Oxytocin use in labour

Target audience	Maternity staff.
Patient group	Maternity patients. The term 'women/pregnant people' is used within this document to include women, girls, trans men, and non-binary and intersex people, who are pregnant or have recently been pregnant.

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Section 1 – abbreviations

CEFM	continuous electronic fetal monitoring
CPD	cephalopelvic disproportion
CTG	cardiotocography
FBS	fetal blood sampling
FHR	fetal heart rate
iu	international units
IV	intravenous
ml	millilitres
NaCl	sodium chloride
NPSA	national patient safety alert
PET	pre-eclampsia
PROM	premature rupture of membranes
ULM	unlicenced medication
VBAC	vaginal birth after caesarean
VE	vaginal examination

Section 2 – introduction

Oxytocin is a potentially dangerous drug. As it is so commonly used, this fact may not be respected or understood. Misuse of oxytocin is a common cause for obstetric litigation. Please see the National Patient Safety Alert (NPSA) released by the NHS England National Patient Safety Team in September 2024 for more information. This NPSA can be found here: https://www.england.nhs.uk/wp-content/uploads/2024/09/patient-safety-alert-risk-of-oxytocin-overdose-during-labour-and-childbirth.pdf.

Section 3 – aims

- to provide a standard care pathway for women/pregnant people for whom oxytocin has been prescribed.
- to provide all maternity staff with guidance on the indications for its use and avoidance.
- to prevent inappropriate use of oxytocin.

Section 4 – monitoring for fetal heart rate changes

- Oxytocin has no direct drug effect on the fetal heart rate (FHR).
- Its indirect effects are due to increased frequency, duration and/or amplitude of uterine contractions causing compression of the umbilical cord and fetal head and a reduction in the retroplacental pool of blood.
- Continuous electronic fetal monitoring (CEFM) is mandatory for all patients being infused with oxytocin.

- If there are any cardiotocographic (CTG) concerns prior to commencement or during the infusion of oxytocin, the situation must be reviewed immediately by either the maternity unit coordinator or medical staff.
- If the CTG is normal, oxytocin should be titrated upwards (see below) until the woman/pregnant person is contracting 3-4 times in 10 minutes.
- Oxytocin should be reduced if contractions occur more frequently than this or if there is poor resting tone.
- Avoid routine reducing or stopping oxytocin in such cases prior to medical review unless the CTG is pathological/acutely bradycardic.
- Consider the following measures in cases whereby there are CTG concerns whilst the woman/pregnant person is receiving an oxytocin infusion:
    - turn the patient to the left lateral position or perform manual uterine displacement (to prevent aortocaval compression).
    - administer IV fluids +/- IV antibiotics if the woman/pregnant person is hypotensive or has signs of sepsis.
    - if the woman/pregnant person has an epidural in-situ, start IV fluids and call for immediate anaesthetic review.
    - if there is evidence of uterine tachysystole, stop the oxytocin infusion and administer subcutaneous terbutaline 250 micrograms (if no contraindications).
    - do not offer maternal facial oxygen therapy unless there is maternal hypoxia, or as part of preoxygenation before potential anaesthetic.
    - the uterus becomes more sensitive to oxytocin with progressive labour. In the late first stage and throughout the second stage, there is additional uterine activity due to Ferguson's reflex.

Section 5 – precautions with the use of an oxytocin infusion

5.1 *Contraindications*

- Allergy to any product constituents.
- Placenta praevia/accreta spectrum.
- Vasa praevia.
- Placental abruption.
- Cord presentation/prolapse.
- Hyperstimulation.
- Fetal distress.
- Fetal malpresentation (singleton pregnancy).
- Known cephalopelvic disproportion (CPD).
- Within six hours of vaginal prostaglandin administration.
- Severe cardiovascular disease.

5.2 *Potential adverse reactions*

- Administration of excessive doses resulting in uterine hyperstimulation (can cause fetal distress, hypertonicity, tetanic contractions, soft tissue damage

and/or uterine rupture).
- Nausea and/or vomiting.
- Headache.
- Rash.
- Cardiac arrhythmias.
- Anaphylactic reactions.
- Rapid IV administration and subsequent hypotension.
- Fluid overload:
    - Can occur due to prolonged administration with large fluid volumes.
    - Can cause hyponatraemia due to its antidiuretic effect.
    - To avoid this, ensure the following:
        - Administer oxytocin in sodium chloride (NaCl 0.9%).
        - Restrict fluid intake to isotonic drinks and intravenous Plasma-Lyte-148 6-hourly.

