CATEGORY: CLINICAL GUIDANCE

Timing of planned caesarean section at term

This statement has been developed and reviewed by the Women's Health Committee and approved by the RANZCOG Board and Council.

A list of Women's Health Committee Members can be found in Appendix A.

Disclosure statements have been received from all members of this committee. (Appendix C)

Disclaimer This information is intended to provide general advice to practitioners. This information should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any patient. This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The document has been prepared having regard to general circumstances.

First endorsed by RANZCOG: November 2006
Current: November 2022
Review due: November 2027

Objectives: To provide advice on the timing of planned caesarean section at term.

Target audience: All health care professionals providing maternity care, and patients.

Values: The evidence was reviewed by the Women's Health Committee (RANZCOG) and applied to local factors relating to Australia and New Zealand.

Validation: This statement was compared with ACOG, RCOG, and NICE guidance on this topic.

Background: This statement was first developed by Women's Health Committee in November 2006 and subsequently in March 2018 and most recently reviewed in November 2022.

Funding: The development and review of this statement was funded by RANZCOG.

Contents

1. Plain language summary

The timing of planned or pre-labour caesarean section at term should be decided with consideration given to both maternal, perinatal, neonatal and longer-term factors and local resourcing. Population-level data show clear benefit to delivery at 39 weeks gestation in uncomplicated pregnancies where planned caesarean section is indicated but individual women's perception of risk may vary.

Women should be informed of the benefits and risks surrounding planned delivery at various gestations and the usual standards of documentation and consent should apply. RANZCOG recognises the key role of a woman's maternity care provider in providing evidence-based and individualised information regarding the timing of birth.

2. Summary of recommendations

Recommendation 1	Grade
It is recommended that planned caesarean section in women without additional risks should ideally be carried out at 39 weeks gestation, or later.	Evidence-based recommendation B

3. Perinatal and longer-term considerations

Caesarean birth, without prior labour, has been consistently demonstrated to be associated with an increased risk of neonatal respiratory morbidity in term infants, including transient tachypnoea of the newborn (TTN), surfactant deficiency and pulmonary hypertension.[1] When compared with either planned or achieved vaginal birth, planned caesarean birth is associated with a 2.1 to 6.8-fold increase in the risk of these respiratory morbidities in the near term neonate.[2,3] It is proposed that the increased incidence of respiratory distress following caesarean birth results from both surfactant deficiency (in the absence of the catecholamine surge accompanying labour), and from a failure to clear fetal lung fluid in labour.[1,4] The incidence of transfer to a Neonatal Intensive Care Unit (NICU) following planned term caesarean birth is twice that associated with planned vaginal birth.

Infants born by planned caesarean section at early term (37^{+0} to 38^{+6} weeks) gestations are 2.4 times more likely to have severe neonatal respiratory morbidity (requiring invasive ventilator support for at least four hours) than those born at or after 39 weeks, with clear reductions in this outcome for each week of gestation. This outcome is not uncommon, occurring in over 3% of neonates born at 37^{+0} to 37^{+6} weeks.[5]

Other disadvantages associated with birth earlier than 39 weeks have also been clearly demonstrated, principally relating to childhood neurodevelopmental outcomes.[6] It is now clear that children born at 37^{+0} to 38^{+6} weeks gestation have increased rates of any adverse neurological outcomes compared to those born at 39^{+0} to 41^{+6} weeks [7], including behavioural disorders [8], learning difficulties [9,10,11], motor disability [12], and autism spectrum disorder [13]. Increases in mental illness have also been demonstrated in adults born at early term compared to full term gestations. [14] Adverse metabolic consequences are also apparent, with increases in diabetes, dyslipidaemia, overweight and obesity all evident. [15]

Early mortality (up to 25 years of age) was also demonstrated in those born at 37^{+0} to 38^{+6} weeks compared to 39^{+0} to 41^{+6} weeks in a Western Australian study although the increase in absolute risk is very small. [16]

In response to this, deferring planned delivery in uncomplicated singleton pregnancies until 39 weeks' gestation or later is recommended by many international obstetric bodies albeit, importantly, with caveats around pregnancies with risk factors for adverse outcomes, certainty of gestational dating, and the increased risks of emergency caesarean section in those women who labour prior to the planned caesarean section date.[17,18,22] The rate of admission to NICU and the incidence of respiratory distress is inversely related to the gestation at delivery among infants born by planned caesarean birth at term.[1,19,20] These associations persist after adjustment for potential confounders, such as diabetes mellitus, pre-eclampsia and fetal growth restriction.[21]

The Antenatal Steroids for Term Elective Caesarean Section (ASTECS) trial, found the incidence of respiratory distress following caesarean section after 37^{+0} weeks was significantly reduced by the administration of betamethasone prior to delivery [21], however administration of steroids in this setting has been subject to limited investigation, and may have adverse consequences. Such practice is likely to be informed by ongoing large-scale clinical trials.

