

# South Australian Perinatal Practice Guideline

# Tocolysis for Uterine Hypercontractility

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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 woman. 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.**

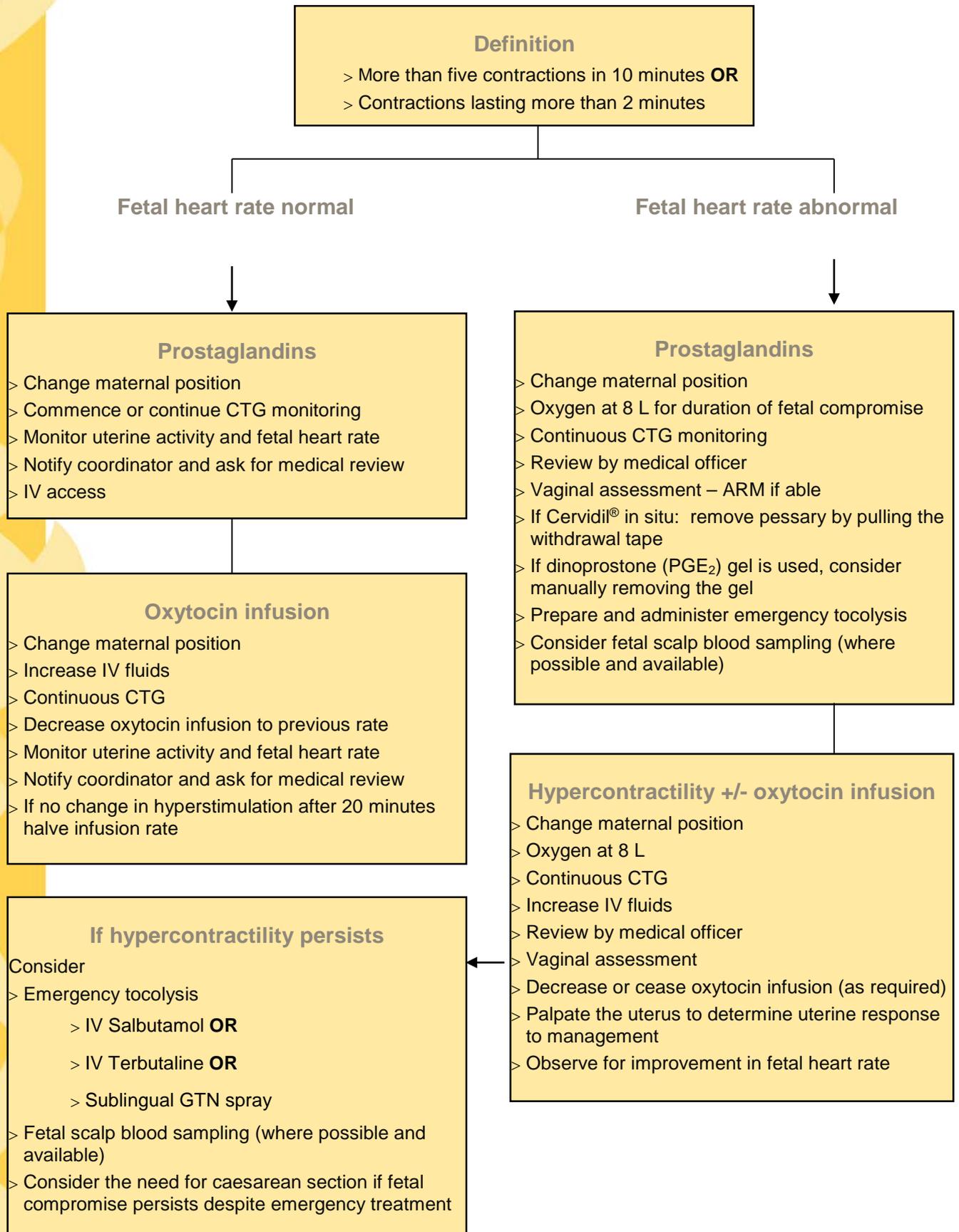
## Purpose and Scope of PPG

This guideline provides clinicians with information for managing uterine hypercontractility, including administration of emergency tocolysis.



