NICE National Institute for Health and Care Excellence

NICE guideline

Caesarean birth

NICE guideline
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Your responsibility

The recommendations in this guideline represent the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, professionals and practitioners are expected to take this guideline fully into account, alongside the individual needs, preferences and values of their patients or the people using their service. It is not mandatory to apply the recommendations, and the guideline does not override the responsibility to make decisions appropriate to the circumstances of the individual, in consultation with them and their families and carers or guardian.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Local commissioners and providers of healthcare have a responsibility to enable the guideline to be applied when individual professionals and people using services wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with complying with those duties.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

This guideline partially replaces CG132.

This guideline is the basis of QS32.

Overview

This guideline covers when to offer and discuss caesarean birth, procedural aspects of the operation, and care after caesarean birth. It aims to improve the consistency and quality of care for women and pregnant people who are thinking about having a caesarean birth or have had a caesarean birth in the past and are now pregnant again.

Who is it for?

- Healthcare professionals
- Commissioners
- Pregnant women and pregnant people, their families and carers

Recommendations

People have the right to be involved in discussions and make informed decisions about their care, as described in NICE's information on making decisions about your care.

This guideline uses specific, inclusive language to describe the population groups it covers (for example, women and pregnant people, or trans and non-binary people) except when:

- the evidence for the recommendation has not been reviewed, and it is not certain from expert opinion whether it can cover more groups, or
- the evidence has been reviewed, but the information available for some groups at the time of development was too limited to make specific recommendations, or
- only a very limited number of recommendations have been updated in direct response to new evidence or to reflect a change in practice.

Healthcare professionals should use their clinical judgement when implementing gender-specific recommendations, taking into account the individual's circumstances, needs and preferences, and ensuring all people are treated with dignity and respect throughout their care.

Making decisions using NICE guidelines explains how we use words to show the strength (or certainty) of our recommendations, and has information about prescribing medicines (including off-label use), professional guidelines, standards and laws (including on consent and mental capacity), and safeguarding.

1.1 Planning mode of birth

Provision of information

1.1.1 Offer all pregnant women information and support to enable them to make

informed decisions about childbirth. Make sure that:

- the information is evidence based
- any information provided is accessible, ideally with a choice of formats to suit different women's needs
- the language used in any information (written or oral) is respectful and suitable for the woman, taking into account any personal, cultural or religious factors that could form part of the woman's choices
- the women's preferences and concerns are central to the decision-making process. **[2004, amended 2021]**

1.1.2 Discuss mode of birth with all pregnant women early in their pregnancy. Cover information such as:

- around 25% to 30% of women have a caesarean birth
- factors that mean women may need a caesarean birth (for example, increased maternal age and body mass index [BMI])
- common indications for emergency caesarean birth include slow progression of labour or concern about fetal condition
- planned place of birth may affect the mode of birth (see planning place of birth in the NICE guideline on intrapartum care)
- what the caesarean birth procedure involves
- how a caesarean birth may impact on the postnatal period (for example, need for pain relief)
- implications for future pregnancies and birth after caesarean birth or vaginal birth (for example, after a caesarean birth the chances of caesarean birth in a future pregnancy may be increased). **[2011, amended 2021]**

Benefits and risks of caesarean and vaginal birth

1.1.3 Discuss the benefits and risks of both caesarean and vaginal birth with women,

taking into account their circumstances, concerns, priorities and plans for future pregnancies. **[2021]**

1.1.4 Using the information in appendix A, explain to women that:

- there are benefits and risks associated with both vaginal and caesarean birth, some of which are very small absolute risks and some are greater absolute risks, and they will need to decide which risks are more (or less) acceptable to them
- there are other risks not included in these tables that might be relevant to their individual circumstances (for example, placental adherence problems from multiple caesarean births, fetal lacerations in caesarean birth, term birth injuries with vaginal birth or caesarean birth)
- these tables give summary estimates only and are intended to help discussions, but precise numerical risk estimates cannot be given for individual women. **[2021]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on benefits and risks of caesarean and vaginal birth.

Full details of the evidence and the committee's discussion are in evidence review A: the benefits and risks of planned caesarean birth.

1.2 Planned caesarean birth

Breech presentation

1.2.1 Discuss with women the benefits and risks of planned vaginal birth versus planned caesarean birth for breech presentation, and the option of external cephalic version. **[2004, amended 2021]**

1.2.2 Offer women who have an uncomplicated singleton breech pregnancy after 36+0 weeks, external cephalic version, unless:

- the woman is in established labour
- there is fetal compromise
- the woman has ruptured membranes or vaginal bleeding
- the woman has any other medical conditions (for example, severe hypertension) that would make external cephalic version inadvisable. **[2004, amended 2021]**

1.2.3 Before carrying out a caesarean birth for an uncomplicated singleton breech pregnancy, carry out an ultrasound scan to check that the baby is in the breech position. Do this as late as possible before the caesarean birth procedure. **[2021]**

Multiple pregnancy

1.2.4 For recommendations on mode of birth in multiple pregnancy, see mode of birth in the NICE guideline on twin and triplet pregnancy. **[2021]**

Preterm birth

1.2.5 For recommendations on mode of birth in preterm labour and birth, see mode of birth in the NICE guideline on preterm labour and birth. **[2021]**

Placenta praevia

1.2.6 Offer caesarean birth to women with a placenta that partly or completely covers the internal cervical os (minor or major placenta praevia). **[2004, amended 2011]**

Placenta accreta spectrum

1.2.7 If the routine 20-week ultrasound scan shows placenta praevia or low-lying placenta in a woman or pregnant person with a previous caesarean scar (or a

uterine scar from other surgery), refer for a greyscale ultrasound scan with colour doppler to assess for placenta accreta. This scan should be done around 28 weeks, but no later than 29 weeks, by a senior clinician with expertise in the diagnosis of placenta accreta. **[2024]**

(See the section on routine antenatal clinical care in the NICE guideline on antenatal care for more information on routine scans.)

1.2.8 If placenta accreta is suspected following the greyscale ultrasound scan with colour doppler (see recommendation 1.2.7), refer the woman or pregnant person to a specialist placenta accreta spectrum centre for care and ongoing management. **[2024]**

Care for women with placenta accreta spectrum in specialist centres

1.2.9 Consider an MRI scan to complement ultrasound findings when planning ongoing surgical management of placenta accreta spectrum. Discuss the following with the woman or pregnant person:

- what to expect during an MRI procedure
- that MRI can help clarify the degree of invasion, particularly with a posterior placenta
- that current experience suggests that MRI is safe, but that there is a lack of evidence about any long-term risks to the baby. **[2024]**

1.2.10 Discuss birth options (for example, timing of birth, operative interventions including possibility of hysterectomy, need for blood transfusion) with a woman or pregnant person suspected to have placenta accreta spectrum. This discussion should be carried out by a senior obstetrician. **[2011, amended 2024]**

1.2.11 When planning a caesarean birth for women or pregnant people suspected to have placenta accreta spectrum, the multidisciplinary team should:

- agree which other healthcare professionals need to be consulted or present

(for example, specialists in gynaecological surgery, interventional radiology, colorectal surgery, urology or vascular surgery, depending on the nature of the placenta accreta spectrum) **and**

- the responsibilities of each team member. **[2011, amended 2024]**

1.2.12 When performing a planned caesarean birth for a woman or pregnant person suspected to have placenta accreta spectrum, ensure that:

- a consultant obstetrician, a consultant gynaecologist and a consultant anaesthetist are present in the operating theatre
- a paediatric or neonatal registrar or consultant is present to provide immediate care for the baby as soon as it is born
- a haematology registrar or consultant is available to contact for advice
- a critical care bed is available for the woman or pregnant person, and a critical care neonatal cot is available for the baby (although emergency surgery should not be delayed while waiting for a bed)
- sufficient cross-matched blood and blood products are readily available (if blood transfusions are acceptable to the woman or pregnant person). See the NICE guideline on blood transfusion. **[2011, amended 2024]**

1.2.13 Specialist placenta accreta spectrum centres and the local maternity units they support should develop protocols covering how placenta accreta spectrum should be diagnosed, assessed and managed across their network. The protocol should include the care and management of placenta accreta spectrum identified late in pregnancy or in labour, including how specialist units can support emergency care in local maternity units. **[2024]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on placenta accreta spectrum.

Full details of the evidence and the committee's discussion are in evidence review H: placenta accreta spectrum (PAS).

