South Australian Perinatal Practice Guidelines

Tocolysis for uterine hypercontactility

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Management of uterine hypercontractility (hyperstimulation)

Definition
- More than five contractions in 10 minutes **OR**
- Contractions lasting more than 2 minutes

Fetal heart rate normal

Prostaglandins
- Change maternal position
- Commence or continue CTG monitoring
- Monitor uterine activity and fetal heart rate
- Notify coordinator and ask for medical review
- IV access

Oxytocin infusion
- Change maternal position
- Increase IV fluids
- Continuous CTG
- Decrease oxytocin infusion to previous rate
- Monitor uterine activity and fetal heart rate
- Notify coordinator and ask for medical review
- If no change in hyperstimulation after 20 minutes halve infusion rate

If hypercontractility persists

Consider
- Emergency tocolysis
  - IV Salbutamol **OR**
  - IV Terbutaline **OR**
  - Sublingual GTN spray
- Fetal scalp blood sampling (where possible and available)
- Caesarean section if hypercontractility and fetal compromise persist

Fetal heart rate abnormal

Prostaglandins
- Change maternal position
- Oxygen at 8 L for duration of fetal compromise
- Continuous CTG monitoring
- Review by medical officer
- Vaginal assessment – ARM if able
- If Cervidil® in situ: remove pessary by pulling the withdrawal tape
- If dinoprostone (PGE2) gel is used, consider manually removing the gel
- Prepare and administer emergency tocolysis
- Consider fetal scalp blood sampling (where possible and available)

Hypercontractility +/- oxytocin infusion
- Change maternal position
- Oxygen at 8 L
- Continuous CTG
- Increase IV fluids
- Review by medical officer
- Vaginal assessment
- Decrease or cease oxytocin infusion (as required)
- Palpate the uterus to determine uterine response to management
- Observe for improvement in fetal heart rate

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ISBN number: UNKNOWN
Endorsed by: SA Maternal & Neonatal Clinical Network
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Introduction

- Uterine hypercontractility (hyperstimulation) may occur spontaneously in labour; however, it is frequently associated with prostaglandin agents or oxytocin infusion (see PPG 'Induction of labour')
- A retrospective study found that administration of tocolytic treatment with ß$_2$-adrenergic drugs following PGE_2 induced uterine hyperstimulation was successful in normalising uterine contractions and reversing fetal compromise within 5 minutes in 98 % of cases (NICE 2008)
- No evidence has been identified relating to the management of uterine hyperstimulation caused by induction with intravenous oxytocin (NICE 2008)

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 (NICE 2008)
- Early recognition is essential as uterine hyperstimulation causes poor utero-placental perfusion leading to a decrease in fetal oxygenation and eventually fetal compromise (MNCN 2010)
- A raised uterine baseline pressure also contributes to reduced utero-placental perfusion. Sustained baseline pressures above 15 mmHg lead to fetal heart rate changes (MNCN 2010)

Management of uterine hypercontractility

- Employ emergency management measures
  - Place the woman in left lateral position
  - Administer oxygen via face mask at 8 litres / minute
  - Ensure good intravenous (IV) access and give bolus of fluid as indicated
  - Continuous electronic fetal monitoring and observe for signs of fetal compromise
  - Palpate uterus to determine response to management
  - Alert theatre and duty anaesthetist for possible emergency delivery
- 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® pumpspray 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

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Salbutamol tocolysis regimen

Indications

- Persistent uterine hypercontractility with fetal compromise
- Tocolysis before attempting external cephalic version for breech presentation < 37^{+6} 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

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Last reviewed: 12 April 2011

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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

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Sublingual glyceryl trinitrate spray (Nitrolingual®)

- Nitrolingual® pumpspray 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 Pumpspray should be primed before using it for the first time by pressing the nozzle five times
- If Nitrolingual Pumpspray 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

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Abbreviations

IV	Intravenous
L	Litre(s)
CTG	Cardiotocograph
ARM	Artificial rupture of the membranes
TGA	Therapeutic Goods Administration
PGE_2	Prostaglandin E_2
mmHg	Millimetres of mercury
%	Percent
mg	Milligram(s)
mL	Millilitre(s)
i.e.	That is
>	Greater than
<	Less than
+/-	Plus or minus
NICE	National Institute for Clinical Excellence
RANZCOG	Royal Australian and New Zealand College of Obstetricians and Gynaecologists
URL	Uniform resource locator

Version control and change history

PDS reference: OCE use only

Version	Date from	Date to	Amendment
1.0	18 Aug 04	12 Apr 11	Original version
2.0	12 Apr 11	current	

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