# Tocolysis for Uterine Hypercontractility

Flowchart I: Management of uterine hypercontractility (hyperstimulation)



# Tocolysis for Uterine Hypercontractility

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## Summary of Practice Recommendations

Uterine hypercontractility refers to more than five contractions in 10 minutes or contractions lasting more than 2 minutes.

Early recognition is essential as uterine hyperstimulation causes poor utero-placental perfusion.

Adverse effects on the fetus can be avoided by minimising periods of hyperstimulation, removing/reducing hyperstimulation-producing medication and administering treatment in a timely manner.

Maternal assessment during tocolysis treatment is essential due to known cardiovascular side effects.



# Tocolysis for Uterine Hypercontractility

## Abbreviations

ARM	Artificial rupture of the membranes
CTG	Cardiotocograph
IV	Intravenous
L	Litre(s)
mg	Milligram(s)
mL	Millilitre(s)
mmHg	Millimetres of mercury
NICE	National Institute for Clinical Excellence
%	Percent
PGE <sub>2</sub>	Prostaglandin E <sub>2</sub>
RANZCOG	Royal Australian and New Zealand College of Obstetricians and Gynaecologists
i.e.	That is
TGA	Therapeutic Goods Administration
URL	Uniform resource locator



# Tocolysis for Uterine Hypercontractility

## Introduction

- > Uterine hypercontractility (hyperstimulation) may occur spontaneously in labour; however, it is frequently associated with prostaglandin agents or oxytocin infusion (see induction of labour)
- > A retrospective study found that administration of tocolytic treatment with  $\beta$ 2-adrenergic drugs following PGE2 induced uterine hyperstimulation was successful in normalising uterine contractions and reversing fetal compromise within 5 minutes in 98 % of cases.<sup>1</sup>
- > No evidence has been identified relating to the management of uterine hyperstimulation caused by induction with intravenous oxytocin.<sup>1</sup>

## Uterine hypercontractility (hyperstimulation)

- > Uterine hypercontractility refers to more than five contractions in 10 minutes, or contractions lasting more than 2 minutes and may or may not be associated with fetal compromise.<sup>1</sup>
- > Early recognition is essential as uterine hyperstimulation causes poor utero-placental perfusion leading to a decrease in fetal oxygenation and eventually fetal compromise.<sup>2</sup>
- > A raised uterine baseline pressure also contributes to reduced utero-placental perfusion. Sustained baseline pressures above 15 mmHg lead to fetal heart rate changes.<sup>2</sup>
- > Prolonged use of maternal facial oxygen therapy may be harmful to the baby and should be avoided. There is no research evidence evaluating the benefits or risks associated with the short-term use of maternal facial oxygen therapy in cases of suspected fetal compromise.<sup>3</sup>

## Management of uterine hypercontractility

- > Employ emergency management measures
  - > Place the woman in left lateral position
  - > Ensure good intravenous (IV) access and give bolus of fluid as indicated
  - > Continuous electronic fetal monitoring and observe for signs of fetal compromise
  - > Administer oxygen via face mask at 8 litres / minute for the duration of fetal compromise if present
  - > Palpate uterus to determine response to management
- > If emergency management measures fail, administer tocolysis
- > Adverse effects on the fetus can be avoided by minimising periods of hyperstimulation and administering treatment in a timely manner
  - > Either salbutamol or terbutaline tocolysis may be administered
  - > Nitrolingual® pump spray may be given if salbutamol or terbutaline are not available (see below)
- > In cases where fetal compromise is sustained despite the above emergency measures, consider need to expedite delivery



# Tocolysis for Uterine Hypercontractility

## Salbutamol tocolysis regimen

### Indications

- > Persistent uterine hypercontractility with fetal compromise
- > Tocolysis before attempting external cephalic version for breech presentation < 37<sup>+6</sup> weeks gestation

### Contraindications

- > A bolus dose of salbutamol is contraindicated in:
  - > Cardiac disease
  - > Hypertension
  - > Hyperthyroidism

