

South Australian Perinatal Practice Guideline

Cord Presentation and Prolapse

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Note:

This guideline provides advice of a general nature. This statewide guideline has been prepared to promote and facilitate standardisation and consistency of practice, using a multidisciplinary approach. The guideline is based on a review of published evidence and expert opinion.

Information in this statewide guideline is current at the time of publication.

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Health practitioners in the South Australian public health sector are expected to review specific details of each patient and professionally assess the applicability of the relevant guideline to that clinical situation.

If for good clinical reasons, a decision is made to depart from the guideline, the responsible clinician must document in the patient's medical record, the decision made, by whom, and detailed reasons for the departure from the guideline.

This statewide guideline does not address all the elements of clinical practice and assumes that the individual clinicians are responsible for discussing care with consumers in an environment that is culturally appropriate and which enables respectful confidential discussion. This includes:

- The use of interpreter services where necessary,
- Advising consumers of their choice and ensuring informed consent is obtained,
- Providing care within scope of practice, meeting all legislative requirements and maintaining standards of professional conduct, and
- Documenting all care in accordance with mandatory and local requirements

Explanation of the aboriginal artwork:

The aboriginal artwork used symbolises the connection to country and the circle shape shows the strong relationships amongst families and the aboriginal culture. The horse shoe shape design shown in front of the generic statement symbolises a woman and those enclosing a smaller horse shoe shape depicts a pregnant women. The smaller horse shoe shape in this instance represents the unborn child. The artwork shown before the specific statements within the document symbolises a footprint and demonstrates the need to move forward together in unison.



Australian Aboriginal Culture is the oldest living culture in the world yet Aboriginal people continue to experience the poorest health outcomes when compared to non-Aboriginal Australians. In South Australia, Aboriginal women are 2-5 times more likely to die in childbirth and their babies are 2-3 times more likely to be of low birth weight. The accumulative effects of stress, low socio economic status, exposure to violence, historical trauma, culturally unsafe and discriminatory health services and health systems are all major contributors to the disparities in Aboriginal maternal and birthing outcomes. Despite these unacceptable statistics the birth of an Aboriginal baby is a celebration of life and an important cultural event bringing family together in celebration, obligation and responsibility. The diversity between Aboriginal cultures, language and practices differ greatly and so it is imperative that perinatal services prepare to respectively manage Aboriginal protocol and provide a culturally positive health care experience for Aboriginal people to ensure the best maternal, neonatal and child health outcomes.

