Government of Western Australia
North Metropolitan Health Service
Women and Newborn Health Service

OBSTETRICS AND GYNAECOLOGY
CLINICAL PRACTICE GUIDELINE

Caesarean birth

Scope (Staff):	WNHS Obstetrics and Gynaecology Directorate staff
Scope (Area):	Obstetrics and Gynaecology Directorate clinical areas at KEMH, OPH and home visiting (e.g. Visiting Midwifery Services, Community Midwifery Program and Midwifery Group Practice)

This document should be read in conjunction with this Disclaimer

Contents

Elective caesarean

Key points

1. All women booked for an elective Caesarean section (CS) will attend the Pre-admission Clinic unless they are hospital in-patients. Refer to section below: 'Pre-Admission Clinic for Births by Elective CS.
2. **Initiatives to reduce unnecessary elective early births:** Birth before 39 weeks may have serious outcomes for the child.[1] The statement by the Australian Preterm Birth Prevention Alliance draws attention to recent research suggesting that "birth before 39 weeks of pregnancy may have important consequences in later life, including behavioural and learning problems in school aged children".[1]

Recommendations [2023]:

- The **timing of planned birth** should be delayed to 39^{+0} weeks or later, in women without additional risks.[1, 2]
- Individualise decisions through partnership between the pregnant woman and health care providers, considering risk of stillbirth against risk of harm in childhood.[1]

Pre-admission clinic for births by elective CS

Inclusion criteria

- All women who have been booked for an elective CS within 7 days of the Pre-Admission Clinic (PAC) date.

Exclusion criteria

- All women with a medical / obstetric reason which requires admission prior to day of surgery.
- Women who are currently inpatients.

Medical prerequisites for appointment

Antenatal Clinic Medical Officer has arranged that:

- Operating theatre is booked and the booking form has been completed.
- Caesarean section consent form (MR295) has been signed
- Pathology request forms are completed for pre-surgery investigations
- Medical admission assessment and medical records are completed
- Waitlist form is complete.

Assessment

Anaesthetist will ensure:

- anaesthetic assessment completed
- premedication ordered on MR810.05

Midwives will ensure:

- An antenatal assessment is performed to identify potential problems.
  - An abdominal palpation is performed by the midwife, and if unsure of position (or if the woman's only reason for elective caesarean is breech presentation and fetus is now cephalic), discuss with the PAC RMO, and the woman is sent to MFAU or scanned in clinic depending on the RMO in PAC.
- Completion of the Elective Caesarean Section Pre-Admission Checklist Pathway.
- Inclusion of relevant documentation as per the PAC checklist
  - Birth plan: Midwife to arrange any necessary further discussion of extra-ordinary birth plan requests with appropriate professional.
- Email is sent to KEMH Midwifery Nurse Managers (including Hospital Clinical Managers), Language Services and DSU Clerks with a list of all women that attended, clinic, date of surgery, reason(s) for caesarean, gestation, language spoken if not English, if complex care, and including weight or BMI.
- Interpreters are booked for DSU as required

Midwife has explained:

- fasting guidelines
- the woman is to ring Day Surgery Unit (DSU) the evening prior to the day of CS to confirm the admission and fasting times
- procedure during admission and what to expect in theatre
- discharge planning, including length of stay and Visiting Midwifery Service
- Enhanced recovery after surgery (ERAS) principles (e.g. encourage mobilisation, eating and drinking as soon as possible)
- rooming-in policy and visiting hours
- physiotherapy guidelines and benefits of mobilisation
- use of Graduated Compression Stockings (TED) anti-embolism stockings
- pain relief options
- options for / importance of
  - skin-to-skin contact with newborn as soon as possible
  - early breastfeed (in PACU)
  - limited separation of mother and baby
- vitamin K administration
- Allied Health referrals if required
- blood testing required within 6 days of surgery date

Phlebotomist has taken blood for (or woman given pathology form to have blood taken at a Path west in advance of (but within 6 days of) caesarean date):

- full blood picture, and group and hold
- If required: Antibodies (if required) and other (as requested).

Admission for Caesarean: Procedure

1. Admit the woman as per a routine antenatal admission.
2. The woman is to fast as per fasting guidelines. Refer to Clinical Guideline, Anaesthesia: **Preoperative**: 'Fasting guidelines: Elective gynaecological/ oncology and caesarean birth patients' (available to WA Health employees through HealthPoint)
3. Ensure the woman's details are correct on the identification (ID) name bands and apply one to the woman's wrist and one to her ankle.
4. Check that relevant investigations have been carried out and results recorded e.g.
    - Routine antenatal screening tests
    - Blood group and cross matching
    - Full blood count
    - Coagulation screen
5. Ensure consent forms for Caesarean section (MR295) and epidural analgesia/anaesthesia (MR295.50) are completed.
6. Use electric hair clippers to remove excess pubic hair only as required for the incision.

