

Guidelines for anaesthetising obstetric patients for non-obstetric surgery

Key Points

- Pregnant women requiring non-obstetric urgent or emergency surgery require a multidisciplinary team approach involving surgeons, anaesthetists, obstetricians, midwives and neonatologists (1)
- The aim is to provide safe anaesthesia for both mother and fetus
- Care should be provided by a senior anaesthetist and senior surgeon with involvement from a senior obstetrician
- Surgery should be undertaken where neonatal and maternity services are available
- Contact numbers for obstetric team should be available to the surgical team and ward nurses
- Refer to [Antenatal and Postnatal Women who attend the ED or are admitted outside Maternity](#)

Version: 3.0
Date Issued: 21/03/2026
Review Date: 01/03/2029
Key words: Non-obstetric surgery, pregnancy, anaesthesia

This is a controlled document. If you are using a printed copy, check it against the guidelines site to ensure you are using the latest edition. Print copies must be destroyed after use.

Abbreviations

FHR	Fetal Heart Rate
RSI	Rapid Sequence Induction
NICE	National Institute for Health and Care Excellence
LMA	Laryngeal Mask Airway
MDT	Multidisciplinary Team
NSAIDs	Non-Steroid anti-inflammatory drugs
RCOG	Royal College of Obstetricians and Gynaecologists

Contents

1.0 Guidelines for anaesthetising obstetric patients for non-obstetric surgery	3
2.0 Pre-anaesthetic assessment	3
3.1 General Anaesthesia	4
3.3 Regional Anaesthesia	5
3.4 Haemodynamics	6
4.0 Fetal Monitoring	6
5.0 Caesarean Deliveries during non-obstetric surgery	6
6.0 Laparoscopic surgery vs open surgery	7
7.0 Analgesia and antiemetics	7
8.0 Table 1. Drugs, side effects and considerations in the peri-operative period during pregnancy and breastfeeding	8
9.0 Thromboprophylaxis	8
10.0 Documentation in Epic	9
References	11
Full version control record	13

1.0 Guidelines for anaesthetising obstetric patients for non-obstetric surgery

This document has been written to give guidance in anaesthetising pregnant women for non-obstetric surgery. This includes emergency surgery e.g. appendicectomy and trauma surgery, and urgent cases e.g. surgery for malignancy. A senior anaesthetist and senior surgeon should be involved with involvement from a senior obstetrician, midwives and neonatologists (1).

A pregnant woman should not be denied emergency surgery that is medically indicated. However, elective surgery should be delayed until after delivery if this does not harm the mother or baby. The second trimester may be a safer time to perform surgery because of the lower risk of fetal loss than the first trimester and the incidence of preterm labour is lower than in the third trimester (2).

Further information is available from obstetric guideline: **Antenatal and Postnatal Women who attend the Emergency Department or are admitted outside the Maternity Department**

[Antenatal and Postnatal Women who attend the ED or are admitted outside Maternity](#)

The goals of safe anaesthesia in pregnancy are to:

- Avoid hypoxia and hypotension
- Maintain normal acid-base status and utero-placental blood flow (2)
- Avoid drugs that may be teratogenic
- Avoid stimulating the uterus to reduce risk of preterm labour
- Carefully manage the airway to avoid maternal aspiration
- Avoid maternal hypo/hyperthermia (2)

2.0 Pre-anaesthetic assessment

- The pre-operative assessment should include consideration of gestational age, any pregnancy related health issues and airway assessment
- General anaesthesia, regional anaesthesia and sedation have all been successfully used in pregnancy (2).
- Informed consent involves consideration of fetal wellbeing and the possibility of Caesarean delivery (1). The main risks are changes in uteroplacental blood flow or in fetal oxygenation, fetal loss, preterm delivery and potential neurodevelopmental effects of anaesthetic agents on the fetal brain. There is insufficient evidence to recommend a specific anaesthetic technique (2).
- Outcomes of pregnant women having non-obstetric surgery are generally good with a 30-day maternal mortality rate of 0.4% and overall maternal morbidity of 6.6% (3).
- Fetal outcomes have around a 10.5% incidence of 1st trimester pregnancy loss

and overall miscarriage rate of 5.8% (4).

- Close liaison with obstetricians is needed to plan for fetal heart rate (FHR) monitoring peri-operatively and potential intraoperative Caesarean delivery should be discussed. If intraoperative Caesarean delivery is a possibility, then Neonatal consultation is required to discuss newborn care (2).
- For elective cases and where possible, the woman should be fasted 6 hours for food and 2 hours for clear fluids, with sips of clear fluids allowed until sending. Please follow the Trust fasting guidance.
- Consider pre-medication for aspiration prophylaxis such as two doses of oral omeprazole 40mg given 12 hours apart, after 14 weeks gestation or sooner if symptomatic for reflux. Sedative premedication is best avoided.