Predicting caesarean birth for cephalopelvic disproportion in labour

1.2.14 Do not use pelvimetry for decision making about mode of birth. **[2004, amended 2021]**

1.2.15 Do not use the following for decision making about mode of birth, as they do not accurately predict cephalopelvic disproportion:

- maternal shoe size
- maternal height
- estimations of fetal size (ultrasound or clinical examination). **[2004, amended 2021]**

Mother-to-child transmission of maternal infections

HIV

1.2.16 Provide women with HIV information about the benefits and risks for them and their baby of the HIV treatment options and mode of birth as early as possible in their pregnancy, so that they can make an informed decision. Obtain specialist advice about HIV in pregnancy from a sexual health specialist if necessary. **[2011, amended 2021]**

Hepatitis B virus

1.2.17 Do not offer pregnant women with hepatitis B a planned caesarean birth for this reason alone, as mother-to-baby transmission of hepatitis B can be reduced if the baby receives immunoglobulin and vaccination. **[2004, amended 2021]**

Hepatitis C virus

1.2.18 Do not offer women who are infected with hepatitis C a planned caesarean birth

for this reason alone. **[2004, amended 2021]**

1.2.19 Offer pregnant women who are co-infected with hepatitis C virus and HIV a planned caesarean birth to reduce mother-to-baby transmission of hepatitis C virus and HIV. **[2004, amended 2021]**

Herpes simplex virus

1.2.20 Offer women with primary genital herpes simplex virus (HSV) infection occurring in the third trimester of pregnancy a planned caesarean birth to decrease the risk of neonatal HSV infection. **[2004]**

1.2.21 Do not routinely offer pregnant women with recurrent HSV infection a planned caesarean birth outside of the context of research. **[2004, amended 2021]**

Body mass index

1.2.22 Do not use a BMI of over 50 kg/m^2 alone as an indication for planned caesarean birth. **[2011]**

Shared decision making

1.2.23 Ask for consent for caesarean birth only after providing pregnant women with evidence-based information. Ensure the woman's dignity, privacy, views and culture are respected, while taking the woman's clinical situation into account. **[2004, amended 2021]**

1.2.24 Advise women that they are entitled to decline the offer of treatment such as caesarean birth, even when it would benefit their or their baby's health. **[2004, amended 2021]**

1.2.25 When a woman decides on or declines a caesarean birth, document the factors that that are important to the woman when making her decision. **[2004, amended 2021]**

Maternal choice for caesarean birth

1.2.26 When a woman or pregnant person with no medical indication for a caesarean birth requests a caesarean birth:

- offer to discuss and explore the reasons for the request
- ensure they have balanced and accurate information
- offer to discuss alternative birth options (for example, place of birth, continuity of midwifery care where available, pain relief options), which may help address concerns they have about the birth
- offer discussions with a consultant midwife or senior midwife, ideally in a birth options clinic or at a birth options appointment
- offer discussions with a consultant or senior obstetrician and other members of the team (for example, an anaesthetist) if necessary or requested by the woman or pregnant person
- record the discussions and decisions. **[2011, amended 2023]**

1.2.27 If a woman or pregnant person requests a caesarean birth, discuss the overall benefits and risks of caesarean birth compared with vaginal birth (see the section on planning mode of birth) and record that this discussion has taken place. **[2011]**

1.2.28 If a woman or pregnant person requests a caesarean birth because they have tokophobia or other severe anxiety about childbirth (for example, following abuse or a previous traumatic event), offer referral to a healthcare professional with expertise in providing perinatal mental health support to help with their anxiety. See the NICE guideline on antenatal and postnatal mental health for more detailed advice on providing mental health services during pregnancy. **[2011, amended 2021]**

1.2.29 Ensure healthcare professionals providing perinatal mental health support for women or pregnant people with tokophobia or other severe anxiety about childbirth are able to access the planned place of birth with the woman or pregnant person during the antenatal period, as part of the support offered to

help them overcome fears and concerns about the labour and birth. **[2011, amended 2023]**

1.2.30 If, after an informed discussion about the options for birth (including the offer of perinatal mental health support if appropriate; see recommendation 1.2.27), the woman or pregnant person requests a caesarean birth, support their choice. **[2011, amended 2023]**

1.2.31 If a woman or pregnant person requests a caesarean birth this should be offered within their obstetric unit. **[2011, amended 2023]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on maternal choice for caesarean birth.

1.3 Factors affecting the likelihood of emergency caesarean birth during intrapartum care

Factors reducing the likelihood of caesarean birth

1.3.1 Inform women that continuous support during labour from women, with or without prior training, reduces the likelihood of caesarean birth. **[2004]**

1.3.2 Use a partogram with a 4-hour action line to monitor progress of women in spontaneous labour with an uncomplicated singleton pregnancy at term to reduce the likelihood of caesarean birth. **[2004]**

1.3.3 Involve a consultant obstetrician in decision-making for caesarean birth. **[2004, amended 2021]**

No influence on the likelihood of caesarean birth

1.3.4 Inform women that the following interventions during intrapartum care have not

been shown to influence the likelihood of caesarean birth, although they can affect other outcomes:

- walking in labour
- non-supine position during the second stage of labour
- immersion in water during labour
- epidural analgesia during labour
- the use of raspberry leaves. **[2004, amended 2021]**

1.3.5 Inform women that the effects on the likelihood of caesarean birth of complementary therapies used during labour (such as acupuncture, aromatherapy, hypnosis, herbal products, nutritional supplements, homeopathic medicines, and Chinese medicines) are uncertain. **[2004, amended 2021]**

Slow progression in labour and caesarean birth

1.3.6 Do not offer the following as they do not influence the likelihood of caesarean birth for slow progression in labour, although they can affect other outcomes:

- active management of labour (comprising a strict definition of established labour, early routine amniotomy, routine 2-hourly vaginal examination, oxytocin if labour becomes slow)
- early amniotomy. **[2004, amended 2021]**

Eating during labour

1.3.7 Inform women that eating a low-residue diet during labour (toast, crackers, low-fat cheese) results in larger gastric volumes, but the effect on the risk of aspiration if anaesthesia is needed is uncertain. **[2004]**

1.3.8 Inform women that having isotonic drinks during labour prevents ketosis without a concomitant increase in gastric volume. **[2004]**

1.4 Procedural aspects of caesarean birth

Timing of planned caesarean birth

1.4.1 Do not routinely carry out planned caesarean birth before 39 weeks, as this can increase the risk of respiratory morbidity in babies. **[2004]**

Classification of urgency for caesarean birth

1.4.2 Use the following standardised scheme to document the urgency of caesarean birth and aid clear communication between healthcare professionals:

- Category 1. Immediate threat to the life of the woman or fetus (for example, suspected uterine rupture, major placental abruption, cord prolapse, fetal hypoxia or persistent fetal bradycardia).
- Category 2. Maternal or fetal compromise which is not immediately life-threatening.
- Category 3. No maternal or fetal compromise but needs early birth.
- Category 4. Birth timed to suit woman or healthcare provider. **[2004, amended 2021]**

Decision-to-birth interval for unplanned and emergency caesarean birth

Category 1 caesarean birth is when there is immediate threat to the life of the woman or fetus, and category 2 caesarean birth is when there is maternal or fetal compromise which is not immediately life-threatening.

1.4.3 Perform category 1 caesarean birth as soon as possible, and in most situations within 30 minutes of making the decision. **[2011, amended 2021]**

1.4.4 Perform category 2 caesarean birth as soon as possible, and in most situations

within 75 minutes of making the decision. **[2011, amended 2021]**

1.4.5 Take into account the condition of the woman and the unborn baby when making decisions about rapid birth. Be aware that rapid birth can be harmful in certain circumstances. **[2011]**

Preoperative testing and preparation for caesarean birth

1.4.6 Before caesarean birth, carry out a full blood count to identify anaemia, antibody screening, and blood grouping with saving of serum. **[2004, amended 2021]**

1.4.7 Do not routinely carry out the following tests before caesarean birth:

- cross-matching of blood
- a clotting screen
- preoperative ultrasound for localisation of the placenta. **[2004, amended 2021]**

1.4.8 Carry out caesarean birth for pregnant women with antepartum haemorrhage, abruption or placenta praevia at a maternity unit with on-site blood transfusion services, as they are at increased risk of blood loss of more than 1,000 ml. **[2004, amended 2021]**

1.4.9 Give women having caesarean birth with regional anaesthesia an indwelling urinary catheter to prevent over-distension of the bladder. **[2004, amended 2021]**

Anaesthesia for caesarean birth

1.4.10 Provide pregnant women having a caesarean birth with information on the different types of post-caesarean birth analgesia, so that they can make an informed choice (see recommendation 1.6.11). **[2004]**

1.4.11 Offer women who are having a caesarean birth regional anaesthesia in preference

to general anaesthesia, including women who have a diagnosis of placenta praevia. **[2004, amended 2021]**

1.4.12 Carry out induction of anaesthesia, including regional anaesthesia, for caesarean birth in theatre. **[2004, amended 2021]**

1.4.13 Apply a left lateral tilt of up to 15 degrees or appropriate uterine displacement once the woman is in a supine position on the operating table to reduce maternal hypotension. **[2004, amended 2021]**

1.4.14 Offer women who are having a caesarean birth under spinal anaesthesia a prophylactic intravenous infusion of phenylephrine, started immediately after the spinal injection. Adjust the rate of infusion to keep maternal blood pressure at 90% or more of baseline value and avoid decreases to less than 80% of baseline. **[2004, amended 2021]**

1.4.15 When using phenylephrine infusion, give intravenous ephedrine boluses to manage hypotension during caesarean birth, for example, if the heart rate is low and blood pressure is less than 90% of baseline. **[2004, amended 2021]**

1.4.16 Use intravenous crystalloid co-loading in addition to vasopressors to reduce the risk of hypotension occurring during caesarean birth. **[2004, amended 2021]**

1.4.17 Ensure each maternity unit has a set of procedures for failed intubation during obstetric anaesthesia. **[2004]**

1.4.18 Offer women antacids and drugs (such as H_2-receptor antagonists or proton pump inhibitors) to reduce gastric volumes and acidity before caesarean birth.