5.3 *Special circumstances*

- Presence of uterine scar (see section below).
- Parous patients with secondary arrest of labour (see section below).
- Multiple and higher-order pregnancies (see section below).
- Severe pre-eclampsia (PET) or severe gestational hypertension.
- Severe cardiovascular disorders.
- Severe renal impairment (can result in fluid overload, impaired excretion and accumulation of oxytocin).
- Long QT syndrome.
- Patients taking medications which may prolong the QT interval.

If any of the above circumstances apply, the decision to use oxytocin should be made by a consultant obstetrician.

Section 6 – administration of oxytocin

6.1 *General principles*

- Ensure membranes are ruptured prior to commencing an oxytocin infusion either spontaneously or via amniotomy.
- Oxytocin should be prescribed prior to its use.
- The following should be documented on BadgerNet prior to its use:
    - indication.
    - discussion with medical staff (tier 2 doctor or consultant).
    - subsequent plan for vaginal examination.

6.2 *Standard oxytocin regimen*

- See Medusa injectable medicines guide for oxytocin version 7 (2026).
- Add 10 international units of oxytocin to 500ml of 0.9% NaCl (0.02 units/ml).

- The bag must be labelled detailing the preparation, concentration and the date/time prepared.
- The infusion should be commenced at and increased as follows:

Time after starting (mins)	Oxytocin dose (milliunits/min)	Infusion rate (ml/hr)
0	1	3
30	2	6
60	4	12
90	8	24
120	12	36
150	16	48
180	20	60
210	24	72
240	28	84
270	32	96

- The infusion rate should be titrated against uterine activity and increased every 30 minutes if needed.
- Not all women/pregnant people will need titration to the maximum dose to achieve adequate uterine activity.
- Titration should be increased against uterine activity until a maximum of 3-4 contractions occur in every 10 minutes.
- Please note that the maximum licenced dose is 20 milliunits/minute as per oxytocin's summary of product characteristics (SPC). However, use of higher doses is commonplace across the UK. These higher doses are highlighted in yellow in the table above and administration is governed by a blanket unlicenced medication (ULM) form.
- The escalation/de-escalation process requires to be reviewed in accordance with clinical judgement of the midwife and obstetrician caring for the patient.
- If the infusion is stopped for up to 30 minutes and the decision has been made to re-start, it should be recommenced at half the rate being infused at the time the infusion was stopped.
- If the infusion is stopped for more than 30 minutes, restart at 3ml/hr and titrate to response.
- Ensure that the infusion rate AND doses are recorded on BadgerNet.

6.3 *Primigravida*

6.3.1 *Induction of labour (IOL)*

- The above standard oxytocin regimen should be used following amniotomy.
- The woman/pregnant person should be re-examined after 4 hours of regular uterine activity to ensure progress in labour.
- If there is no change in cervical dilatation after this examination and the

uterine activity is adequate, oxytocin should be considered for a further four hours.

- If there is no change in cervical dilatation after 8 hours of oxytocin despite adequate uterine activity, consideration should be given to discussion with the consultant obstetrician and to emergency caesarean birth.
- Oxytocin should not be administered for more than 12 hours without evidence of definite progress in labour.

6.3.2 *Spontaneous labour*

- If uterine activity and/or progress in labour is inadequate, commence an intravenous oxytocin standard regimen as per guidance above.
- Vaginal examination should be performed 4 hours later and managed as above.

6.4 *Parous women/pregnant people*

6.4.1 *Induction of labour*

- The above standard oxytocin regimen should be used following amniotomy.
- However, consideration should be given to delaying the commencement of oxytocin for 1-2 hours after amniotomy. This decision should be made depending on the indication for amniotomy, clinical judgement and the woman/pregnant person's preference.
- The woman/pregnant person should be re-examined after 4 hours of regular uterine activity to ensure progress in labour.
- If there is no change in cervical dilatation after this examination and the uterine activity is adequate, consideration should be given to discussion with the consultant obstetrician and emergency caesarean birth.
- The dose can often be reduced and sometimes stopped once the parous woman/pregnant person is established in labour.

6.4.2 *Spontaneous labour*

- Parous women/pregnant people in spontaneous labour with evidence of failure to progress in the 1st stage represent a deviation from normal.
- There is a risk of uterine rupture which may be further increased with administration of oxytocin in the following:
    - malposition.
    - malpresentation.
    - CPD.
- If oxytocin is being considered, the following must be done:
    - accurate assessment of uterine activity.
    - medical staff must perform a vaginal examination (VE) to exclude malpresentation or evidence of CPD.
    - the oxytocin infusion must be prescribed prior to it being commenced.
    - the consultant obstetrician must be informed and must verbally agree.
- Once the standard oxytocin regimen is commenced, a VE should be performed after

1 hour of adequate uterine activity.