3.1 General Anaesthesia

- General anaesthesia is the most common anaesthetic technique used in pregnancy (2).
- The use of rapid-sequence induction (RSI) is controversial, but many anaesthetists perform RSI on women beyond 15–18 weeks' gestation (2). NICE recommends RSI with pre-oxygenation and cricoid pressure for Caesarean delivery (5).
- For positioning consider head up tilt, for example using the Oxford HELP pillow, to reduce aspiration risk and decrease breast interference with laryngoscopy. Use left lateral tilt from 18-20 weeks onwards.
- Pre-oxygenate with 100% oxygen. The risk of failed intubation is higher (1:533 Caesarean deliveries) (2) due to weight gain, laryngeal oedema and breast enlargement. Functional residual capacity is reduced, and oxygen consumption is higher leading to more rapidly falling oxygen saturations. Consider the use of nasal oxygenation on induction.
- Propofol is the induction agent of choice. No anaesthetic agent in current use is considered teratogenic at clinical doses (2), so use the anaesthetic drugs that are safest in your hands.
- There is no consensus on the use of bag mask ventilation after induction (2).
- Nasal tube airways should be avoided because of increased vascularity of mucus membranes (1).
- Muscle relaxants do not cross the placenta and are safe to use. If using suxamethonium note that pseudocholinesterase concentration is reduced in pregnancy but this is of little clinical significance (2).
- A cuffed endotracheal tube should be used, with some smaller sizes to hand. Some may prefer intubating with a videolaryngoscope. A bougie and equipment for difficult intubation should be available including laryngeal mask airways which can be used if unable to intubate. A short handled laryngoscope can be useful.

- A recent study comparing 502 intubated patients having a Caesarean delivery to 221 patients with LMA Supremes with gastric drainage tubes demonstrated no cases of regurgitation or aspiration (6). This shows that LMAs (laryngeal mask airways) can be safely used for failed intubations. Most anaesthetists would use LMAs for low risk, starved 1st trimester patients.
- Maintenance with inhalational agents and intravenous anaesthesia have both been used. Inhalational agents reduce uterine contractions which may be beneficial.
- Mechanical ventilation in pregnancy requires an increased minute ventilation to accommodate the physiologic respiratory alkalosis of pregnancy. The respiratory rate can be increased whilst setting a similar tidal volume as would be used if not pregnant. If this doesn't prevent hypercapnia, higher tidal volumes can be considered. Maternal hypercarbia can lead to acidosis and myocardial depression in the fetus. Maternal hypocarbia can cause uteroplacental vasoconstriction and fetal hypoxia (2).
- All opioids are safe to use intraoperatively (2) except tramadol which is usually not given in pregnancy.
- Many anaesthetists prefer to use the neostigmine/glycopyrrolate mix to reverse. Some prefer to use neostigmine and atropine as atropine crosses the placenta and avoids fetal bradycardia, but it is probably not clinically significant (2).
- Sugammadex is not routinely used in pregnancy due to its tendency to bind with progesterone. There is some limited evidence that sugammadex is safe to use if Caesarean delivery has been performed under general anaesthetic (7). Data is limited as to sugammadex's safety profile in breastfeeding.
- At the end of a procedure patients should be extubated awake sitting up.

3.2 Sedation

A study using deep sedation with propofol in women pregnant in their 1st or 2nd trimesters undergoing surgical abortions had no cases of pulmonary aspiration. Hence, sedation with propofol for pregnant women can be considered, but individual cases should be risk assessed as to whether this is appropriate for them and aspiration prophylaxis considered (8).

3.3 Regional Anaesthesia

Regional anaesthesia may be used. Spinal anaesthesia or combined spinal epidural anaesthesia could be considered in some surgeries.

Intrathecal heavy bupivacaine, fentanyl and preservative free morphine or diamorphine can be used. The spread of intrathecal and epidural local anaesthetic is more extensive in pregnancy and requires careful choice of dose and monitoring of block height.

Spinal prilocaine (9) or chloroprocaine (10) can be used if ambulatory spinal anaesthesia is required, but the data is limited especially with chloroprocaine. Prilocaine should be avoided in heart and liver disease and in porphyria.

Prilocaine and chloroprocaine should not be used for any other blocks or local anaesthetic infiltration.

