



Category One
Caesarean Section:
Standards for Management
in South Australia
2018

Clinical Directive

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Category One Caesarean Section: Standards for Management in South Australia 2018 Clinical Directive

1. Policy Statement

This clinical directive determines the minimal requirements for the safe management of Category 1 Caesarean Section (urgent / emergency) for public health care providers. It is recognised that the facilities made available to the woman requiring a Category 1 Caesarean Section should meet the needs of the woman and her baby.

It upholds the SA Health Strategic Plan 2017 - 2020 themes of Lead, Partner and Deliver through the use of evidence, translating research into practice and involving consumers in its development, ensuring safe and effective care for women requiring a Category 1 Caesarean Section.

2. Roles and Responsibility

2.1 Executive Officer

The Executive Officer of the hospital providing birthing services has the responsibility to ensure Category 1 Caesarean Section can be safely undertaken 24/7 with:

- > appropriately credentialed workforce available in accordance with the *Standards for Maternal & Neonatal Services in South Australia*¹
- > access to operating room facilities maintained in accordance with the relevant professional standards including the Australian College of Operating Rooms Standards

The Executive Officer will ensure all reports related to Category 1 Caesarean Section are provided as per their Local Health Network reporting arrangements.

2.2 Hospital Managers

Hospital Managers have the opportunity and obligation to determine their hospital's maternity services role in managing a Category 1 Caesarean Section within a clinical service delineation framework.

Hospital Managers employed in hospitals that do not have the appropriate resources and staff available to manage a Category 1 Caesarean Section have a responsibility to inform the community of this. The patient information brochure *Category One Caesarean Section Management 2018*² could be used in this situation.

Hospital Managers at hospitals providing birthing services will ensure the:

- > role and responsibilities of all relevant perinatal health professionals involved in the clinical management a Category 1 Caesarean Section are clearly defined within a local multidisciplinary protocol
- > availability of appropriately qualified and experienced clinicians to safely manage the comprehensive care of the women and her baby in the event the a Category 1 Caesarean Section
- > relevant necessary facilities and infrastructure within their hospitals are established in accordance with the *Standards for Maternal & Neonatal Services in SA*.

2.3 SA Health employees employed in perinatal or related services

SA Health employees employed in perinatal or related services must;

- > be aware of the *Standards for Maternal & Neonatal Services in SA*
- > adhere to the local protocols guiding staff in the referral of women requiring more complex care to more qualified perinatal staff for advice and, when required, to facilities able to provide more advanced care.

and in addition, SA Health employees employed in hospitals providing birthing services must oblige the:

- > local multidisciplinary protocol outlining their role and responsibilities in the management of a Category 1 Caesarean Section.

3. Background

Responding to obstetric emergencies is uniquely challenging and requires defined resources and skills that need to be sourced from several disciplines across a health service. Most maternity services have determined a systematic process whereby staff recognise the urgency of the need for an urgent/emergency Caesarean Section and respond accordingly. Historically, within maternity services, the procedure of co-ordinating the required resources to undertake an urgent/emergency caesarean section have been called a variety of terms, i.e.:

- Crash caesarean section
- Code Green
- Code Blue Obstetrics
- Emergency caesarean section

Many of these descriptors are now known to be inappropriate for use in planning for emergency care in health facilities. As per the *Standards Australia AS 4083-2010, Planning for emergencies – Health care facilities*³ the colour green is identified as part of a national colour code system for describing emergencies and is discouraged from use for any other purpose.

In consideration of these anomalies that have historically existed within maternity care services, and the need to improve consistency and reliability of the processes associated with co-ordinating an urgent/emergency Caesarean Section, this clinical directive has been developed using '**Category 1 Caesarean Section**' as the term of choice to instigate the deployment of resources to accommodate an urgent/emergency caesarean section.

No other term should be used to describe this process.

This clinical directive has also adopted the term 'booking to birth interval' as opposed to the commonly used term; 'decision-to-delivery interval'. It is acknowledged that the 'decision to birth interval' has been influenced by organisational factors such as the availability of staff and theatre.

The criterion-based framework from the *Standards for Maternal & Neonatal Services in SA* has been used to determine the minimum clinical standards that should be provided given the complexity of maternity service required by a woman requiring a Category 1 Caesarean Section; including the defined workforce, equipment, protocols and service arrangements that need to be formally in place to ensure an appropriate level of service is available

Caesarean sections have traditionally been divided into 2 groups, either elective or emergency procedures. Elective caesarean sections are undertaken before labour commences as opposed to an emergency caesarean section, which is undertaken before or after labour has commenced. The emergency category is broad, as it may include procedures done within minutes to save the life of mother and baby as well as those in which the mother and baby are well but where early birth is desirable. The classification does not convey the degree of urgency of the procedure. In some centres this has led to an ad hoc local adaptation with either reclassification of the least urgent cases to elective or the creation of a third semi elective category. A clear classification system facilitates communication between health professionals as to the degree of urgency of a caesarean section.

