[21] (Note that the data used in this study are not directly comparable with those in this report.)

An education campaign specifically focused for Australian general practitioners (GPs) on optimal timing for planned caesarean section could be worthwhile, as GPs undertake shared care with obstetricians in some cases.

Hospital monitoring and public reporting of local rates

Quality improvement activities by hospitals, obstetricians and neonatologists could provide insights into local rates of planned caesarean section without an obstetric or medical indication before 39 weeks' gestation. For example, local monitoring of clinical variation, as required by Action 1.28 of the Clinical Governance for Health Service Organisations Standard in the National Safety and Quality Health Service Standards (second edition)[35], could include monitoring of variation between the local rate and the state rate, variation between practitioners, and deviation from evidence-based guidelines.

Improving data collection and monitoring

The lack of publishable data for this indicator from many states and territories in Australia underscores the urgency of improving the completeness and consistency of national data collection on early planned caesarean section. Complete data would clarify the scale of the problem in Australia, allow efforts to be targeted where they are most needed, and show whether interventions are having an effect.

Data improvements could include:

- Complete collection from all states and territories to allow regular reporting as part of the National Core Maternity Indicators
- Reporting of gestational age in days to allow more in-depth understanding of the distribution of births occurring before 39 weeks
- Hospital monitoring and public reporting of local rates
- Inclusion of early planned caesarean section as a hospital-acquired complication.

In the United States, planned early-term birth without a medical indication is a national perinatal quality benchmark monitored by the National Quality Forum and the Joint Commission.[14] Consumers in the United States also have access to published rates of early elective births for many hospitals.[14,34]

United States data from the Leapfrog Hospital Survey (a voluntary safety and quality survey) showed that the proportion of planned births by caesarean section or induction performed without medical necessity before 39 weeks' gestation was 4.6% in 2013.[34] This rate fell to 1.6% in 2017, following increased interventions to reduce the rate.[34] (These rates are not directly comparable with the state rates reported in this chapter because the denominators are different, the participating United States hospitals may not be a representative sample and the measure includes inductions.[14]) The percentage of planned births before 39 weeks without an obstetric or medical indication, along with other indicator results, is publicly reported in a consumer-friendly format for each hospital assessing this indicator for the Leapfrog survey.[36]

Early planned caesarean section without medical or obstetric indication

Resources

- United States National Quality Forum Maternity Action Team, *Playbook for the Successful Elimination of Early Elective Deliveries*[37]
- California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care, *Elimination of Non-medically Indicated (Elective) Deliveries Before 39 Weeks Gestational Age*[38]
- March of Dimes Foundation, Healthy Babies are Worth the Wait® community education toolkit[39]
- World Health Organization, statement on caesarean section rates[40]
- 'Antenatal care for Aboriginal and Torres Strait Islander women'.[41]

Australian initiatives

The information in this chapter will complement work already under way to improve outcomes from planned caesarean section in Australia. At a national level, this work includes:

- RANZCOG statement on timing of elective caesarean section at term[8]
- RANZCOG statement on caesarean delivery on maternal request.[42]

Many state and territory initiatives are also in place, including:

- Australian Capital Territory, policy of booking all elective caesarean sections for 39 weeks unless there is an obstetric or medical indication for earlier delivery
- South Australia Maternal and Neonatal Clinical Network, perinatal practice guidelines for caesarean section[31]
- New South Wales Health, guideline on timing of elective or pre-labour caesarean section[16]
- New South Wales Health translational research project grant for 'Are we there yet? Optimising timing of planned birth to improve newborn outcomes and reduce health service costs'
- Safer Care Victoria, *Planning for Birth After Caesarean*[15]
- Queensland Clinical Guidelines, *Vaginal Birth After Caesarean Section (VBAC)*[32]
- Western Australian Preterm Birth Prevention Initiative.[33]