3.4 Haemodynamics

- From 18-20 weeks 15 degrees left lateral tilt should be used by tilting the operating table or inserting a wedge under the patient's right side. This will help to avoid maternal hypotension from aortocaval compression from the gravid uterus (2, 5). This may not be possible with all surgeries.
- Systolic blood pressure should be maintained at 80-100% of baseline to maintain perfusion of the placenta (2). Intravenous fluids administration and vasopressors such as phenylephrine infusion can be used. NICE guidelines state that phenylephrine infusion with ephedrine boluses may be used for Caesarean section (5).

4.0 Fetal Monitoring

- Fetal monitoring should be discussed with a senior obstetrician and midwife during the MDT. The plan for fetal heart monitoring should be documented in the notes. A plan for the place of post-operative care should be discussed.
- Pre- and post-operative documentation of fetal heart rate should be performed. For pre-viable gestations this requires ultrasound/Doppler. For viable gestational ages monitoring contractions and electronic fetal heart rate before and after surgery can be used (2).
- Intraoperative fetal heart rate monitoring should be discussed as part of the MDT. This can be considered at a non-viable gestational age if the fetus is of a size a trace will be picked up as worsening fetal heart rate can indicate uterine hypoperfusion which may be corrected. However, there is no evidence that intraoperative monitoring improves outcomes. Intraoperative monitoring also needs to be physically possible, a qualified individual needs to be present to interpret it, if the fetus is of a viable age an obstetrician needs to be available and if indicated the patient should have been consented for an intraoperative Caesarean delivery (2).
- Obstetricians should consider giving corticosteroids to the mother to promote fetal lung maturation prior to surgery if the fetus is of viable gestation and delivery is planned or possible.
- Consider with the obstetricians whether a Rhesus negative woman needs Anti-D immunoglobulin administration (1).

5.0 Caesarean Deliveries during non-obstetric surgery

It may in some circumstances be considered in the mother's and fetus's best interests to perform a Caesarean delivery. This may be done just prior to the intended surgery if planned. The

Caesarean delivery can be performed under spinal, combined spinal epidural or general anaesthesia. The MDT should consider whether a paediatrician should be present (a paediatrician should always be present if the mother has a general anaesthetic, is unwell or the baby is premature). Avoid intravenous opioids unless the mother is pre-eclamptic until after delivery of the baby. Carefully consider the timing of antibiotics.

6.0 Laparoscopic surgery vs open surgery

- Laparoscopic surgery can be used during pregnancy with careful placement of instrumentation to avoid uterine puncture and the pneumoperitoneum should be kept at 15 mmHg or less (2).
- The surgical approach should be based on the surgeon's preference with careful thought to the risks and benefits of each (2).
- There are advantages of laparoscopic surgery such as decreased pain, shorter recovery times and lower risk of thromboembolic events.

7.0 Analgesia and antiemetics

- Adequate analgesia is important. Poorly controlled pain is associated with preterm contraction and labour (2).
- Opioids are safe for short term post-operative pain but avoid prolonged use (2). Codeine can be used in pregnancy in the short term, but codeine should not be prescribed if breastfeeding due to the risk of respiratory depression in the neonate (1).
- Paracetamol can be used.
- NSAIDs in the 1st trimester can increase the risk of miscarriage and in the 3rd trimester cause constriction of ductus arteriosus. Limited doses of NSAIDs can be used to control acute postoperative pain in the second and early third trimesters and do not pose a substantial risk for fetal adverse events (11).
- The Royal College of Gynaecologists and Obstetricians' Green Top Guideline No 69 on the management of nausea and vomiting in pregnancy states that anti (H1) histamines such as cyclizine can be used as a first line antiemetic in pregnancy. Patients can receive metoclopramide or ondansetron as second line. Beware of extrapyramidal side effects with metoclopramide. There is possibly a small increased risk of orofacial clefting with ondansetron use during the first trimester and slight increase in cardiac defects, but this is controversial (12, 22). Informed consent should be gained regarding the use of antiemetics.

