# Caesarean section

## NICE guideline

## Draft for consultation, May 2011

If you wish to comment on this version of the guideline, please be aware that all the supporting information and evidence is contained in the full version.

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This guidance is a partial update of NICE clinical guideline 13 (published April 2004) and will replace it.

New recommendations have been added to address the following topics:

- the risks and benefits of planned caesarean section (CS) compared with planned vaginal birth
- antenatal care of women considered at risk of a morbidly adherent placenta
- appropriate care and choices for women who are HIV positive
- care of women requesting a CS without a clinical indication
- decision-to-delivery intervals to be used as audit standards
- timing of the administration of antibiotics for CS
- appropriate care and choices for women who have previously had a CS.

Where recommendations are shaded in grey and end **[2004]** the evidence has not been updated since the original guideline. Yellow shading in these recommendations indicates where wording changes have been made for the purposes of clarification only.

You are invited to comment on the new and updated recommendations in this guideline only. These are marked as **[2011]** if the evidence has been reviewed but no change has been made to the recommendation or **[new 2011]** if the evidence has been reviewed and the recommendation has been added or updated.

Appendix D contains recommendations from the 2004 guideline that NICE proposes deleting in the 2011 update. This is because the evidence has been reviewed and the recommendation has been updated or because NICE has updated other relevant guidance and has replaced the original recommendations. Where there are replacement recommendations, details are provided. Where there is no replacement recommendation, an explanation for the proposed deletion is given. You are invited to comment on the deleted recommendations as part of the consultation on the 2011 update.

The original NICE guideline and supporting documents are available from www.nice.org.uk/guidance/CG13

# Introduction

This guideline has been developed to help ensure consistency and quality of care experienced by women who:

- have had a caesarean section (CS) in the past and are now pregnant again or
- have a clinical indication for a CS or
- are considering a CS in the absence of a clinical indication.

It provides evidence-based information for healthcare professionals and women about:

- the risks and benefits of CS
- specific indications for CS
- effective management strategies to avoid CS
- anaesthetic and surgical aspects of care
- interventions to reduce morbidity from CS
- organisational and environmental factors that affect CS rates.

For the update, a number of topics have been addressed where new evidence had a bearing on the original recommendations. These topics are listed in the box above.

The guideline has not sought to define acceptable CS rates. Rather the purpose of this guideline is to allow appropriate decision-making for individual women, with women and their families having a key role in the decision-making process.

The guideline will assume that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

## Woman-centred care

This guideline offers best practice advice on the care of pregnant women who may require a CS.

Treatment and care should take into account women's needs and preferences. Pregnant women should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If women do not have the capacity to make decisions, healthcare professionals should follow the Department of Health's advice on consent (available from www.dh.gov.uk/consent) and the code of practice that accompanies the Mental Capacity Act (summary available from www.publicguardian.gov.uk). In Wales, healthcare professionals should follow advice on consent from the Welsh Assembly Government (available from www.wales.nhs.uk/consent).

If the woman is under 16, healthcare professionals should follow the guidelines in 'Seeking consent: working with children' (available from www.dh.gov.uk/consent).

Good communication between healthcare professionals and pregnant women is essential. It should be supported by evidence-based written information tailored to the woman's needs. Treatment and care, and the information women are given about it, should be culturally appropriate. It should also be accessible to women with additional needs such as physical, sensory or learning disabilities, and to women who do not speak or read English.

If the woman agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

Families and carers should also be given the information and support they need.

# Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

**Morbidly adherent placenta**

- If an ultrasound scan result suggests morbidly adherent placenta:
  - discuss with the woman the improved accuracy of magnetic resonance imaging (MRI) in addition to ultrasound and explain what to expect during an MRI procedure
  - offer MRI to confirm the diagnosis and the degree of invasion if acceptable to the woman. **[new 2011] [1.2.6.2]**

**Mother-to-child transmission of HIV**

- Do not offer a CS on the grounds of HIV status to prevent mother-to-child transmission of HIV to:
  - women on highly active anti-retroviral therapy (HAART) with a viral load of less than 400 copies per ml **or**
  - women on any anti-retroviral therapy with a viral load of less than 50 copies per ml.

  Inform women that in these circumstances the risk of HIV transmission is the same for a CS and a vaginal birth. **[new 2011] [1.2.8.2]**

**Maternal request for CS**

- When a woman requests a CS because she has a fear of childbirth, offer referral to a healthcare professional with expertise in providing perinatal mental health support to help her address her fears in a supportive manner. **[new 2011] [1.2.9.3]**
- If after providing support, a vaginal birth is still not an acceptable option to the woman, offer a planned CS. **[new 2011] [1.2.9.5]**
- An obstetrician has the right to decline a woman's request for a CS. If this happens, they should refer the woman to an obstetrician who will carry out the CS. **[new 2011] [1.2.9.6]**

**Decision-to-delivery interval for unplanned CS**

- To measure the overall performance of an obstetric unit the following decision-to-delivery intervals should be used:
  - 30 minutes for category 1 CS
  - 30 and 75 minutes for category 2 CS.