    To minimise the risk of supine hypotension place a wedge under woman's right side lower back and right buttock until the procedure is completed and she can reposition.
7. Remove all nail varnish and jewellery including all studs in nose, tongue, naval and other body parts. Tape wedding ring in place.
8. Complete all elements of the Preoperative Perioperative Checklist (MR290)
9. The woman is to shower and dress in a hospital gown fastened at the back. Ensure all underwear is removed. Most elective C/S are booked to DSU and would come in showered. DSU staff are to clean the woman's abdomen with two Antiseptic body cleansing washcloths (2% Chlorhexidine Gluconate) prior to putting on theatre gown.
10. Measure and fit Graduated Compression Stockings (GCS) according to the manufacturer's instructions. See Clinical Guideline, O&G: Venous Thromboembolism (VTE) Prevention and Management: 'Prophylaxis after Caesarean Birth'
11. Administer pre-operative medication as prescribed by the anaesthetist.
12. Accompany the woman and her support person to the theatre check in bay. See section: Transfer to Operating Theatre.
13. The FHR should be auscultated and recorded following the insertion of the regional block (epidural, spinal or combined) in the anaesthetic room. **[OCOMC recommendation Feb 2019]**

Elective Caesarean birth at OPH

For processes specific to OPH, refer to Caesarean Section - Elective (OPH)

Non-elective Caesarean

Key points

1. Each case shall be managed according to the clinical evidence of urgency, with every single case being considered on its merits.[3]
2. It is recommended that the four grade classification of urgency system (decision to delivery interval (DDI)) for caesarean birth be used.[3]

Categories:

Category 1: Urgent threat to the life or the health of the woman or fetus.
KEMH Optimal timeframe – within 30 minutes.

Category 2: Maternal or fetal compromise but not immediately life-threatening.
KEMH Optimal timeframe – within 60 minutes.

Category 3: Needing earlier than planned delivery but without currently evident maternal or fetal compromise

Category 4: At a time acceptable to both the woman and the caesarean section team, understanding that this can be affected by a number of factors.[3]

Note- At WNHS optimal DDIs time frames are included for categories where there is maternal or fetal compromise, though it is recognised that RANZCOG encourage categories individualised to assessment of urgency rather than focus on specific time constraints.

Procedure

1. It is the responsibility of the obstetric doctor booking the case to ensure all of the following people have been informed:
   a) Theatre coordinator (page 3316)
   b) Duty anaesthetist (page 3225)
   c) Neonatal Registrar (page 3249)
   d) Labour & Birth Suite (LBS) midwife coordinator (page 3313), this includes if woman is going to theatre from the ward.

   If a code blue caesarean has been called, all these people will automatically be informed and staff can handover face-to face in theatre.

   Note: Sufficient clinical information should be provided to the neonatal staff to allow them to summon help if they are busy elsewhere. Do not wait until in theatre to inform the paediatricians who may be busy elsewhere in the hospital.

   Do not start a CS without the paediatric staff in theatre, unless there is an urgent maternal or fetal indication for delivery.

2. Commence documentation of the MR290 Preoperative Perioperative Checklist.

   NB As a minimum the following **must be recorded** on the MR 290 for **all** Code Blue and category 1 CS:

   - ID labels correct; ID Band x 2 correct

- Group and Hold and date
- Operation consent obtained
- Allergies

3. If possible, the woman is to fast as per fasting guidelines. See Clinical Guidelines Anaesthesia: Preoperative: Fasting guidelines (via HealthPoint intranet access).
4. Ensure intravenous (IV) access and take blood for a full blood picture and cross matching or group and hold.
5. The midwife caring for the woman notifies the LBS midwife coordinator (page 3313) who will contact:
    - Midwifery / Nursing Hospital Clinical Manager (page 3333)
    - Special Care Nursery
    - Support persons as requested by the woman/midwife
6. Ensure the woman's details are correct on the identification band and apply one to the woman's wrist and one to her ankle.
7. Ensure the consent forms for Caesarean section (MR295) and epidural analgesia / anaesthesia (MR295.50) are completed.
8. Administer pre-operative medication as ordered by the obstetric and / or anaesthetic Registrar. See section below: Gastric aspiration prevention in obstetrics
9. If time permits:
    - Measure and fit Graduated Compression Stockings according to the manufacturer's instructions. See WNHS OGD guideline VTE- 'Mechanical and non-pharmacological prophylaxis'.
    - Use electric hair clippers to remove excess pubic hair only as required for the incision just prior to surgery.[4]
    - Insert an indwelling catheter if one is not already in situ.
    - To minimise the risk of supine hypotension place a wedge under the woman's right side lower back and right buttock until the procedure is completed and she can change position.
    - Clean the woman's abdomen with two Antiseptic body cleansing washcloths (2% Chlorhexidine Gluconate) prior to putting on theatre gown.
10. Remove all nail varnish and jewellery including all studs in nose, tongue, navel and other body parts. Tape wedding ring in place.
11. Accompany the woman and her support person to theatre. See section: Transfer to the Operating Theatre.

Non-elective Caesarean at OPH

For processes specific to OPH, refer to Caesarean Section - Non Elective (OPH)

Gastric aspiration prevention in obstetrics

Management

For elective caesarean / surgery fasting requirements: see WNHS Clinical Guideline: Anaesthesia and Pain Medicine: 'Preoperative Management: Anaesthetic Consultation, Investigation and Fasting' guideline; section 'Elective gynaecological/ oncology and caesarean birth patients' (available to WA Health employees through HealthPoint).

All usual anti-reflux medications should be continued throughout the peri-operative period, including when in labour and when fasting.

Women with gastric bands should have these deflated well in advance of planned surgery.

Elective caesarean and elective surgery during pregnancy

- Famotidine 40mg orally at least one hour pre-operatively on the day of surgery.

Women in labour considered at high risk of requiring operative birth

- Consider famotidine 40mg orally 12 hourly for high risk cases **as selected by the anaesthetist** in consultation with obstetric staff.

Emergency operations

- IV Famotidine- refer to adult monograph for dosing.

  If IV Famotidine unavailable, consider using IV Pantoprazole 40mg as an alternative.
- Metoclopramide 10mg IV as soon as possible after notification.
- 30mL of SODIUM CITRATE mixture orally (0.3 molar solution) shall be given when the woman is on the operating table and immediately prior to induction of general anaesthesia.

