National Caesarean Section Guideline

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CONTENTS

FOREWORD

Improving the quality of maternal health is a key priority under the Ministry of Health's 13th Five-Year Plan, which places strong emphasis on the provision of quality maternal and child health. Over the years, the Ministry has made significant progress in reducing maternal and newborn deaths, supported by strong systems that provide essential and emergency obstetric services across the country. Among these, cesarean sections have been crucial in improving access to obstetric care and ensuring the safety of mothers and babies when vaginal delivery is not safe.

According to the National Health Survey (2023), Bhutan's cesarean section rate stands at 29.3%, significantly exceeding the WHO's recommended threshold of 10–15%. This highlights the need for more judicious use and rationalization of the procedure. When not medically justified, cesarean deliveries may result in unnecessary risks for mothers and their newborns.

This National Caesarean Section Guideline provides a timely, evidence-based, and standardized approach to ensuring cesarean sections are performed only when medically justified. It prioritizes women's informed participation in birth planning and promotes safe vaginal delivery whenever possible. Furthermore, the adoption of Robson's Classification for monitoring will support meaningful clinical audits and help improve institutional practices.

We are confident that this guideline will enhance the quality, safety, and integrity of obstetric care in Bhutan. It reflects our shared vision, where every woman, regardless of the location or background, receives respectful, safe, and appropriate maternal health services.

I commend all professionals who contributed to the development of this guideline and urge every health worker to apply it in practice with diligence and compassion.

(Karma Jamtsho)
Director
Department of Public Health

I. INTRODUCTION

1.1 Background

The National Health Policy emphasizes provision of quality, comprehensive maternal and child health (MCH) care. Accordingly, maternal and child health is a key focus area in the Health Ministry's 13th Five-Year Plan (FYP). Improving MCH outcomes remains a top priority for the Ministry of Health. Consistent government commitment and policy support have led to significant achievements, as evidenced by the reduction in the Maternal Mortality Rate (MMR) from 225 per 100,000 live births in 2005 to 53 per 100,000 in 2023 and the decline in the Neonatal Mortality Rate (NMR) from 21 per 1000 live births in 2012 to 6.9 per 1000 live births in 2023.

The strategic placement of obstetricians and gynecologists across the country has significantly improved access to specialized care, ensuring that women from all backgrounds can receive the necessary services. One of the interventions to enhance obstetric care was the introduction of cesarean sections (CS) as a component of Comprehensive Emergency Obstetric and Neonatal Care [CEmONC]. According to the National Health Survey (2023), the CS rate in the country has reached 29%, surpassing the WHO recommended threshold of 10-15%. The increasing rate of CS in Bhutan has become a significant concern. Contributing factors include maternal requests for convenience, fear of labor pain, rising maternal age with associated health conditions, fear of legal repercussions among healthcare providers, and institutional practices. To address this, targeted strategies such as educational interventions for women, adherence to evidence-based clinical guidelines, and regular clinical audits of CS practices are essential to ensure that CS are performed only when medically necessary.

1.2 Rationale

While Cesarean section is a critical and life-saving procedure in cases of obstetric and medical indications, their overuse can result in unnecessary risks to both mothers and newborns, as well as an

increased strain on healthcare resources. The rising CS rates call for national guidelines to rationalize and standardize the procedure. A standardized classification system is essential, particularly in hospitals, for reliable comparison of C-section rates and outcomes. The Robson Classification system (the "10 groups") addresses issues in current classifications by being simple, robust, reproducible, and clinically relevant. Adopting this system will enable healthcare facilities to assess, monitor, and compare CS rates over time within the institute and among different institutions. It will also promote safe vaginal deliveries and empower providers to make well informed evidence-based decisions. This guideline offers a framework for healthcare professionals to ensure Cesarean sections are performed only when medically necessary.

1.3 Women at the Center of all Decisions

Woman should be involved in her birth planning right from when she is attending antenatal care. Providing evidence-based information empowers women to make informed decisions about her childbirth planning. Intervention and support programs such as midwife-led birth training, psychosocial couple counseling, and psychoeducation for women with fear of childbirth are recommended to reduce the unnecessary caesarean section and promote safe vaginal births.

1.4. Objectives

1.4.1. To standardize evidence-based practices to reduce non-medically indicated CS and promote safe vaginal deliveries.

1.4.2. To establish standardized surgical techniques and perioperative management to ensure high-quality care and reduce complications.

