Drug Guideline  
Guideline Title  Oxytocin (syntocinon)

Summary: Oxytocin stimulates the smooth muscle of the uterus producing rhythmic contractions

Approved by: ICU Medical Director

Publication (Issue) Date: May 2015

Next Review Date: May 2018

Replaces Existing Guideline: Syntocinon 2005

Previous Review Dates: 2004

1. Introduction contains:
The risk addressed by this policy:

Patient Safety

The Aims / Expected Outcome of this policy:

Oxytocin should be administered safely and without any adverse side effects

Related Standards or Legislation

NSQHS Standard 1 Governance
National Standard 4 Medication Safety

Related Policies

<table>
<thead>
<tr>
<th>LH_PD2013_C03.01</th>
<th>Drug Administration</th>
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<tr>
<td>LH_PD2013_C03.00</td>
<td>Drug Prescribing</td>
</tr>
</tbody>
</table>

2. Policy Statement:

- All care provided within Liverpool Hospital will be in accordance with infection prevention/control, manual handling and minimisation and management of aggression guidelines.
- Medications are to be prescribed and signed by a medical officer unless required during an emergency.
- Medications are to be given at the time prescribed and are to be signed by the administering registered nurse.
- Parenteral medication prescriptions and the drug are to be checked with a second registered nurse prior to administration.
- Infection Control guidelines are to be followed.
- All drugs administered during an emergency (under the direction of a medical officer) are to be documented during the event, then prescribed and signed following the event.
- Adverse drug reactions are to be documented and reported to a medical officer.
- Medication errors are to be reported using the hospital electronic IIMS reporting system.
- Guidelines are for adult patients unless otherwise stated.
- Administered by a fully trained staff member, who can identify possible complications
- When being administered IV a syringe driver or infusion pump must be used

3. **Principles / Guidelines**

**Actions**

Oxytocin stimulates the smooth muscle of the uterus, producing rhythmic contractions. The uterine myometrium contains receptors specific to oxytocin. Oxytocin stimulates contraction of uterine smooth muscle by increasing intracellular calcium concentrations, thus mimicking contractions of normal, spontaneous labour and transiently impeding uterine blood flow. Amplitude and duration of uterine contractions are increased, leading to dilation and effacement of the cervix. Oxytocin also increases local prostaglandin production, further stimulating uterine contraction

**Indications**

- Induction of labour, assistance with inadequate uterine contraction.
- Postpartum haemorrhage.
- Management of third stage of labour.

**Contraindications**

- Foetal distress where delivery is not imminent
- Excessive distension of the uterus, multiple pregnancy, hydramnios.
- Previous caesarean section or uterine surgery.
- Severe toxemia, predisposition to amniotic fluid embolism, foetal death
- Placenta praevia.
- Hypersensitivity.
- Placental abruption.
- Obstetrical emergencies.
- Not to be administered 6 hours after vaginal prostaglandins have been given.
- Significant cephalopelvic disproportion
- Unfavourable foetal positions or presentations
- Adequate uterine activity fails to achieve satisfactory progress
- The uterus is already hyperactive or hypertonic
- Vaginal delivery is contraindicated

**Precautions**

- Induction of labour:
  - Only be attempted when medically indicated.
  - Administered by a fully trained staff member, who can identify possible complications
  - When being administered a syringe driver or infusion pump must be used
  - Not to be administered by subcutaneous, intramuscular or intravenous bolus injections as may cause acute hypotension, flushing and reflex tachycardia.
- Foetal distress and death:
  - Administration of Oxytocin at excessive doses results in uterine over stimulation which may cause foetal distress, asphyxia or death.
  - Careful monitoring is essential so the dose can be titrated accordingly to individual response.
- Third stage of labour and puerperium
  - When used for prevention of uterine haemorrhage, rapid IV bolus should be avoided, as it may lead to hypotension, flushing and reflex tachycardia.
Rapid haemodynamic changes may result in myocardial ischaemia, especially in patients with pre-existing cardiovascular disease.

Multiple pregnancies must be excluded before administering the drug.

Use Caution In The Following Circumstances:
- The presence of borderline cephalopelvic distortion.
- Secondary uterine inertia.
- Mild or moderate degrees of pregnancy induced hypertension or cardiac disease.
- Also in patients above 35 years of age.