References [5-9]

Transfer to the operating theatre

Key points

1. All women will be transferred to the theatre holding bay by a midwife and an orderly / Patient Care Assistant (PCA).
2. All women shall be transferred to the holding bay by a wheelchair, trolley or bed as appropriate.
3. Women walk to holding bay if appropriate and then transferred onto trolley
4. All women shall be covered with a blanket for warmth and dignity.
5. All personal belongings shall be bagged, labelled and given to the family, left in the woman's room or secured in a locker by unit nursing / midwifery staff.

Procedure

1. The anaesthetic nurse / technician will inform DSU / Ward staff when theatre is ready to receive the woman.
2. Escort the woman and her support person to theatre 'holding bay'. Support person must be wearing appropriate foot attire.
3. Ensure that these all go to theatre with the woman:
    - the woman's medical records,
    - a labelled blue "Patient's Belongings" bag and
    - a pillow and blanket
4. Hand over the care of the woman to theatre staff and CS midwife. The woman is then escorted into the anaesthetic room by theatre staff before being assisted onto a trolley. A wedge is placed for left tilted or the woman is sitting upright in the trolley.
5. **Transfer of care to theatre staff**

5.1 Transfer of care will occur at "holding bay". Hand over to the:

- Receiving nurse and / or technician. See Perioperative guideline: Perioperative Patient Process (available to WA Health employees through HealthPoint)
- For transfers from the ward to theatre, handover to the CS Midwife. See Clinical Handover guideline for 'Inpatient on ward going to theatre for Caesarean'.

5.2 Check the woman's identification with receiving nurse or technician.

Infection prevention

Abdominal preparation

See Infection Prevention and Management policy: Prevention of Surgical Site Infections for preoperative, intraoperative and postoperative measures.

Vaginal preparation

Vaginal preparation before Caesarean birth has been shown to reduce the risk of endometritis[10-12], postoperative fever and postoperative wound infection.[13-15]

- Perform vaginal preparation with aqueous chlorhexidine acetate 0.015% cetrimide 0.15% (yellow, non-alcoholic) before Caesarean birth, except in code blue cases, women with actively bleeding placenta praevia, or where there are other contraindications to chlorhexidine use.
- See 'Vaginal Preparation: Pre-caesarean [procedure]' (available through HealthPoint to WA Health staff)

Uterine tone at caesarean- pharmacological management

Quick reference guide

Quick Reference Guide

Oxytocin

- **Bolus Doses**
  - Elective caesarean birth: 1-2 units bolus followed by infusion
  - Non elective caesarean birth: 3 units bolus followed by infusion
  - Women considered at higher risk of uterine atony: 3 units bolus followed by infusion
- **Standard IV infusion**
  40 units of oxytocin diluted into 500 mL of normal 0.9% sodium chloride
  - Normal starting rate: 125 mL/h (10 units/h)
  - High starting rate: 250 mL/h (20 units/h)
- **Low volume IV infusion**
  Dilute 40 units of oxytocin into a total volume of 50 mL with normal 0.9% sodium chloride. This requires administration via a dedicated syringe driver.
  - Normal starting rate: 12.5 mL/h (10 units/h)
  - High starting rate: 25 mL/h (20 units/h)

Carbetocin

- A single IV dose of 100 microg administered slowly post-birth.
- In women who do not respond to a single dose of Carbetocin, further bolus dosing is not recommended and alternative uterotonic agents should be utilised.

Ergometrine

- 250 to 500 microg IM or 250 microg IV (caution with IV, only use in life threatening circumstances)

Prostaglandin f2 alpha (Carboprost)

- First dose may be given outside of the operating theatre; The requirement for additional doses is an indication for a Category 1 transfer to the operating theatre.
- The dose is 250 microg IM. This may be repeated every 15 minutes up to a maximum of 2 mg (8 doses).

Glyceryl trinitrate (Uterine relaxant)

- 1 – 2 sprays (400 - 800 microg) administered as spray droplets beneath the tongue (do not inhale). Repeat after 5 minutes if hypertonus sustained
- IV; **The standard IV preparation of GTN requires careful dilution in preparation for administration.**
  - **Dilution*:*** Inject 1mL of a 50mg ampoule (5mg) into 100mL Sodium Chloride 0.9% (concentration is 50microg/mL) and withdraw 20mL. A standard dose would be 1-2mL (50-100microg).

Oxytocin[16]

Indications

An oxytocin infusion should be considered routine in all women undergoing a caesarean birth at WNHS, unless carbetocin is used as the primary agent. The main caveat is that in women undergoing a planned caesarean hysterectomy for placental abnormalities in which the placenta will be left in situ, the obstetrician may not want a uterotonic administered to avoid placental separation.

Precautions and contraindications

- As even small amounts of oxytocin may cause significant uterine contraction, the bolus dose of oxytocin should not be drawn up until after the birth of the neonate(s). Infusions must not be connected until after the birth of the neonate (or the final neonate in the case of multiple gestations).
- Oxytocin, particularly when administered as a bolus, may cause significant peripheral vasodilatation and tachycardia. This may not be well tolerated in women with significant cardiac disease/fixed cardiac output lesions.