8.0 Table 1. Drugs, side effects and considerations in the peri-operative period during pregnancy and breastfeeding

Drug	Fetal Risk
Paracetamol	Safe for short term use during pregnancy and breastfeeding (19).
Ibuprofen, diclofenac and other NSAIDS	Use of NSAIDs in 1 st trimester may cause increased fetal loss and in 3 rd trimester can cause constriction of ductus arteriosus. During pregnancy limited doses in the 2nd and early 3rd trimester can be considered (2). Rectal diclofenac 100mg is routinely given for Caesarean delivery and ibuprofen is safe for breast feeding (19).
Codeine	Can be used during pregnancy in the short term (21). Codeine near term can cause neonatal withdrawal/respiratory depression (20). Codeine should NOT be used if breastfeeding (19).
Morphine (oral immediate release, IV bolus or PCA)	Can be used in the short term for peri-operative pain in pregnancy and if breastfeeding (20). Observe the baby for drowsiness and respiratory suppression.
Tramadol (immediate release only)	Is not usually used in pregnancy (19). Can be used in breastfeeding for severe pain for a short period if the patient is aware that the baby is at increased risk of sedation and respiratory depression and both mother and baby are closely observed (5)
Dihydrocodeine (immediate release only) and co-dydramol	The NHS advises dihydrocodeine or co-dydramol can be taken in pregnancy but can cause neonatal withdrawal and drowsiness if taken towards the end of pregnancy (13, 21). NICE recommends dihydrocodeine or co-dydramol after Caesarean delivery when breastfeeding if unable to take NSAIDS or in severe pain. Take the lowest dose for the shortest time and avoid taking for longer than 3 days (5). Observe the baby for drowsiness.
Cyclizine	Can be used in pregnancy (14). Occasional doses during breastfeeding are thought to be safe, can cause neonatal drowsiness (15).
Metoclopramide	Can be used in pregnancy (14). Can be used in breastfeeding (16). Small risk of extrapyramidal side effects.
Ondansetron	Very small increase of risk of orofacial clefting during the first trimester (22). It is recommended as a second line antiemetic during pregnancy for Hyperemesis Gravidarum by RCOG (14). Its licence suggests avoiding in breastfeeding but anecdotally appears to be safe (16).
Dexamethasone	The immunosuppressive effects of dexamethasone can block placental growth factors, decrease immune cells and alter progesterone/oestrogen levels, and at high and repeated doses may affect fetal health (17). It is usually ok to take dexamethasone whilst breastfeeding (18).
Antiemetics	Should be given for the minimum duration possible.

9.0 Thromboprophylaxis

- Pregnancy is a significant risk factor for thromboembolism and therefore postoperative thromboprophylaxis should be considered (2).
- Measures taken to reduce incidence of thromboembolism include:
 - a. Early mobilisation
 - b. Maintaining adequate hydration
 - c. Anti-embolism stockings
 - d. Consideration of pharmacological prophylaxis in accordance with Trust policy.
 - e. Flowtrons can be considered if there is any delay in giving pharmacological prophylaxis.

10.0 Documentation in Epic

The operating surgeon should document the surgery performed and other relevant information in the patient's notes. This provides communication with the patient's community team and other healthcare professionals.

11.0 Important Contact Details

Frimley Park Hospital:

Resident Obstetric Anaesthetist bleep 5112

Consultant Obstetric Anaesthetist during Monday-Friday working hours bleep 5591 or mobile phone through switchboard

General Consultant Anaesthetist bleep 5757 or mobile phone through switchboard

Consultant Obstetrician bleep 5607

Obstetric Registrar bleep 5390

Senior Midwife/Labour Ward Supervisor ext 134035 anytime

Consultant Neonatologist contact via switchboard

Neonatal Registrar bleep 5573

Wexham Park Hospital:

Resident Obstetric Anaesthetist phone 07766473057

Consultant Obstetric Anaesthetist during Monday-Friday working hours mobile phone through switchboard

General Consultant Anaesthetist starred Monday-Friday working hours 078826991948 or mobile phone through switchboard