In March 2021, this was an off-label use of proton pump inhibitors. See NICE's information on prescribing medicines. **[2004, amended 2021]**

1.4.19 Offer women having a caesarean birth anti-emetics (either pharmacological or acupressure) to reduce nausea and vomiting during caesarean birth. **[2004]**

1.4.20 Include pre-oxygenation, cricoid pressure and rapid sequence induction in general anaesthesia for caesarean birth to reduce the risk of aspiration. **[2004,**

amended 2011]

Prevention and management of hypothermia and shivering

1.4.21 Warm IV fluids (500 ml or more) and blood products used during caesarean birth to 37 degrees Celsius using a fluid warming device. **[2021]**

1.4.22 Warm all irrigation fluids used during caesarean birth to 38 to 40 degrees Celsius in a thermostatically controlled cabinet. **[2021]**

1.4.23 Consider forced air warming for women who shiver, feel cold, or have a temperature of less than 36 degrees Celsius during caesarean birth. **[2021]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on prevention and management of hypothermia and shivering.

Full details of the evidence and the committee's discussion are in evidence review C: prevention and management of hypothermia and shivering.

Surgical techniques and medication for caesarean birth

Methods to reduce infectious morbidity

1.4.24 Use alcohol-based chlorhexidine skin preparation before caesarean birth to reduce the risk of wound infections. See the NICE guideline on surgical site infections. **[2021]**

1.4.25 Use aqueous povidone-iodine vaginal preparation before caesarean birth in women with ruptured membranes to reduce the risk of endometritis. If aqueous povidone-iodine vaginal preparation is not available or is contraindicated, aqueous chlorhexidine vaginal preparation can be used. **[2021]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on methods to reduce infectious morbidity and wound care after caesarean birth.

Full details of the evidence and the committee's discussion are in evidence review B: methods to reduce infectious morbidity at caesarean birth.

Methods to prevent HIV transmission in theatre

1.4.26 Wear double gloves when performing or assisting a caesarean birth for women who have tested positive for HIV, to reduce the risk of HIV infection of staff. **[2004]**

1.4.27 Follow general recommendations for safe surgical practice during caesarean birth to reduce the risk of HIV infection of staff. **[2004]**

Abdominal wall incision

1.4.28 Perform caesarean birth using a low, transverse, straight skin incision with subsequent tissue layers opened bluntly and, if necessary, extended using sharp dissection. This may need to be modified with a higher incision for women and pregnant people with class 3 obesity (BMI 40 kg/m^2 or more). A vertical midline incision may be required for some clinical indications. **[2004, amended 2023]**

For a short explanation of why the committee made the recommendation and how it might affect practice, see the rationale and impact section on surgical opening technique.

Full details of the evidence and the committee's discussion are in evidence review G: surgical opening technique.

Instruments for skin incision

1.4.29 Do not use separate surgical knives to incise the skin and the deeper tissues in caesarean birth, as it does not decrease wound infection. **[2004]**

Extension of the uterine incision

1.4.30 When there is a well-formed lower uterine segment, use blunt rather than sharp extension of the uterine incision to reduce blood loss, incidences of postpartum haemorrhage and the need for transfusion during caesarean birth. **[2004]**

Fetal laceration

1.4.31 Inform women who are having a caesarean birth that the risk of fetal lacerations is about 2%. **[2004]**

Use of forceps

1.4.32 Only use forceps in caesarean birth if there is difficulty delivering the baby's head. The effect on neonatal morbidity of the routine use of forceps at caesarean birth remains uncertain. **[2004]**

Use of uterotonics

1.4.33 Follow recommendation 1.10.13 in the section on the third stage of labour in NICE's guideline on intrapartum care. **[2004, amended 2025]**

Method of placental removal

1.4.34 Remove the placenta in caesarean birth using controlled cord traction and not manual removal to reduce the risk of endometritis. **[2004]**

Exteriorisation of the uterus

1.4.35 Perform intraperitoneal repair of the uterus for caesarean birth. Routine exteriorisation of the uterus is not recommended because it is associated with more pain and does not improve operative outcomes such as haemorrhage and infection. **[2004, amended 2021]**

Closure of the uterus

1.4.36 Use single layer or double layer uterine closure in caesarean birth, depending on the clinical circumstances. Note that single layer closure does not increase the risk of postoperative bleeding or uterine rupture in a subsequent pregnancy. **[2021]**

For a short explanation of why the committee made the recommendation and how it might affect practice, see the rationale and impact section on closure of the uterus.

Full details of the evidence and the committee's discussion are in evidence review D: techniques to close the uterus at caesarean birth.

Closure of the peritoneum

1.4.37 Do not suture the visceral or the parietal peritoneum in caesarean birth to reduce operating time and the need for postoperative analgesia, and improve maternal satisfaction. **[2004]**

Closure of the abdominal wall

1.4.38 If a midline abdominal incision is used in caesarean birth, use mass closure with slowly absorbable continuous sutures as this results in fewer incisional hernias and less dehiscence than layered closure. **[2004]**

Closure of subcutaneous tissue

1.4.39 Do not routinely close the subcutaneous tissue space in caesarean birth unless the woman has more than 2 cm subcutaneous fat, as it does not reduce the incidence of wound infection. **[2004]**

Use of superficial wound drains

1.4.40 Do not routinely use superficial wound drains in caesarean birth as they do not decrease the incidence of wound infection or wound haematoma. See recommendation 1.7.2 on the use of negative pressure wound therapy. **[2004, amended 2021]**

Closure of the skin

1.4.41 Consider using sutures rather than staples to close the skin after caesarean birth to reduce the risk of superficial wound dehiscence. See closure methods in the NICE guideline on surgical site infections. **[2019]**

Umbilical artery pH measurement

1.4.42 Perform paired umbilical artery and vein measurements of cord blood gases after caesarean birth for suspected fetal compromise, to allow for assessment of fetal wellbeing and guide ongoing care of the baby. **[2004, amended 2021]**

Timing of antibiotic administration

1.4.43 Offer women prophylactic antibiotics before skin incision for caesarean birth, choosing antibiotics that are effective against endometritis, urinary tract and wound infections. **[2011, amended 2021]**

1.4.44 Inform women that:

- endometritis, urinary tract and wound infections occur in about 8% of women

who have had a caesarean birth

- using prophylactic antibiotics before skin incision reduces the risk of maternal infection more than prophylactic antibiotics given after skin incision, and that there is no known effect on the baby. **[2011, amended 2021]**

1.4.45 Do not use co-amoxiclav when giving prophylactic antibiotics before skin incision for caesarean birth. **[2011]**

Thromboprophylaxis for caesarean birth

1.4.46 Offer thromboprophylaxis to women having a caesarean birth. Take into account the risk of thromboembolic disease when choosing the method of prophylaxis (for example, graduated stockings, hydration, early mobilisation, low molecular weight heparin). **[2011]**

Women's preferences during caesarean birth

1.4.47 Accommodate a woman's preferences for her caesarean birth whenever possible, such as, music playing in theatre, lowering the screen to see the baby born, or silence so that the mother's voice is the first the baby hears. **[2004]**

1.5 Care of the baby born by caesarean birth

Presence of paediatrician at caesarean birth

1.5.1 Ensure an appropriately trained practitioner skilled in the resuscitation of newborn babies is present for caesarean birth performed under general anaesthesia, or if there is evidence of fetal compromise. **[2004]**

Thermal care for babies born by caesarean birth

1.5.2 As babies born by caesarean birth are more likely to have a lower temperature, ensure thermal care is in accordance with good practice for thermal care of newborn babies. **[2004]**

Maternal contact (skin-to-skin)

1.5.3 Offer and facilitate early skin-to-skin contact between the woman and her baby. **[2004, amended 2021]**

Breastfeeding

1.5.4 Offer women who have had a caesarean birth and who wish to breastfeed support to help them to start breastfeeding as soon as possible after the birth of their baby. **[2004, amended 2021]**

1.6 Care of the woman after caesarean birth

High-dependency unit/intensive therapy unit admission

1.6.1 Be aware that, although it is rare for women to need intensive care after childbirth, this may occur after caesarean birth. **[2004, amended 2021]**

Monitoring after caesarean birth

After general anaesthesia

1.6.2 After caesarean birth under a general anaesthetic, a healthcare professional with airway skills should carry out continuous, one-to-one observation of the woman until she:

- has regained airway control **and**
- is haemodynamically stable **and**
- is able to communicate. **[2021]**

1.6.3 When a woman has regained airway control, is haemodynamically stable, and is able to communicate after caesarean birth under a general anaesthetic:

- continue observations (oxygen saturations, respiratory rate, heart rate, blood pressure, temperature, pain and sedation) every half hour for 2 hours
- after 2 hours, if these observations are stable, carry out routine observations in accordance with local protocols
- if these observations are not stable, or the woman has other risk factors or complications (for example, severe hypertension, or signs of infection or sepsis), carry out a medical review and increase the duration and frequency of observations.

  Also see recommendation 1.6.6 on use of pulse oximeters for people with dark skin. **[2021, amended 2023]**

After spinal or epidural anaesthesia

1.6.4 After caesarean birth under a spinal or epidural anaesthetic, a healthcare professional should carry out continuous one-to-one observation of the woman or person who has given birth until they are haemodynamically stable (for example, when pulse and blood pressure have returned to baseline values). **[2021]**

1.6.5 For women or people who have had intrathecal or epidural diamorphine for caesarean birth, and who have known risk factors for respiratory depression:

- carry out hourly monitoring of oxygen saturations, respiratory rate and sedation for at least 12 hours after birth **and then**
- continue with routine postnatal observations in accordance with local

protocols. **[2021, amended 2023]**

1.6.6 Take into account that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin so hypoxaemia may not be detected. Close attention to respiratory rate and sedation may therefore be needed to detect respiratory depression.