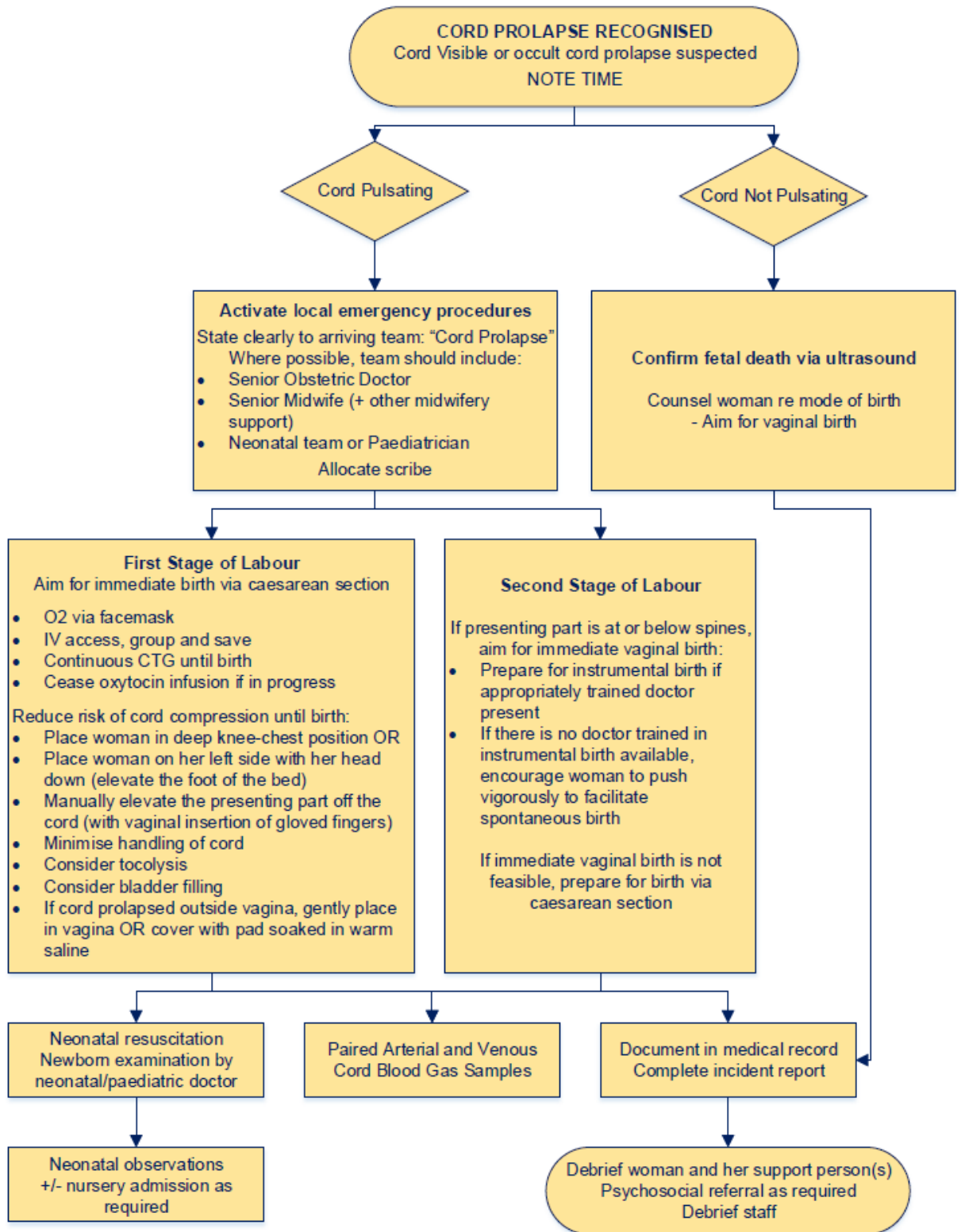
Purpose and Scope of Perinatal Practice Guideline (PPG)

This guideline provides clinicians with information on risk factors, prevention, diagnosis and management of cord prolapse and/or presentation.



Cord Presentation and Prolapse

Flowchart: Cord Prolapse Management



Cord Presentation and Prolapse

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Cord Presentation and Prolapse

Summary of Practice Recommendations

- Risk of cord presentation/prolapse is increased after artificial rupture of the membranes (ARM) or sudden spontaneous rupture of the forewaters with malpresentation or high presenting part.
- Perform a vaginal examination to exclude or confirm the presence of cord presentation/prolapse if sudden appearance of persistent, deep, fetal variable decelerations or prolonged fetal bradycardia.
- **Once cord prolapse is diagnosed, treat as an obstetric emergency.**
- If the woman's cervix is fully dilated, expedite vaginal birth.
- If the woman's cervix is not fully dilated, the priority is to relieve pressure on the cord by elevating the presenting part while preparations are made for an emergency caesarean section.
- If the cord is not pulsating, confirm fetal death with ultrasound and plan for vaginal birth.