### Relative contraindication

- > Diabetes

**Obstetric salbutamol: 5 mL ampoule 5 mg / 5 mL**

### Dosage and administration

- > Using a 1 mL syringe, draw up 0.25 mL (250 micrograms) of salbutamol
- > Add to a 10 mL syringe and make up to 10 mL with sodium chloride 0.9 % (25 micrograms per mL)
- > Give intravenous salbutamol slowly in 50 microgram boluses up to 250 micrograms in total (often 100 micrograms will be sufficient)
- > **Ensure monitoring of maternal pulse whilst bolus doses are administered**
- > **Stop IV administration if maternal pulse > 140**

### Side effects

- > Fetal and maternal tachycardia, maternal hypotension, ventricular ectopics, supra-ventricular tachycardia, ventricular fibrillation, pulmonary oedema, hypoxia – secondary to increased oxygen demands + / - fluid shift in lungs, hyperglycaemia



# Tocolysis for Uterine Hypercontractility

## Terbutaline tocolysis regimen

### Indications

- > Persistent uterine hypercontractility with fetal compromise
- > Tocolysis before attempting external cephalic version for breech presentation < 37+6 weeks gestation
- > These are not TGA approved indications

### Contraindications

- > Sympathomimetic amine hypersensitivity

### Relative contraindications

- > Cardiac disease
- > Hypertension
- > Hyperthyroidism
- > Diabetes

**Terbutaline: 1 mL ampoule 500 micrograms / 1 mL**

### Dosage and administration

- > May be given subcutaneous or intravenous

#### Subcutaneous

- > Using a 1 mL syringe, draw up 0.5 mL (250 micrograms) of terbutaline and administer subcutaneously

#### Intravenous

- > Using a 1 mL syringe, draw up 0.5 mL (250 micrograms) of terbutaline
- > Add to a 10 mL syringe and make up to 10 mL with sodium chloride 0.9 % (25 micrograms per mL)
- > Give intravenous terbutaline slowly in 50 microgram boluses up to 250 micrograms in total (often 100 micrograms will be sufficient)
- > **Ensure monitoring of maternal pulse whilst bolus doses are administered**
- > **Stop IV administration if maternal pulse > 140**

### Side effects

- > Tremor, headache, nervousness, cardiovascular effects including arrhythmia, tachycardia, palpitation, muscle cramps, hypokalaemia



# Tocolysis for Uterine Hypercontractility

## Sublingual glyceryl trinitrate spray (Nitrolingual®)

- > Nitrolingual® pump spray is a metered dose spray that delivers glyceryl trinitrate 400 micrograms per spray emission

### Action

- > The principal pharmacological action of glyceryl trinitrate is relaxation of vascular smooth muscle, producing a vasodilator effect on both peripheral arteries and veins, with more prominent effects on the latter

### Indications

- > Persistent uterine hypercontractility associated with fetal compromise (not a TGA approved indication)

### Contraindications

- > Acute circulatory failure (shock, circulatory collapse)
- > Cardiac disease
- > Pronounced hypotension (systolic BP < 90 mm Hg)
- > Severe anaemia

### Dosage and administration

- > 1 metered spray (400 micrograms) administered as spray droplets beneath the tongue (do not inhale)
- > Repeat after 5 minutes if hypertonus sustained
- > No more than 2 metered doses should be given

### Administration

- > Nitrolingual pump spray should be primed before using it for the first time by pressing the nozzle five times
- > If Nitrolingual pump spray has not been used for seven days a priming of one spray will be necessary
- > If the product has not been used for more than four months it will need to be primed several times (maximum five) until an even spray is obtained
- > The woman should be in a sitting position
- > The bottle should be kept vertical with the nozzle head uppermost
- > Hold the opening in the nozzle head as close to the open mouth as possible and spray under the tongue
- > Close the mouth immediately after each dose

### Side effects

- > Headache
- > Hypotension
- > Reflex tachycardia or bradycardia
- > Rarely nausea, vomiting, flushing



# Tocolysis for Uterine Hypercontractility

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## Useful Resources

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# Tocolysis for Uterine Hypercontractility

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