  These should be used as audit standards only and not to judge multidisciplinary team performance for any individual CS. **[new 2011] [1.4.3.3]**

**Timing of antibiotic administration**

- Offer women prophylactic antibiotics at CS before skin incision. Inform them that this reduces the risk of maternal infection more than prophylactic antibiotics given after skin incision, and that there is no demonstrated benefit or risk to the baby. **[new 2011] [1.4.6.19]**
- Women having a CS should be offered prophylactic antibiotics, such as a single dose of first-generation cephalosporin or ampicillin, to reduce the risk of postoperative infections (such as endometritis, urinary tract and wound infection), which occur in about 8% of women who have had a CS. **[2004] [1.4.6.20]**
- Do not use co-amoxiclav when giving antibiotics before skin incision. **[new 2011] [1.4.6.21]**

**Recovery following CS**

- While women are in hospital after having a CS, give them the opportunity to discuss with healthcare professionals the reasons for the CS and provide both verbal and printed information about birth options for any future pregnancies. **[new 2011] [1.7.1.9]**

**Pregnancy and childbirth after CS**

- Inform women who have had up to and including four CS that the risk of fever, bladder injuries, surgical injuries, and uterine rupture does not vary with planned mode of birth. **[new 2011] [1.8.2]**

# 1 Guidance

The following guidance is based on the best available evidence. The full guideline ([hyperlink to be added for final publication]) gives details of the methods and the evidence used to develop the guidance.

## *1.1 Woman-centred care*

### 1.1.1 Provision of information

1.1.1.1 Pregnant women should be offered evidence-based information and support to enable them to make informed decisions about childbirth. Addressing women's views and concerns should be recognised as being integral to the decision-making process. **[2004]**

1.1.1.2 Pregnant women should be given evidence-based information about CS during the antenatal period, because about 1 in 5 women will have a CS. This should include information about CS, such as:

- indications for CS (such as presumed fetal compromise, 'failure to progress' in labour, breech presentation)
- what the procedure involves
- associated risks and benefits
- implications for future pregnancies and birth after CS. **[2004]**

1.1.1.3 Communication and information should be provided in a form that is accessible to pregnant women, taking into account the information and cultural needs of minority communities and women whose first language is not English or who cannot read, together with the needs of women with disabilities or learning difficulties. **[2004]**

### 1.1.2 Consent for CS

1.1.2.1 Discuss the risks and benefits of CS compared with vaginal birth

with women, using tables 1 and 2 (see appendix E). **[new 2011]**

1.1.2.2 Consent for CS should be requested after providing pregnant women with evidence-based information and in a manner that respects the woman's dignity, privacy, views and culture, while taking into consideration the clinical situation. **[2004]**

1.1.2.3 A pregnant woman is entitled to decline the offer of treatment such as CS, even when the treatment would clearly benefit her or her baby's health. Refusal of treatment needs to be one of the woman's options. **[2004]**

1.1.2.4 When the decision is made to perform a CS, a record should be made of all the factors that influence the decision, and which of these is the most influential. **[2004]**

## *1.2 Planned CS*

### 1.2.1 Breech presentation

1.2.1.1 Women who have an uncomplicated singleton breech pregnancy at 36 weeks' gestation should be offered external cephalic version. Exceptions include women in labour and women with a uterine scar or abnormality, fetal compromise, ruptured membranes, vaginal bleeding or medical conditions. **[2004]**

1.2.1.2 Pregnant women with a singleton breech presentation at term, for whom external cephalic version is contraindicated or has been unsuccessful, should be offered CS because it reduces perinatal mortality and neonatal morbidity. **[2004]**

### 1.2.2 Multiple pregnancy

1.2.2.1 In otherwise uncomplicated twin pregnancies at term where the presentation of the first twin is cephalic, perinatal morbidity and mortality is increased for the second twin. However, the effect of planned CS in improving outcome for the second twin remains uncertain and therefore CS should not routinely be offered outside

a research context. **[2004]**

1.2.2.2 In twin pregnancies where the first twin is not cephalic the effect of CS in improving outcome is uncertain, but current practice is to offer a planned CS. **[2004]**

### 1.2.3 Preterm birth and CS

1.2.3.1 Preterm birth is associated with higher neonatal morbidity and mortality. However, the effect of planned CS in improving these outcomes remains uncertain and therefore CS should not routinely be offered outside a research context. **[2004]**

### 1.2.4 Small for gestational age and CS

1.2.4.1 The risk of neonatal morbidity and mortality is higher with 'small for gestational age' babies. However, the effect of planned CS in improving these outcomes remains uncertain and therefore CS should not routinely be offered outside a research context. **[2004]**

### 1.2.5 Placenta praevia

1.2.5.1 Women with a placenta that partly or completely covers the internal cervical os (grade 3 or 4 placenta praevia) should be offered CS. **[2004]**

### 1.2.6 Morbidly adherent placenta

1.2.6.1 If low-lying placenta at 32–34 weeks is confirmed in women who have had a previous CS, offer colour ultrasound as the first diagnostic test for morbidly adherent placenta. **[new 2011]**

1.2.6.2 If an ultrasound scan result suggests morbidly adherent placenta:

- discuss with the woman the improved accuracy of magnetic resonance imaging (MRI) in addition to ultrasound and explain what to expect during an MRI procedure
- offer MRI to confirm the diagnosis and the degree of invasion if acceptable to the woman. **[new 2011]**

1.2.6.3 Discuss the interventions available for delivery with women suspected to have morbidly adherent placenta. **[new 2011]**

1.2.6.4 When performing a CS for women suspected to have morbidly adherent placenta, ensure that:

- a consultant obstetrician and a consultant anaesthetist are present
- a senior haematologist is available for advice
- a critical care bed is available
- sufficient cross-matched blood and blood products are readily available. **[new 2011]**