The risk of stillbirth between 38^{+0} and 38^{+6} weeks is estimated at 3 per 10,000. Although rare, this is a devastating perinatal complication and should be taken into account when considering the date of a planned caesarean section. This risk (stillbirth) needs to be weighed against the increased risk of early mortality observed in children born at early-term gestations and adverse neurodevelopmental outcomes, which are significantly more prevalent than stillbirth. The Centre for Research Excellence in Stillbirth provides useful guidance to clinicians and women around these competing risks.

3. Maternal considerations

Against the neonatal benefits need to be weighed the risks of deferring delivery until 39 weeks or beyond. UK data[10] suggests that about 10% of women booked for caesarean section at 39 weeks will labour prior to the date of scheduled caesarean section. The implication is that there will be a proportion of women who will need to have an emergency caesarean section in place of a planned caesarean section. This has important resource implications and the increased maternal hazard associated with emergency, rather than planned, caesarean section needs to be weighed against the expected improved perinatal outcomes. In some circumstances (e.g., placental insufficiency, footling breech presentation, and others) there will also be increased perinatal risk associated with the onset of labour or spontaneous rupture of the membranes prior to birth. Local factors, such as availability of emergency caesarean section services should be considered. This has particular implications for women in rural and remote areas for whom access to caesarean section may be dependent on visiting staff. Local units should make every effort to reduce this inequity of access to care, although the realities of service provision in smaller communities are acknowledged and must be taken into account during clinical decision making.

On balance, weighing up the risk of respiratory and neurodevelopmental morbidity following planned caesarean section and the risk of stillbirth or complications related to labouring prior to caesarean section, it is recommended that planned caesarean section in women without additional risks should be carried out at 39^{+0} weeks gestation, or later. Where delivery by caesarean section (without prior labour) is planned before 39 weeks gestation and cannot safely be deferred, consideration could be given to the administration of corticosteroids to reduce respiratory morbidity in the newborn. In pregnancies where planned delivery is expected or possible it is important to establish a reliable expected due date in the first trimester.

Recommendation 1	Grade
It is recommended that planned caesarean section in women without additional risks should ideally be carried out at 39 weeks gestation, or later.	Evidence-based recommendation B

4. Preterm planned caesarean delivery

In the event of maternal disease (such as pre-eclampsia), obstetric complications (such as multiple pregnancies or placenta previa) or fetal complications (such as fetal growth restriction), earlier planned caesarean delivery may be necessary after weighing up the relative hazards of preterm birth versus those associated with continuing the pregnancy.

5. Shared decision-making and informed consent

Women should be informed of the benefits and risks surrounding planned delivery at various gestations and the usual standards of documentation and consent should apply. Such discussions should reflect an individualised assessment, taking into account maternal-fetal and local resource factors, of the benefits of planned birth at each gestation versus the potential maternal, perinatal, and long-term complications.

Population-level data show clear benefit to delivery at 39 weeks gestation in uncomplicated pregnancies where planned caesarean section is indicated but individual women's perception of risk may vary. RANZCOG recognises the key role of a woman's maternity care provider in providing evidence-based and individualised information regarding the timing of birth. Given the recommendations from international professional societies and local bodies including Safer Care Victoria, the Australian Preterm Birth Prevention Alliance, the Centre for Research Excellence in Stillbirth, and The University of Sydney's "Every Week Counts" initiative, decisions regarding the timing of planned caesarean sections should be carefully documented including, in such cases, a specific reason why delivery is scheduled prior to 39 weeks.

6. References

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7. Further reading

Safe Care Victoria: https://www.safercare.vic.gov.au/clinical-guidance/maternity/birth-after-caesarean
The Australian Preterm Birth Prevention Alliance statement: https://www.pretermalliance.com.au/Alliance-News/Latest-News/Statement-by-the-Alliance

The Centre for Research Excellence in Stillbirth: https://saferbaby.org.au/timing-of-birth/

The University of Sydney's "Every Week Counts" initiative: https://everyweekcounts.com.au/

8. Links to other College statements

Evidence-based Medicine, Obstetrics and Gynaecology (C-Gen 15)
https://ranzcog.edu.au/wp-content/uploads/2022/05/Evidence-based-Medicine-Obstetrics-and-Gynaecology.pdf

9. Patient information

A RANZCOG Patient Information Pamphlet on Caesarean Section is available at: https://ranzcog.edu.au/wp-content/uploads/2022/06/Caesarean-section.pdf

A range of RANZCOG Patient Information Pamphlets are available:
https://www.ranzcog.edu.au/Womens-Health/Patient-Information-Guides/Patient-Information-Pamphlets
Digital prints are available to order.

