Thromboprophylaxis in the Antenatal and Postpartum Period Guideline

Policy Number:	620	Supersedes:		Classification	Clinical

Version No	Date of EqIA:	Approved by:	Date of Approval:	Date made Active:	Review Date:
3	In progress	Obstetric Written Control Documentation Group	18/02/2022	01/06/2022	18/02/2025

Brief Summary of Document:	Reducing the Risk of Venous Thromboembolism during Pregnancy and the Postnatal period
Scope:	Guidance on identifying women at risk of a thromboembolism during the antepartum and postpartum period.
To be read in conjunction with:	Reducing the Risk of Venous Thromboembolism during Pregnancy and the puerperium. Green-top Guideline No. 37a (2015) https://www.rcog.org.uk/globalassets/documents/guidelines/gtg-37a.pdf
Patient information	Reducing the risk of venous thrombosis in pregnancy and after birth https://www.rcog.org.uk/globalassets/documents/patients/patient-informationleaflets/pregnancy/pi-reducing-the-risk-of-vt-in-pregnancy.pdf

Owning Committee	Obstetric Written Documentation Group

Reviews and updates		
Version no:	Summary of Amendments:	Date Approved:
1	New	14/9/202017
2	Updated Guideline	13/10/022
3	Guideline update	18/02/2022

Keywords	Pulmonary embolism, blood clots, deep vein thrombosis, venous thromboembolism , thromboprophylaxis , SARS Covid

Glossary	
AES	Anti-embolic stockings
BMI	Body mass index
DVT	Deep vein thrombosis
IOL	Induction of labour
LWMH	Low weight molecular heparin
PE	Pulmonary embolism
PPH	Postpartum haemorrhage
UFT	Unfractionated heparin
VTE	Venous thromboembolism

Contents

1. Scope

Guidance on identifying women at risk of a thromboembolism during the antepartum and postpartum period.

2. Aims

This guideline is to help health care professionals identify women who have an increased risk of thromboembolism in the antepartum and postpartum period, and to offer appropriate thromboprophylaxis to reduce their risk of Venous Thromboembolism (VTE).

This is an abbreviated guide and should be used in conjunction with the main guideline produced by the Royal Collage of Obstetricians and Gynaecologists (RCOG) No 37a: Reducing the Risk of Venous Thromboembolism during Pregnancy and the Puerperium.
https://www.rcog.org.uk/globalassets/documents/guidelines/gtg-37a.pdf

High-risk patients or those with thrombophilias should be managed by a multi-disciplinary team that includes input from a haematologist with an interest in obstetrics.

3. Objectives

To reduce the risks of pregnant and postpartum women experiencing preventable thrombosis such as pulmonary embolism (PE) and deep vein thrombosis (DVT) by effective risk assessments and initiation of low weight molecular heparin (LWMH). Pulmonary Embolism remains one of the leading causes of maternal morbidity and mortality. The MBRACCE-UK report into maternal deaths found that blood clots caused 16 % of all maternal deaths during the period 2015 -2017.

4. Risk Factors

The risk factors for VTE in pregnancy and post partum are listed in table 1. **(Appendix 4)**

5. Risk Assessment

All women will be assessed using the maternity VTE risk assessment proforma for the risk of VTE at the following times:

- At booking by community midwife and repeated following the dating scan or at the initial consultant appointment (if required) **(Appendix 1)**
- On each admission to hospital **(Appendix 2)**
- With the development of other inter current problems (i.e. pre-eclampsia, hyperemesis gravidaram)
- Post-delivery prior to transfer to the ward / home **(Appendix 3)**

These assessments should be documented (including date, score and whether LWMH is required) on the appropriate risk assessment proforma found in both the antenatal handheld records and postnatal handheld notes.

6. Antenatal / prenatal management

Antenatal scoring (Appendix 1)

- If total score ≥ 4 antenatally, consider thromboprophylaxis from the first trimester.
- If total score 3 antenatally, consider thromboprophylaxis from 28 weeks.
- If admitted to hospital antenatally consider thromboprophylaxis.

- If prolonged admission (≥ 3 days) or readmission to hospital within the puerperium consider thromboprophylaxis.

For patients with an identified bleeding risk, the balance of risks of bleeding and thrombosis should be discussed in consultation with a haematologist with expertise in thrombosis and bleeding in pregnancy.

Antenatal thromboprophylaxis for those *WITH* previous VTE should begin as early in pregnancy as practical.

- Women with previous VTE associated with antithrombin deficiency (who will often be on long-term oral anticoagulation) should be offered thromboprophylaxis with higher dose LMWH (either 50%, 75% or full treatment dose) antenatally and for 6 weeks postpartum or until returned to oral anticoagulant therapy after delivery.