Birth normally carries a low risk to the mother or her baby. However, there are occasions when birth of the baby needs to be expedited with birth by caesarean section as soon as possible to optimise the health outcomes for the mother and/or her baby. In this circumstance, maternity units must have a well drilled team, available 24 hours a day which can respond appropriately.

The 'decision-to-delivery interval' has been a matter of considerable controversy in recent years.

Within the context of a risk management framework, it is recognised that hospitals that provide obstetric services should establish their capability of responding in a timely and appropriately manner to emergencies such as Category 1 Caesarean Section.

The Royal Australian & New Zealand College of Obstetricians & Gynaecologists (RANZCOG) – College Statement 'Decision to delivery interval for Caesarean Section', Statement No. C-Obs 14, 2015 recommends:

...that there be a four-grade classification system for emergency caesarean section:

- | | |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Category 1</i> | <i>Urgent threat to the life or the health of a woman or fetus.</i> |
| <i>Category 2</i> | <i>Maternal or fetal compromise but not immediately life threatening.</i> |
| <i>Category 3</i> | <i>Needing earlier than planned delivery but without currently evident maternal or fetal compromise.</i> |
| <i>Category 4</i> | <i>At a time acceptable to both the woman and the caesarean section team, understanding that this can be affected by a number of factors⁴.</i> |

Whilst RANZCOG recommends that there should be no specific time attached to the various types of caesarean section and advocates that each case should be managed according to the clinical evidence of urgency, with every single case being considered on its merits.

Intrapartum or peripartum death of a mature fetus is a rare event. In the annual reports from the South Australian Maternal, Perinatal and Infant Mortality Committee, hypoxic peripartum death rate is 0.1 per 1000 births⁵. Most of these are not associated with complications during labour.

"Fetal distress" is the most common reason recorded for justifying a Category 1 Caesarean Section. Fetal distress includes abnormalities of the fetal heart rate or detection of acidaemia in a sample of blood collected from the fetal scalp. Other terms used include non-reassuring fetal heart rate, however, the RANZCOG recommends in their third edition; *Intrapartum Fetal Surveillance* that it is better to manage a change in fetal patterns suggestive of fetal compromise⁶.

Good clinical practice supports the importance of having a well prepared team and protocol to ensure the caesarean section is undertaken in the quickest amount of time⁷.

In the non-metropolitan hospitals, operating teams are usually on site in the hospital during normal working hours and on-call after hours. In accordance with the *Standards for Maternal & Neonatal Services in SA* the minimum team required for a caesarean section includes a medical officer or neonatal nurse practitioner privileged to perform a caesarean section, a general practitioner or specialist anaesthetist, a medical officer privileged to care for the newborn baby, a theatre 'scrub' nurse, a midwife and a theatre nurse to assist.

Further to this, the standards provide a framework to define the levels of complexity of care appropriate for maternity units in South Australia and subsequently define the 'booking to birth' time interval for each of these levels of service. It is acknowledged that Level 5 & 6 maternity units have the required staff onsite 24 hours per day, seven days per week, and are therefore able to mobilise an appropriate operating room team to achieve a Category 1 Caesarean Section within a 30 minute period (booking to birth) and those hospitals providing level 3 and 4 maternity services are resourced to manage less complex patients when compared to level 5 and 6 hospitals (i.e. tertiary sites) and have a requirement to mobilise an appropriate health care team to achieve a Category 1 Caesarean Section within an extended period of time i.e. Level 3 – 60 minutes and Level 4 - 45 minutes, (booking to birth interval).

As indicated by Fuhrmann et al., (2016) the previous standard of 30 minutes is increasingly being challenged in consideration of the limited data indicating the neonatal outcomes are improved⁸.

It is crucial that there exists a triage process that allows women to be selected for birth in country hospitals providing maternity services according to the complexity of care they require. This should be undertaken in accordance with the *Standards for Maternity & Neonatal Services in SA 2015*. Triage, by definition, is a dynamic process, as the patient's status can change rapidly. Hospitals providing maternity services must have the capacity to escalate the management of pregnant women to include access to an immediate Caesarean Section.