1.2.6.5 The consultant obstetrician should decide which other surgical professionals need to be present, such as a gynaecologist, vascular surgeon or urologist. **[new 2011]**

1.2.6.6 All hospitals should have a locally agreed protocol for managing morbidly adherent placenta that sets out how these elements of care should be provided. **[new 2011]**

### 1.2.7 Predicting CS for cephalopelvic disproportion in labour

1.2.7.1 Pelvimetry is not useful in predicting 'failure to progress' in labour and should not be used in decision making about mode of birth. **[2004]**

1.2.7.2 Shoe size, maternal height and estimations of fetal size (ultrasound or clinical examination) do not accurately predict cephalopelvic disproportion and should not be used to predict 'failure to progress' during labour. **[2004**]

### 1.2.8 Mother-to-child transmission of maternal infections

**HIV**

1.2.8.1 As early as possible give women with HIV information about the risks and benefits for them and their child of the HIV treatment options and mode of birth so that they can make an informed

choice. **[new 2011]**

1.2.8.2 Do not offer a CS on the grounds of HIV status to prevent mother-to-child transmission of HIV to:

- women on highly active anti-retroviral therapy (HAART) with a viral load of less than 400 copies per ml **or**
- women on any anti-retroviral therapy with a viral load of less than 50 copies per ml.

Inform women that in these circumstances the risk of HIV transmission is the same for a CS and a vaginal birth. **[new 2011]**

1.2.8.3 Consider a vaginal birth for women on anti-retroviral therapy (ART) with a viral load of 50–400 copies per ml because there is no evidence that a CS prevents mother-to-child transmission of HIV. **[new 2011]**

1.2.8.4 Offer a CS to women with HIV who:

- are not receiving any anti-retroviral therapy **or**
- have a viral load of 400 copies per ml or more regardless of their anti-retroviral therapy. **[new 2011]**

1.2.8.5 Continue to collect UK-based population data about HIV diagnoses in pregnant women, treatment, mode of birth, and mother-to-child transmission rates. **[new 2011]**

**Hepatitis B virus**

1.2.8.6 Mother-to-child transmission of hepatitis B can be reduced if the baby receives immunoglobulin and vaccination. In these situations pregnant women with hepatitis B should not be offered a planned CS because there is insufficient evidence that this reduces mother-to-child transmission of hepatitis B virus. **[2004]**

**Hepatitis C virus**

1.2.8.7 Women who are infected with hepatitis C should not be offered a

planned CS because this does not reduce mother-to-child transmission of the virus. **[2004]**

1.2.8.8 Pregnant women who are co-infected with hepatitis C virus and HIV should be offered planned CS because it reduces mother-to-child transmission of both hepatitis C virus and HIV. **[2004]**

**Herpes simplex virus**

1.2.8.9 Women with primary genital herpes simplex virus (HSV) infection occurring in the third trimester of pregnancy should be offered planned CS because it decreases the risk of neonatal HSV infection. **[2004]**

1.2.8.10 Pregnant women with a recurrence of HSV at birth should be informed that there is uncertainty about the effect of planned CS in reducing the risk of neonatal HSV infection. Therefore, CS should not routinely be offered outside a research context. **[2004]**

### 1.2.9 Maternal request for CS

1.2.9.1 When a woman requests a CS explore, discuss and record the specific reasons for the request. **[new 2011]**

1.2.9.2 If a woman requests a CS without a clinical indication, discuss the overall risks and benefits of CS compared with vaginal birth (see tables 1 and 2, appendix E) and record that this discussion has taken place. Include a discussion with other members of the obstetric team (including the obstetrician, midwife and anaesthetist) if necessary to explore the reasons for the request, and to ensure the woman has accurate information. **[new 2011]**

1.2.9.3 When a woman requests a CS because she has a fear of childbirth, offer referral to a healthcare professional with expertise in providing perinatal mental health support to help her address her fears in a supportive manner. **[new 2011]**

1.2.9.4 Ensure the healthcare professional providing perinatal mental

health support has access to the planned place of birth in order to provide care. **[new 2011]**

1.2.9.5 If after providing support, a vaginal birth is still not an acceptable option to the woman, offer a planned CS. **[new 2011]**

1.2.9.6 An obstetrician has the right to decline a woman's request for a CS. If this happens, they should refer the woman to an obstetrician who will carry out the CS. **[new 2011]**

### 1.2.10 Body mass index

1.2.10.1 Do not use a body mass index (BMI) of over 50 alone as an indication for planned CS. **[new 2011]**

## *1.3 Factors affecting likelihood of CS during intrapartum care*

### 1.3.1 Place of birth

1.3.1.1 During their discussions about options for birth, healthy pregnant women with anticipated uncomplicated pregnancies should be informed that delivering at home reduces the likelihood of CS. **[2004]**

1.3.1.2 During their discussions about options for birth, healthy pregnant women with anticipated uncomplicated pregnancies should be informed that planned childbirth in a 'midwifery-led unit' does not reduce the likelihood of CS. **[2004]**

### 1.3.2 Factors reducing the likelihood of CS

1.3.2.1 Women should be informed that continuous support during labour from women with or without prior training reduces the likelihood of CS. **[2004]**

1.3.2.2 Women with an uncomplicated pregnancy should be offered induction of labour beyond 41 weeks because this reduces the risk of perinatal mortality and the likelihood of CS. **[2004]**

1.3.2.3 A partogram with a 4-hour action line should be used to monitor progress of labour of women in spontaneous labour with an uncomplicated singleton pregnancy at term, because it reduces the likelihood of CS. **[2004]**