Follow the NHS guidance on the use of pulse oximeters and the NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes. **[2023]**

1.6.7 For women or people who have had intrathecal or epidural diamorphine for caesarean birth, and do not have any known risk factors for respiratory depression, carry out routine postnatal observations in accordance with local protocols. **[2021, amended 2023]**

1.6.8 Take into account that, compared with neuraxial diamorphine, neuraxial morphine may be associated with an increased risk of respiratory depression over a longer period, so additional monitoring may be needed (see recommendations 1.6.9 and 1.6.10). **[2023]**

1.6.9 For women or people who have had intrathecal morphine or epidural morphine for caesarean birth, and who have known risk factors for respiratory depression:

- carry out hourly monitoring of oxygen saturations, respiratory rate and sedation for at least 12 hours after birth, **and then**
- continue with routine postnatal observations in accordance with local protocols, unless clinical assessment suggests concerns, including the potential for prolonged effects of morphine (see recommendation 1.6.8), which mean that ongoing monitoring of respiratory status is needed. **[2023]**

1.6.10 For women or people who have had intrathecal morphine or epidural morphine for caesarean birth and who do not have any known risk factors for respiratory depression, carry out routine postnatal observations in accordance with local protocols, unless clinical assessment suggests concerns, including the potential for prolonged effects of morphine (see recommendation 1.6.8), which mean that

additional monitoring of respiratory status is needed. **[2023]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on monitoring after caesarean birth.

Full details of the evidence and the committee's discussion are in evidence review E: monitoring after intrathecal or epidural opioids for caesarean birth.

Pain management after caesarean birth

1.6.11 Offer intrathecal diamorphine (up to 300 micrograms) to reduce the need for supplemental analgesia after a caesarean birth. Use epidural diamorphine (up to 3 mg) as an alternative if intrathecal diamorphine has not been given.

In September 2023, this was an off-label use of diamorphine (both intrathecal and epidural). See NICE's information on prescribing medicines. **[2004, amended 2023]**

1.6.12 If diamorphine is unavailable, offer intrathecal preservative-free morphine (up to 100 micrograms) plus intrathecal fentanyl (up to 15 micrograms). Use epidural preservative-free morphine (up to 3 mg) as an alternative if intrathecal morphine has not been used.

Take into account that neuraxial morphine increases the risk of nausea, vomiting and itching compared with diamorphine, and that these side effects may need treatment.

In September 2023, this was an off-label use of fentanyl (intrathecal). See NICE's information on prescribing medicines. **[2023]**

1.6.13 When using neuraxial morphine in place of diamorphine, ensure that:

- only preservative-free morphine is used
- that preservative-containing and preservative-free morphine are stored

separately

- that in settings where both types of morphine injection are kept, preservative-containing morphine is clearly identified as 'not for neuraxial administration'. **[2023]**

1.6.14 Discuss options with women for pain relief after caesarean birth and explain that:

- pain after caesarean birth can be controlled using oral or injectable medicines
- their choice of pain relief medicines after caesarean birth will depend on:
  - the severity of pain
  - whether they had spinal or epidural anaesthesia, or general anaesthesia
- if they wish to breastfeed, they will usually be able to do this and care for their baby while taking pain relief medicines. **[2021]**

1.6.15 Offer oral immediate-release morphine sulfate to women who have received spinal or epidural anaesthesia for caesarean birth. If the woman cannot take oral medication (for example, because of nausea or vomiting), offer intravenous, intramuscular or subcutaneous morphine. **[2021]**

1.6.16 Consider intravenous patient-controlled analgesia (PCA) using morphine for women and people who have given birth who have had a general anaesthetic for caesarean birth. If intravenous PCA is not acceptable to the woman or person who has given birth, or the pain is less severe, consider oral immediate-release morphine sulfate. **[2021]**

1.6.17 Ensure women and people who have had PCA with opioids after caesarean birth have routine hourly monitoring of oxygen saturations, respiratory rate, sedation and pain scores throughout treatment, and for at least 2 hours after discontinuation of treatment. **[2004, amended 2023]**

1.6.18 Use paracetamol and, unless contraindicated, a non-steroidal anti-inflammatory drug (for example, ibuprofen) in combination after caesarean birth, to reduce the need for opioids and to allow them to be stepped down and stopped as early as

possible. **[2004, amended 2021]**

1.6.19 If paracetamol does not provide sufficient pain relief after caesarean birth, or non-steroidal anti-inflammatory drugs cannot be taken, consider adding immediate-release dihydrocodeine to paracetamol, or changing to co-dydramol (combination preparation of paracetamol and dihydrocodeine) as an alternative to paracetamol. **[2021]**

1.6.20 Do not offer codeine or co-codamol (combination preparation of paracetamol and codeine) to women who are currently breastfeeding, because this can lead to serious neonatal sedation and respiratory depression. Follow the MHRA safety advice on codeine for analgesia: restricted use in children because of reports of morphine toxicity. **[2021]**

1.6.21 When using paracetamol, immediate-release dihydrocodeine, co-dydramol or a non-steroidal anti-inflammatory drug after caesarean birth, prescribe them to be taken regularly and not just when needed for pain relief. **[2021]**

1.6.22 For women with severe pain after caesarean birth, when other pain relief is not sufficient:

- perform a full assessment to exclude other causes for the pain (for example, sepsis, haemorrhage, urinary retention)
- discuss with the woman that stronger pain relief medicines are available
- make sure the woman is aware that, if taken while breastfeeding, these medicines could increase the risk of neonatal sedation and respiratory depression.

  If the woman chooses to take stronger medicines, consider a short course of immediate-release tramadol or immediate-release oxycodone at the lowest effective dose. **[2021]**

1.6.23 In breastfeeding women, use immediate-release opioid analgesics (for example, morphine, dihydrocodeine, tramadol or oxycodone) at the lowest effective dose and for the shortest duration, and not for more than 3 days without close supervision. **[2021]**

1.6.24 If, after a caesarean birth, a woman is discharged home on opioids, advise the woman to contact their healthcare provider if they are concerned about their baby (for example, drowsiness, breathing difficulties, constipation or difficulty feeding). **[2021]**

1.6.25 Consider laxatives for women taking opioids, for the prevention of constipation. **[2021]**

1.6.26 Consider anti-emetics for women taking opioids, if needed for nausea and vomiting. **[2021]**

1.6.27 Advise women that some over-the-counter medicines contain codeine, and should not be taken while breastfeeding because this can lead to serious neonatal sedation and respiratory depression. **[2021]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on pain management after caesarean birth.

Full details of the evidence and the committee's discussion are in evidence review F: opioids for pain relief after caesarean birth.

Early eating and drinking after caesarean birth

1.6.28 If women are recovering well after caesarean birth and do not have complications, they can eat and drink as normal. **[2004]**

Urinary catheter removal after caesarean birth

1.6.29 Offer removal of the urinary bladder catheter once a woman is mobile after a regional anaesthetic for caesarean birth, but no sooner than 12 hours after the last 'top-up' dose. **[2004, amended 2021]**

Respiratory physiotherapy after caesarean birth

1.6.30 Do not offer routine respiratory physiotherapy to women after a caesarean birth under general anaesthesia as it does not improve respiratory outcomes (for example, coughing, phlegm, body temperature, chest palpation or auscultatory changes). **[2004]**

Length of hospital stay and readmission to hospital

1.6.31 Inform women that length of hospital stay is likely to be longer after caesarean birth than after a vaginal birth. **[2004, amended 2021]**

1.6.32 Offer women who are recovering well, are apyrexial and do not have complications after caesarean birth, discharge from hospital after 24 hours and follow up at home, as this is not associated with more readmissions for babies or mothers. **[2004, amended 2021]**

1.7 Recovery after caesarean birth

1.7.1 In addition to general postnatal care, provide women who have had a caesarean birth with:

- specific care related to recovery after caesarean birth
- care related to management of other complications during pregnancy or childbirth. **[2004]**

Wound care

1.7.2 Consider negative pressure wound therapy after caesarean birth for women with a BMI of 35 kg/m^2 or more to reduce the risk of wound infections. **[2021]**

1.7.3 When using standard (not negative pressure) wound dressings after caesarean birth take into account that:

- no type of wound dressing has been shown to be better than another at reducing the risk of wound infections
- there is no difference in the risk of wound infection when dressings are removed 6 hours postoperatively, compared with 24 hours postoperatively. **[2021]**

For a short explanation of why the committee made these recommendations and how they might affect practice, see the rationale and impact section on methods to reduce infectious morbidity and wound care after caesarean birth.

Full details of the evidence and the committee's discussion are in evidence review B: methods to reduce infectious morbidity at caesarean birth.

1.7.4 Ensure caesarean birth wound care includes:

- removing standard dressings 6 to 24 hours after the caesarean birth
- specific monitoring for fever
- assessing the wound for signs of infection (such as increasing pain, redness or discharge), separation or dehiscence
- encouraging the woman to wear loose, comfortable clothes and cotton underwear
- gently cleaning and drying the wound daily
- if needed, planning the removal of sutures or clips.