- Women with VTE associated with antiphospholipid syndrome with recurrent VTE (who will often be on long-term oral anticoagulation) should be offered thromboprophylaxis with higher dose LMWH (either 50%, 75% or full treatment dose) antenatally and for 6 weeks postpartum or until returned to oral anticoagulant therapy after delivery. These women require specialist management by experts in haemostasis and pregnancy.

- Women in whom the original VTE was unprovoked/idiopathic or related to oestrogen (oestrogen-containing contraception/pregnancy) or related to a transient risk factor other than major surgery or who have other risk factors should be offered thromboprophylaxis with LMWH throughout the antenatal period.

- Women with previous VTE should be offered prepregnancy counselling and a prospective management plan for thromboprophylaxis in pregnancy made. Those who become pregnant before receiving such counselling should be referred at the earliest opportunity in pregnancy to a clinician with expertise in thrombosis in pregnancy. Women with previous VTE (except those with a single previous VTE related to major surgery and no other risk factors) should be offered thromboprophylaxis with LMWH throughout the antenatal period.

- In women in whom the original VTE was provoked by major surgery from which they have recovered and who have no other risk factors, thromboprophylaxis with LMWH can be withheld antenatally until 28 weeks provided no additional risk factors are present (in which case they should be offered LMWH). They require close surveillance for the development of other risk factors.

Antenatal thromboprophylaxis for women *WITHOUT* previous VTE

- Women with thrombophilia without previous VTE should be stratified according to both the level of risk associated with their thrombophilia and the presence or absence of a family history or other risk factors.

- Women without previous VTE and without particular first trimester risk factors or admission to hospital, but with four other risk factors, should be considered for antenatal prophylaxis throughout pregnancy.

- Women without previous VTE and without particular first trimester risk factors or admission to hospital, but with three other risk factors, can start antenatal prophylaxis at 28 weeks of gestation.

First trimester risk factors

- Women admitted with hyperemesis should be considered for thromboprophylaxis with LMWH and can discontinue thromboprophylaxis when the hyperemesis resolves.

- Women with ovarian hyper stimulation syndrome should be considered for thromboprophylaxis with LMWH in the first trimester.

- Women with an IVF pregnancy and three other risk factors should be considered for thromboprophylaxis with LMWH starting in the first trimester.

7. Thromboprophylactic doses for antenatal and postnatal LMWH

Dose is based on the woman's weight taken at the booking appointment.

WEIGHT	Enoxaparin	Dalteparin	Tinzaparin (75 units/kg/day)
< 50 kg	20 mg daily	2500 units daily	3500 units daily
50–90 kg	40 mg daily	5000 units daily	4500 units daily
91–130 kg	60 mg daily*	7500 units daily	7000 units daily*
131–170 kg	80 mg daily*	10 000 units daily	9000 units daily*
> 170 kg	0.6 mg/kg/day*	75 units/kg/day	75 units/kg/day*
High prophylactic dose for women weighing 50–90 kg	40 mg 12 hourly	5000 units 12 hourly	4500 units 12 hourly

*may be given in 2 divided doses

8. Contraindications to LMWH use

- Known bleeding disorder (e.g. haemophilia, von Willebrand's disease or acquired coagulopathy)
- Active antenatal or postpartum bleeding
- Women considered at increased risk of major haemorrhage (e.g. placenta praevia)
- Thrombocytopenia (platelet count < 75 × 109/l)
- Acute stroke in previous 4 weeks (haemorrhagic or ischaemic)
- Severe liver disease (prothrombin time above normal range or known varices)
- Uncontrolled hypertension (blood pressure > 200 mmHg systolic or > 120 mmHg diastolic).
- Women at high risk of haemorrhage with risk factors including major antepartum haemorrhage, coagulopathy, progressive wound haematoma, suspected intra-abdominal bleeding and postpartum haemorrhage may be managed with anti-embolism stockings (AES), foot impulse devices or intermittent pneumatic compression devices. Unfractionated heparin (UFT) may also be considered.
- Women with previous or current allergic reactions to LMWH should be offered an alternative preparation or alternative form of prophylaxis.

- Severe renal disease (glomerular filtration rate [GFR] < 30 ml/minute/1.73m2) (Doses of LMWH should be reduced in women with renal impairment.)