1.3.2.4 Consultant obstetricians should be involved in the decision making for CS, because this reduces the likelihood of CS. **[2004]**

1.3.2.5 Electronic fetal monitoring is associated with an increased likelihood of CS. When CS is contemplated because of an abnormal fetal heart rate pattern, in cases of suspected fetal acidosis, fetal blood sampling should be offered if it is technically possible and there are no contraindications. **[2004]**

### 1.3.3 No influence on likelihood of CS

1.3.3.1 Women should be informed that the following interventions during intrapartum care have not been shown to influence the likelihood of CS, although they may affect other outcomes that are outside the scope of this guideline:

- 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]**

1.3.3.2 Women should be informed that the effects on the likelihood of CS of complementary therapies used during labour (such as acupuncture, aromatherapy, hypnosis, herbal products, nutritional supplements, homeopathic medicines, and Chinese medicines) have not been properly evaluated and further research is needed before such interventions can be recommended. **[2004]**

### 1.3.4 'Failure to progress' in labour and CS

1.3.4.1 The following aspects of intrapartum care have not been shown to

influence the likelihood of CS for 'failure to progress' and should not be offered for this reason, although they may affect other outcomes which are outside the scope of this guideline:

- active management of labour
- early amniotomy. **[2004]**

### 1.3.5 Eating during labour

1.3.5.1 Women should be informed 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 required is uncertain. **[2004]**

1.3.5.2 Women should be informed that having isotonic drinks during labour prevents ketosis without a concomitant increase in gastric volume. **[2004]**

## *1.4 Procedural aspects of CS*

### 1.4.1 Timing of planned CS

1.4.1.1 The risk of respiratory morbidity is increased in babies born by CS before labour, but this risk decreases significantly after 39 weeks. Therefore planned CS should not routinely be carried out before 39 weeks. **[2004]**

### 1.4.2 Classification of urgency

1.4.2.1 The urgency of CS should be documented using the following standardised scheme in order to aid clear communication between healthcare professionals about the urgency of a CS:

1 immediate threat to the life of the woman or fetus
2 maternal or fetal compromise which is not immediately life-threatening
3 no maternal or fetal compromise but needs early delivery
4 delivery timed to suit woman or staff. **[2004]**

### 1.4.3 Decision-to-delivery interval for unplanned CS

1.4.3.1 Perform category 1 and 2 CS (see 1.4.2.1) as quickly as possible, particularly for category 1. **[new 2011]**

1.4.3.2 Take into account the condition of the woman and the unborn baby when making decisions about rapid delivery. Remember that rapid delivery may be harmful in certain circumstances. **[new 2011]**

1.4.3.3 To measure the overall performance of an obstetric unit the following decision-to-delivery intervals should be used:

- 30 minutes for category 1 CS
- 30 and 75 minutes for category 2 CS.

These should be used as audit standards only and not to judge multidisciplinary team performance for any individual CS. **[new 2011]**

1.4.3.4 Perform category 2 CS in most situations within 75 minutes of making the decision. **[new 2011]**

### 1.4.4 Preoperative testing and preparation for CS

1.4.4.1 Pregnant women should be offered a haemoglobin assessment before CS to identify those who have anaemia. Although blood loss of more than 1000 ml is infrequent after CS (it occurs in 4–8% of CS) it is a potentially serious complication. **[2004]**

1.4.4.2 Pregnant women having CS for antepartum haemorrhage, abruption, uterine rupture and placenta praevia are at increased risk of blood loss of more than 1000 ml and should have the CS carried out at a maternity unit with on-site blood transfusion services. **[2004]**

1.4.4.3 Pregnant women who are healthy and who have otherwise uncomplicated pregnancies should not routinely be offered the following tests before CS:

- grouping and saving of serum
- cross-matching of blood
- a clotting screen
- preoperative ultrasound for localisation of the placenta, because this does not improve CS morbidity outcomes (such as blood loss of more than 1000 ml, injury of the infant, and injury to the cord or to other adjacent structures). **[2004]**

1.4.4.4 Women having CS with regional anaesthesia require an indwelling urinary catheter to prevent over-distension of the bladder because the anaesthetic block interferes with normal bladder function. **[2004]**

### 1.4.5 Anaesthesia for CS

1.4.5.1 Pregnant women having a CS should be given information on different types of post-CS analgesia so that analgesia best suited to their needs can be offered (see recommendation 1.6.3.1). **[2004]**

1.4.5.2 Women who are having a CS should be offered regional anaesthesia because it is safer and results in less maternal and neonatal morbidity than general anaesthesia. This includes women who have a diagnosis of placenta praevia. **[2004]**

1.4.5.3 Women who are having induction of regional anaesthesia for CS should be cared for in theatre because this does not increase women's anxiety. **[2004]**

1.4.5.4 Women who are having a CS under regional anaesthesia should be offered intravenous ephedrine or phenylephrine, and volume pre-loading with crystalloid or colloid to reduce the risk of hypotension occurring during CS. **[2004]**

1.4.5.5 Each maternity unit should have a drill for failed intubation during obstetric anaesthesia. **[2004]**

1.4.5.6 To reduce the risk of aspiration pneumonitis women should be

offered antacids and drugs (such as $H_2$ receptor antagonists or proton pump inhibitors) to reduce gastric volumes and acidity before CS. **[2004]**