Abbreviations

ARM	Artificial rupture of membranes
CTG	Cardiotocography
FHR	Fetal Heart Rate
G&S	Group and Save
IV	Intravenous
O ₂	Oxygen
%	Percent

Definitions

Cord Presentation	The presence of the umbilical cord between the cervix and the fetal presenting part with or without intact membranes. ¹
Cord Prolapse	The descent of the umbilical cord through the cervix and alongside the presenting part (Occult Cord Prolapse) or past the presenting part (Overt Cord Prolapse) in the presence of ruptured membranes. ²



Cord Presentation and Prolapse

Introduction

Cord presentation occurs when there is the presence of the umbilical cord between the cervix and the fetal presenting part with or without intact membranes.¹ Cord prolapse occurs where there is descent of the umbilical cord through the cervix, either alongside the presenting part (Occult Cord Prolapse) or past the presenting part (Overt Cord Prolapse), in the presence of ruptured membranes.^{1,2}

Cord presentation or cord prolapse can occur in any situation where the presenting part does not fit well into the maternal pelvis. In the case of cord presentation and prolapse, blood flow through the umbilical vessels may be compromised from the compression of the cord between the fetus and the uterus, cervix or pelvic inlet. Where cord prolapse has occurred the cord is vulnerable to compression, umbilical vein occlusion, and umbilical artery vasospasm, which can compromise fetal oxygenation.³

Cord prolapse is a life threatening obstetric emergency that may result in fetal asphyxia or death.

Caesarean section is the safest birth option for the viable fetus, especially in the first and early second stage of labour.

Common issues in the management of cord prolapse include: lack of recognition of cord prolapse, inappropriate handling of the cord, delay in the woman adopting a position that will relieve the pressure on the cord, not calling for help, delays in transfer to theatre, difficulty with equipment for bladder filling and omission of collection of cord blood gases.²

Literature Review

Cord prolapse occurs at rates of approximately 0.1-0.6%, South Australian data from 2016 showed a cord prolapse rate of 0.2%.^{1,4}

A large retrospective cohort study found that whilst risk factors can be identified in cord prolapse, it most commonly occurs in low risk women giving birth at term.⁵ A prospective observational study over 20 years found increased incidence in multiparous women and a fetal death rate of 6.8%.⁶

Cord prolapse has been identified as an unpredictable event that requires a high level of clinical vigilance, prompt birth once identified to reduce the fetal morbidity and mortality.⁶

Perinatal mortality is significantly increased when cord prolapse occurs outside of a health facility.¹ Likewise there is an increased chance of neonatal morbidity and mortality in these cases.¹

Risk Factors

Cord prolapse occurs most frequently after the amniotic membranes rupture (spontaneous or via artificial rupture of membranes) and the fetal presenting part is not well applied.²

Maternal^{1,2}

- Multiparity
- Polyhydramnios
- Abnormal placentation
- Pre-term labour +/- low birth weight <2,500 g
- Pelvic deformities
- Prolonged labour
- Previous cord prolapse
- Second twin



Cord Presentation and Prolapse

Fetal

- Breech/malpresentations
- Transverse, oblique and unstable lie (where the longitudinal axis of the fetus is changing repeatedly)
- High head at onset of labour +/- artificial rupture of the membranes
- Fetal congenital anomalies
- Abnormally long umbilical cord

Obstetric Procedures

- Amniotomy
- Internal podalic version
- Disimpaction of fetal head during rotational assisted birth
- Fetal scalp electrode application
- External cephalic version
- Expectant management of premature rupture of membranes
- Cervical ripening with a balloon catheter
- Induction of labour
- Manual rotation of the fetal head
- Application of forceps or vacuum

Prevention

If the cord is felt on vaginal examination below the presenting part in the presence of intact membranes, artificial rupture of membranes should be avoided.¹ In the presence of risk factors cord presentation or prolapse should be excluded at every vaginal examination.¹

Where artificial rupture of membranes (ARM) is indicated it should only be performed by senior medical or midwifery staff in the following circumstances (consider the need to exclude cord presentation on ultrasound before ARM):

- High, ill-fitting presenting part
- Unstable lie
- Polyhydramnios

In the above circumstances arrangements should be in place for an immediate caesarean section.¹