References

1. Dong Y, Chen SJ, Yu JL. A systematic review and meta-analysis of long-term development of early term infants. Neonatology 2012;102(3):212–21.
2. Searle AK, Smithers LG, Chittleborough CR, Gregory TA, Lynch JW. Gestational age and school achievement: a population study. Arch Dis Child Fetal Neonatal Ed 2017;102(5):F409–16.
3. Bentley JP, Roberts CL, Bowen JR, Martin AJ, Morris JM, Nassar N. Planned birth before 39 weeks and child development: a population-based study. Pediatrics 2016;138(6):e20162002.
4. Murray SR, Shenkin SD, McIntosh K, Lim J, Grove B, Pell JP, et al. Long term cognitive outcomes of early term (37–38 weeks) and late preterm (34–36 weeks) births: a systematic review. Wellcome Open Res 2017;2:101.
5. Noble KG, Fifer WP, Rauh VA, Nomura Y, Andrews HF. Academic achievement varies with gestational age among children born at term. Pediatrics 2012;130(2):e257–64.
6. MacKay DF, Smith GC, Dobbie R, Pell JP. Gestational age at delivery and special educational need: retrospective cohort study of 407,503 schoolchildren. PLoS Med 2010;7(6):e1000289.
7. Zhang LY, Todd AL, Khambalia A, Roberts CL. Women's beliefs about the duration of pregnancy and the earliest gestational age to safely give birth. Aust N Z J Obstet Gynaecol 2015;55(2):156–62.
8. Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Timing of elective caesarean section at term. Sydney: RANZCOG; 2014. https://www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Timing-of-elective-caesarean-section-(C-Obs-23)-March18.pdf?ext=.pdf (accessed Jan 2018).
9. Australian Commission on Safety and Quality in Health Care, Australian Institute of Health and Welfare. The Second Australian Atlas of Healthcare Variation. Sydney: ACSQHC; 2017.
10. Fleischman AR, Oinuma M, Clark SL. Rethinking the definition of 'term pregnancy'. Obstet Gynecol 2010;116(1):136–9.
11. American College of Obstetricians and Gynecologists. Definition of term pregnancy [Internet]. Washington, DC: ACOG; 2013 [updated 2013 Nov; cited 2018 Jan 16]. Available from: www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Definition-of-Term-Pregnancy
12. National Institute for Health and Care Excellence. Caesarean section clinical guideline [Internet]. London: NICE; 2011 [updated 2012 Aug; cited 2018 Jan 16]. Available from: www.nice.org.uk/guidance/cg132
13. American College of Obstetricians and Gynecologists. Nonmedically indicated early-term deliveries. Washington, DC: ACOG; 2013.
14. Joint Commission. Specifications manual for Joint Commission national quality measures: set measure PC-01 [Internet]. Washington, DC: Joint Commission; 2017. Available from: https://manual.jointcommission.org/releases/TJC2016A/TableOfContentsTJC.html
15. Safer Care Victoria Maternity and Newborn Network. Planning for birth after caesarean. Melbourne: Safer Care Victoria; 2018.
16. NSW Health. Maternity: timing of planned or pre-labour caesarean section at term. Sydney: NSW Ministry of Health; 2016.
17. Morrison JJ, Rennie JM, Milton PJ. Neonatal respiratory morbidity and mode of delivery at term: influence of timing of elective caesarean section. Br J Obstet Gynaecol 1995;102(2):101–6.
18. Tita AT, Landon MB, Spong CY, Lai Y, Leveno KJ, Varner MW, et al. Timing of elective repeat cesarean delivery at term and neonatal outcomes. N Engl J Med 2009;360(2):111–20.
19. Hansen AK, Wisborg K, Uldbjerg N, Henriksen TB. Risk of respiratory morbidity in term infants delivered by elective caesarean section: cohort study. BMJ 2008;336(7635):85–7.
20. Doan E, Gibbons K, Tudehope D. The timing of elective caesarean deliveries and early neonatal outcomes in singleton infants born 37–41 weeks' gestation. Aust N Z J Obstet Gynaecol 2014;54(4):340–7.
21. Clark SL, Frye DR, Meyers JA, Belfort MA, Dildy GA, Kofford S, et al. Reduction in elective delivery at <39 weeks of gestation: comparative effectiveness of 3 approaches to change and the impact on neonatal intensive care admission and stillbirth. Am J Obstet Gynecol 2010;203(5):449 e1–6.