1.4.5.7 Women having a CS should be offered antiemetics (either pharmacological or acupressure) to reduce nausea and vomiting during CS. **[2004]**

1.4.5.8 General anaesthesia for emergency CS should include preoxygenation, cricoid pressure and rapid sequence induction to reduce the risk of aspiration. **[2004]**

1.4.5.9 Intravenous ephedrine or phenylephrine should be used in the management of hypotension during CS. **[2004]**

1.4.5.10 The operating table for CS should have a lateral tilt of 15°, because this reduces maternal hypotension. **[2004]**

### 1.4.6 Surgical techniques for CS

**Methods to prevent HIV transmission in theatre**

1.4.6.1 Healthcare professionals should wear double gloves when performing or assisting at CS on women who have tested positive for HIV, to reduce the risk of HIV infection of healthcare professionals during surgery. **[2004]**

1.4.6.2 General recommendations for safe surgical practice should be followed at CS to reduce the risk of HIV infection of staff. **[2004]**

**Abdominal wall incision**

1.4.6.3 CS should be performed using a transverse abdominal incision because this is associated with less postoperative pain and an improved cosmetic effect compared with a midline incision. **[2004]**

1.4.6.4 The transverse incision of choice should be the Joel Cohen incision (a straight skin incision, 3 cm above the symphysis pubis; subsequent tissue layers are opened bluntly and, if necessary,

extended with scissors and not a knife), because it is associated with shorter operating times and reduced postoperative febrile morbidity. **[2004]**

**Instruments for skin incision**

1.4.6.5 The use of separate surgical knives to incise the skin and the deeper tissues at CS is not recommended because it does not decrease wound infection. **[2004]**

**Extension of the uterine incision**

1.4.6.6 When there is a well formed lower uterine segment, blunt rather than sharp extension of the uterine incision should be used because it reduces blood loss, incidence of postpartum haemorrhage and the need for transfusion at CS. **[2004]**

**Fetal laceration**

1.4.6.7 Women who are having a CS birth should be informed that the risk of fetal lacerations is about 2%. **[2004]**

**Use of forceps**

1.4.6.8 Forceps should only be used at CS if there is difficulty delivering the baby's head. The effect on neonatal morbidity of the routine use of forceps at CS remains uncertain. **[2004]**

**Use of uterotonics**

1.4.6.9 Oxytocin 5 IU by slow intravenous injection should be used at CS to encourage contraction of the uterus and to decrease blood loss. **[2004]**

**Method of placental removal**

1.4.6.10 At CS, the placenta should be removed using controlled cord traction and not manual removal as this reduces the risk of endometritis. **[2004]**

**Exteriorisation of the uterus**

1.4.6.11 Intraperitoneal repair of the uterus at CS should be undertaken. 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]**

**Closure of the uterus**

1.4.6.12 The effectiveness and safety of single layer closure of the uterine incision is uncertain. Except within a research context, the uterine incision should be sutured with two layers. **[2004]**

**Closure of the peritoneum**

1.4.6.13 Neither the visceral nor the parietal peritoneum should be sutured at CS because this reduces operating time and the need for postoperative analgesia, and improves maternal satisfaction. **[2004]**

**Closure of the abdominal wall**

1.4.6.14 In the rare circumstances that a midline abdominal incision is used at CS, mass closure with slowly absorbable continuous sutures should be used because this results in fewer incisional hernias and less dehiscence than layered closure. **[2004]**

**Closure of subcutaneous tissue**

1.4.6.15 Routine closure of the subcutaneous tissue space should not be used, unless the woman has more than 2 cm subcutaneous fat, because it does not reduce the incidence of wound infection. **[2004]**

**Use of superficial wound drains**

1.4.6.16 Superficial wound drains should not be used at CS because they do not decrease the incidence of wound infection or wound haematoma. **[2004]**

**Closure of the skin**

1.4.6.17 Obstetricians should be aware that the effects of different suture materials or methods of skin closure at CS are not certain. **[2004]**

**Umbilical artery pH measurement**

1.4.6.18 Umbilical artery pH should be performed after all CS for suspected fetal compromise, to allow review of fetal wellbeing and guide ongoing care of the baby. **[2004]**

**Timing of antibiotic administration**

1.4.6.19 Offer women prophylactic antibiotics at CS before skin incision. Inform them that this reduces the risk of maternal infection more than prophylactic antibiotics given after skin incision, and that there is no demonstrated benefit or risk to the baby. **[new 2011]**

1.4.6.20 Women having a CS should be offered prophylactic antibiotics, such as a single dose of first-generation cephalosporin or ampicillin, to reduce the risk of postoperative infections (such as endometritis, urinary tract and wound infection), which occur in about 8% of women who have had a CS. **[2004]**

1.4.6.21 Do not use co-amoxiclav when giving antibiotics before skin incision. **[new 2011]**

**Thromboprophylaxis for CS**

1.4.6.22 Women having a CS should be offered thromboprophylaxis because they are at increased risk of venous thromboembolism. The choice of method of prophylaxis (for example, graduated stockings, hydration, early mobilisation, low molecular weight heparin) should take into account risk of thromboembolic disease and follow existing guidelines. **[2004]**

**Women's preferences during CS**

1.4.6.23 Women's preferences for the birth, 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, should be accommodated where possible. **[2004]**

## *1.5 Care of the baby born by CS*

### 1.5.1 Presence of paediatrician at CS

1.5.1.1 An appropriately trained practitioner skilled in the resuscitation of the newborn should be present at CS performed under general anaesthesia or where there is evidence of fetal compromise. **[2004]**