Side effects

- Hypotension
- Tachycardia and myocardial ischemia
- Arrhythmias
- Nausea and vomiting
- Headache and flushing
- Hyponatraemia
- Seizures and coma

Infusion preparation

- **Standard IV infusion**

  40 units of oxytocin diluted into 500 mL of 0.9% sodium chloride

  - Normal starting rate: 125 mL/h (10 units/h)
  - High starting rate: 250 mL/h (20 units/h)

- **Low volume IV infusion**

  When excessive fluid administration is of concern (e.g. pre-eclampsia) consideration may be given to diluting 40 units of oxytocin into a total volume of 50 mL with 0.9% sodium chloride. This requires administration via a dedicated syringe driver.

  - Normal starting rate: 12.5 mL/h (10 units/h)
  - High starting rate: 25 mL/h (20 units/h)

Suggested dosing

It is recommended that the oxytocin bolus solution is not prepared prior to birth of the neonate, to avoid accidental administration prior to birth.

Oxytocin bolus doses should be given slowly IV (preferably over 1 minute). If there is an inadequate response to the initial dose this may be repeated after 3-5 minutes.

- Elective caesarean birth: 1-2 units bolus followed by infusion
- Non elective caesarean birth: 3 units bolus followed by infusion
- Women considered at higher risk of uterine atony (see risk factors within PPH guideline): 3 units bolus followed by infusion
- Omission of bolus doses should be considered in women at increased risk of cardiovascular compromise- e.g. severe ongoing haemorrhage or underlying cardiac disease
- Management of Oxytocin infusion is to be discussed with the Obstetric Surgeon at the sign out step at the end of surgery.

Weaning of oxytocin infusions

- Weaning should be as per Clinical Guideline Therapeutic and Prophylactic Oxytocin Infusion regimes

Prescribing of additional bags of oxytocin

Some women may require additional bags of oxytocin to be prescribed. These women are generally women who have a PPH or are at increased risk of PPH.

The requirement for an additional bag to be charted should serve as a prompt for clinical obstetric review. The anaesthetic team are not to take primary responsibility for charting additional bags of oxytocin.

Carbetocin (Duratocin™) [17]

Onset and duration of action

Carbetocin is a synthetic octapeptide analogue of oxytocin. Compared with oxytocin it has a prolonged duration of action. It has an onset time of less than 2 minutes after IV administration with a total duration of action of approximately 1 hour.

Precautions and contraindications

Carbetocin should be used with extreme caution in women with a history of coronary artery disease.

Side effects

The side effect profile is similar to oxytocin and includes: tachycardia, hypotension, nausea, vomiting, flushing, pruritus, abdominal pain, headache, tremor, hyponatraemia, water intoxication.

Suggested administration

A single IV dose of 100 microg administered slowly after birth.

In women who do not respond to a single dose of carbetocin, further bolus dosing is not recommended and alternative uterotonic agents should be utilised.

Ergometrine

Precautions and contraindications

Ergometrine can produce intense vasoconstriction which can cause an elevated blood pressure and central venous pressure. It is relatively contra-indicated in pre-eclampsia as exaggerated hypertensive effects may be seen. In addition, it is also relatively contra-indicated in women with hypertension, sepsis and in women with peripheral vascular disease. It has been associated with clinical exacerbations of porphyria.

Some women may not respond to ergometrine if they are hypocalcaemic. Cautious IV calcium replacement may be required for optimal efficacy.

Side effects

There are a large number of potential side effects and adverse effects with Ergometrine. These include:

- Hypertension
- Nausea, vomiting and diarrhoea
- Headache
- Abdominal pain
- Coronary artery and peripheral vasospasm with chest pain and palpitations
- Dyspnoea

Suggested administration

- Prophylaxis for PPH:
  - 250 to 500 microg intramuscular (IM) after complete birth of the placenta
- Emergency management of uterine atony / PPH:
  - 250 to 500 microg IM
  - 250 microg may be given slowly IV over at least 1 minute (note this route is more likely to cause hypertension and nausea and vomiting)

Prostaglandin F2alpha (Carboprost)

Refer to the WNHS Pharmacy Monograph: Carboprost for administration information.

Background

It is important to note that there are two major formulations of PGF2a available throughout the world, Dinoprost and Carboprost. Carboprost has replaced Dinoprost for use at KEMH. Carboprost is given via the intra-muscular (IM) route (Dinoprost is administered directly into the myometrium).

PGF2a is an established second line agent in the management of postpartum haemorrhage. It is a potent contractor of smooth muscle which is metabolised in the lungs. Large bolus administration may cause systemic effects if the metabolic pathways in the lungs are overloaded.

Indication

- Second line agent in the management of PPH.

Precautions and contraindications

The first dose of PGF2a may be administered outside of the operating theatre, however if a second dose is required this is an indication for a Category 1 transfer to theatre. This ensures a controlled environment with IV access, resuscitation equipment and respiratory and cardiac monitoring in place.

Side effects

- Bronchospasm, pulmonary oedema and hypoxia – use with caution in asthmatics
- Acute hypertension, arrhythmias
- Abdominal cramps, diarrhoea and vomiting
- Flushing, shivering and headache

Suggested administration

The recommended dose is 250 microg given IM.

This can be repeated every 15 minutes up to a maximum dose of 2 mg (i.e. 8 doses).

Glyceryl Trinitrate (GTN)[18]

Background

The principal pharmacological action of glyceryl trinitrate is relaxation of smooth muscle. It causes relaxation of the uterus (tocolysis) as well as producing a vasodilator effect on both peripheral arteries and veins, with more prominent effects on the latter. GTN may be administered by the IV or sublingual route. The systematic availability of sublingual

GTN is approximately 39%. Therapeutic effect is seen within 1-2 minutes of administration independent of the route and the therapeutic effect lasts 3 to 5 minutes.