Any upward displacement of the presenting part should be minimised once the membranes have ruptured.¹

When the fetal lie is transverse, oblique or unstable consider elective admission to hospital after 37 weeks gestation.¹ Women with a transverse, oblique or unstable fetal lie not admitted to hospital should be counselled as to the urgency of presenting should labour commence or they experience rupture of membranes.¹

Diagnosis and presentation

Cord prolapse can present with sudden bradycardia or decelerations of the fetal heart rate (FHR) where there has previously been a normal trace.³ The abnormal FHR changes will typically occur after rupture of membranes OR an obstetric intervention that dislodges the presenting part.³

The presence of cord should be excluded during all routine vaginal examinations in labour and after spontaneous rupture of membranes where risk factors are present or if fetal heart rate abnormalities commence soon thereafter.¹

Diagnosis can be made when a soft, usually pulsatile structure is felt during routine vaginal examination or where on examination, the cord may be presenting (alongside the presenting part), or prolapsed (in the vagina or at the introitus).



Cord Presentation and Prolapse

Management

Antepartum

- Speculum or vaginal examination immediately after rupture of the membranes for women with a high risk of cord prolapse or if cord prolapse is suspected.
- If cord presentation or prolapse is diagnosed, **call for immediate medical assistance.**
- Immediate assessment of clinical circumstances: gestation, presentation, cervical dilatation, fetal wellbeing.
- Obstetric emergency management will depend on gestation and viability and discussion with the woman.
- If no cord pulsation or fetal heart heard, confirm presence or absence of fetal heart with portable ultrasound.
- In cases of viability, expedite birth and manage as below.
- In the setting of an incidental finding of a cord presentation on a routine ultrasound, appropriate antenatal counselling should be arranged with a senior obstetrician to discuss potential risks and plan mode of birth. Further ultrasound to assess the status of the cord presentation may be appropriate depending on the gestation. Women should be counselled regarding the risk of cord prolapse and immediate management to undertake in the event of labour or rupture of membranes.

Intrapartum

- The sudden appearance of FHR decelerations or prolonged fetal bradycardia on the cardiotocograph (CTG) or as part of intermittent FHR auscultation in labour or after spontaneous rupture of the membranes is an indication to perform a vaginal examination to exclude or confirm the presence of cord presentation/ prolapse.
- Once cord presentation/prolapse is diagnosed, treat as an obstetric emergency and **call for immediate medical assistance / activate local emergency procedures** to expedite birth.
- Discontinue oxytocin infusion if in progress.
- The mode of birth will depend on whether a FHR is present or absent and the stage of labour.
- Explain the findings to the woman and support persons including the emergency measures that may be needed.
- Aim to maintain the fetal circulation by preventing/minimising cord compression until birth occurs (see below).
- Note the time of diagnosis of cord presentation/prolapse and maintain a contemporaneous record of events until birth occurs.
- A practitioner experienced in neonatal resuscitation should be present at all births where cord prolapse has occurred.

Cord pulsating

Determine the stage of labour by vaginal examination. Management will depend on the stage of labour or cervical dilatation.

Cervix is not fully dilated

- Arrange immediate Category One caesarean section. (See *Standards for the Management of Category 1 Caesarean Section in SA* available at www.sahealth.sa.gov.au/perinatal).
- Ensure intravenous access is in place and obtain and send group and save (may occur in theatre and should not delay transfer).
- Administer O₂ via non-rebreathing mask at 8 litres per minute.
- Ensure continuous CTG until in theatre and commencing caesarean section or until after vaginal birth.



Cord Presentation and Prolapse

- The priority is to relieve pressure on the cord by elevating the presenting part while preparations are made for emergency caesarean section. This can be achieved by:
 - Positioning the woman in the deep knee-chest position or on the left side with head down (see pictures below). Elevate the foot of the bed where possible.