Appendices

Appendix A Women's Health Committee Membership

Name	Position on Committee
Dr Scott White	Chair
Dr Gillian Gibson	Deputy Chair, Gynaecology
Dr Anna Clare	Deputy Chair, Obstetrics
Associate Professor Amanda Henry	Member and Councillor
Dr Samantha Scherman	Member and Councillor
Dr Marilla Druitt	Member and Councillor
Dr Frank O'Keeffe	Member and Councillor
Dr Kasia Siwicki	Member and Councillor
Dr Jessica Caudwell-Hall	Member and Councillor
Dr Sue Belgrave	Member and Councillor
Dr Marilyn Clarke	Aboriginal and Torres Strait Islander Representative
Professor Kirsten Black	SRHSIG Chair
Dr Nisha Khot	Member and SIMG Representative
Dr Judith Gardiner	Diplomate Representative
Dr Angela Brown	Midwifery Representative, Australia
Ms Adrienne Priday	Midwifery Representative, New Zealand
Ms Leigh Toomey	Community Representative
Dr Rania Abdou	Trainee Representative
Dr Philip Suisted	Māori Representative
Prof Caroline De Costa	Co-opted member (ANZJOG member)
Dr Steve Resnick	Co-opted member

Appendix B Contributing Authors

The Women's Health Committee acknowledges the contribution and leadership of Dr White in reviewing and updating the statement.

Appendix C Overview of the development and review process for this statement

i. Steps in developing and updating this statement

This statement was originally developed in 2006 and first endorsed by RANZCOG in November 2006 and was most recently reviewed in November 2022. The Women's Health Committee carried out the following steps in reviewing this statement:

- Declarations of interest were sought from all members prior to reviewing this statement.
- Structured clinical questions were developed and agreed upon.
- An updated literature search to answer the clinical questions was undertaken.

- At the November 2022 face-to-face committee meeting, the existing consensus-based recommendation was reviewed and updated (where appropriate) based on the available body of evidence, other resources and clinical expertise.

ii. Declaration of interest process and management

Declaring interests is essential in order to prevent any potential conflict between the private interests of members, and their duties as part of the Women's Health Committee.

A declaration of interest form specific to guidelines and statements was developed by RANZCOG and approved by the RANZCOG Board in September 2012. The Women's Health Committee members were required to declare their relevant interests in writing on this form prior to participating in the review of this statement.

Members were required to update their information as soon as they become aware of any changes to their interests and there was also a standing agenda item at each meeting where declarations of interest were called for and recorded as part of the meeting minutes.

Real or perceived conflicts of interest that were declared and managed during the process of updating this statement includes: Dr White serves on the Steering Committee of The Australian Preterm Birth Prevention Alliance - a national Alliance of clinical leaders, researchers, health departments, and communities working together to lower the rate of preterm birth across the country.

iii. Grading of recommendations

Each recommendation in this College statement is given an overall grade as per the table below, based on the National Health and Medical Research Council (NHMRC) Levels of Evidence and Grades of Recommendations for Developers of Guidelines. Where no robust evidence was available but there was sufficient consensus within the Women's Health Committee, consensus-based recommendations were developed, or existing ones updated and are identifiable as such. Consensus-based recommendations were agreed to by the entire committee. Good Practice Notes are highlighted throughout and provide practical guidance to facilitate implementation. These were also developed through consensus of the entire committee.

Recommendation category		Description
Evidence-based	A	Body of evidence can be trusted to guide practice
	B	Body of evidence can be trusted to guide practice in most situations
	C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
	D	The body of evidence is weak and the recommendation must be applied with caution
Consensus-based		Recommendation based on clinical opinion and expertise as insufficient evidence available
Good Practice Note		Practical advice and information based on clinical opinion and expertise

Appendix D Full Disclaimer

Purpose

This Statement has been developed to provide general advice to practitioners about women's health issues concerning the recommended timing of planned caesarean section, and should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any person. It is the responsibility of each practitioner to have regard to the particular circumstances of each case. Clinical management should be responsive to the needs of the individual person when considering the timing of planed caesarean section at term, and the particular circumstances of each case.

Quality of information

The information available in Timing of planned caesarean section at term (C-Obs 23) is intended as a guide and provided for information purposes only. The information is based on the Australian/New Zealand context using the best available evidence and information at the time of preparation. While the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) had endeavoured to ensure that information is accurate and current at the time of preparation, it takes no responsibility for matters arising from changed circumstances or information or material that may have become subsequently available. The use of this information is entirely at your own risk and responsibility.

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Version	Date of Version	Pages revised / Brief Explanation of Revision
v1.1	Nov / 2006	WHC (Walker s; White B)
v2.1	Mar / 2012	WHC
v3.1	Sept / 2021	WHC [White S] Neurological implications for neonate added to the statement
V4.1	Nov/2022	WHC (White S] updates to address concerns over terminology, and alignment with the Australian Preterm Birth Prevention Alliance

Policy Version:	Version 4.1
Policy Owner:	Women's Health Committee
Policy Approved by:	RANZCOG Council/Board
Review of Policy:	November/2027