Policy

Clinical Guideline
South Australian Perinatal Practice Guidelines – tocolysis for uterine hypercontractility

Policy developed by: SA Maternal & Neonatal Clinical Network
Approved SA Health Safety & Quality Strategic Governance Committee on: 10 June 2014
Next review due: 31 July 2017

Summary
Guideline for tocolysis for uterine hypercontractility

Keywords
hypercontractility, contractions, prostaglandins, ctg, cervidil, dinoprostone, oxytocin, oxygen, vaginal, fetal heart rate, salbutamol, terbutaline, gtn, uterus, external cephalic version, breech, Perinatal Practice Guidelines, tocolysis for uterine hypercontractility, clinical guideline

Policy history
Is this a new policy? N
Does this policy amend or update an existing policy? Y
Does this policy replace an existing policy? Y
If so, which policies?
Tocolysis for uterine hypercontractility

Applies to
All SA Health Portfolio
All Department for Health and Ageing Divisions
All Health Networks
CALHN, SALHN, NALHN, CHSALHN, WCHN, SAAS
Other

Staff impact
All Clinical, Medical, Nursing, Allied Health, Emergency, Dental, Mental Health, Pathology

PDS reference CG155

Version control and change history

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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
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

**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)

- **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

- **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

**If hypercontractility persists**
- Consider emergency tocolysis
  - IV Salbutamol OR
  - IV Terbutaline OR
  - Sublingual GTN spray
- Fetal scalp blood sampling (where possible and available)
- Consider the need for caesarean section if fetal compromise persists despite emergency treatment
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 β2-adrenergic drugs following PGE2 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)

> 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 (NICE 2007)

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
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

<table>
<thead>
<tr>
<th>Obstetric salbutamol: 5 mL ampoule 5 mg / 5 mL</th>
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<tbody>
<tr>
<td><strong>Dosage and administration</strong></td>
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<tr>
<td>&gt; Using a 1 mL syringe, draw up 0.25 mL (250 micrograms) of salbutamol</td>
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<tr>
<td>&gt; Add to a 10 mL syringe and make up to 10 mL with sodium chloride 0.9 % (25 micrograms per mL)</td>
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<tr>
<td>&gt; Give intravenous salbutamol slowly in 50 microgram boluses up to 250 micrograms in total (often 100 micrograms will be sufficient)</td>
</tr>
<tr>
<td>&gt; <strong>Ensure monitoring of maternal pulse whilst bolus doses are administered</strong></td>
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<tr>
<td>&gt; <strong>Stop IV administration if maternal pulse &gt; 140</strong></td>
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**Side effects**
- Fetal and maternal tachycardia, maternal hypotension, ventricular ectopics, supraventricular tachycardia, ventricular fibrillation, pulmonary oedema, hypoxia – secondary to increased oxygen demands + / - fluid shift in lungs, hyperglycaemia
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
Sublingual glyceryl trinitrate spray (Nitrolingual®)

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
References


tocolysis for uterine hypercontractility

Abbreviations

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<td>Artificial rupture of the membranes</td>
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<tr>
<td>CTG</td>
<td>Cardiotocograph</td>
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<tr>
<td>IV</td>
<td>Intravenous</td>
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<tr>
<td>L</td>
<td>Litre(s)</td>
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<tr>
<td>mg</td>
<td>Milligram(s)</td>
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<tr>
<td>mL</td>
<td>Millilitre(s)</td>
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<tr>
<td>mmHg</td>
<td>Millimetres of mercury</td>
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<tr>
<td>NICE</td>
<td>National Institute for Clinical Excellence</td>
</tr>
<tr>
<td>%</td>
<td>Percent</td>
</tr>
<tr>
<td>PGE₂</td>
<td>Prostaglandin E₂</td>
</tr>
<tr>
<td>RANZCOG</td>
<td>Royal Australian and New Zealand College of Obstetricians and Gynaecologists</td>
</tr>
<tr>
<td>i.e.</td>
<td>That is</td>
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<td>TGA</td>
<td>Therapeutic Goods Administration</td>
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<td>Uniform resource locator</td>
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