5 INTRAPARTUM CARE

5.1 INDUCTION OF LABOUR

5.1.3 OXYTOCIN INFUSION

Keywords: syntocinon infusion, oxytocin infusion, oxytocin induction, labour stimulation

See Clinical Guidelines Section B 5.1 Induction of Labour for management prior to commencing an induction of labour.

KEY POINTS

1. These infusion guidelines are as per the ACOG review October 2010.
2. The maximum infusion rates are as per the RCOG guidelines.

ABSOLUTE CONTRAINDICATIONS

- Any condition in which spontaneous labour is inadvisable
- 2 or more previous caesarean sections

RELATIVE CONTRAINDICATIONS

- Grande multiparity (> P4) – discuss with the consultant
- 1 previous caesarean section – discuss with the consultant
- Secondary arrest in active labour in a multiparous woman – discuss with consultant

PRIOR TO COMMENCING OXYTOCIN

- Oxytocin should not be started for six hours following administration of vaginal prostoglandins.¹
- For women with intact membranes an ARM should be performed prior to commencing induction.¹
- Establish fetal well-being immediately prior to commencement of oxytocin.¹ Perform a 20-30 minute cardiotocograph (CTG) prior to commencing the induction.
- Women with a previous uterine scar and / or high parity (greater than 4) should not have oxytocin commenced without discussion with the obstetric team Consultant.
- Women with a previous caesarean section scar should have discussion and consent to the use of oxytocin. The rupture risk (approximately 1:100) should be explained and this discussion documented in the medical notes.
DOSE
To reduce error a standard dilution should always be used.

**Standard Dilution of Oxytocin**
10 I.U. of oxytocin in 500mL of Hartmann’s solution.
At this dilution, a 3mL/hr infusion rate equates to 1milli-unit (mU) of oxytocin per minute.

INFUSION RATE
The dose of oxytocin should be titrated against uterine contractions. The aim is to achieve a frequency of one contraction every two and half to three minutes, lasting 60 seconds using the minimum dose of oxytocin possible.

**Labour Stimulation with Oxytocin**

<table>
<thead>
<tr>
<th>Starting Dose</th>
<th>Incremental Increase</th>
<th>Dosage Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 mU per minute</td>
<td>Increase the infusion rate by 4 mU per minute (12mL / hr)</td>
<td>Increase the infusion rate at 15 minutely intervals</td>
</tr>
<tr>
<td>(12mL / hr).</td>
<td>to a maximum dose of 20 mU per minute (60mL / hr).</td>
<td></td>
</tr>
</tbody>
</table>

• Once the maximum dose has been running for 30 minutes the Consultant or Senior Registrar should review the woman prior to higher doses being administered. The overall maximum dose of oxytocin should not exceed 36 mU per minute (108mL/hour)

• Once an ideal uterine contraction pattern has been achieved, titrate the dose to maintain the pattern.

• In the case of grande multipara(>Para 4) or a previous caesarean section, the regime may be modified after discussion with the consultant

**Oxytocin Infusion Conversion Chart**

<table>
<thead>
<tr>
<th>Time after starting (minutes)</th>
<th>Oxytocin dose (mU per minute)</th>
<th>Volume infused (mL per hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>15</td>
<td>8</td>
<td>24</td>
</tr>
<tr>
<td>30</td>
<td>12</td>
<td>36</td>
</tr>
<tr>
<td>45</td>
<td>16</td>
<td>48</td>
</tr>
<tr>
<td>60</td>
<td>20</td>
<td>60</td>
</tr>
<tr>
<td>75</td>
<td>24</td>
<td>72</td>
</tr>
<tr>
<td>90</td>
<td>28</td>
<td>84</td>
</tr>
<tr>
<td>105</td>
<td>32</td>
<td>96</td>
</tr>
<tr>
<td>120</td>
<td>36</td>
<td>108</td>
</tr>
</tbody>
</table>

Doses shaded yellow are above the licensed maximum dose and require Consultant or Senior Registrar review prior to administration.

**DURING ADMINISTRATION**

• Deliver the oxytocin through an infusion pump and ensure the giving set has a double or triple lumen peripheral set (V-set) attached. **Note:** The V-Set acts as an anti reflux valve preventing bolus administration of oxytocin.

• Where the oxytocin infusion is to run as a sideline to a main intravenous line, it should be connected to the main line with a V-Set.
Ensure continuous electronic fetal heart rate monitoring and monitoring of uterine contractions throughout the induction using continuous electronic cardiotocography.

Place an intrauterine pressure catheter in women whose contractions cannot be adequately assessed by external monitoring or manual palpation.

Monitor fluid balance.

Ensure constant midwifery support. The woman should have one-on-one midwifery care while have oxytocin infusion.¹

**POTENTIAL COMPLICATIONS OF OXYTOCIN INFUSION**

Complications that may potentially occur with oxytocin use include:

- Uterine Hyperstimulation⁴
- Hyponatraemia⁴.
- hypotension⁴
- nausea and vomiting (infrequent)⁵
- Rarely – arrhythmias, anaphylactoid reaction⁵

**UTERINE HYPERSTIMULATION**

Uterine hyperstimulation from the use of oxytocin or prostaglandins induction of labour occurs in 1-5% of women.³ Oxytocin has a short half life from 1-5 minutes and is easy to titrate should hyperstimulation occur.⁶

Uterine hyperstimulation is defined as:

- 5 or more contractions in 10 minutes³,⁴
- contractions lasting more than 90 seconds³ to 2 minutes.⁴
- contractions of normal duration occurring within 1 minute of each other.⁴

**Management of Hyperstimulation with FHR Decelerations or Abnormalities**

1. **CEASE THE OXYTOCIN INFUSION³,⁴**
2. Reposition the woman onto her left side.³
3. Notify the midwifery Co-ordinator and the Medical Obstetric Team.
4. Consider tocolysis with Terbutaline 0.25mg subcutaneously if cessation of the oxytocic infusion fails to resolve hyperstimulation.³ A response from Terbutaline should occur within 5-10 minutes. Note: Terbutaline is contra-indicated in women with cardiac disease.
5. Prepare the woman for immediate vaginal delivery or possible Caesarean delivery if the FHR does not return to normal.³
6. If the uterine hyperstimulation resolves, re-start the oxytocin infusion at half the rate of the last dose infused, and increase the rate as required.³

**Management of Uterine Hyperstimulation without Fetal Compromise**

Decrease the oxytocin infusion rate.⁴ If in doubt, cease the oxytocin, reassess the clinical situation and discuss the management with the Medical Obstetric Team.

**HYPONATRAEMIA**

Oxytocin is similar in structure to vasopressin and in high doses may cause water retention. With the use of isotonic solutions it is rare.⁴ It can occur with prolonged infusions and if hyponatraemia is not recognised can lead to seizures, coma and death. Pulmonary oedema may also occur without hyponatraemia.⁴

To reduce the risk of hyponatraemia:

- Monitor and record fluid intake and output⁴ at least 2 hourly during oxytocin infusion.
- Apply caution with use and careful monitoring of fluid balance for women with cardiac conditions.⁷
HYPOTENSION
If oxytocin is given as a bolus dose it can cause significant hypotension. Use of infusion pumps prevents this risk. If a rapid injection is given it can cause transient hypotension, flushing and reflex tachycardia.5

REFERENCES (STANDARDS)
1. Novartis Syntocinon ® Product Information. 2009

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