  Follow the recommendations in the NICE guideline on surgical site infections. **[2004, amended 2021]**

Management of symptoms

1.7.5 When caring for women who have had a caesarean birth who have urinary symptoms, consider possible diagnoses of:

- urinary tract infection
- stress incontinence (occurs in about 4% of women after caesarean birth)
- urinary tract injury (occurs in about 1 per 1,000 caesarean births)
- urinary retention. **[2004, amended 2021]**

1.7.6 When caring for women who have had a caesarean birth who have heavy and/or irregular vaginal bleeding, consider whether this is more likely to be because of endometritis than retained products of conception, and manage accordingly. **[2004, amended 2021]**

1.7.7 Pay particular attention to women who have respiratory symptoms (such as cough or shortness of breath) or leg symptoms (such as painful swollen calf), as women who have had a caesarean birth may be at increased risk of thromboembolic disease (both deep vein thrombosis and pulmonary embolism). **[2004, amended 2021]**

Resuming activities and discharge home

1.7.8 Inform women who have had a caesarean birth that they can resume activities such as driving a vehicle, carrying heavy items, formal exercise and sexual intercourse when they feel they have fully recovered from the caesarean birth (including any physical restrictions or pain). **[2004, amended 2021]**

1.7.9 When caring for women who have had a caesarean birth, discuss that after a caesarean birth they are not at increased risk of depression, post-traumatic stress symptoms, pain on sexual intercourse, faecal incontinence or difficulties with breastfeeding. **[2004, amended 2021]**

1.7.10 While women are in hospital after having an emergency or unplanned caesarean birth, give them the opportunity to discuss with healthcare professionals the reasons for the caesarean birth, and provide both verbal and printed information about birth options for any future pregnancies. If the woman prefers, provide this at a later date. **[2011, amended 2021]**

1.7.11 Inform the woman's GP if follow-up investigations are needed after discharge from hospital (for example, a repeat full blood count if there has been a large amount of blood loss), and include details of the plan or course of action if the results are abnormal. **[2021]**

1.8 Pregnancy and childbirth after caesarean birth

1.8.1 When advising about the mode of birth after a previous caesarean birth, consider:

- maternal preferences and priorities
- the risks and benefits of repeat planned caesarean birth
- the risks and benefits of planned vaginal birth after caesarean birth, including the risk of unplanned caesarean birth. **[2011]**

1.8.2 Inform women who have had up to and including 4 caesarean births that the risk of fever, bladder injuries and surgical injuries does not vary with planned mode of birth, but that the risk of uterine rupture is higher for planned vaginal birth. **[2011]**

1.8.3 Offer women planning a vaginal birth who have had a previous caesarean birth:

- electronic fetal monitoring during labour
- care during labour in a unit where there is immediate access to caesarean birth and on-site blood transfusion services. **[2011]**

1.8.4 During induction of labour, women who have had a previous caesarean birth should be monitored closely, with access to electronic fetal monitoring and with immediate access to caesarean birth, as they are at increased risk of uterine rupture. For further information, see the NICE guideline on inducing labour. **[2011]**

1.8.5 Pregnant women with both previous caesarean birth and a previous vaginal birth should be informed that they have an increased likelihood of having a vaginal birth than women who have had a previous caesarean birth but no previous vaginal birth. **[2004]**

Terms used in this guideline

Specialist placenta accreta spectrum centre

A specialised maternity service for women and pregnant people diagnosed with placenta accreta spectrum (also known in the NHS England service specification as abnormally invasive placenta, or AIP) that enables diagnosis and care, including the birth, to be delivered in a centre with the appropriate multidisciplinary team, access to adult intensive care, level 3 neonatal care and access to blood products.

Recommendations for research

The guideline committee has made the following key recommendations for research.

As part of the 2021 update, the guideline committee removed the research recommendation on 'What are the medium- to long-term risks and benefits to women and their babies of planned caesarean birth compared with planned vaginal birth?' and replaced it with a research recommendation on the short-term and long-term risks and benefits of planned caesarean birth compared with planned vaginal birth.

1 Short-term and long-term benefits and risks of planned caesarean birth compared to planned vaginal birth

What are the benefits and risks (short term and long term) of planned caesarean birth compared with planned vaginal birth at term for women and babies/infants/children? **[2021]**

Why this is important

Information provided to women with low-risk pregnancies in relation to the short- and long-term benefits and risks of planned caesarean birth compared with planned vaginal birth should reflect the relevant risks during the antenatal period when a woman is planning mode of birth. Studies used to inform these discussions with women should be from 'intention to treat' type analyses. However, this type of evidence is sparse for outcomes relevant to the early neonatal period and minimal for long-term outcomes and further research is needed.

For a short explanation of why the committee made the recommendation for research, see the rationale on benefits and risks of caesarean and vaginal birth.

Full details of the evidence and the committee's discussion are in evidence review A: the benefits and risks of planned caesarean birth.

2 Decision-to-birth interval (category 1 urgency)

What factors influence the decision-to-birth interval when there is a category 1 level of urgency for caesarean birth? **[2011]**

Why this is important

'Crash' caesarean birth is a psychologically traumatic event for women and their partners, and is also stressful for clinical staff. Staff and resources might have to be obtained from other areas of clinical care. This should be done as efficiently and effectively as possible, minimising anxiety and ensuring the safety of the mother and her baby.

For category 1 caesarean birth there is a recognised urgency to deliver as quickly as is reasonably possible. Most research in this area is quantitative and looks at the impact of the decision-to-birth interval on various aspects of fetal and maternal outcomes rather than the interplay of factors that can affect this time period itself. Much of this evidence is retrospective. Although some work has been done in the UK to examine where the systematic delays are and how to avoid them, more work is needed to determine how to optimise the decision-to-birth interval. This work should use qualitative as well as quantitative research methods to assess which factors influence the decision-to-birth interval for a category 1 caesarean birth. Evaluation of these factors could be used to inform future NICE guidance, for example, specific guidance for management of category 1 caesarean birth. Such information could also be used by hospitals for maternity services planning, and at a team level would assist with audit and ongoing evaluation and training of the multidisciplinary team.

A large amount of NHS and other state funding is used to provide continuing care for babies who are disabled as a result of birth asphyxia and in providing lifelong support for the child and their family. In addition, large sums of public money are spent on litigation and compensation in some of these cases through the Clinical Negligence Scheme for Trusts (CNST). If research helped to reduce the incidence of birth asphyxia this would reduce the costs of continuing care to the state and the burden to the child, their family and the wider community.

More realistic and more relevant expectations for the decision-to-delivery interval based on evidence would inform debate in the legal system and could help to reduce the cost to the state of related litigation.

3 Decision-to-birth interval (category 2 urgency)

A prospective study to determine whether the decision-to-birth interval has an impact on maternal and neonatal outcomes when there is a category 2 level of urgency for caesarean birth. **[2011]**

Why this is important

This research is important to inform the ongoing debate about the management of category 2 caesarean birth. The 'continuum of risk' in this setting has been recognised. However, most of the work in this area, looking at maternal and fetal outcomes, generally considers unplanned caesarean birth as a whole group without making any distinction between degrees of urgency. Furthermore, much of this work is retrospective. Most women who undergo intrapartum caesarean birth fall into the category 2 level of urgency and therefore specific information for this group could affect and benefit many women and contribute to the delivery of equity of care.

Delay in birth with a compromised fetus could result in major and long-term harm including cerebral palsy and other major long-term disability. The immediate and long-term effect on a family of the birth of a baby requiring lifelong specialised care and support is enormous. If such harm could be avoided by appropriate haste this would be an important improvement in outcome. However, if such haste is of no benefit, then any related risk of adverse maternal outcome needs to be minimised.

A large amount of NHS and other state funding is used to provide continuing care for babies who are disabled as a result of delay in birth and in providing lifelong support for the child and their family. In addition, large sums of public money are spent on litigation and compensation in some of these cases through the CNST. If research helped to reduce the incidence of delay in birth this would reduce the costs of continuing care to the state and the burden to the child, their family and the wider community.

More realistic and more relevant expectations for the decision-to-birth interval based on evidence would inform debate within the legal system and could help to reduce the cost to the state of related litigation.

4 Maternal request for caesarean birth

What support or psychological interventions would be appropriate for women who have a fear of vaginal childbirth and request a caesarean birth? **[2011]**

Why this is important

Fear of vaginal childbirth can stem from:

- fear of damage to the maternal pelvic floor
- damage to the baby during childbirth
- self-doubt on the ability to physically have a vaginal birth
- previous childbirth experience
- unresolved issues related to the genital area.

Currently there is a wide variation in practice and limited resources lead to limited availability of effective interventions. Interventions that might be appropriate include:

- antenatal clinics dedicated to providing care for women with no obstetric indications who request a caesarean birth
- referral to a psychologist or a mental health professional
- referral to an obstetric anaesthetist
- intensive midwifery support.

Continuity of healthcare professional support from the antenatal to the intrapartum periods and 'one-to-one' midwifery care during labour are also often lacking and could make a difference to women who are anxious or afraid.

All of these interventions have different resource implications and there is no clear evidence to suggest that any are of benefit. The proposed research would compare in a randomised controlled trial 2 or more of these interventions in women requesting a caesarean birth. In the absence of any evidence, there is a case for comparing these interventions with routine antenatal care (that is, no special intervention).