Indications

Situations when uterine relaxation may be necessary during caesarean birth include:

- Fetal malpresentation
- inadvertent oxytocics overdose prior to birth
- uterine constriction ring

Precautions and contraindications

GTN may cause hypotension and tachycardia and should be avoided in the following situations:

- Acute circulatory failure (shock, circulatory collapse)
- Cardiac disease
- Pronounced hypotension (systolic BP < 90 mm Hg)

Side effects such as hypotension can be managed by the administration of vasoactive medications such as ephedrine, metaraminol or phenylyephrine by the anaesthetist.

Side effects

Due to the vasodilating effects of GTN the following side effects may occur: Headache, hypotension, reflex tachycardia or bradycardia, and rarely nausea, vomiting, flushing.

Suggested administration

- **Sublingual via metered pump spray:**
  - **Nitro-lingual pump spray should be primed before using it for the first time by pressing the nozzle five times.**
  - 1 – 2 sprays (400 - 800 microg) administered as spray droplets beneath the tongue (do not inhale).
  - Repeat after 5 minutes if hyper tonus is sustained.
- **IV:**
  - **The standard IV preparation of GTN requires careful dilution in preparation for administration.**
  - **Dilution*:*** Inject 1mL of a 50mg ampoule (5mg) into 100mL Sodium Chloride 0.9% (concentration is 50microg/mL) and withdraw 20mL. A standard dose would be 1-2mL (50-100microg).

See also WNHS Obstetrics and Gynaecology (Restricted Area Guideline): Postpartum Complications: Primary Postpartum Haemorrhage (WA Health employee access through HealthPoint)

Transfer from the operating theatre

Key points

1. Two persons, one of whom is a Midwife / Student Midwife, shall accompany the woman from the Post Anaesthetic Care Unit (PACU) to the ward. When possible two orderlies shall facilitate the bed move.
2. Equipment for resuscitation shall be available during all transfers, at a minimum, oxygen and suction.
3. The baby may be transferred with the mother on the bed in the mother's arms to PACU and the ward.
4. If the nurse/ midwife is transferring the baby alone, the baby shall be transported in a transport cot
5. The receiving midwife shall ensure the woman and her baby can adequately maintain their airway and adequate ventilation, be physiologically stable, comfortable, normothermic and assessed as unlikely to develop immediate complications as per the PACU discharge criteria. See WNHS Perioperative guideline: Post Anaesthetic Care Unit (PACU)- Discharge Criteria (WA Health employee access through HealthPoint)
6. The woman and her baby shall be continuously observed during transfer.

Procedure

1. Prior to collecting the woman from PACU, the midwife shall ensure all bedside equipment has been checked and is working.
2. The receiving midwife shall obtain a verbal handover from the PACU staff member.
3. A minimum handover shall include:
    - The woman's name
    - The procedure performed- including any adverse events.
    - Relevant medical, surgical and psychosocial history (past and present) including allergies.
    - Post procedure instructions / parameters.
    - Observations.
    - All medications administered.
    - Pain management plan.
    - Wound status.
    - Invasive access devices.
    - Fluids and medications infusing.

4. The receiving midwife shall visually check:
    - All wound sites and drains for type, patency and drainage volumes and ensure dressings are intact
    - All IV infusions (fluids and volumetric pumps delivering the infusions) shall be checked to ensure that they correspond to the written medical prescription with the PACU room nurse / midwife.
5. The receiving midwife shall:
    - Introduce themselves to the woman.
    - Ascertain the woman is able to respond to verbal stimuli.
    - Ensure that pain is adequately managed.
    - Ensure any post procedure nausea and vomiting is addressed and anti-emetics are prescribed.
    - Be satisfied that the woman is suitable for transfer to the clinical area as they have met the Recovery Area / PACU discharge criteria and are in a stable condition.
    - If the receiving midwife determines that the woman may not be suitable for transfer to the clinical area and concerns are not able to be addressed by the PACU nurse / midwife, they shall:
        - Contact the ward shift co-ordinator and request review by the clinical area Clinical Midwifery Consultant / Specialist or experienced Clinical / Registered Nurse / Midwife and / or the Anaesthetist on duty.

See also Perioperative Services guideline: Post Anaesthetic Care Unit (PACU)- Criteria for Discharge to the Ward (WA Health employee access via HealthPoint intranet).

Postoperative care

Preparation for admission of the post-operative woman

Equipment

- Continence sheet
- IV stand
- Jug of water / glass / straw
- Urine measuring jug
- Baby cot with: Baby linen and Child Health Record (purple book)

Room preparation

Check oxygen and suction

Procedure

1.	**Admitting the woman to her ward room**
1.1	Check the call bell is accessible, working, and demonstrate to the woman how to summon assistance.
1.2	Advise the woman to request assistance for position changes and breastfeeding as required.
1.3	Ensure minimum standards for falls prevention are in place (refer to poster in the room). • Refer to WNHS Clinical Guideline, Obstetrics and Gynaecology, 'Falls: Risk, Assessment and Management of Patient Falls'.
1.4	Refer women to their "Pregnancy, Birth and your Baby (PDF, 7.66MB)" information book (also available online), "Your Caesarean Birth and Recovery (PDF, 3.3MB)" and "Preparing to go home after the birth of your baby" checklist. The "when can baby and I go home" checklist is a criteria-led discharge checklist for women to complete, once all boxes are ticked they are able to see they are cleared for going home. This is one of the Enhanced Recovery After Surgery (ERAS) principles.
2	**Observations – vital signs**
2.1	Observations to be checked include: • Respiratory rate, oxygen saturations, heart rate and blood pressure, temperature and level of consciousness. Escalate all abnormal observations as determined by the Observation and Response Chart. • Wound / wound dressing and wound drainage (if any)