### 1.5.2 Thermal care for babies born by CS

1.5.2.1 Babies born by CS are more likely to have a lower temperature, and thermal care should be in accordance with good practice for thermal care of the newborn baby. **[2004]**

### 1.5.3 Maternal contact (skin-to-skin)

1.5.3.1 Early skin-to-skin contact between the woman and her baby should be encouraged and facilitated because it improves maternal perceptions of the infant, mothering skills, maternal behaviour, and breastfeeding outcomes, and reduces infant crying. **[2004]**

### 1.5.4 Breastfeeding

1.5.4.1 Women who have had a CS should be offered additional support to help them to start breastfeeding as soon as possible after the birth of their baby. This is because women who have had a CS are less likely to start breastfeeding in the first few hours after the birth, but, when breastfeeding is established, they are as likely to continue as women who have a vaginal birth. **[2004]**

## *1.6 Care of the woman after CS*

### 1.6.1 High dependency unit/intensive therapy unit admission

1.6.1.1 Healthcare professionals caring for women after CS should be aware that, although it is rare for women to need intensive care following childbirth, this occurs more frequently after CS (about

9 per 1000). **[2004]**

### 1.6.2 Routine monitoring after CS

1.6.2.1 After CS, women should be observed on a one-to-one basis by a properly trained member of staff until they have regained airway control and cardiorespiratory stability and are able to communicate. **[2004]**

1.6.2.2 After recovery from anaesthesia, observations (respiratory rate, heart rate, blood pressure, pain and sedation) should be continued every half hour for 2 hours, and hourly thereafter provided that the observations are stable or satisfactory. If these observations are not stable, more frequent observations and medical review are recommended. **[2004]**

1.6.2.3 For women who have had intrathecal opioids, there should be a minimum hourly observation of respiratory rate, sedation and pain scores for at least 12 hours for diamorphine and 24 hours for morphine. **[2004]**

1.6.2.4 For women who have had epidural opioids or patient-controlled analgesia with opioids, there should be routine hourly monitoring of respiratory rate, sedation and pain scores throughout treatment and for at least 2 hours after discontinuation of treatment. **[2004]**

### 1.6.3 Pain management after CS

1.6.3.1 Women should be offered diamorphine (0.3–0.4 mg intrathecally) for intra- and postoperative analgesia because it reduces the need for supplemental analgesia after a CS. Epidural diamorphine (2.5–5 mg) is a suitable alternative. **[2004]**

1.6.3.2 Patient-controlled analgesia using opioid analgesics should be offered after CS because it improves pain relief. **[2004]**

1.6.3.3 Providing there is no contraindication, non-steroidal anti-inflammatory drugs should be offered post-CS as an adjunct to

other analgesics, because they reduce the need for opioids. **[2004]**

### 1.6.4 Early eating and drinking after CS

1.6.4.1 Women who are recovering well after CS and who do not have complications can eat and drink when they feel hungry or thirsty. **[2004]**

### 1.6.5 Urinary catheter removal after CS

1.6.5.1 Removal of the urinary bladder catheter should be carried out once a woman is mobile after a regional anaesthetic and not sooner than 12 hours after the last epidural 'top up' dose. **[2004]**

### 1.6.6 Respiratory physiotherapy after CS

1.6.6.1 Routine respiratory physiotherapy does not need to be offered to women after a CS under general anaesthesia, because it does not improve respiratory outcomes such as coughing, phlegm, body temperature, chest palpation and auscultatory changes. **[2004]**

### 1.6.7 Length of hospital stay and readmission to hospital

1.6.7.1 Length of hospital stay is likely to be longer after a CS (an average of 3–4 days) than after a vaginal birth (average 1–2 days). However, women who are recovering well, are apyrexial and do not have complications following CS should be offered early discharge (after 24 hours) from hospital and follow-up at home, because this is not associated with more infant or maternal readmissions. **[2004]**

## *1.7 Recovery following CS*

1.7.1.1 In addition to general postnatal care, women who have had a CS should be provided with:

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

1.7.1.2 Women who have a CS should be prescribed and encouraged to

take regular analgesia for postoperative pain, using:

- for severe pain, co-codamol with added ibuprofen
- for moderate pain, co-codamol
- for mild pain, paracetamol. **[2004]**

1.7.1.3 CS wound care should include:

- removing the dressing 24 hours after the CS
- 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. **[2004]**

1.7.1.4 Healthcare professionals caring for women who have had a CS and who have urinary symptoms should consider the possible diagnosis of:

- urinary tract infection
- stress incontinence (occurs in about 4% of women after CS)
- urinary tract injury (occurs in about 1 per 1000 CS). **[2004]**

1.7.1.5 Healthcare professionals caring for women who have had a CS and who have irregular vaginal bleeding should consider that this is more likely to be due to endometritis than retained products of conception. **[2004]**

1.7.1.6 Women who have had a CS are at increased risk of thromboembolic disease (both deep vein thrombosis and pulmonary embolism), so healthcare professionals need to pay particular attention to women who have chest symptoms (such as cough or shortness of breath) or leg symptoms (such as painful swollen calf). **[2004]**

1.7.1.7 Women who have had a CS should resume activities such as driving a vehicle, carrying heavy items, formal exercise and sexual intercourse once they have fully recovered from the CS (including any physical restrictions or distracting effect due to pain). **[2004]**