- If there is inadequate progress, further management must be discussed with the consultant obstetrician as caesarean birth is usually indicated.

6.5 *Special circumstances*

6.5.1 *Uterine hyperstimulation*

- The infusion should be reduced/stopped in the following:
  - contraction frequency persistently ≥6:10.
  - uterine tachysystole with poor resting tone.
  - single contractions lasting more than two minutes.
- If the above abnormalities do not resolve after the infusion is reduced/stopped, consideration should be given to administration of a tocolytic bolus of subcutaneous terbutaline 250 micrograms.
- With medical staff agreement, the infusion can be re-commenced after 15 minutes (see guidance above for doses) assuming the indication for discontinuing oxytocin has resolved.

6.5.2 *Intact membranes*

- If membranes are found to be inadvertently intact (such as in augmentation for term premature rupture of the membranes (PROM)), the oxytocin may need reduced following amniotomy.
- For parous women/pregnant people, it should be halved and re-escalated according to the above regimen.

6.5.3 *Epidural insertion*

- It is appropriate to reduce or stop the infusion to allow safe insertion of the epidural catheter if required.
- In this scenario, CEFM is vital.
- Once analgesia is effective, the standard oxytocin regimen should be recommenced at the previous dose and subsequently re-escalated as per the above guidance.

6.5.4 *Twin pregnancies*

- Labour and delivery of twin 1 should be managed as in a singleton pregnancy.
- If twin 2 has a longitudinal lie, cephalic presentation and satisfactory fetal monitoring, allow twin 2 to descend into the pelvis. Once engaged, amniotomy should be performed +/- a fetal scalp electrode (FSE) applied.
- If uterine activity is considered inadequate or infrequent, commence an oxytocin infusion as per the regimen above.
- Delivery should then proceed as per a singleton pregnancy.
- If the lie is not longitudinal, attempt correction to (ideally) a cephalic presentation or breech by external version.
- If cephalic, proceed as above.

- If breech and uterine activity has diminished, discuss with the consultant obstetrician regarding the use of a standard oxytocin regimen.
- If the woman/pregnant person is already receiving a standard oxytocin regimen infusion, double the current infusion rate.
- The above does not apply to higher order pregnancies and the intrapartum care for these women/pregnant people including use of oxytocin should be at the discretion of the consultant obstetrician.

6.6 *De-escalation of oxytocin*

- After delivery, the infusion should be reduced at 15-minute intervals in reverse order of the infusion rate in the table above.
- It may take up to one hour to discontinue oxytocin.

Section 7 – oxytocin use with previous caesarean birth

- Women/pregnant people should be informed of:
  - the two to three-fold increased risk of uterine rupture, and
  - the 1.5-fold increased risk of caesarean birth in induced/augmented labours compared with spontaneous labours.
- There should be serial cervical assessments, preferably by the same person, to ensure adequate cervical progress.
- A consultant obstetrician should make the following decisions in formulating a plan for the intrapartum care of someone aiming for VBAC:
  - decision to induce.
  - method of induction.
  - decision to augment with oxytocin.
  - time intervals for serial vaginal examinations.
  - selected parameters of progress that would necessitate discontinuing VBAC attempts.
- If oxytocin is required, a 'half-dose' oxytocin regimen should be used instead whilst still adhering to the recommendations in section 6 above.
- Dilute 5 international units of oxytocin in 500ml 0.9% NaCl (0.01 unit/ml) and escalate as per the following table:

Time after starting (mins)	Oxytocin dose at current rate (milliunits/min)	Infusion rate (ml/hr)
0	0.5	3
30	1	6
60	2	12
90	4	24
120	6	36
150	8	48
180	10	60
210	12	72
240	14	84
270	16	96

- The above half-dose oxytocin regimen should be prescribed.
- A VE should be performed by the designated midwife four hours after commencing an oxytocin infusion.
- If there has been no evidence of progressive cervical dilatation, further management should be discussed with a consultant obstetrician.
- If there has been some change, but not sufficient enough to confirm adequate progress, further management should be discussed with the consultant obstetrician.
- If labour progress is demonstrated, the above regimen should be continued and titrated against uterine activity.
- It may be possible to reduce the infusion rate further, particularly if the woman/pregnant person laboured in their previous pregnancy.
- The use of a half-dose oxytocin regimen in women/pregnant people with a previous caesarean birth in spontaneous labour is a consultant obstetrician decision only and each case should be tailored to the individual patient/situation.
- The use of a half-dose oxytocin regimen in someone with two or more previous caesarean births is a consultant obstetrician decision and should be tailored to the individual patient/situation.

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Clinical governance

Lead author:	N Kent
Current responsible author:	G Buchanan
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