II. CLASSIFICATION OF URGENCY OF CESAREAN SECTION

Cesarean section is done as either planned or emergency and following standardized categorization system should guide the decision on urgency of procedure:

Category	Description	Decision to Delivery
Category 1	Immediate threat to the life of the woman or fetus (suspected uterine rupture, major placental abruption, cord prolapse, fetal hypoxia or persistent fetal bradycardia)	Within 30 minutes
Category 2	Maternal or fetal compromise which is not immediately life-threatening	Within 60 minutes
Category 3	No maternal or fetal compromise but needs early birth	Within 4-6 hours
Category 4	Birth timed to suit women or healthcare providers	Planned

- Category 4 planned CS should not be performed routinely before 39 weeks of gestation as this can increase the risk of respiratory morbidity in the baby.
- Take into account the condition of the woman and the unborn baby when making decisions about rapid birth. Remember that rapid delivery may be harmful in certain circumstances.

III. CESAREAN INDICATIONS

3.1 Maternal

3.1.1 Prior cesarean delivery: A trial of labor after cesarean (TOLAC) is a viable option for most women with one previous low-segment transverse cesarean. For those with one previous lower-segment cesarean in active labor (more than 5 cm), option can be given for TOLAC after discussing with patient.

3.1.2 Pelvic deformity or cephalo-pelvic disproportion.

3.1.3 Abnormal placentation (such as placenta previa, placenta accreta).

3.1.4 Placental abruption if birth not eminent and there is fetal or maternal compromise.

3.1.5 Failed operative vaginal delivery.

3.1.6 HIV infection, if HIV RNA load is greater than 50 copies/ mL diagnosed at 36weeks OR if viral load is not known.

3.1.7 Herpes simplex, if active genital lesions and prodromal symptoms.

3.1.8 Cardiac or pulmonary disease as indicated (Annexure II).

3.1.9 Prior pelvic or anal/rectal reconstructive surgery.

3.1.10 Prior classical hysterotomy.

3.1.11 Prior full-thickness myomectomy.

3.1.12 Invasive cervical cancer.

3.1.13 Genital tract obstructive mass.

3.1.14 History of difficult instrumental delivery

3.1.15 Peri mortem cesarean

3.2 Fetal

3.2.1 Category III CTG with no eminent delivery

3.2.2 Abnormal umbilical cord doppler study

3.2.3 Mal-presentation

3.2.3.1 Transverse lie

3.2.3.2 Breech (except for those in active labor)

3.2.4 Macrosomia

3.2.4.1 EFW of >4500gms

3.2.4.2 EFW of >4000 gms if mother is diabetic

3.2.5 Twin/multifetal pregnancy (twin in active labor with

favorable presentation can be allowed for vaginal delivery)

3.2.6 Umbilical cord prolapses

3.2.7 Congenital anomalies not favorable for vaginal delivery

IV. PERI-OPERATIVE MANAGEMENT

4.1 Preoperative care

4.1.1 On the day prior to surgery

- Admit all planned cesarean cases
- Do routine CBC, grouping, cross matching, and reserve 2 units PRCs
- Ensure PAC has been done and advice followed-through
- Ensure woman is showered/ bathed
- Take informed consent and educate patient on procedure and EENC

4.1.2 On the day of surgery

- Ensure correct patient identification with properly labeled wrist bands.
- Ensure the patient is gowned, jewelries and assistive devices removed.
- Inform neonatal team if preterm delivery or neonatal complication is expected.
- Keep fasting period of 6 hours for solid and 2 hours for clear fluid for all planned cesarean sections.
- Give oral Ranitidine (150mg) and Antacid (2 tabs) 2 hours prior shifting to OR
- Hydrate with 1000 ml of IV fluid (crystalloids) before shifting to OR (if not contraindicated)

- Give antibiotic prophylaxis in pre-op. room within one hour before skin incision
    - 2gm Cephazolin IV (if BMI > 35, give 3 gm)
    - 2 gm Cephazolin IV plus 1 gm oral Azithromycin for ruptured membrane
    - If patient is already on broad-spectrum antibiotics (Ampicillin), continue same antibiotic
- Prepare skin with alcohol-based chlorhexidine (4%) with contact time of at least 2 minutes
- Perform routine vaginal cleansing with betadine (10%) for laboring and ruptured membrane
- Insert urinary catheter before spinal anesthesia
- Complete surgical checklist and time out appropriately
- Place the women in left lateral position and apply a left lateral tilt up to 15 degree or appropriate uterine displacement