	• Vaginal loss • Urinary output • IV therapy • Pain score • Epidural site (if in situ) and dermatomes • Check for risk of pressure injuries and implement strategies to prevent pressure injuries. See WNHS Pressure Injury Policy • PIVAS- monitor IV sites. **Monitor PIVAS on all IV sites for their duration (max 72 hours) and for 48 hours post removal**
2.2	Frequency of post-caesarean observations: • ½ hourly for 2 hours • 1 hourly for 2 hours • 2 hourly for 2 hours • 4 hourly for 24 hours • **Note**: If the woman has been in ASCU, four hourly observations must continue for the initial 24 hours following transfer to the postnatal ward. • Three times daily unless maternal condition indicates more frequent observations are appropriate. • If these observations are not stable, or the woman has other risk factors or complications, more frequent observations and medical review are recommended[10] as per Postnatal Observation and Response Chart MR 285 and as per WNHS policy: Recognising and Responding to Acute Physiological (Clinical) Deterioration. • Other observations as per all births (e.g. breasts, legs, emotional wellbeing), see clinical pathway.
3	**Maternal comfort and assistance**
3.1	Assist the woman to position herself comfortably and assist with breastfeeding as required.
3.2	If the observations are within normal parameters after 2 hours, sponge the woman and assist her to change into her own attire.
4	**Nutrition and Fluids**
4.1	**Fluids**
	Encourage oral fluids as required unless contraindicated by medical condition. • Maternal hydration is a strategy to assist prevention of VTE[10]
	If the woman returns to the ward area with IVT, consider removing the IVT when the woman is able to tolerate oral fluids and diet. Note the amount of IV fluids the woman has already had and beware of fluid overload.

	For management of oxytocin infusion see Clinical Guideline, OGD, Postpartum Complications: PPH: 'Oxytocin: Prophylactic and Therapeutic Regimens' and section in this document: Uterine Tone at Caesarean Birth- Pharmacological Management Additional information: • The IV cannula shall be left in situ when using epidural analgesia. • Oxytocin is an anti-diuretic and urinary output will improve once this has been ceased. Increasing IV fluid intake based on concentrated urine output alone, can cause fluid overload and eventually pulmonary oedema.
4.2	**Diet**
	A full diet may commence as soon as the woman wishes unless contradicted by medical condition. • Early diet and fluids post CS does not cause complications, and some evidence suggests that it may speed bowel recovery.
5	**Pain Management**
5.1	Monitor the woman's pain score post-operatively by regular assessment. • A woman in pain will be less mobile, less likely to do deep breathing and leg exercises, which increases the risk of VTE.
5.2	Notify the Pain Team if the woman has inadequate analgesic cover or any sign of complications developing.
6	**Wound Care**
6.1	**Observation of the wound**
	CS wound care should include: • removing the dressing 48 hours after the CS. Note: See postoperative orders and Wound Care guideline for negative pressure wound therapy time period recommendations. • specific monitoring for fever[10] • encouraging the woman to wear loose, comfortable clothes and cotton underwear [10] • the woman gently cleaning and drying the wound daily[10] • if needed, planning the removal of sutures or clips[10] Assess the wound for: • Bleeding / discharge • Signs of infection e.g. increasing pain, redness or discharge [10] • Observe for signs of wound separation or dehiscence[10]
6.2	**Removal of the dressing**
	Wound care to be carried out using Aseptic Technique [4]

	All women will have dressings which are waterproof. Hydrocolloid dressings are preferred by some surgeons and are to be used only on subcuticular sutures (not over staples) and are to **remain in situ for 3-5 days** (according to manufacturer's instructions). **Non-adhesive pad dressings** are to remain in situ for at least 48 hours and should to be removed on day 3, unless otherwise ordered by medical staff. Wound dressing shall be removed post shower, using aseptic technique. An absorbent non- adhesive dressing pad shall be placed over the wound for ongoing protection and comfort for the woman. **Topical Negative Pressure Wound Therapy dressings**- see Wound Care guideline
6.3	**Removal of sutures/staples/drains** As per medical staff instructions. See Clinical Guideline, O&G, Wound Care
7	**Bladder management**
	See Bladder Management Clinical Guideline
8	**Education and prevention of complications** As per Postnatal Clinical pathway MR 249.60
8.1	**Prevention of thromboembolic disease**
	Refer to Clinical Guidelines, O&G, VTE: 'Thromboprophylaxis after Caesarean Birth' and check legs. Refer to these guidelines **before** removing an epidural for woman on pharmacological prophylaxis.
8.2	**Mobilisation**
	Encourage early mobilisation (within six hours of returning to the ward) or when the woman's sensation/movement returns by: • Assessing motor function (Bromage) prior to ambulation. See Anaesthesia and Pain Medicine guideline: Neuraxial Analgesia: section 'Assessment of Motor Function (Bromage)' • Sitting the woman out of bed as soon as maternal condition allows. • Advise the women to have a midwife present when she first decides to ambulate. • Check the woman's pressure areas on return to the ward to ensure there has been no compromise of skin integrity. The midwife should ensure adequate sensation is present if the woman has an epidural in situ, and be available should the woman feel faint or unsteady.
8.3	**Deep breathing exercises**
	Encourage deep breathing exercises.