The safety of small maternity hospitals has been examined and generally the outcomes from country hospitals are good⁹. Women with identified risk factors are transferred to maternity hospitals equipped with facilities and appropriate personnel to manage these complexities. The larger public maternity hospitals usually receive these types of transfers. Transfer in labour at term occurs infrequently compared with transfer with preterm labour or when maternal or fetal complications are identified.

4. Policy Requirements

4.1. Principles

This clinical directive differentiates the complexity of clinical activity that is required by a hospital providing maternity services to meet the needs of the woman requiring a Category 1 Caesarean Section.

The early identification of a clinically compromised pregnant woman and/or her baby along with timely referral, assessment and provision of appropriate care and services, will promote optimal health outcomes for them both.

The accepted categories for caesarean sections include:

Category	Clinical Conditions
<p>1 Urgent threat to the life or the health of a woman or fetus.</p>	<ul style="list-style-type: none"> • cord prolapse • failed instrument birth with fetal compromise (bradycardia, high lactate or low pH i.e. < 7.2) • maternal cardiac arrest • abnormal fetal scalp blood sample/pH (high lactate or pH<7.2) • confirmed fetal blood (Apt's test) indicating ruptured fetal blood vessel, including Vasa Praevia • sustained fetal bradycardia (<70/min for ≥ 3minutes) • Placental abruption • Placenta praevia with major haemorrhage • identified irreversible abnormality on the cardiotocographs that requires imminent delivery
<p>2 Maternal or fetal compromise but not immediately life threatening</p>	<ul style="list-style-type: none"> • identified, but irreversible abnormality on the cardiotocographs but safe to deliver within 60 minutes • malpresentation of the fetus
<p>3 Needing earlier than planned delivery but without currently evident maternal or fetal compromise.</p>	<ul style="list-style-type: none"> • failure to progress • malpresentation in early labour • planned caesarean section presenting in labour • maternal condition requiring stabilisation, e.g. preeclampsia
<p>4 At a time acceptable to both the woman and the caesarean section team, understanding that this can be affected by a number of factors.</p>	

Source: Risk Factors - *Standards for Maternal & Neonatal Services in SA*

While short 'booking-to-birth' intervals are advocated when this is indicated by the maternal or fetal clinical presentation, this must be balanced with the ability to provide a safe service in a particular setting. Maternity services in remote locations where less complex care is provided, with limited resources and/or facilities, preventing them from offering birth by caesarean section, or the full range of Categories 1 to 4 Caesarean Section births and where longer 'booking-to-birth' intervals are likely, should ensure pregnant women are provided with information related to the limitations of the services available. These women should be provided with the Patient Information brochure "Category One Caesarean Section Management 2018".

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4.2. Standard Requirements

All hospitals offering a birthing service as part of their maternity services should have the appropriate staff and resources to perform a safe and prompt Category 1 Caesarean Section.

Some maternity models of care, such as planned home birth¹⁰ will not, due to the location of the birth in reference to operating rooms facilities, allow a woman easy access to a Category 1 Caesarean Section.

Hospitals providing less complex care must have the capacity to refer a woman requiring more complex care to more qualified perinatal staff for advice and, when required, to facilities able to provide more advanced care whilst providing the clinical capabilities to support the obstetric woman.

4.2.1 Alert System

All hospitals offering a birthing service must have a local multidisciplinary protocol, guiding staff in the management of a Category 1 Caesarean Section that must be applicable over the 24 hour period and must determine the resources and processes required. It should include

- > the role and responsibilities for all staff required, i.e.:
 - Medical officer performing the caesarean section
 - Switchboard operator(s)
 - Hospital senior nurse manager
 - Labour ward midwife
 - Operating room staff taking the booking
 - Theatre orderly (s)
 - Operating room nurse/midwife
 - Scrub nurse
 - Anaesthetic assistant
 - Anaesthetist
 - Surgeon assistant
 - Neonatologist/ Paediatrician/ Neonatal Nurse practitioner
 - Neonatal nurse/ midwife.
- > an alert system for all relevant staff involved in the caesarean section - i.e. telephone/pager/overhead intercom using a generic alert 'Category 1 Caesarean Section'
- > checklists and flow charts outlining the specific roles and responsibilities of staff and the details of the operating procedures for the 24 hour period; i.e. 'out of hours', and staff 'call in'.
- > specifics of the operating room booking system:
 - booking process system (level 5 and 6 hospitals via IT/software – SA Health - Operating Rooms Information Management System (ORMIS)¹¹, other hospitals will utilise a designated local documentation system)
 - incorporates the ability of the midwife to 'book' the Category 1 Caesarean Section under instruction from a medical practitioner
 - provides a priority system of allocating an operating room and the reallocation of theatre cases which are pre-booked to the allocated operating room
 - provides local system to inform and mobilise the operating room staff.