4.2 Intra-operative care

4.2.1 Prevention of hypothermia

- Use warming devices to maintain body temperature of 37 degree celsius
- Warm intravenous fluid and blood products
- Warm Theaters (24-28 degree celsius)

4.2.2 Surgical techniques

- Skin Incision: Joel- Cohen incisions with adequate length
- Subcutaneous tissues /fascia/rectus muscle layers and peritoneum.: Joel-Cohen technique- incision

made medially and then opening manually, extended laterally with fingers

- Bladder flap - It is not necessary to reflect the bladder peritoneum but may be required in deeply impacted fetal head and previous cesarean section.
- Uterine incision
    - Transverse incision in the lower segment, made just above, or at a maximum 1 cm below utero-vesical fold, about >10 cm in opening
    - A “J” or inverted “T” extension may be required if a larger incision is needed.
    - In prolonged labor and the head deep into the pelvis, avoid making the incision too inferiorly as it may transect the cervix or vagina.
    - Vertical incision- Dense bladder adhesions, pathology of lower Uterine Segment.
    - Blunt expansion of uterine incision by the surgeon's fingers to reduce surgical blood loss.

- Fetal extraction
    - Delivery of the baby can be done by inserting the obstetrician's dominant hand through the uterine incision or use forceps or vacuum in difficult cases.
    - Practice delay cord clamping after delivery of the baby and initiate EENC
    - Placenta removal- Await spontaneous expulsion of placenta.
    - Uterine closure (exteriorization of uterus should be avoided, full thickness closure of

the uterine incision in continuous manner using delayed absorbable suture

- Abdominal wall closure
  - Ensure that hemostasis has been achieved.
  - Closure of the visceral and parietal peritoneum is not advised.
  - Fascia closure: continuous suture are placed approximately 1 cm from the edge of the incision and 1 cm apart, without excessive tension by slowly absorbable sutures.
  - Subcutaneous layer: >2 cm of subcutaneous tissue, reapproximation of that tissue layer should be performed.
  - Skin closure: The skin closure should be closed with subcuticular suture in most cases.
- Dressing: Use of dry adhesive dressing for 24 hours
- Unnecessary procedures to be avoided
  - Changing of gloves after placenta delivery
  - Wiping of endometrial cavity
  - Mechanical dilatation of cervix
  - Abdominal irrigation
  - Wound irrigation
  - Rectus re-approximation

4.3 Post-operative care

4.3.1 Immediate postoperative care in post anesthesia care unit

- After cesarean birth under spinal or epidural

anesthesia, provide continuous one-to-one observation of the woman until they are hemodynamically stable.

- If general anesthesia was used, provide one-to-one observation of the woman until she has regained airway control, is able to communicate, and is hemodynamically stable.

4.3.2 Continuous postoperative care in ward

- Pain management: While the woman is still on NPO, use injectable paracetamol (IV) and if pain is not relieved, consider a short course of injection Tramadol/Morphine at the lowest effective dose. Once the woman is over NPO period, use oral paracetamol combined with NSAIDS (example: Ibuprofen), unless contraindicated.
- Limit IV fluids as far as possible
- Oral intake: If a woman is recovering well after cesarean birth and dont have complications, they can eat and drink as normal by 3 hours post -surgery.
- Urinary catheter: Remove the urinary bladder catheter after 6 hours
- Ambulation: encourage early ambulation by 6 hours once bladder catheter is removed
- Monitoring vital signs (BP, Pulse, Respiration, PV bleeding, Uterine tone):
    - First 2 hours: every 15 minutes
    - Next 6 hours: hourly
    - Beyond 6 hours: as routine practice

4.3.3. Thromboprophylaxis following cesarean section: offer

thromboprophylaxis to women who have had cesarean birth, taking into account the risks (refer annexure)

- Nonpharmacologic
    - o Early ambulation: encourage and assist for early ambulation
    - o Intermittent pneumatic compression: it is recommended that intermittent pneumatic compression device is left in place until the patient is ambulatory or until anticoagulation therapy is restarted.
    - o Hydration

- Pharmacological
    - o Recommended agent of pharmacological VTE prophylaxis in pregnancy is LMWH.
    - o All women with class III obesity (BMI greater than or equal to 40 kg/m2) should be considered for prophylactic LMWH in doses appropriate for their weight for 10 days after ceasrean.
    - o All women with a previous history of confirmed VTE should be offered thromboprophylaxis with LMWH or warfarin for at least 6 weeks postpartum regardless of the mode of delivery.
    - o Women with two or more persisting low risk factors should be considered for LMWH prophylaxis for 10 days.
    - o Start enoxaparin 6–12 hours after cesarean delivery. If the Women is already receiving antenatal LMWH prophylaxis, the morning dose on the day of cesarean section should be omitted and preferably taken to OT as a

first case for the day.