	• A woman in pain is more likely to take shallow breaths, so adequate analgesia is required and support of the abdomen with a pillow is helpful.
8.4	**Graduated Compression Stockings**
	• Encourage the woman to wear GCS stockings until fully mobile • Check to ensure the stockings are correctly fitted and applied. The inability to achieve a correct fit is a contraindication to wearing them and the medical staff must be informed. • See Clinical Guideline, O&G: VTE: 'Mechanical and Non-pharmacological'
8.5	**Flowtrons**
	Consider using the Flowtron device if a woman is resting in bed and not mobilising after surgery.
9	**Documentation**
9.1	Complete Postnatal Clinical Pathway MR 249.60 including appropriate care plan for 0-6 hours post birth and thereafter. Complete the information on the top of page 10 (booking BP, last observations, wound/dressing information) Additional information: Discharge planning commences on admission and aids in timely discharge from hospital.
9.2	Complete VTE assessment. If woman is at risk of developing VTE, ensure sticker for GCS stockings is placed in the medication chart MR 810.05.
10	**Discharge planning**
10.1	Discussion by medical and midwifery staff shall include: • Routine postnatal care as provided to all postnatal women • Ensuring the woman has a clear understanding of the reason for the caesarean. • The impact of CS surgery for future pregnancies • Resumption of normal activities e.g. driving, lifting, sexual relations • Signs of infections or complications after discharge from hospital. • Medical follow-up with the GP • Exercise and prevention of VTE • Pressure areas are to be checked prior to discharge and their condition noted in the woman's medical notes. • Commence on admission, discharge considerations and planning within Postnatal Clinical pathway MR 249.60. This section is to be completed by the midwife discharging the woman from hospital. Additional information: • Avoid activities that include heavy lifting or carrying for up to 6 weeks after surgery. It is traditionally advised to avoid driving for 4-6 weeks, but women may find their pain is no longer an impediment earlier than this

	and may contact their insurance company for individual advice.[19] • Discharge planning commences on admission and aids in timely discharge from hospital.
10.2	**Timing of discharge**
	In keeping with the ERAS principles, women can be discharged as early as 24 hours post CS (if medically cleared). A woman may be transferred home (with follow-up at home) after 24 hours post CS, if she is afebrile, recovering well and has no post-surgery complications.[10] Additional information: • This should be explained to the woman at the time of admission. • A reason for variation from normal length of stay is to be documented. Variances box are to be ticked if relevant.

12	**Care of the woman in the home after a Caesarean birth by Visiting Midwifery Service (VMS)**
12.1	**Observations – vital signs-** as per sections within Postnatal Clinical Pathway, including checking: • Epidural site • Peripheral IV sites. Monitor PIVAS for 48 hours post removal.
12.2	**Maternal comfort and assistance**- Assist with breastfeeding as required
12.3	**Nutrition and fluids**
	Fluids- Encourage oral fluids as required. **Diet** A full diet is recommended unless contradicted by medical condition. • Maintaining a healthy diet high in vitamins and minerals is paramount in wound healing.
12.4	**Pain management**
	Assess pain score, ensure adequate analgesia available and encourage the use of analgesia as prescribed/required. Utilise pain score scale 0-10.
12.5	**Wound care**
	Observation of the wound- as per point 6 above and see top of VMS section in the Postnatal Clinical Pathway. If there are abnormal signs of bleeding, discharge or signs of infection, refer to birth hospital (KEMH Emergency Centre, WNHS at OPH Maternity Assessment Unit) or GP. **Removal of dressing/sutures/staples/drains** as per section 6 (Wound Care) above and relevant section of the Postnatal Clinical Pathway. Note: If instructions not documented on Postnatal Pathway, check Stork print

	out 'Visiting Midwifery Summary'. If not documented, contact discharging ward.
12.6	**Bladder management**
	If the woman has bladder function problems following removal of the IDC, notify the Emergency Centre at KEMH as she may require a referral to the Urology clinic at KEMH or her GP. Additional information: • Women are advised to notify the midwifery staff if they experience any pain or difficulties voiding. • Women with urinary symptoms should be assessed for urinary tract infections, stress incontinence and urinary tract injury.
12.7	**Education and prevention of complications**
	Prevention of thromboembolic disease Refer to guideline, OGD: VTE: 'Prophylaxis after Caesarean Birth'. Check legs as per routine birth observations. Graduated Compression Stockings as per section 8.4
	Postnatal education - as per section 10 above. • As stipulated in the Postnatal Clinical Pathway • Pressure areas if noted on discharge are to be checked and their condition noted in the woman's medical notes.
	Clinical care- as per pages in the Postnatal Clinical Pathway

Caesarean related guidelines

Roles of staff attending caesarean birth

See WNHS Perioperative guideline: Caesarean Section: Roles of Staff Attending (available to WA Health staff via HealthPoint)

Thromboprophylaxis after caesarean birth

See guideline, O&G: Venous Thromboembolism: Prevention and Management: 'Prophylaxis: After Caesarean Birth'

Wound care

See guideline, O&G: Wound Care

References and resources

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Related legislation, policies and guidelines

Department of Health:

- Consent policy and procedure (effective from March 2023)
- MP 0095 - Clinical Handover Policy

NMHS (available to WA Health staff through HealthPoint):

- NMHS Consent to Treatment [Policy placecard]
- NMHS Falls Risk Management Policy

Related WNHS policies, procedures and guidelines
(available to WA Health staff through HealthPoint):

Anaesthesia and Pain Medicine Guidelines:

- Preoperative Management: Consultation, Investigation and Fasting (section 'Fasting guidelines: Elective Gynaecological / Oncology and Caesarean Birth Patients'