This research is relevant because it would help to guide the optimal use of these limited resources and future guideline recommendations.

Rationale and impact

These sections briefly explain why the committee made the recommendations and how they might affect practice. They link to details of the evidence and a full description of the committee's discussion.

Benefits and risks of caesarean and vaginal birth

Recommendations 1.1.3 and 1.1.4

Why the committee made the recommendations

There was some evidence for a selected number of outcomes on the short- and long-term effects of caesarean birth compared with vaginal birth, although there were some limitations with the quality of the evidence, and not all evidence was from a comparison of planned mode of birth. The committee used this evidence, along with their clinical expertise, to update the advice comparing the relative benefits and risks of these 2 modes of birth.

For some outcomes there was conflicting or limited evidence, and there were also a number of outcomes for which no evidence was identified for inclusion, so the committee highlighted these uncertainties.

As the evidence was limited for this review the committee made a research recommendation.

There were also 3 outcomes included in the 2011 guideline which had not been included in this current review (vaginal tears, length of stay and pain) but the committee agreed that the advice was still appropriate and should be carried forward into the updated guideline.

How the recommendations might affect practice

The committee considered that their recommendations would reinforce best practice. It is already current practice to discuss the risks and benefits of alternative modes of birth during the antenatal period and this review has simply led to an update of the information that should be discussed with women.

Return to recommendations

Placenta accreta spectrum

Recommendations 1.2.7 to 1.2.13

Why the committee made the recommendations

The routine 20-week ultrasound scan offered to women and pregnant people is used to determine placental location, so the committee agreed that identification of a placenta praevia or low-lying placenta at this scan in those with a previous caesarean scar, or a scar from previous uterine surgery, should be the trigger for further investigations to check for the presence of placenta accreta. There was evidence from a number of studies that greyscale ultrasound with colour doppler had moderate sensitivity and high specificity for detecting placenta accreta. However, the committee were aware that the sensitivity and specificity of ultrasound scans is very operator-dependent, and that if a case of placenta accreta is missed, there is a risk of severe morbidity or mortality at birth. They therefore recommended that the scan should be done by a senior clinician with the necessary expertise and experience to detect placenta accreta.

The committee discussed the timing of this scan and noted that in most of the included studies, it was carried out between 28 and 37 weeks. The committee agreed that an earlier scan would allow more time for planning the birth, particularly if an early birth was thought to be needed, but that scanning too early would not be an advantage as the placenta may move. They therefore recommended that the scan be done around 28 weeks, but not later than 29 weeks.

The committee discussed that, since 2020, NHS England has commissioned a specialised maternity service for women and pregnant people diagnosed with placenta accreta spectrum (which they refer to as abnormally invasive placenta, or AIP). This service enables diagnosis and care, including the birth, to be given in a centre with an appropriate multidisciplinary team, access to adult intensive care, level 3 neonatal care and access to blood products. The committee therefore recommended that, if placenta accreta is suspected at the scan carried out around 28 weeks, women and pregnant people should be referred to a specialist placenta accreta centre.

The committee discussed evidence showing that the sensitivity and specificity of MRI (without contrast or with contrast unspecified) for assessing placenta accreta spectrum

was no better than that for ultrasound with colour doppler, and therefore agreed that it was not necessary to offer an MRI scan to confirm the presumed diagnosis of placenta accreta. However, the committee also agreed that MRI was a useful imaging technique when planning surgical management of placenta accreta to identify if, for example, placenta percreta had impacted on other organs, and so updated the recommendation on this.

Although the committee were aware that women and pregnant people with placenta accreta are now referred to specialist placenta accreta spectrum centres, they discussed that some people may present very late in pregnancy or in labour and need to be cared for at their local maternity unit, and so the recommendations on care in this setting were retained. The committee agreed that the discussion on birth options should be carried out by a senior obstetrician, and they also updated the advice on who may need to be consulted or present for the caesarean birth, including their roles. The committee also advised that a critical care bed should be available for the woman or pregnant person and for the baby in case they are needed, but that emergency surgery should not be delayed if a bed was not immediately available.

The committee amended the existing recommendation on use of blood products to clarify that this should only be if the use of such products is acceptable to the woman or pregnant person, and included a link to the NICE guideline on blood transfusion as this provides some useful advice on alternatives to blood transfusions and also cell salvage and tranexamic acid.

The committee agreed that as placenta accreta was no longer managed by local hospitals, a local protocol was no longer appropriate, but that specialist placenta accreta spectrum centres should develop protocols with their local maternity units about how placenta accreta should be managed within the network, such as methods for referral and ongoing management. The committee also agreed that the protocol should include details of how local maternity units should provide care if placenta accreta was identified very late, which may include, for example, emergency transfer to a specialist regional centre or support from the specialist centre being provided to the local maternity unit.

How the recommendations might affect practice

The 20-week ultrasound scan is routinely offered to all women and pregnant people already, so this will not be a change in practice. The use of a 28-week ultrasound scan with colour doppler to assess for the presence of placenta accreta is also not a change in

practice, and although the timing is now earlier than previously recommended, this will not lead to additional scans. Advising that the scan is done by a senior clinician with expertise in placenta accreta is a change to the previous advice, but in practice, the scan is already done by a consultant in most cases so it is not thought this will result in a major change in practice. Using a more experienced operator for when looking for placenta accreta is likely to lead to the best sensitivity and specificity from the scan. This in turn is likely to correctly identify more cases, reducing the risk of serious morbidity or mortality for the mother and baby, and optimising resource use by preventing complications at birth that may otherwise need expensive critical care. This should also reduce the number of false positives referred to specialist centres where the presumed diagnosis of placenta accreta is later found to be incorrect.

The recommendation to consider MRI only when planning surgery may reduce the use of MRI for the diagnosis of placenta accreta, in turn reducing costs. The discussion about birth options being carried out by a senior obstetrician is not a change in practice and so will not have a resource impact.

Specialist regional placenta accreta spectrum centres are already established, so recommending appropriate referral to them will not have a resource impact. Ensuring that all maternity centres (both local units and specialist centres for placenta accreta spectrum) understand their responsibilities will enable safe care to be provided.

Return to recommendations

Maternal choice for caesarean birth

Recommendations 1.2.26 to 1.2.31

Why the committee made the recommendations

The committee discussed the fact that some women or pregnant people may request a caesarean birth because they have concerns about aspects of the birth and believe that a caesarean birth would be the best way to alleviate these concerns. However, there may be cases where the concerns can be addressed in other ways, such as choosing an alternative place of birth, opting for a birth which will provide greater continuity of midwifery care, or by planning adequate pain relief. The committee therefore expanded the advice to include these aspects in the discussion.

The committee were aware that this discussion would be best held in a clinic where there was time to explore the different options and preferences, and so suggested this should be in a birth options clinic. The committee were aware that consultant midwives were often involved in such discussions and so included them in the list of healthcare professionals who should be involved.

The committee revised the wording of the recommendation on perinatal mental health support to clarify that the access to the planned place of birth was needed during the antenatal period, and not that all antenatal support had to be provided at the planned place of birth.

The committee revised the wording of the recommendation on offering caesarean birth to be more person-centred, and to ensure the woman or pregnant person's choice to have a caesarean birth was supported.

The committee agreed that women and pregnant people should not have to move to a different obstetric unit for a caesarean birth, and so recommended that caesarean birth should be offered within their obstetric unit. The committee discussed the potential rare situations where there was a clinical reason behind a reluctance to perform a maternal request caesarean birth, but agreed that in this situation a full multidisciplinary team discussion would be needed during the pregnancy to agree a plan for the woman or pregnant person.

How the recommendations might affect practice

This change to add more factors into the discussions around requests for caesarean birth may mean more women and pregnant people can be supported to have their preferred mode of birth. The change may also increase the number of women or pregnant people being seen by a consultant midwife or senior midwife for a longer 'birth options' appointment, but is unlikely to have a resource impact as these conversations would previously have been held across multiple midwife appointments.

This change to recommend that caesarean birth should be offered within the woman or pregnant person's obstetric unit will reduce the number of people who have to move to a different obstetric unit in order to have a caesarean birth. This will benefit the following groups in particular:

- women or pregnant people with disabilities who find it difficult to travel or feel anxious

about change

- women or pregnant people from lower socioeconomic groups where the increased travel costs are a concern
- younger women or pregnant people who may not feel confident enough to transfer to another unit
- women or pregnant people from certain racial groups who may experience bias surrounding decisions relating to mode of birth and who may have less favourable maternity outcomes
- women or pregnant people who do not speak English as a first language, or those from groups such as migrants or refugees who may not be familiar with navigating the healthcare system and who therefore may have more difficulty changing their provider or travelling to another unit.

Return to recommendations

Prevention and management of hypothermia and shivering

Recommendations 1.4.21 to 1.4.23

Why the committee made the recommendations

There was evidence for the effectiveness of active warming measures (for example, forced air warming, under body pads, warmed IV fluids) to prevent shivering and hypothermia in women having a caesarean birth, and there was some evidence for improved thermal comfort and maternal temperature. The committee recommended the use of warmed IV fluids and irrigation fluids for all women having caesarean birth, but because of the low incidence of hypothermia and shivering during caesarean birth, the physiological differences between women having caesarean birth and the general surgical population, the lack of beneficial effect on wound infections, and the fact that warming methods are likely to be as effective at managing hypothermia and shivering as they are at preventing it, the committee recommended that other warming measures should only be used in women who were shivering, said they felt cold or were hypothermic, and not in all women for prevention. The committee recommended forced air warming as the method of choice as this was already widely available, easier to use and could be easily moved with the

woman.