22. Glavind J, Uldbjerg N. Elective cesarean delivery at 38 and 39 weeks: neonatal and maternal risks. Curr Opin Obstet Gynecol 2015;27(2):121–7.
23. Visco AG, Viswanathan M, Lohr KN, Wechter ME, Gartlehner G, Wu JM, et al. Cesarean delivery on maternal request: maternal and neonatal outcomes. Obstet Gynecol 2006;108(6):1517–29.
24. Petrou S, Khan K. An overview of the health economic implications of elective caesarean section. Appl Health Econ Health Policy 2013;11(6):561–76.
25. Australian Institute of Health and Welfare. Australia's mothers and babies 2016: in brief. Canberra: AIHW; 2018. (Cat. No. PER 97; Perinatal Statistics Series No. 34.)
26. Lancaster PA, Pedisich EL. Caesarean births in Australia, 1985–1990. Sydney: AIHW Perinatal Statistics Unit; 1993.
27. Nassar N, Schiff M, Roberts CL. Trends in the distribution of gestational age and contribution of planned births in New South Wales, Australia. PLoS One 2013;8(2):e56238.
28. Morris JM, Algert CS, Falster MO, Ford JB, Kinnear A, Nicholl MC, et al. Trends in planned early birth: a population-based study. Am J Obstet Gynecol 2012;207(3):186 e1–8.
29. Laws PJ, Hilder L. Australia's mothers and babies 2006. Sydney: AIHW National Perinatal Statistics Unit; 2008. (Cat. no. PER 46; Perinatal Statistics Series No. 22.)
30. Australian Institute of Health and Welfare. Australia's mothers and babies 2015: in brief. Canberra: AIHW; 2017. (Cat No. PER 91; Perinatal Statistics Series No. 33.)
31. SA Maternal and Neonatal Clinical Network. South Australian perinatal practice guidelines: caesarean section. Adelaide: SA Health; 2014. www.sahealth.sa.gov.au/wps/wcm/connect/Public+Content/SA+Health+Internet/Clinical+resources/Clinical+topics/Perinatal/Perinatal+Practice+Guidelines (accessed Jul 2018).
32. Queensland Health Queensland Clinical Guidelines. Vaginal birth after caesarean section (VBAC). Brisbane: Queensland Health; 2015.
33. Newnham JP, White SW, Meharry S, Lee HS, Pedretti MK, Arrese CA, et al. Reducing preterm birth by a statewide multifaceted program: an implementation study. Am J Obstet Gynecol 2017;216(5):434–42.
34. Castlight, Leapfrog Group. Maternity care: data by hospital on nationally reported metrics. San Francisco: Castlight; 2018.
35. Australian Commission on Safety and Quality in Health Care. National Safety and Quality Health Service Standards. 2nd ed. Sydney: ACSQHC; 2017.
36. Leapfrog Group. Compare hospitals [Internet]. Washington, DC: Leapfrog Group; 2018 [cited 2018 Jul 20]. Available from: www.leapfroggroup.org/compare-hospitals
37. National Quality Forum Maternity Action Team. Playbook for the successful elimination of early elective deliveries. Washington, DC: National Quality Forum; 2014.
38. Main E, Oshiro B, Chagolla B, Bingham D, Dang-Kilduff L, Kowalewski L. Elimination of non-medically indicated (elective) deliveries before 39 weeks gestational age (California Maternal Quality Care Collaborative Toolkit to Transform Maternity Care). Sacramento: California Department of Public Health, Maternal, Child and Adolescent Health Division; 2010.
39. March of Dimes Pregnancy and Newborn Health Education Center. Healthy Babies are Worth the Wait® community education toolkit. March of Dimes Foundation; 2010.
40. World Health Organization. WHO statement on caesarean section rates. Geneva: WHO; 2015.
41. Clarke M, Boyle J. Antenatal care for Aboriginal and Torres Strait Islander women. Aust Fam Physician 2014;43(1):20–4.
42. Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Caesarean delivery on maternal request (CDMR). Sydney: RANZCOG; 2017. www.ranzcog.edu.au/RANZCOG_SITE/media/RANZCOG-MEDIA/Women%27s%20Health/Statement%20and%20guidelines/Clinical-Obstetrics/Caesarean-delivery-on-maternal-request-(C-Obs-39)-Review-July-2017_1.pdf.