Infection Prevention and Management manual:

- Aseptic Technique

Obstetrics and Gynaecology:

- Acute Deterioration (Adult): Resuscitation and Life Support
- Falls: Risk Assessment and Management of Patient Falls
- Infections (Obstetrics and Gynaecological): Antibiotic Prophylaxis for Caesarean Section
- Labour and Birth: Planned Birth Timing (indications and gestations for booking inductions and Caesareans)
- Postpartum Complications- Primary Postpartum Haemorrhage (access via HealthPoint: Restricted Area Guidelines)
- Venous Thromboembolism (VTE): Prevention and Management (prophylaxis after Caesarean birth)
- Wound Care

Perioperative Services:

- Perioperative Patient Process (admission to Theatre)
- Post Anaesthetic Care Unit PACU (criteria for discharge to the ward)
- Caesarean Section: Roles of Staff Attending

WNHS policies:

- Recognising and Responding to Acute Physiological Clinical Deterioration (Physiological and Mental Health)
- Discharge Policy
- Pressure Injury and Prevention Management

Useful resources and related forms

Forms:

MR 249.60	Postnatal Clinical Pathway (OPH Caesarean Birth Clinical Pathway (OPH) 73T)
MR 285	Postnatal Observation and Response Chart
MR 290	Preoperative Perioperative Checklist
MR 290.01	Scheduled Caesarean Section Birth Plan
MR 295	Generic Consent Form
MR 295.50	Patient Consent to Anaesthesia (General or Regional)
MR 310	Caesarean Section (operative information)
MR 325.01	Handover to Recovery / Ward Caesarean Section
MR 325.03	24-Hour-Post Caesarean Assessment
MR 810.02	Postoperative Nausea and Vomiting Chart
MR 810.05	WA Hospital Medication Chart- Short Stay

Keywords:	pre-admission, PAC, ELUSCS, caesarean, elective caesarean, booked caesarean, pre-operative, admission, NELUSCS, caesarean birth, caesarean category, pre-caesarean checklist, non-elective caesarean, emergency caesarean, operating theatre, OT, transfer to holding bay, recovery room discharge, transfer to the ward, collecting a patient after surgery, PACU, recovery handover, PACU handover, post-operative, observations, wound, wound dressing, pain management, bladder management, mobilisation, discharge planning, VMS, flowtron, thromboprophylaxis, postnatal education, dressing removal, staple removal, caesarean birth clinical pathway, ERAS, gastric reflux, metoclopramide, sodium citrate, fasting, gastric aspiration, general anaesthesia, elective surgery, emergency operation, prevention of regurgitation, peri-operative, postpartum haemorrhage, PPH, oxytocin, carbetocin, ergometrine, misoprostol, carboprost, GTN		
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NSQHS Standards (v2) applicable:	☒ 1: Clinical Governance ☐ 2: Partnering with Consumers ☐ 3: Preventing and Controlling Healthcare Associated Infection ☒ 4: Medication Safety	☒ 5: Comprehensive Care ☒ 6: Communicating for Safety ☐ 7: Blood Management ☒ 8: Recognising and Responding to Acute Deterioration	
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Version history

Version number	Date	Summary
1	Feb 2019	First version. **History**: Eight caesarean section guidelines (dated from Sept 2001) were amalgamated into one document. Contact OGD Guideline Coordinator for archived versions. 1. Pre admission clinic for birth by elective Caesarean Section (dated Feb 2018) 2. Elective Caesarean Section (dated Sept 2013) 3. Non-elective Caesarean Section (date amended Feb 2015) 4. Transfer to theatre (date amended Dec 2015) 5. Transfer from theatre (dated Oct 2014) 6. Caesarean Section Postoperative Care (dated Feb 2018) 7. Uterine Tone at Caesarean Birth (dated July 2018) 8. Prevention of gastric aspiration (date endorsed Nov 2017)
1.1	July 2019	Minor amendment- Updated hyperlinks
2	April 2021	• Gastric aspiration- Ranitidine no longer available. Famotidine added- see guideline and pharmacy medication monograph for dosage. • Uterine tone at caesarean- ➢ Oxytocin bolus- changed from 2 units to 1-2 units ➢ Ergometrine- (caution with IV, only use in life threatening circumstances)
3	Sept 2022	• Gastric aspiration- If IV Famotidine unavailable, consider using IV Pantoprazole • Perform vaginal preparation with aqueous chlorhexidine acetate 0.015% cetrimide 0.15% (yellow, non-alcoholic) before Caesarean birth to reduce the risk of endometritis, postoperative fever and postoperative wound infection; Except in code blue cases, women with actively bleeding placenta praevia, or where

		there are other contraindications to chlorhexidine use. Added link to perioperative procedure. • Preoperative- Added link for handover from ward to LBS • Ergometrine amended dosage • A combined 'Postnatal pathway' MR form has replaced the Caesarean birth and vaginal birth pathways
4	Dec 2022	• Amendment- Added if time permits for non-elective CS- clean abdomen with two antiseptic washcloths
5	Aug 2023	Amendments- • Elective / Planned Caesarean chapter: Statements and recommendation relating to prevention of preterm birth added. The timing of planned birth should be delayed to 39^{+0} weeks or later, in women without additional risks. Individualise decisions through partnership between the pregnant woman and health care providers, considering risk of stillbirth against risk of harm in childhood. Added link to new 'Labour and Birth: Planned Birth Timing guideline' for common indications of planned birth and recommended gestations. • Uterine tone chapter links to PPH guideline for PPH risk list

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