There was evidence that pethidine was also effective at reducing shivering, but the committee did not recommend this because of the possible adverse effects on breastfeeding.

How the recommendations might affect practice

The recommendation to use forced air warming will standardise practice across the NHS. There could be resource implications for units to purchase the disposable 'blankets' used, but this could be offset by earlier discharge of women from recovery to the postnatal ward.

The use of warmed intravenous fluids, blood and irrigation fluids is already standard practice, so this recommendation will not change this.

Return to recommendations

Methods to reduce infectious morbidity and wound care after caesarean birth

Recommendations 1.4.24 and 1.4.25 and recommendations 1.7.2 and 1.7.3

Why the committee made the recommendations

There was evidence that alcohol-based chlorhexidine solution skin preparations reduce the risk of surgical site infections, compared with alcohol-based iodine solutions.

There was also evidence that aqueous iodine vaginal preparations reduce the risk of endometritis in women with ruptured membranes. Although there was some evidence on chlorhexidine vaginal preparations, overall the evidence indicated that that iodine vaginal preparations might be more effective.

There was some evidence that negative pressure wound therapy (NPWT) reduces the risk of wound or surgical site infections for women with a body mass index (BMI) of 30 kg/m^2 or more but economic evidence indicated that this would not be cost effective in those with a BMI of less than 35 kg/m^2 and only borderline cost effective in the group with a BMI

of 35 kg/m^2 or more.

The evidence showed no difference in wound infection or readmissions into hospital when the dressing was removed either 6 hours or 24 hours after surgery.

There was very limited evidence on the use of 2 different types of dressing, but the committee agreed it was not enough to recommend a specific type.

There was no evidence on the use of incise drapes, diathermy or body hair removal, so the committee did not make recommendations about these, but noted that the NICE guideline on surgical site infections (which covers general surgery rather than caesarean birth) has recommendations on some of these interventions.

How the recommendations might affect practice

The recommendations on skin preparation are broadly in line with current best clinical practice. The committee agreed that the recommendation to use aqueous iodine vaginal preparation will be a change in clinical practice, because the use of vaginal preparation is not routine across England.

The committee identified that considering the use of NPWT for women with a BMI of 35 kg/m^2 will be a change of practice for many units (some units do not use it at all, or only at higher BMI thresholds), and could have resource implications, particularly in areas where a higher proportion of pregnant women will meet the criteria.

Return to the recommendations

Surgical opening technique

Recommendation 1.4.28

Why the committee made the recommendation

The committee agreed that vertical midline incisions were no longer routinely used for caesarean birth, and so the recommendation advising that a transverse incision should be used instead was withdrawn. The committee noted that in some rare clinical situations (for example, previous abdominal surgery) a vertical midline incision may still be necessary,

and so added this to their recommendation on the type of incision to be used.

There was evidence that a low transverse straight skin incision with blunt dissection of subsequent tissue layers (such as described in the Joel–Cohen or modified Joel–Cohen techniques) led to a reduction in post-operative febrile morbidity and use of post-operative analgesia, reduced decreases in haemoglobin and reduced total operating time compared to the use of a very low transverse curved skin incision and sharp dissection (as described in the Pfannenstiel technique). The committee agreed that in some women and pregnant people, such as those who have had previous caesarean births, the presence of scar tissue may mean that blunt dissection was not always possible and so in some cases, (which would be decided by the surgeon at the time of operation), sharp dissection would be necessary for extension.

There was evidence that in women and pregnant people with class 3 obesity (BMI of 40 kg/m^2 or more) there was an increased risk of wound complications with the Pfannenstiel technique (which uses a very low incision) compared to a higher transverse abdominal incision. The committee discussed the fact that in very obese women and pregnant people the presence of a panniculus led to the wound being covered which increased the risk of infection. Based on this evidence, and their knowledge of the complications caused by a panniculus, the committee therefore recommended that in these situations a higher incision may be needed.

The committee agreed not to use the names of the surgical techniques in the recommendations as the number of techniques, including the modified techniques, and the slight variations between them may lead to confusion. They therefore agreed that it was preferable to describe the details of the incision and subsequent opening.

How the recommendation might affect practice

The recommendations on method of skin incision and opening of subsequent layers will standardise care across the NHS while still allowing room for surgeon modification on a case-by-case basis, for example, in women and pregnant people who are obese or have had previous caesarean births. Use of a technique which reduces operating time, blood loss, pain and infections may lead to savings in resource use to treat these complications.

Return to recommendation

Closure of the uterus

Recommendation 1.4.36

Why the committee made the recommendation

There was evidence showing that there was no difference in any outcomes when comparing single and double layer closure of the uterus. There was some evidence of the reduced need for blood transfusions with single layer compared with double layer closure, as part of a comparison of different caesarean birth techniques, but this could have been confounded by other differences in the techniques.

How the recommendation might affect practice

Current practice is to use a double layer uterine closure technique, except in occasional circumstances when there is a specific reason for using single layer closure. This recommendation will allow surgeons to choose single or double layer closure, depending on the individual clinical circumstances at the time of the surgery.

Return to recommendation

Monitoring after caesarean birth

Recommendations 1.6.2 to 1.6.10 and 1.6.17

Why the committee made the recommendations

There was no evidence found on the best monitoring schedule for women, but the committee used their knowledge and expertise of current best practice to develop recommendations on the monitoring schedule.

The factors which may increase the risk of respiratory depression listed in the Society for Obstetric Anesthesia and Perinatology consensus statement include class 3 obesity (BMI 40 kg/m^2 or more), cardiovascular disease, magnesium administration, and obstructive sleep apnoea. The committee discussed whether listing these factors would be useful but agreed, based on feedback from stakeholders, that leaving the risk factors unspecified would encourage healthcare professionals to consider all potential risk factors for

respiratory depression when deciding on appropriate levels of monitoring.

The committee agreed that continuous pulse oximetry monitoring may interfere with the ability of a woman or person who has given birth to mobilise and care for their baby. They agreed that it was therefore more appropriate to use hourly monitoring of oxygen saturations in combination with hourly monitoring of sedation and respiratory rate to detect respiratory depression.

The committee agreed that heart rate, blood pressure, temperature and pain monitoring would be carried out as in usual postnatal protocols, but were not necessary every hour to detect respiratory depression.

The committee agreed to add information to the recommendation about overestimation of oxygen saturation levels using pulse oximetry in people with dark skin to advise healthcare professionals of the potential implications and what action could be taken to overcome this limitation.

The committee agreed that as a result of the different pharmacokinetic properties of neuraxial morphine compared with neuraxial diamorphine, it may lead to an increased risk of respiratory depression and over a longer period of time, and that this fact should be highlighted. Because of the long-lasting effects of neuraxial morphine and the possible increased risk of respiratory depression, the committee discussed whether to adopt the monitoring recommendations developed by the Society for Obstetric Anesthesia and Perinatology but agreed that healthcare staff should be advised that monitoring could be the same as that recommended for diamorphine, unless there were concerns about the woman or person's respiratory status, in which case more intensive respiratory monitoring would need to continue.

How the recommendations might affect practice

The recommendations should standardise the frequency and duration of monitoring of most women who have received intrathecal or epidural opioids at the time of caesarean birth, but will mean women need to be assessed for risk factors or other concerns about respiratory status to determine if they need a more intensive monitoring schedule. The recommendations may increase the number of people assessed as being at risk of respiratory depression, as the determination of risk has now been left to clinical judgement instead of including a list of suggested risk factors in the recommendation. An increase in the number of people monitored is likely to increase costs. However, these costs will be

offset to some extent as the revised recommendations will reduce the use of continuous pulse oximetry and the number of observations being carried out every hour for the purpose of detecting respiratory depression. The frequency of monitoring for respiratory depression has not changed.

Additional ways of monitoring for respiratory depression may be used more for people with dark skin. No resource impact is anticipated from this change.

The recommendations will increase awareness of the differences in risk and duration of respiratory depression between neuraxial morphine and diamorphine, and women and people with risk factors for respiratory depression who have given birth may need increased monitoring after neuraxial morphine, compared with those who have received neuraxial diamorphine, if there are concerns about respiratory depression after 12 hours of hourly monitoring. As diamorphine shortages are unpredictable, it is difficult to quantify the resource impact. Any increased monitoring required for people receiving morphine may increase the staff resources needed, although this could be mitigated as the checks could be undertaken by a maternity support worker or healthcare assistant (typically Agenda for Change Band 3). Although the use of morphine is not expected to lead to longer hospital stays, any more intensive monitoring that is necessary after 12 hours may require the woman or person who has given birth to stay in a setting where this monitoring can be carried out.

Return to recommendations

Pain management after caesarean birth

Recommendations 1.6.11 to 1.6.16 and 1.6.18 to 1.6.27

Why the committee made the recommendations

The committee developed separate recommendations for women receiving regional or general anaesthesia, based on their knowledge of the likely differences in analgesia requirements. For all women, the committee agreed that any postoperative analgesia should be suitable for use while breastfeeding, but that women should be made aware of any potential adverse effects on their baby.