- Manually elevating the presenting part is reasonable if there is immediate access to theatre. The clinician should insert sterile gloved fingers into the vagina to elevate the presenting part off the cord. Avoid excessive handling of the cord. Cover the woman and expedite birth.
- Acute intravenous tocolysis (using either subcutaneous or intravenous (IV) Terbutaline, IV salbutamol, GTN) may be an effective adjunct treatment whilst preparing for theatre or if a delay is experienced (for dosing information and tocolytic alternatives, see *Tocolysis for Uterine Hypercontractility* PPG available at www.sahealth.sa.gov.au/perinatal).
- In cases where a delay in transfer to theatre for caesarean section is expected – consider elevation of the presenting part through rapid instillation of sodium chloride 0.9 % (at least at room temperature) into the maternal bladder (by inserting the end of a blood giving set into a Foley catheter). Position head down in left lateral position before passing urinary catheter. Clamp the catheter once 500 – 750 mL has been instilled. **Ensure the bladder is emptied before any birth attempt.**¹
- If a delay in transfer to theatre is expected and the pulsating cord is prolapsed outside of the vagina, the cord may be replaced in the vagina or a pad soaked in warm saline (sodium chloride 0.9 %) may be used to cover the cord. There is insufficient data to prove the benefits of either method.
- Any of the methods above (tocolytics, bladder filling, positioning) should not be engaged if they will delay the birth of the baby.
- Immediate resuscitation of the neonate should take priority over delayed cord clamping with compromised neonates.¹

Anaesthetic and theatre management

- The aim should be to deliver the baby **as soon as possible** in a manner that provides for safe anaesthesia for the woman.
- There is poor correlation between the decision-to-delivery interval and umbilical cord pH.¹ The 30-minute decision-to-delivery interval is the acknowledged target for category 1 caesarean section although this is not always possible in country sites.⁷
- A focused anaesthetic assessment of the woman must be conducted before anaesthetising the woman.
- If the woman has a working epidural in place, there may be time for this to be topped up, by the anaesthetist, either before or en-route to theatre, avoiding general anaesthesia.¹
- The majority of caesarean sections, where there is a cord prolapse and there is no epidural in-situ, are performed under general anaesthesia. However, expeditious spinal anaesthesia performed in a lateral position can be performed in cases of cord presentation, particularly when the fetal heart rate is acceptable.¹

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- It is a high priority to move the woman to the operating room:
 - Depending upon local circumstances, some procedures e.g. intravenous cannulation, obtaining group and save and urinary catheterisation can be delayed until the woman is in the operating theatre.
 - The usual prophylaxis to prevent the adverse effects of the aspiration of gastric contents should still be given to the woman.
 - Perform “Surgical Team Safety Checklist” as per SA Health Policy Directive “Surgical Team Safety Checklist” before commencing surgery. In many cases, the immediacy of the situation leaves little time for documentation of consent before surgery. However, documentation of the woman’s verbal consent can be completed.
- Obtain paired arterial and venous cord blood gases immediately after birth to exclude intrapartum-related hypoxic ischaemic brain damage.¹
- It is important that staff counsel any support persons who are unable to be present in theatre in cases of emergency caesarean section regarding the need for immediate intervention to optimise fetal outcomes.

Second stage of labour

- If the woman is in the second stage of labour and vaginal birth is feasible with the presenting part at or below spines, the doctor should prepare for operative birth (vacuum extraction or instrumental).
- The obstetrician should choose the instrument most appropriate to the clinical circumstances and the operator’s level of skill.¹
- If immediate vaginal birth is not feasible, expedite birth with caesarean section.
- Obtain paired arterial and venous cord blood gases immediately after birth to exclude intrapartum-related hypoxic ischaemic brain damage.¹

Cord not pulsating

- If the cord is not pulsating fetal demise should be confirmed via an ultrasound scan.
- Counsel the woman and discuss mode of birth explaining that the preferred management is by vaginal birth in the case of fetal demise.

