Oxytocin for Induction and Augmentation of Labour

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Risk of non-compliance	may result in significant harm to the patient/DHB
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• Organisation(s)	Auckland District Health Board
• Directorate(s)	Women's Health
• Department(s)	Maternity
• Used for which patients?	All Auckland DHB Maternity patients as indicated
• Used by which staff?	All Auckland DHB clinicians in maternity including access holder Lead Maternity Carers (LMCs)
• Excluded	
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Contents

1. Purpose of guideline

The purpose of this guideline is to ensure that the use of oxytocin is safe and effective within Auckland District Health Board (Auckland DHB).

2. Guideline management principles and goals

- Oxytocin for augmentation or induction of labour requires a formal consultation with the Labour & Birthing Suite (L&BS) team on call, LMC and the woman.
- Consent from the woman must be obtained and documented, including awareness of complication of uterine hyper-stimulation (see *Informed Consent Policy* in associated documents).
- Decision about ongoing clinical responsibility must be discussed with the woman and her LMC
- It is recommended that clinical responsibility be transferred to the L&BS team on call and a clinical responsibility handover sticker placed in clinical record.
- Oxytocin must be prescribed on the Auckland DHB Medication Chart by the L&BS team on call, including any changes to the standard guideline which must also be documented in the patient's clinical notes. See Table 1: Standard protocol for oxytocin infusion (see associated documents for *Medication - Prescribing policy*).
- In settings where oxytocin is to be used with caution (see Precautions), consultation with the obstetric consultant via the registrar is mandatory.
- Individualised management plan regarding pain relief and reassessments must be documented.
- Advise active management of third stage of labour.
- If oxytocin is started in second stage, it is advised that vaginal exams be performed by L&BS team on call, every hour, to ensure progress and plan for delivery.

3. Contraindications

- Known hypersensitivity to oxytocin.
- Hypertonic uterine contractions or fetal distress when delivery is not imminent.
- Any condition where spontaneous labour or vaginal delivery is contraindicated.
- Oxytocin must NOT be administered within 6 hours after administration of vaginal prostaglandin gel.

4. Precautions

- Women with previous uterine scar*.
- Multiparous women.
- Women in second stage labour.
- With high risk women i.e. cardiac or severe eclampsia.
- Women with known Long QT syndrome and women taking other medications known to prolong the QT interval.

- Severe renal impairment.
- Multiple pregnancy.
- HIV/Hepatitis B – oxytocin may be used with intact membranes in an effort to reduce vertical transmission. See Note 2 below. In the above settings, consultation with the obstetric consultant via the registrar is mandatory.

***Note**: If a trial of labour after caesarean is judged safe, then oxytocin may be used for either induction or augmentation if clinically appropriate.

Note 2: Amniotomy performed later, after the commencement of oxytocin, is associated with longer duration of labour, which can be mitigated by an oxytocin protocol using 30-minute increments. It may also reduce the risk of chorioamnionitis, and does not increase the risk of caesarean section (Mercer, McNanley, O'brien, Randal, & Sibai, 1995).

Note 3: Once an ARM has been performed, evidence is insufficient to make recommendations regarding timing of commencement of oxytocin (Howarth & Botha, 2001).

5. Adverse effects

- Uterine hyperstimulation with excessive doses of oxytocin.
- Water intoxication, associated with administration of high doses of oxytocin together with large amounts of electrolyte-free fluid over a prolonged time.
- Headache.
- Tachycardia, bradycardia.
- Nausea and vomiting.

6. Assessment

Maternal assessment

- Vital signs: temperature, pulse, blood pressure and respirations 4 hourly or more frequently if clinically indicated.
- Abdominal palpation for contractions and resting tone should be performed prior to, and after, increasing the dose: frequency, strength, duration.
- Vaginal examination: this should only be performed if the findings will affect the management.
- Monitor fluid balance as water intoxication may result from prolonged infusion combined with the slight anti-diuretic activity of oxytocin.

Fetal assessment

Continuous CTG.

Note: It is important to interpret the findings of maternal and fetal assessments, and document a plan of management.

7. Administration

Equipment

- Volumetric pump (Alaris)
- 10 units of oxytocin
- 500 mL 0.9% sodium chloride
- Mainline IV infusion of Plasma-Lyte

Preparation

- Add 10 units of oxytocin (to a 500 mL bag 0.9% sodium chloride).
- Label bag with signed "medication added" label.
- Document fluid volume and drug on the Fluid Balance Record.
- Invert bag several times to ensure mixing of the oxytocin in the diluent fluid.
- Connect the infusion to the side arm of the mainline of Plasma-Lyte.

Administration

- Commence the oxytocin infusion via the Alaris infusion pump (see Table 1: Standard protocol for oxytocin infusion)
- Increase the rate (see Table 1: Standard protocol for oxytocin infusion) until reaching goal of four contractions in 10 minutes, lasting 40 - 90 seconds each with at least 60 seconds resting tone in-between.
- Once 4 contractions in 10 minutes are achieved, maintain infusion rate. The infusion rate should be titrated as required to maintain four contractions in 10 minutes.
- Watch for uterine hyperstimulation, especially in second stage of labour.