- > a detailed list of pre-operative tasks that must occur prior to the commencement of surgery:
 - performance of a SA Health Surgical Team Safety Checklist
 - insertion of an intravenous cannula
 - removal of the fetal scalp electrode (if in situ)
 - anaesthetic check.

Whilst it is recognised that the majority of Category 1 Caesarean Sections are conducted in the operating room, it is acknowledged that in some Category 1 cases, such as a perimortem caesarean section, demand that the procedure be undertaken in an area outside of the operating room. The location of the Category 1 Caesarean Section does not preclude instigation of the – Generic Alert “Category 1 Caesarean Section” which will ensure the efficient mobilisation of identified health team required for this procedure.

4.2.2 Workforce implications

Determinants of the suitability of the maternity services workforce available at each level of service to manage a Category 1 Caesarean Section are defined in the *Standards for Maternal & Neonatal Services in SA*. Credentialing, admitting rights and clinical privileges for these staff remain the responsibility of the employing hospital.

The safe anaesthetic management of the woman requiring a Category 1 Caesarean Section is integral to the health outcomes for both the woman and her baby. The role of the Anaesthetist in a Category 1 Caesarean Section includes the management of maternal resuscitation, including the post-operative period and active participation in the in-utero resuscitation of the fetus. Only those Anaesthetists privileged for this procedure can undertake this role and will ensure their clinical practices are performed in accordance with the professional standards of the Australian and New Zealand College of Anaesthetists.

4.2.3 Workforce education

All hospital staff involved in a Category 1 Caesarean Section must have access to specific competency-based education and training that addresses the emergency management of a woman requiring a Category 1 Caesarean Section. Hospital protocols should be tested in these education sessions. SA Health supports obstetric emergency management training through its *Perinatal Emergency Education Strategy*¹², utilising *Practical Obstetric Multi-Professional Training (PROMPT)*¹³, to ensure all relevant health practitioners undertake the standardised perinatal emergency care training.

4.3. Description of perinatal service delineation for a Category 1 caesarean section

As per *Standards for Maternal & Neonatal Services in SA*:

4.3.1 Level 1 & Level 2: Complexity of perinatal clinical care for managing a Category 1 Caesarean Section

Level 1 and Level 2 hospitals and their available workforce have been determined as hospitals which cannot provide a safe perinatal service and have no capacity to manage a woman requiring a Category 1 Caesarean Section.

4.3.2 Level 3: Complexity of perinatal clinical care for managing a Category 1 Caesarean Section

Hospitals providing Level 3 perinatal services have an appropriate workforce and facilities enabling the provision of comprehensive care for an uncomplicated pregnancy deemed to be 'low risk' in accordance with per the *South Australian Perinatal Practice Guidelines*.

Perinatal service providers working in a Level 3 hospital are restricted to managing the perinatal period, including birth, for a woman with no complications.

Hospitals deemed to provide Level 3 perinatal services should have appropriate formal policy/protocols which guide staff, ensuring that the woman requiring a Category 1 Caesarean Section has access to operating room facilities adequate to accommodate a Category 1 Caesarean Section and achieve birth within 60 minutes of the booking.

Hospitals deemed to provide Level 3 perinatal services must have an operating room information management system with the capacity to record the processes of the 'booking to birth'.

4.3.3 Level 4: Complexity of perinatal clinical care for managing a Category 1 Caesarean Section

Hospitals providing Level 4 perinatal services have an appropriate workforce with facilities enabling the provision of comprehensive care for a woman deemed to be 'low risk' in accordance with the *South Australian Perinatal Practice Guidelines* and are able to extend this care for some pregnancy related illnesses that remain stable

Hospitals deemed to provide Level 4 perinatal services should have appropriate formal policy/protocols which guide staff, ensuring that the woman requiring a Category 1 Caesarean Section has access to operating room facilities adequate to accommodate a Category 1 Caesarean Section and achieve birth within 45 minutes of the booking.

Hospitals deemed to provide Level 4 perinatal services must have an operating room information management system with the capacity to record the processes of the 'booking to birth'.

4.3.4 Level 5 or 6: Complexity of perinatal clinical care for managing a Category 1 Caesarean Section

Hospitals providing Level 5 or Level 6 perinatal services have an appropriate workforce and facilities enabling the provision of comprehensive care of a pregnancy deemed 'low-high' risk, in accordance with the *South Australian Perinatal Practice Guidelines* and are able to extend this care for all pregnancy related illnesses.