- Usual dose for prophylaxis is Enoxaparin 40 mg SC once daily but It is reasonable to use weight-adjusted LMWH dosing in all women with obesity.
- There is no need for routine anti-Xa monitoring and if an initial platelet count and renal function are normal, there is no need for on-going monitoring. Doses of LMWH should be reduced in women with renal impairment.

4.3.3 Discharge plan and wound care

- Change wound dressing after 24 hours, assess the wound for signs of infection and advise to keep the wound clean and dry
- If there is no fever, pain controlled, and ambulating, patient is fit for discharge
- Advice for removal of suture after 5 to 7 days if interrupted sutures

V. MONITORING AND EVALUATION

5.1. Clinical audit based on Robson's classification to be conducted 6 monthly by respective hospitals where c-sections is performed

5.2. Report to be submitted to the National RMNH Program for compilation and analysis.

Robson classification

Every woman who is admitted for delivery should be immediately classified in one of the following ten classifications:

1. Group 1: Nulliparous women (first pregnancy), single fetus, cephalic presentation, ≥37 weeks of gestation, spontaneous labor.

2. Group 2: Nulliparous women, single fetus, cephalic presentation, ≥37 weeks of gestation, induced labor or C-section before labor.
    A. 2a Labour induced
    B. 2b Pre-labour CS
3. Group 3: Multiparous women (previous birth), single fetus, cephalic presentation, ≥37 weeks of gestation, spontaneous labor.
4. Group 4: Multiparous women, single fetus, cephalic presentation, ≥37 week's gestation, induced labor or C-section before labor.
    A. 4a Labour induced
    B. 4b Pre-labour CS
5. Group 5: Multiparous women with at least one previous C-section, single fetus, cephalic presentation, ≥37 weeks of gestation.
    5.1 With one previous CS
    5.2 With two or more previous CSs
6. Group 6: Nulliparous women, single fetus, breech presentation (buttocks or feet first).
7. Group 7: Multiparous women, single fetus, breech presentation.
8. Group 8: Women with multiple pregnancies (e.g., twins or triplets).
9. Group 9: Women with a single fetus in abnormal lie (e.g., transverse or oblique positions).
10. Group 10: Women with a single fetus, cephalic presentation, <37 weeks gestation (preterm births)

ANNEXURE I: Indication for cesarean section in pregnancy with cardiac disease

For nearly all gravidas with cardiac disease, vaginal delivery is preferred to cesarean delivery since vaginal delivery generally poses less cardiac risk. Cesarean delivery is generally reserved for obstetric indications. However, cesarean delivery is suggested for gravidas with advanced heart failure and hemodynamic instability despite treatment.

1. Left Ventricular Dysfunction: Severe left ventricular dysfunction (Ejection fraction < 30%)
    - Gravidas with unfavorable cervix but expeditious delivery is required
    - urgent cesarean delivery is suggested for gravidas with advanced heart failure and hemodynamic instability despite treatment
2. Valvular Heart Disease
    - Severe aortic stenosis
    - Severe mitral stenosis: Symptomatic patients with NYHA class III-IV despite optimal medical therapy.
3. Aortic Pathologies: Aortic dissection or aneurysm (Marfan syndrome, bicuspid aortic valve disease
4. Severe pulmonary hypertension
5. Recent myocardial infarction: close proximity to labor or in unstable cases or for the usual obstetric indications
6. Anticoagulated on warfarin: Due to fetal intracranial hemorrhage

Annexure II: Informed Consent

Written informed consent should be obtained. The consent form ideally should include information about the procedure, benefits and risks. The rare possibility of hysterectomy should be clearly discussed.