Consultant Obstetrician phone 07789650059

Obstetric Registrar bleep 4449

Senior Midwife/Labour Ward Supervisor ext 154521/153275 anytime

Consultant Neonatologist bleep 4598

Neonatal Registrar bleep 4509

References

1. The Royal College of Anaesthetists. (2025). *Chapter 5: Guidelines for the Provision of Emergency Anaesthesia Services 2025*. [online] Available at: <https://www.rcoa.ac.uk/safety-standards-quality/guidance-resources/guidelines-provision-anaesthetic-services/chapter-5#section-6.6> [Accessed 7 Sep. 2025].
<https://www.rcoa.ac.uk/safety-standards-quality/guidance-resources/guidelines-provision-anaesthetic-services/chapter-5#section-6.6>
2. Brakke, B.D. and Sviggum, H.P. (2023). Anaesthesia for non-obstetric surgery during pregnancy. *BJA Education*. doi:<https://doi.org/10.1016/j.bjae.2022.12.001>.
3. Moore, H.B. · Juarez-Colunga, E. · Bronsert, M. ...
Effect of pregnancy on adverse outcomes after general surgery
JAMA Surg. 2015; 150:637-643
4. Cohen-Kerem, R. · Railton, C. · Oren, D. ...
Pregnancy outcome following non-obstetric surgical intervention
Am J Surg. 2005; 190:467-473
5. National Institute for Health and Care Excellence, Caesarean Birth, NICE guidance, NG 192, published: 31/3/2021, last updated: 10 June 2025
6. Comparison of Supreme laryngeal mask airway versus endotracheal intubation for airway management during general anesthesia for cesarean section: a randomized controlled trial
BMC Anesthesiol. 2019; 19:123
7. Puhlinger, F.K., Kristen, P., Rex, C. Sugammadex reversal of rocuronium-induced neuromuscular block in Caesarean section patients: a series of seven cases. *BJA* vol 105, issue 5, Nov 2010, pgs 657-660
8. Dean, G. · Jacobs, A.R. · Goldstein, R.C. ...
The safety of deep sedation without intubation for abortion in the outpatient setting
J Clin Anesth. 2011; 23:437-442
9. Guntz E, Carini A, Kapessidou. Spinal prilocaine for caesarean section: walking a fine line. *Anaesthesia* 2021; 76:1671-1674
10. Mandalia S, Dinges E, Bollag L, Delgado C. Spinal chloroprocaine for obstetrical non-delivery procedures: a retrospective analysis at a single academic centre. *International Journal of Obstetric Anesthesia* (2021) 45:158-159
<https://doi.org/10.1016/j.ijoa.2020.11.009>

11. Bermas, B.L.
Safety of rheumatic disease medication use during pregnancy and lactation
UpToDate. 2022;
Available from: <https://www.uptodate.com/contents/safety-of-rheumatic-disease-medication-use-during-pregnancy-and-lactation>
12. The Management of Nausea and Vomiting in Pregnancy and Hyperemesis Gravidarum (Green-top Guideline No. 69). Catherine Nelson-Piercy, Caitlin Dean et al. The Royal College of Obstetricians and Gynaecologists. Feb 2024
13. www.nhs.uk, Medicines A to Z, Codydramol, pregnancy, breastfeeding and fertility while taking co-dydramol
14. BJOG, The management of nausea and vomiting in pregnancy and Hyperemesis Gravidarum, RCOG Green-top Guideline No. 69, vol 131 issue 7 June 2024
15. NHS website, Medicines A to Z, Cyclizine, Pregnancy, breastfeeding and fertility while taking cyclizine.
16. Anaesthesia vol 75 Issue 11 Pages 1482-1493, Guideline on anaesthesia and sedation in breastfeeding women 2020
17. Anesth Prog. 2021 Jun 29; 68(2): 119-127. Anesthetic Management of the Pregnant Patient: Part 2
18. www.nhs.uk, Medicines A to Z, Dexamethasone, Pregnancy, breastfeeding and fertility while taking dexamethasone tablets and liquid.
19. NICE website bnf.nice.org.uk
20. NHS website www.nhs.uk
21. uktis.org/monographs/use-of-codeine-or-dihydrocodeine-in-pregnancy/
22. uktis.org/wp-content/uploads/2025/02/Ondansetron-UKTIS-Response-Statement-add-on-to-ENTIS-KKH-v1

Full version control record

Version:	3.0
Guidelines Lead(s):	Dr Sharon Hesford, Consultant Anaesthetist Dr Sarah Armstrong, Consultant Anaesthetist, Dr Nimisha Patel, Consultant Anaesthetist, Dr Catherine Doyle, Consultant Anaesthetist, Miss Sukhera Furness, Consultant Obstetrician
Contributor(s):	
Lead Director / Chief of Service:	Mr Luke Forster
Library check completed:	17/03/2025
Ratified at:	Cross-site Anaesthetic Clinical Governance 18/03/2026
Date Issued:	21/03/2026
Review Date:	01/03/2029
Pharmaceutical dosing advice and formulary compliance checked by:	Rashmi Selli 17/03/2026
Key words:	Non-obstetric surgery, pregnancy, anaesthesia

This guideline has been registered with the Trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt, contact a senior colleague or expert. Caution is advised when using guidelines after the review date.

This guideline is for use in Frimley Health NHS Foundation Trust hospitals only. Any use outside this location will not be supported by the Trust and will be at the risk of the individual using it.

Version Control Sheet

Version	Date	Guideline Lead(s)	Status	Comment
1	June 2015	M Cheresnva, S Hesford	Final	Approved at Labour Ward Forum January 2015
2	January 2022	S Hesford	Final	
3	March 2026	S Hesford	Final	Full review Cross-site Anaesthetic Clinical Governance 18/03/2026

Related Documents

Document Type	Document Name
Guideline	AN and PN Women Attending ED or Admitted Outside Maternity