9. Management for Delivery

- Women receiving antenatal LMWH should be advised that if they have any vaginal bleeding or once labour begins they should not inject any further LMWH. They should be reassessed on admission to hospital and further doses should be prescribed by medical staff.
- Women receiving antenatal LMWH having an elective caesarean section should receive a thromboprophylactic dose of LMWH on the day prior to delivery. On the day of delivery, any morning dose should be omitted and the operation performed that morning
- Regional anaesthetics should not be given to a woman until at least 12 hours after the last dose of prophylactic LMWH or at least 24 hours after the last dose of therapeutic low molecular heparin.
- Epidural catheters should not be removed within 12 hours of the most recent injection.

10. Postnatal Management

- Thromboprophylaxis should be started or reinstituted as soon as the immediate risk of haemorrhage is reduced.
- Thromboprophylaxis doses of LMWH should be given between 4 - 6 hours after operative delivery.
- Postnatal thromboprophylaxis for women who received antenatal LWMH should have a postnatal plan documented by an obstetrician in the antenatal handheld record.
- All women need immediate rescoring following delivery and score should be documented in the postnatal handheld record.
- All women requiring LWMH should have it prescribed prior to transfer to the ward to avoid any delay in administration.
- A scoring of risk factors should be undertaken following the development of any complications such as a secondary PPH, postnatal pre-eclampsia, infection, or increased immobility.

Special consideration should be given to:

- Women with two or more persisting risk factors listed in Table 1 should be considered for LMWH in prophylactic doses appropriate for their weight for 10 days after delivery.
- All women with class 3 obesity (BMI greater than or equal to 40 kg/m2) should be considered for prophylactic LMWH in doses appropriate for their weight for a minimum 10 days after birth (this may be longer depending on their individualised risk factors).
- 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.
- Women with thrombophilia without previous VTE should be stratified according to both the level of risk associated with their thrombophilia and the presence or absence of a family history or other risk factors.
- All women who have had caesarean sections should be considered for thromboprophylaxis with LMWH for 10 days after delivery apart from those having an elective caesarean section who should be considered for thromboprophylaxis with LMWH for 10 days after delivery if they have any additional risk factors.

11. Anti-Embolic Stockings

- The use of properly applied anti-embolism stockings (AES) of appropriate size and providing graduated compression with a calf pressure of 14–15 mmHg is recommended in pregnancy and the puerperium for women who are hospitalised and have a contraindication to LMWH.
- These include women who are hospitalised post-caesarean section (combined with LMWH) and considered to be at particularly high risk of VTE (e.g. previous VTE, more than four risk factors antenatally or more than two risk factors postnatally) and women travelling long distance for more than 4 hours.

12. Covid-19 and Pregnancy

Please refer to the RCOG Coronavirus infection and pregnancy guideline (2022) for management of Covid-19 during pregnancy and the postnatal period
https://www.rcog.org.uk/globalassets/documents/guidelines/2022-01-11-coronavirus-covid-19-infection-in-pregnancy-v14.3.pdf

Women should have a VTE risk assessment performed during their pregnancy in line with RCOG Green-top Guideline No. 37a. Infection with SARS-CoV-2 should be considered a transient risk factor and trigger reassessment, and therefore women should be advised to contact their community midwife if Covid positive (Appendix 3)

13. References

- MMBRACE-UK (2019) 'Saving Lives, Improving Mothers' Care' The Maternal, Newborn and Infant Clinical Outcome Review Programme.
- RCOG (2015) Guideline Reducing the Risk of Venous Thromboembolism during Pregnancy and the puerperium. *Green-top Guideline No. 37a.* Available at https://www.rcog.org.uk/globalassets/documents/guidelines/gtg-37a.pdf
- RCOG (2022) Coronavirus infection and pregnancy guideline. Available at : https://www.rcog.org.uk/globalassets/documents/guidelines/2022-01-11-coronavirus-covid-19-infection-in-pregnancy-v14.3.pdf

14. Appendix 1 ANTENATAL THROMBOPROPHYLAXSIS ASSESMENT PERFORMA

ANTENATAL THROMBOPROPHYLAXSIS ASSESMENT PERFORMA

Patient ID **Date Completion**

Gestation

To be used with reference to HDUHB Thromboprophylaxis Guideline

Pre-existing Risk at Booking Visit	**Tick**	**Score**
High Risk Thrombophilia - Refer to haematology		**Refe rral**
Previous VTE (except a single event related to major surgery)		**4**
Previous VTE provoked by major Surgery		**3**
Known High Risk Thrombophilia (Asymptomatic)		**3**
Medical Co Morbidities e.g. cancer; heart failure; active SLE, inflammatory bowel disease; nephrotic syndrome; type 1 diabetes mellitus with nephropathy; sickle cell disease ; current intravenous drug user.		**3**
Family History of Unprovoked or Oestrogen related VTE in first degree relative		**1**
Known low risk Thrombophilia (no VTE)		**1**
Age (>35 yrs)		**1**
Obesity (Score BMI ≥ 30 kg/m^2 = 1 BMI ≥40 kg/m^2 =2)		**1 / 2**
Parity 3 or more		**1**
Smoker		**1**
Gross Varicose Veins		**1**
Antenatal Risk Factors		
OHSS (Score 4) IVF ART (Score 1 -antenatal only)		**4 / 1**
Multiple Pregnancy		**1**
Covid-19 at any gestation refer to the Covid-19 in pregnancy flowchart		
	Total Score	
Maternal weight –(Booking in Kg)	**Dose enoxoparin**	