CONSENT FOR LOWER SEGMENT CAESAREAN SECTION

PROPOSED PROCEDURE

The baby will be delivered surgically by making a cut in the mother's abdomen. This procedure is done under spinal, epidural or general anaesthesia depending on circumstances and decision of the anesthesiologist. A urinary catheter is inserted to keep the bladder empty. The abdomen is usually cut side to side (horizontal) but may occasionally be longitudinal (up and down). Following which the baby is delivered, umbilical cord cut, the placenta is removed, and abdomen is closed. During this procedure, if requested or indicated, tubal sterilization (permanent family planning) can be performed.

BENEFITS

- Allows for more control over the timing of delivery which can be especially important in cases where the mother or baby's health are at risk.
- Cesarean section can lower the risk of pelvic floor damage and subsequent incontinence or pelvic organ prolapse later in life.

RISKS

These are the common risks but there may be other unusual risks that have not been listed below. There are also risks associated with anesthesia as covered in anesthetic consent.

A caesarean section has the following general risks:

- Wound may become infected (7 in 100), requiring antibiotics and dressing. Sometimes an additional procedure to reopen the abdomen to drain pus and re-suture may be required.

- Additional risk factors such as Obesity may increase the risk of a blood clot in leg (deep vein thrombosis) with swelling and pain. Sometimes part of this may break off and travel to the lungs (pulmonary embolism), causing shortness of breath and occasionally this may even be fatal.

A caesarean section has the following specific risks:

- Urinary tract injury (1 in 1000), requiring repair
- There may be some bleeding resulting in a collection of blood in the wound or abdomen which may resolve spontaneously but occasionally, a further operation may be needed to control the blood loss.
- On rare occasions, uncontrolled bleeding may need to be managed by removal of the uterus (hysterectomy: 1 in 670) (1:670)
- Sometimes the intestines may take a little while to return to normal function (paralytic ileus).
- Although a normal delivery in future pregnancies is possible, most likely another caesarean section may be required for future deliveries.
- For future pregnancy, there is risk of scar rupture if women go into labor (1 in 98), requiring an emergency caesarean section. For future pregnancies there is risk of having a placenta that becomes abnormally implanted (placenta accreta: 1 in 1000). Risk increases with each caesarean section (3%, 11%, and 40%, for first, second, and third repeat caesarean births respectively).This can lead to very heavy bleeding after caesarean section and may require a emergency hysterectomy and other procedures such as removal of part of the urinary bladder when the abnormal placenta grows into part of the bladder.

DECLARATION BY THE PATIENT

- I have been informed about the procedure, I have read and or understood the above information and I give my consent to the proposed surgery.

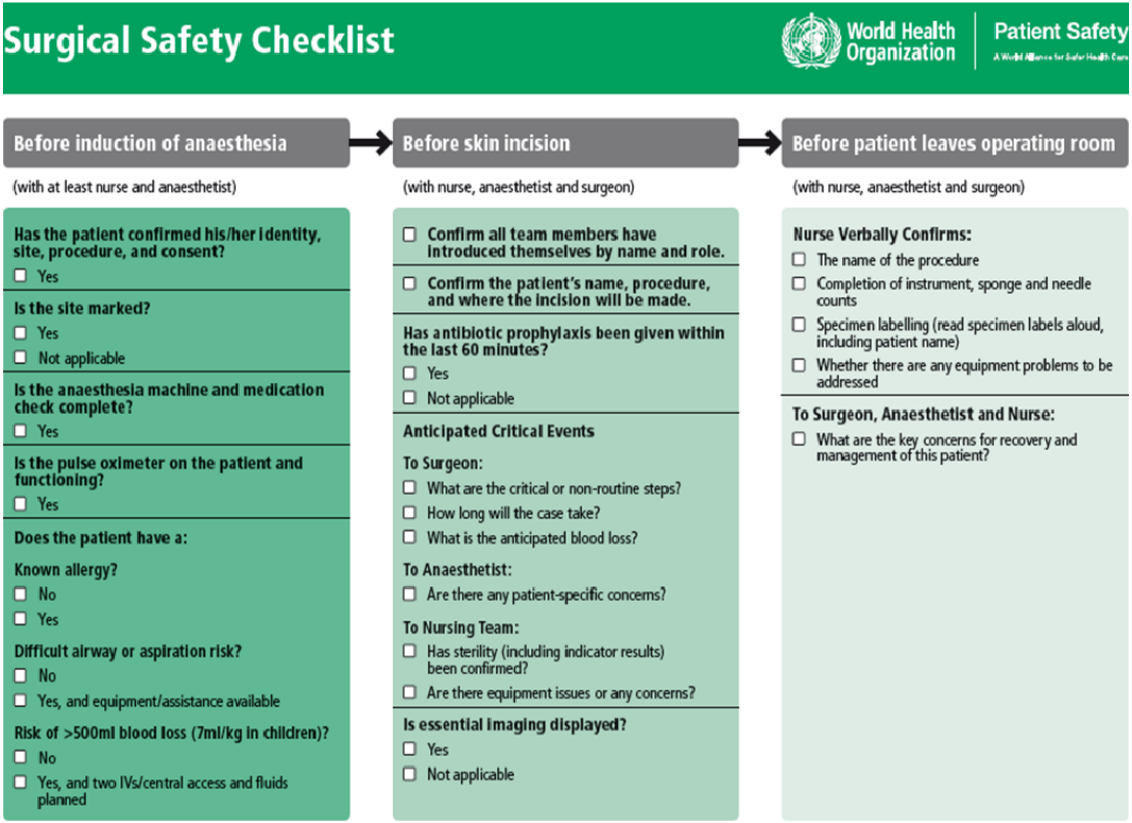
- I have discussed with the doctor regarding any significant risks and complications specific to my individual circumstances and that I have considered it in deciding to have this surgery.
- I agree to any other additional procedures considered necessary in the judgment of the doctor during this surgery.
- I consent to blood transfusion, if needed (patient to circle) YES/ NO