Cardiovascular Disorders: Patients who have a predisposition to myocardial ischaemia due to pre-existing cardiovascular disease to avoid significant haemodynamic changes.

Long QT syndrome: Caution with patients with known long QT syndrome or related symptoms.

Water Intoxication
- It has a antidiuretic effect, increasing water reabsorption from glomerular filtration.
- Also causes fluid overload leading to acute pulmonary oedema without hyponatraemia.
- With severe renal impairment, as may lead to water retention and accumulation of Oxytocin.

Disseminated Intravascular Coagulation
- In rare circumstances induction of labour using Oxytocin increases risk of postpartum disseminated intravascular coagulation.
- Higher risk in women 35 years and above

Pregnancy complications or gestational greater than 40 weeks.

Interactions
- Prostaglandins may potentiate the uterotonic effect of oxytocin and vice versa. Very careful monitoring is, therefore, recommended in cases of concomitant administration.
- Some inhalation anaesthetics may enhance the hypotensive effect of oxytocin and reduce its action. Their concurrent use with oxytocin has also been reported to cause cardiac rhythm disturbances.
- Oxytocin should be given with caution in patients taking drugs that are known to prolong the QTc interval.
- When given during or after caudal block anaesthesia, oxytocin may potentiate the pressor effect of sympathomimetic vasoconstrictor agents.

Adverse Effects

Mother:
- Anaphylactic reaction associated with dyspnoea, hypotension or shock.
- Headache (associated with water intoxication).
- Tachycardia, bradycardia.
- Nausea, vomiting.
- Rash.
- Myocardial ischaemia, QT prolongation.
- Uterine hypertonicity, tetanic contractions, rupture of the uterus.
- Water intoxication, maternal hyponatraemia.
- Acute Pulmonary oedema.
- Flushing
- DIC.

Foetus:
- Foetal distress.
- Neonatal hyponatraemia.
- Amniotic fluid emboli.

Presentation
Oxytocin (Syntocinon) 5 units in 1ml Ampoules.
Oxytocins (Syntocinon) 10 units in 1ml Ampoules.
Administration Guidelines

Postpartum Haemorrhage.
- 5-10 units by intramuscular injection or 5 units by slow bolus intravenous injection. In patients given Oxytocin by drip to induce or stimulate labour, the infusion should be continued during the third stage.
- IM: 10 units after delivery of the placenta

Labour induction/ augmentation.
- Dilute 10 units with 500 mL or 1000 mL 0.9% sodium chloride
- Initial infusion rates vary from 1– 4 units/minute to a maximum of 20 units/minute.¹

<table>
<thead>
<tr>
<th>Dose</th>
<th>Dilute to</th>
<th>Concentration</th>
<th>Rate to deliver 1 unit/minute</th>
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</thead>
<tbody>
<tr>
<td>10 units</td>
<td>500 mL</td>
<td>20 units/mL</td>
<td>3 mL/hour</td>
</tr>
<tr>
<td>10 units</td>
<td>1000 mL</td>
<td>10 units/mL</td>
<td>6 mL/hour</td>
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- Gradually increase dose in increments of 1 to 2 units/minute every 30 to 60 minutes until desired contraction pattern is established; dose may be decreased by similar increments after desired frequency of contractions are reached and labour has progressed to 5 to 6 cm dilation.
- Discontinue the oxytocin infusion immediately in the event of uterine hyperactivity and/or foetal distress. If uterine contractions become too powerful, the infusion can be stopped abruptly.

4. Performance Measures
All incidents are documented using the hospital electronic reporting system: IIMS and managed appropriately by the NUM and staff as directed.

Clinical Considerations
- Fluid intake by mouth must be restricted.
- Maternal serum electrolytes should be measured at regular intervals, 8 to 12 hours.
- To ensure even mixing of the drip solution, the bottle or bag must be turned upside down several times before use.
- Strict fluid balance is required.
- Careful monitoring is essential so the dose can be titrated accordingly to individual response

6. References / Links

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Reviewers: ICU Staff Specialists, ICU CNC, ICU CNE's, NUM's, CNS's , Pharmacists
Endorsed by: ICU Medical Director – Prof. Michael Parr