1.7.1.8 Healthcare professionals caring for women who have had a CS should inform women that after a CS they are not at increased risk of difficulties with breastfeeding, depression, post-traumatic stress symptoms, dyspareunia and faecal incontinence. **[2004]**

1.7.1.9 While women are in hospital after having a CS, give them the opportunity to discuss with healthcare professionals the reasons for the CS and provide both verbal and printed information about birth options for any future pregnancies. **[new 2011]**

## *1.8 Pregnancy and childbirth after CS*

1.8.1 The risks and benefits of vaginal birth after CS compared with repeat CS are uncertain. Therefore when deciding about the mode of birth after a previous CS consider:

- maternal preferences and priorities
- the overall risks and benefits of repeat CS. **[new 2011]**

1.8.2 Inform women who have had up to and including four CS that the risk of fever, bladder injuries, surgical injuries, and uterine rupture does not vary with planned mode of birth. **[new 2011]**

1.8.3 Offer women who have had a previous CS:

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

1.8.4 During induction of labour, women who have had a previous CS should be monitored closely, with access to electronic fetal monitoring and with immediate access to CS, because they are at

increased risk of uterine rupture. **[2004]**

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

# 2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is available from http://guidance.nice.org.uk/CG/WaveR/97/Scope/pdf/English

The topics this guideline addresses are listed in the introduction. This guideline does not cover:

- pregnant women or babies with rare conditions or with complex or unusual comorbidities such as congenital heart disease
- women with clinical conditions that arise during pregnancy, such as pre-eclampsia or gestational diabetes, which require specialist care.

**How this guideline was developed**

NICE commissioned the National Collaborating Centre for Women's and Children's Health to develop this guideline. The Centre established a Guideline Development Group (see appendix A), which reviewed the evidence and developed the recommendations. An independent Guideline Review Panel oversaw the development of the guideline (see appendix B).

There is more information about how NICE clinical guidelines are developed on the NICE website (www.nice.org.uk/HowWeWork). A booklet, 'How NICE clinical guidelines are developed: an overview for stakeholders, the public and the NHS' (fourth edition, published 2009), is available from NICE publications (phone 0845 003 7783 or email publications@nice.org.uk and quote reference N1739).

# 3 Implementation

NICE has developed tools to help organisations implement this guidance (see www.nice.org.uk/guidance/CG[XX])'.

# 4 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future. The Guideline Development Group's full set of research recommendations is detailed in the full guideline (see section 5).

## *4.1 Decision-to-delivery interval (category 1 urgency)*

What factors influence the decision-to-delivery interval when there is a category 1 level of urgency for CS?

Factors to be investigated would include:

- staff grade/level of experience
- skill mix in the multidisciplinary team
- task allocation
- methods of communication
- time of day
- availability of ongoing staff training about emergency procedures and levels of attendance.

The research would be conducted using simulation methods and video observation to determine what factors influence the decision-to-delivery interval for category 1 CS. The videos could also be used to train staff.

**Why this is important**

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

For category 1 CS there is a recognised urgency to deliver as quickly as is reasonably possible. The majority of research in this area is quantitative and looks at the impact of the decision-to-delivery 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 conducted in the UK to examine where the systematic delays lie and how to avoid them (Tuffnell et al. 2001), more work is needed to determine how to optimise the decision-to-delivery interval. This work should use qualitative as well as quantitative research methods to assess which factors influence the decision-to-delivery interval for a category 1 CS. Evaluation of these factors could be used to inform future NICE guidance, for example, specific guidance for management of category 1 CS. 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 infants 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 minimise the impact 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 may help to reduce the cost to the state of related litigation.

## *4.2 Decision-to-delivery interval (category 2 urgency)*

A prospective study to determine whether the decision-to-delivery interval has an impact on maternal and neonatal outcomes when there is a category 2 level of urgency for CS.

Important primary outcomes would be:

- fetal wellbeing (such as cord blood gases, Apgar score at 5 minutes, hypoxic encephalopathy, neonatal respiratory problems, unanticipated admission to neonatal intensive care unit (NICU), duration of stay in the

NICU)

- maternal wellbeing (such as haemoglobin levels on day 2, need for blood transfusion, duration of hospital stay controlled for prolonged neonatal stay and general health/wellbeing).

Valuable secondary outcomes could include:

- fetal trauma at delivery
- iatrogenic maternal bladder or bowel injury
- postoperative maternal infectious morbidity
- establishment of breastfeeding
- psychological outcomes for women, such as the development of postnatal depression/post-traumatic stress disorder.

**Why this is important**

This research is important to inform the ongoing debate about the management of category 2 CS. The ‘continuum of risk’ in this setting has been recognised. However, the majority of work in this area, looking at maternal and fetal outcomes, generally considers ‘emergency’ CS as a whole group without making any distinction between degrees of urgency. Furthermore much of this work is retrospective. The majority of women who undergo intrapartum CS fall into the category 2 level of urgency (Thomas et al. 2001) and therefore specific information for this group could affect and benefit many women and contribute to the delivery of equity of care.

Delay in delivery with a compromised fetus may 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 life-long 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 infants who are disabled as a result of delay in delivery 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 minimise the impact of delay in delivery 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 within the legal system and may help to reduce the cost to the state of related litigation.

## *4.3 National audit*

Repeat of the National Caesarean Section Sentinel Audit.

The original CS guideline included a set of 'auditable standards'. It would be a straightforward task to produce an updated set of auditable standards based on the important topics covered in the updated guideline. These would include:

- consent
- indications (including maternal request)
- procedural aspects
- maternal and fetal outcomes.