Patient:	**Doctor:**
.....	.....
(Dated Name and Signature)	**(Dated Name and Signature)**

Husband/Guardian:

.....
(Dated Name and Signature)

Annexure III: WHO Surgical Safety Checklist



Surgical Safety Checklist

World Health Organization | Patient Safety

Before induction of anaesthesia

(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
- ☐ Yes

Is the site marked?
- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Is the pulse oximeter on the patient and functioning?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

Before skin incision

(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:
- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:
- ☐ Are there any patient-specific concerns?

To Nursing Team:
- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

Before patient leaves operating room

(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:
- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
- ☐ What are the key concerns for recovery and management of this patient?

Annexure IV Postpartum risk classification for VTE

Postnatal assessment and management (to be assessed on delivery suite)

- Any previous VTE
- Anyone requiring antenatal LMWH
- High-risk thrombophilia
- Low-risk thrombophilia + FHx

→ **HIGH RISK**
At least 6 weeks' postnatal prophylactic LMWH

- Caesarean section in labour
- BMI ≥ 40 kg/m²
- Readmission or prolonged admission (≥ 3 days) in the puerperium
- Any surgical procedure in the puerperium except immediate repair of the perineum
- Medical comorbidities e.g. cancer, heart failure, active SLE, IBD or inflammatory polyarthropathy; nephrotic syndrome, type I DM with nephropathy, sickle cell disease, current IVDU

→ **INTERMEDIATE RISK**
At least 10 days' postnatal prophylactic LMWH

NB If persisting or > 3 risk factors consider extending thromboprophylaxis with LMWH

- Age > 35 years
- Obesity (BMI ≥ 30 kg/m²)
- Parity ≥ 3
- Smoker
- Elective caesarean section
- Family history of VTE
- Low-risk thrombophilia
- Gross varicose veins
- Current systemic infection
- Immobility, e.g. paraplegia, PGP, long-distance travel
- Current pre-eclampsia
- Multiple pregnancy
- Preterm delivery in this pregnancy (< 37+0 weeks)
- Stillbirth in this pregnancy
- Mid-cavity rotational or operative delivery
- Prolonged labour (> 24 hours)
- PPH > 1 litre or blood transfusion

Two or more risk factors → **INTERMEDIATE RISK** (as above)

Fewer than two risk factors → **LOWER RISK**
Early mobilisation and avoidance of dehydration

Antenatal and postnatal prophylactic dose of LMWH

Weight < 50 kg = 20 mg enoxaparin/2500 units dalteparin/3500 units tinzaparin daily
Weight 50–90 kg = 40 mg enoxaparin/5000 units dalteparin/4500 units tinzaparin daily
Weight 91–130 kg = 60 mg enoxaparin/7500 units dalteparin/7000 units tinzaparin daily
Weight 131–170 kg = 80 mg enoxaparin/10000 units dalteparin/9000 units tinzaparin daily
Weight > 170 kg = 0.6 mg/kg/day enoxaparin/ 75 u/kg/day dalteparin/ 75 u/kg/day tinzaparin

Nat