Management

- If total score ≥ 4 antenatally, consider thromboprophylaxis from the first trimester. And continue for 6 weeks postnatally
- If total score 3 antenatally, consider thromboprophylaxis from 28 weeks.
    - and continue for 6 weeks postnatally
- If total score ≥ 2 postnatally, consider thromboprophylaxis for at least 10 days.
- If admitted to hospital antenatally consider thromboprophylaxis.
- If prolonged admission (≥ 3 days) or readmission to hospital within the puerperium consider thromboprophylaxis.
- NB if hyperemesis treat for duration of event, if OHSS treat for 1st Trimester
- For patients with an identified bleeding risk, the balance of risks of bleeding and thrombosis should be discussed in consultation with a haematologist with experience in Obstetrics

Transient risk factors

	Tick	Score
Any surgical procedure in pregnancy or puerperium except immediate repair of the perineum, e.g. appendicectomy, postpartum sterilisation		**3**
Hyperemesis		**3**
OHSS (first trimester only)		**4**
Current systemic infection		**1**
Immobility / dehydration		**1**
Covid-19 at any gestation refer to the Covid-19 in pregnancy flowchart		

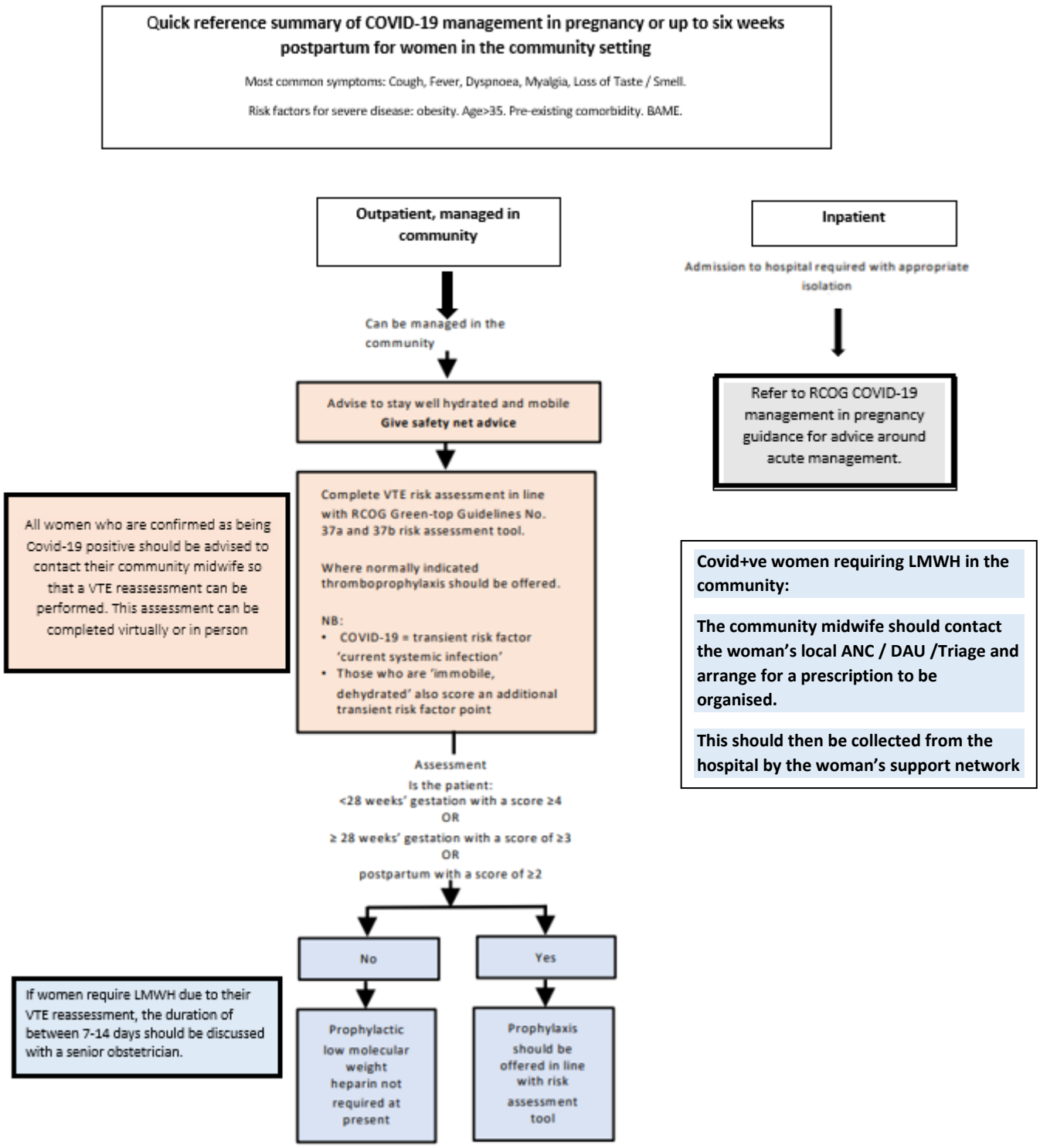
15. Appendix 2 Inpatient Assessment of Thromboprophylaxis