Important considerations

- There is no need to stop infusion during procedures such as epidural insertion, consider decreasing rate if needed.
- In multiparous women, consider decreasing rate once labour is established.
- In women in second stage labour, rate and interval may be increased more frequently, with attendance and on instruction of an obstetric Registrar or SMO.
- In women with previous uterine scar, maximum dose to be advised by obstetric SMO.
- In the operating theatre for a trial of instrumental birth, the oxytocin infusion is administered by the attending midwife, guided by the attending O & G specialist.
- NOT to be given by subcutaneous, intramuscular or IV bolus injection.

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Table 1: Standard protocol for oxytocin infusion

Millilitres per hour	Milliunits per minute	Time
6	2	0
12	4	30 minutes
18	6	60 minutes
24	8	90 minutes
36	12	120 minutes
48	16	150 minutes
60	20	180 minutes
72	24	210 minutes
84	28	240 minutes
96	32	270 minutes

8. Documentation

- Clinical record
- Partogram: record oxytocin rate in milliunits/minute (mu/min)
- CTG: add maternal observations and interventions on graph
- Medication chart (back page)

9. Management of uterine tachsystole, hypertonus and hyperstimulation

Definitions

Term	Definition
Uterine Tachysystole	• More than 5 contractions in 10 minutes with a normal fetal heart rate
Uterine Hypertonus	• Contractions lasting 2 minutes or more and/or • Less than 60 seconds resting tone in-between each contraction with a normal fetal heart rate
Uterine hyperstimulation	• Either of the above (tachysystole or hypertonus) when accompanied by an abnormal fetal heart rate

Management of tachsystole/hypertonus (normal CTG)

- Decrease the oxytocin infusion rate until contractions settle
- Reassess the need for oxytocin infusion
- Notify L&BS team on call

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Management of hyperstimulation

- Inform CCM and call L&BS team on call (see associated documents)
- Stop/reduce oxytocin infusion
- Commence intrauterine resuscitation i.e. position woman in left lateral, increase fluids
- Consider acute tocolysis: terbutaline/glyceryl trinitrate (GTN)/nifedipine (see section 10)
- Consider fetal blood sampling (lactates)
- After review recommence oxytocin as per medical instructions (see associated documents for *Fetal Surveillance Policy*)

10. Options for acute tocolysis (emergency halting of contractions)

The available evidence supports the use of beta-adrenergic receptor agonists such as terbutaline to reduce uterine pressure and contractions during term labour. However the preferred choice of type of beta-agonists and the dosage remains unclear. Terbutaline has been shown to be superior to GTN to reduce uterine contractions in a randomised trial (Pullen et al., 2007). PHARMAC funds terbutaline under section 29. Given the limited evidence overall for acute tocolysis in term labour, and the potential side effect profile of each tocolytic, it is recommended that an individualised approach is taken. Therefore this guideline provides dosage regimes for all 3 tocolytics but recommends that terbulatine be used in the first instance if there are no contraindications.

Terbutaline regime

a) Contraindications include - history of cardiac disease; significant risk factors for myocardial ischaemia; pulmonary hypertension; eclampsia or severe pre-eclampsia
b) Use with caution - hypertension; mild to moderate pre-eclampsia; hyperthyroidism; hypokalaemia (particular risk with potassium-depleting diuretics); suspected cardiovascular disease (should be assessed by a cardiologist before initiating therapy); monitor blood pressure, pulse rate (should not exceed 140 beats per minute), ECG (discontinue treatment if signs of myocardial ischaemia develop), blood glucose and lactate concentrations, fluid and electrolyte status (avoid over-hydration-discontinue drug immediately and initiate diuretic therapy if pulmonary oedema occurs); diabetes—monitor blood glucose (risk of hyperglycaemia and ketoacidosis)
c) Administer 250 micrograms subcutaneously as a single dose

Glyceryl trinitrate (GTN) regime

a) GTN 400 microgram spray, administer one metered spray sublingually
b) Check blood pressure
c) Repeat further spray after 5 minutes if hyper-stimulation persists

Nifedipine regime

a) Check no contraindications to tocolysis (eg woman asthmatic, vaginal bleeding etc.)
b) Check blood pressure and pulse following each dose
c) Initial nifedipine dose: 2 x 5 mg sublingual (pierce capsule prior to administration)

d) 15 minutes after initial dose give further 2 x 5 mg nifedipine capsules sublingually if still hyper-stimulated

e) 30 minutes after initial dose give further 2 x 5 mg nifedipine capsules sublingually if still hyper-stimulated

f) 45 minutes after initial dose give further 2 x 5 mg nifedipine capsules sublingually if still hyper-stimulated

11. Third stage

Active management of the third stage is required for all women who have had oxytocin prescribed for induction or augmentation of labour (see associated documents - *Intrapartum Care – Normal Labour and Birth*).

12. Supporting evidence

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13. Associated Auckland DHB documents

- Fetal Surveillance Policy
- Group and Screen Requirements in Maternity
- Induction of Labour - RBP
- Informed Consent
- Intrapartum Care - Normal Labour & Birth
- Medications - Administration
- Medications - Intravenous and Infusions Administration
- Medications - Prescribing
- Postpartum Haemorrhage (PPH) Prevention and Management

14. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this Auckland DHB guideline to adapt it for safe use within their own institution, recognise the need for specialist help, and call for it without delay, when an individual patient falls outside of the boundaries of this guideline.

15. Corrections and amendments

The next scheduled review of this document is as per the document classification table (page 1). However, if the reader notices any errors or believes that the document should be reviewed ***before*** the scheduled date, they should contact the owner or Document Control without delay.