The committee agreed to retain the previous NICE recommendation to offer diamorphine (delivered intrathecally or by epidural) for women who have regional anaesthesia. Giving

spinal or epidural diamorphine in this way reduces the need for additional opioids and other rescue medications during surgery, and it remains effective for up to 12 hours (when pain is likely to be most severe). The committee agreed that it was not necessary to specify a range of doses for diamorphine. The committee were aware of evidence that suggested a ceiling effect in neuraxial opioid doses, above which there is no more analgesic effect but there is an increased risk of side effects. In most cases, a maximum intrathecal dose of 300 micrograms and a maximum epidural dose of 3 mg are considered to be adequate. These are the doses suggested by the Obstetric Anaesthetists' Association and are the doses used in current clinical practice. In individual cases, and based on clinical judgement, anaesthetists may choose to use alternative doses of intrathecal or epidural diamorphine.

As there may be intermittent shortages of diamorphine, the committee agreed that preservative-free morphine could be used as an alternative and that advising this alternative will provide clear guidance for healthcare professionals to follow in this situation. This will reduce the likelihood of incorrect preparations or dosages of morphine being substituted for diamorphine. The committee agreed that fentanyl has a rapid onset of action and will help ensure rapid onset of pain relief until the intrathecal morphine takes full effect. The dose of intrathecal morphine plus fentanyl and of epidural morphine are based on those recommended by the Obstetric Anaesthetists' Association. In individual circumstances, and based on clinical judgement, anaesthetists may choose to use alternative doses of these drugs.

The committee were aware that neuraxial morphine was more likely to lead to side effects than neuraxial diamorphine, and so advised that these side effects may need treatment to reduce the severity of symptoms. Based on stakeholder feedback, the committee made an additional recommendation to advise on the safe storage and use of preservative-free morphine, particularly in settings where both preservative-free and preservative-containing morphine are available.

The committee agreed that women receiving regional anaesthesia should be offered oral morphine sulfate, as the evidence showed it to be effective.

The evidence on pain relief for women after general anaesthesia was sparse, but the committee agreed that intravenous patient-controlled analgesia (PCA) using morphine should be offered as these women will likely have a higher level of pain. Monitoring requirements for women and people having PCA morphine now includes pulse oximeter oxygen saturation as this is one of the respiratory monitoring modalities used in

conjunction with respiratory rate and sedation assessment. If PCA morphine is not acceptable to the woman, then oral morphine should be considered as a less invasive alternative.

From their knowledge and experience, the committee agreed that paracetamol and a non-steroidal anti-inflammatory drug (NSAID) such as ibuprofen should be offered in combination to all women to limit the amount of opioids needed, and to allow opioids to be stopped. Based on the evidence on the benefits of fixed interval pain management timing, the committee recommended that these are prescribed to be taken regularly to maintain good pain control, in preference to on-request administration, which had lower rates of satisfaction reported by women.

Some women will have contraindications to NSAIDs (for example, inflammatory bowel disease, gastric ulcer or pre-eclampsia) and will not get sufficient pain relief from paracetamol alone. Based on their experience, the committee suggested an alternative of dihydrocodeine in addition to paracetamol, or co-dydramol, as these are also suitable for use while breastfeeding.

There was evidence for the effectiveness of oxycodone, and some evidence for tramadol, but the committee were aware both of these drugs can cause neonatal sedation and respiratory depression if used when breastfeeding. However, in women with severe pain, the committee agreed that a short course of tramadol or oxycodone could be considered as long as the woman was informed of the risks and chose to use them. The length of the course was not defined as there was no evidence for a specific period or dosage.

The committee were aware that there were general recommendations in the BNF on the use of opioids in breastfeeding women and so included these as part of the recommendations. The committee were also aware of an MHRA warning on the risk of serious neonatal respiratory depression and sedation with codeine in some women. Because of this, they recommended that codeine, or medications that include codeine (such as co-codamol), should not be used, and that women should be advised not to use codeine-containing medicines while breastfeeding.

Based on their knowledge and experience, the committee recommended that anti-emetics could be prescribed if needed for nausea and vomiting, and that laxatives should be considered for the prevention of constipation.

How the recommendations might affect practice

The dosing of intrathecal and epidural diamorphine will be simpler for staff and no resource impact is anticipated from this change. These recommendations will lead to increased use of preservative-free morphine if there is a shortage of diamorphine. Preservative-free morphine is more expensive than diamorphine so there may be an increased cost to the NHS, but as the frequency and duration of diamorphine shortages is not known, it is difficult to predict the resource impact.

The treatment of the possible side effects from morphine are not expected to have a resource impact as these will not affect all women, some women will already receive anti-emetics after a caesarean birth, and the medicines are generics.

The separate storage and labelling of different morphine preparations may require additional staff time, but as the frequency and duration of diamorphine shortages is not known, it is difficult to predict the resource impact.

The committee agreed that the recommendations on postoperative pain management would reinforce current practice. However, there may be a reduction in the use of intravenous PCA opioids for pain management after caesarean birth, and an increase in the use of oral morphine. The committee agreed that the recommendations relating to dihydrocodeine and codeine-containing medicines would provide greater clarity and increase safety.

Return to recommendations

Context

This guideline has been developed to help ensure consistent quality care for women who have had a caesarean birth (caesarean section) in the past and are now pregnant again, who have a clinical indication for a caesarean birth, or are considering a caesarean birth when planning their birth, and there is no medical indication.

It provides some evidence-based information for healthcare professionals and women about the risks and benefits of caesarean birth compared with vaginal birth, and this has now been updated to include the short- and long-term risks and benefits for both women and babies/children. It also provides guidance on specific indications for caesarean birth, effective management strategies to avoid unplanned caesarean birth and the organisational and environmental factors that affect caesarean birth rates.

For women who undergo a caesarean birth, guidance is provided on the anaesthetic and surgical aspects of care, including interventions to reduce morbidity from caesarean birth. The recommendations on monitoring after caesarean birth, pain relief after caesarean birth and on uterine closure have been updated.

This update also contains new recommendations on techniques to reduce infectious morbidity and techniques to prevent and manage hypothermia and shivering.

Finding more information and committee details

To find NICE guidance on related topics, including guidance in development, see the NICE topic page on pregnancy.

For full details of the evidence and the guideline committee's discussions, see the evidence reviews. You can also find information about how the guideline was developed, including details of the committee.

NICE has produced tools and resources to help you put this guideline into practice. For general help and advice on putting our guidelines into practice, see resources to help you put NICE guidance into practice.

Update information

June 2025: We deleted recommendation 1.4.33 on oxytocin and replaced it with a link to a recommendation on carbetocin in NICE's guideline on intrapartum care.

January 2024: We have reviewed the evidence and updated the recommendations on placenta accreta spectrum. The new and updated recommendations are marked **[2024]** or **[2011, amended 2024]**.

September 2023: We have updated the recommendations on the use of neuraxial opioids for postoperative pain relief, and monitoring for women and pregnant people who have had neuraxial opioids. The evidence has not been reviewed. These updated or new recommendations are marked **[2004, amended 2023]**, **[2021, amended 2023]** and **[2023]**. In some cases, minor changes have been made to the wording to bring the language and style up to date without changing the meaning.

August 2023: We have reviewed the evidence and updated the recommendations on surgical opening technique. The updated recommendation is marked **[2004, amended 2023]**.

June 2023: We have reviewed and updated the recommendations on maternal choice for caesarean birth by expert opinion and consensus. The evidence has not been reviewed. These recommendations are marked **[2011, amended 2023].**

March 2021: We have reviewed the evidence and made new recommendations on the benefits and risks of caesarean birth compared with vaginal birth, methods to reduce infectious morbidity, methods for uterine closure, methods to prevent and treat hypothermia and shivering, monitoring after caesarean birth and pain relief. These recommendations are marked **[2021]**.

We have also made some changes without an evidence review:

- We have updated some wording to bring the language and style up to date, without changing the meaning.
- We have updated some recommendations to bring them in line with current terminology and practice.

- We have combined, clarified or reworded some recommendations to make them clearer and to improve ease of reading.

These recommendations are marked **[2011, amended 2021]** and **[2004, amended 2021]**.

Recommendations marked **[2011]** and **[2004]** last had an evidence review in 2011 and 2004, respectively. In some cases, minor changes have been made to the wording to bring the language and style up to date, without changing the meaning.

Minor changes since publication

July 2025: We amended the section on pain management after caesarean birth to specify immediate-release opioids, as appropriate, in line with Medicines and Healthcare products Regulatory Agency (MHRA) safety advice that states prolonged-release opioids are not recommended for acute post-operative pain relief.

May 2024: We amended recommendations on methods to reduce infectious morbidity to clarify which skin preparations should be used.

October 2023: We updated the link to the NICE guideline on intrapartum care, which has been updated.

October 2022: We added a recommendation to indicate that pulse oximetry may be less reliable in people with dark skin. We also added a link to the NHS patient safety alert on the risk of harm from inappropriate placement of pulse oximeter probes. See recommendation 1.6.6.

June 2022: We amended the name of the pain outcome measure in the explanation for why the committee made recommendations 1.1.3 and 1.1.4. We also updated the term 'morbidly adherent placenta' to 'placenta accreta spectrum' throughout the guideline.

July 2021: Recommendation 1.4.28 is being updated. We removed reference to the Joel–Cohen transverse incision to clarify what should be done in the meantime. See the exceptional surveillance review on surgical opening technique for more information.

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