Hospitals deemed to provide Level 5 or 6 perinatal services should have appropriate formal policy/protocols which guide staff, ensuring that the woman requiring a Category 1 Caesarean Section has access to operating room facilities adequate to accommodate a Category 1 Caesarean Section and achieve birth within 30 minutes of the booking.

Health units deemed to provide Level 5 or 6 perinatal services must have an operating room information management system with the capacity to record the processes of the 'booking to birth'.

5. Implementation and Monitoring

5.1. Information Management System

Monitoring the 'booking to birth' interval is important in evaluating quality of maternity care and a time reference is needed to achieve this.

Hospitals with birthing services must have a formal information management system designed to audit the 'booking to birth' interval:









- Level 5 and 6 hospitals will have a designated electronic system – SA Health advocated IT software ORMIS.
- Level 3 and 4 hospitals will have a designated local documentation procedure which may be electronic or paper based.

The reporting of Category 1 Caesarean Sections will be undertaken as per the Local Health Network reporting arrangements.

Table: Outlining Booking to Birth Interval for Category 1 Caesarean Section and the relationship with Operating Rooms Information Management System.						
Category Caesarean Section	booking-to-birth interval	Level 6	Level 5	Level 4	Level 3	Level 1 & 2
		ORMIS code used	ORMIS code used	Local data system	Local data system	
Category 1	Within 30 minutes	0.5	0.5	N/A	N/A	No birth facilities to undertake CS
	Within 45 minutes	N/A	N/A	Within 45 minutes	N/A	
	Within 60 minutes	N/A	N/A	N/A	Within 60 minutes	
Category 2	Within 1 hour	001	001	Within 60 minutes	Within 60 minutes	
Category 3	Within 4 hours	004	004	Within 4 hours	Within 4 hours	
Category 4	Within 24 hours	024	024	Within 24 hours	Within 24 hours	

Please note: The process of booking an elective caesarean section is not included in this document and remains outside the scope of this clinical directive.

6. National Safety and Quality Health Service Standards

 National Standard 1 Clinical Governance	 National Standard 2 Partnering with Consumers	 National Standard 3 Preventing & Controlling Healthcare-Associated Infection	 National Standard 4 Medication Safety	 National Standard 5 Comprehensive Care	 National Standard 6 Communicating for Safety	 National Standard 7 Blood Management	 National Standard 8 Recognising & Responding to Acute Deterioration
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

7. Definitions

Apgar score

A criteria based physical assessment undertaken on a newborn at predetermined time interval immediately following birth. It is designed to quickly evaluate the newborn's physical condition and to determine any immediate need for extra medical or emergency care.

Caesarean Section

Is a surgical incision in a woman's abdomen and uterus to deliver one or more babies? Caesarean sections have traditionally been divided into two groups either elective or emergency. Elective caesarean sections are undertaken before labour commences as opposed to an emergency caesarean section which can be undertaken before or after labour has commenced.

Category 1 Caesarean Section:

For the purposes of these standards, a Category 1 Caesarean Section refers to the measures and resources a range of health disciplines required to instigate the surgical procedure, Caesarean Section, when it is deemed that there is an immediate threat to the life of a woman or fetus. Supersedes the historical term 'emergency caesarean section'.

Operating Rooms Information Management System (ORMIS)

A standardised electronic data system with functionality for all aspects of managing hospital operating rooms based on a predetermined set of rules established by the users.

Planned Homebirth

Is a birth that is intended to occur at home. Homebirth occurs when a woman makes an informed choice, in the antenatal period to give birth at home and secures the assistance of a registered practitioner experienced in homebirth.

Triage Process

A process in which a group of patients are sorted according to their need for care, and in consideration of the severity of the problem and the facilities available to manage the required care.

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Team Time Out

A safety check procedure undertaken before any incision has been made in an operative procedure, whereby the operative team confirm verbally – out loud, the operation, the patient's name, the patient identification number and the site of the surgery (i.e. correct operation, correct patient, correct site, etc.).

8. Associated Directives / Guidelines & Resources

Policies are available at: <https://extapps.health.sa.gov.au/PracticeGuidelines> or www.sahealth.sa.gov.au/perinatal.

- > Gupta. S, et al. *Evaluation of decision-to-delivery interval in emergency cesarean section: a 1-year prospective audit in tertiary care hospital*, J Anaesthesiol Clin Pharmacol. 2017 Jan-Mar; 33(1): pp. 64–70. [ONLINE] Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5374832/?report=reader>. [Accessed 21 March 2018].
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10. Acknowledgements

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11. Document Ownership & History

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