	Score	Inpatient Date	Inpatient Date	Inpatient Date	Inpatient Date
Antenatal Score					
Antenatal / Postnatal					
Obstetric Risk Factors					
PET in Current Pregnancy	1				
Elective Caesarean Section	1				
Emergency Caesarean in Labour	2				
Mid Cavity or Rotational Assisted Delivery	1				
Prolonged Labour >24 hrs	1				
PPH >1l or Transfusion	1				
Preterm Birth <37 weeks this Pregnancy	1				
Stillbirth this Pregnancy	1				
Transient Risk Factors					
Any Additional Surgical procedure during pregnancy or puerperium	3				
Hyperemesis	3				
OHSS	4				
Current Systemic Infection	1				
Immobility/Dehydration	1				
Covid-19	Please refer to the Covid-19 in pregnancy flowchart				
TOTAL NEW SCORE					
Clexane® dose and duration of Treatment					

Recommended Dosage of Clexane® for Thromboprophylaxis

Maternal weight	**Dose Clexane® SC**	**Maternal Weight**	**Dose Clexane® SC**
<50 kg	20 mg od	91 – 130 kg	60 mg od
50-90 kg	40 mg od	131 – 170 kg	80 mg od
		>170 kg	0.6 mg/kg day

16. Appendix 3 – Quick reference summary of COVID-019 management in pregnancy or up to six weeks post postpartum for women in the community setting



17. APPENDIX 4: Table 1: Risk factors for VTE

Pre-existing	Previous VTE	
	Thrombophilia	*Heritable* Antithrombin deficiency Protein C deficiency Protein S deficiency Factor V Leiden Prothrombin gene mutation
		Acquired Antiphospholipid antibodies Persistent lupus anticoagulant and/or persistent moderate/high titre anticardiolipin antibodies and/or β_2-glycoprotein 1 antibodies
	Medical comorbidities e.g. cancer; heart failure; active SLE, inflammatory polyarthropathy or IBD; nephrotic syndrome; type I diabetes mellitus with nephropathy; sickle cell disease;[49] current intravenous drug user	
	Age > 35 years	
	Obesity (BMI ≥ 30 kg/m^2) either prepregnancy or in early pregnancy	
	Parity ≥ 3 (a woman becomes para 3 after her third delivery)	
	Smoking	
	Gross varicose veins (symptomatic or above knee or with associated phlebitis, oedema/skin changes)	
	Paraplegia	
Obstetric risk factors	Multiple pregnancy Current pre-eclampsia	
	Caesarean section Prolonged labour (> 24 hours) Mid-cavity or rotational operative delivery Stillbirth Preterm birth Postpartum haemorrhage (> 1 litre/requiring transfusion)	
New onset/transient *These risk factors are potentially reversible and may develop at later stages in gestation than the initial risk assessment or may resolve and therefore what is important is an ongoing individual risk assessment*	Any surgical procedure in pregnancy or puerperium except immediate repair of the perineum, e.g. appendicectomy, postpartum sterilisation Bone fracture	
	Hyperemesis, dehydration	
	Ovarian hyperstimulation syndrome (first trimester only)	Assisted reproductive technology (ART), in vitro fertilisation (IVF)
	Admission or immobility (≥ 3 days' bed rest)	e.g. pelvic girdle pain restricting mobility
	Current systemic infection (requiring intravenous antibiotics or admission to hospital)	e.g. pneumonia, pyelonephritis, postpartum wound infection
	Long-distance travel (> 4 hours)	