Neonate

- Neonates born alive following cord prolapse are highly likely to require resuscitation.¹
- Paired arterial and venous cord blood samples can provide clinicians with an accurate picture of fetal status at the time of birth and should be collected in the case of cord prolapse.¹
- Ensure the baby is reviewed and/or managed by a Paediatrician at the time of birth (where possible) or as soon as possible.

Management where the prolapse occurs outside of the health service

- Women with a known cord prolapse should be advised to assume the knee-chest/face-down position whilst waiting for an emergency transfer to hospital.¹
- Expecting obstetric units should prepare for an emergency caesarean.
- When the woman arrives at the health service, she should be reviewed by senior medical staff and urgent birth plans implemented depending on stage of labour (as above) where the fetus has not succumbed.



Cord Presentation and Prolapse

Post birth

Documentation

- Ensure documentation is completed in the woman's medical records including details of the birth, time help was called and arrived, methods used to alleviate cord compression (if relevant), outcome and follow-up.²
- If a centralised CTG monitoring system was in use (such as OBTraceVu or Philips IntelliSpace Perinatal) the Cord Prolapse event should also be recorded in the system.
- Consider the use of a Cord Prolapse Management Form (see [Appendix](#) for an example)

Open Disclosure, Debriefing and Ongoing Support

All cord prolapse cases should be managed as per the [SA Health Patient Incident Management and Open Disclosure Policy](#).

Considerations include:

- Clear communication and instructions to the woman and support persons during the emergency;
- After the birth, the woman and her support persons should be offered opportunities to discuss the birth and the reason for the suggested management;
- Counselling should be offered;
- A social work referral should be offered;
- Arrange a clinical review postnatally to further debrief.

Staff training and support

- All staff working in delivery and birth suites should participate in regular practical based simulated training in obstetric emergencies including cord prolapse.
- Attending a cord prolapse can be distressing for all staff involved. If possible, a counselling session should occur after the emergency to debrief regarding the events and discuss any issues with the case as a team.



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6. Hartigan L, Hehir M, McHugh A, Mahony R. Analysis of incidence and outcomes of umbilical cord prolapse over 20 years at a large tertiary referral centre. *American Journal of Obstetrics and Gynaecology* 2013; 208(1, Supplement): S188.
7. SA Health. Category One Caesarean Section: Standards for Management in South Australia Clinical Directive. SA Health, 2018.



Cord Presentation and Prolapse

Appendix: Cord Prolapse Management Form

<p>South Australian Perinatal Practice Guidelines Clinical Practice Tool</p> <p>CORD PROLAPSE MANAGEMENT TOOL</p>	<p style="text-align: right; font-size: small;">(Affix identification label here)</p> <p>URN: Family name: Given names(s): Address: Phone: DOB: Sex: M <input type="checkbox"/> F <input type="checkbox"/> I <input type="checkbox"/></p>																		
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Cord Presentation and Prolapse

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Policy history:	Is this a new policy (V1)? N Does this policy amend or update an existing policy? Y If so, which version? V4.1 Does this policy replace another policy with a different title? N If so, which policy (title)?

Approval Date	Version	Who approved New/Revised Version	Reason for Change
20/12/2019	V5	SA Health Commissioning and Performance Unit	Reviewed in line with scheduled review date.
3/05/2018	V4.1	SA Health Safety and Quality Strategic Governance Committee	Review date extended to 5 years following risk assessment. New template
17/06/2014	V4	SA Health Safety and Quality Strategic Governance Committee	Reviewed in line with scheduled review date.
26/07/2011	V3	Maternal and Neonatal Clinical Network	Reviewed in line with scheduled review date.
17/06/2008	V2	Maternal and Neonatal Clinical Network	Reviewed in line with scheduled review date.
28/11/2005	V1	Maternal and Neonatal Clinical Network	Original approved version.