Many of the outcomes documented in a new CS audit would relate directly to recommendations in this CS guideline update. An additional useful feature of the audit would be to record key related data, such as the proportion of CS deliveries for a breech presentation that had an attempted external cephalic version.

**Why this is important**

During the 10 years since the National Caesarean Section Sentinel Audit was undertaken (2000–2001), many of the findings may have changed significantly. The audit examined who was having a CS and why, as well as the views of women having babies and the obstetricians looking after them.

The audit found that a 20% CS rate was considered too high by 51% of obstetricians. UK CS rates now average about 25%.

A repeat of the CS Sentinel Audit would reveal any changes in indications and the views of women and obstetricians. The current literature does not adequately address the issue of maternal request for CS and this is one aspect the audit may address. Women's views on maternal request for CS when there are no obstetric indications are particularly relevant. Such requests may be on the rise and the reasons are not always clearly expressed or documented.

The methodology of the audit is established, making a repeat feasible. This should be given high priority because the benefit to the NHS would be significant.

## *4.4 Maternal request for CS*

What support and psychological interventions would be appropriate for women who have a fear of vaginal childbirth and request a CS?

Interventions for evaluation would include:

- support from a named member of the maternity team
- continuity of carer
- formal counselling
- cognitive behavioural therapy.

Outcomes would include:

- mode of birth planned at term
- psychological outcomes (postnatal depression, post-traumatic stress disorder, self-esteem, mother–infant bonding)
- breastfeeding.

**Why this is important**

Fear of vaginal childbirth may stem from:

- fear of damage to the maternal pelvis

- damage to the baby during childbirth
- self-doubt on the ability to physically achieve 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 may be appropriate include:

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

Continuity of midwifery support from the antenatal to the intrapartum periods and 'one-to-one' care during labour are also often lacking and may 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 two or more of these interventions in women requesting a CS. 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.

## *4.5 Risks and benefits of CS*

What are the medium- to long-term risks and benefits to women and their babies of planned CS compared with planned vaginal birth?

The main focus would be the outcomes in women, which could be measured at 1 year (medium term) and 5–10 years (long term). These outcomes would include:

- urinary dysfunction
- gastrointestinal dysfunction
- dyspareunia
- emotional wellbeing.

Infant outcomes could include medical problems, especially ongoing respiratory and neurological problems.

**Why this is important**

Morbidities arising intraoperatively or in the days after a CS have been reasonably well described in the literature. Much less is known, however, about physical and emotional outcome measures in the longer term.

The Confidential Enquiries into Maternal Death in the UK, most recently published as 'Saving mothers' lives 2006–2008' (Cantwell R et al. 2011), devote a significant proportion of their work to investigating 'late' causes of maternal death. These include events arising in the medium term, namely, up to 1 year after a woman has given birth, many of which originate from the preceding pregnancy. The infectious, psychiatric and other conditions arising in or related to pregnancy do not always cause death but are responsible for arguably a greater burden of morbidity in the medium and long term, long after the pregnancy is over.

To provide more meaningful information to women when they are choosing their mode of birth, there is a pressing need to document medium- to long-term outcomes in women and their babies after a planned CS or a planned vaginal birth. First, it should be possible to gather data using standardised questions (traditional paper-based questionnaires and face-to-face interviews) about maternal septic morbidities and emotional wellbeing up to 1 year after a planned CS in a population of women who have consented for follow-up. Internet-based questionnaires could also be devised to achieve the high response rates required for a full interpretation of the data. Similarly, it would be important to collect high-quality data on infant morbidities after a planned CS compared with a planned vaginal birth. A long-term morbidity evaluation (between 5 and 10 years after the CS) would use similar methodology but

assess symptoms related to urinary and gastrointestinal function.

# 5 Other versions of this guideline

## *5.1 Full guideline*

The full guideline, 'Caesarean section' contains details of the methods and evidence used to develop the guideline. It is published by the National Collaborating Centre for Women's and Children's Health, and is available from our website (www.nice.org.uk/guidance/CG[XX]/Guidance). **Note: these details will apply to the published full guideline.**

## *5.2 Quick reference guide*

A quick reference guide for healthcare professionals is available from www.nice.org.uk/guidance/CG[XX]/QuickRefGuide

For printed copies, phone NICE publications on 0845 003 7783 or email publications@nice.org.uk (quote reference number N[XXXX]). **Note: these details will apply when the guideline is published.**

## *5.3 'Understanding NICE guidance'*

A summary for patients and carers ('Understanding NICE guidance') is available from www.nice.org.uk/guidance/CG[XX]/PublicInfo

For printed copies, phone NICE publications on 0845 003 7783 or email publications@nice.org.uk (quote reference number N[XXXX]). **Note: these details will apply when the guideline is published.**

We encourage NHS and voluntary sector organisations to use text from this booklet in their own information about CS.

# 6 Related NICE guidance

**Published**

- Hypertension in pregnancy. NICE clinical guideline 107 (2010) Available from www.nice.org.uk/guidance/CG107
- Surgical site infection. NICE clinical guideline 74 (2008) Available from

www.nice.org.uk/guidance/CG74

- Induction of labour. NICE clinical guideline 70 (2008). Available from www.nice.org.uk/guidance/CG70
- Diabetes in pregnancy. NICE clinical guideline 63 (2008) Available from www.nice.org.uk/guidance/CG63
- Antenatal care. NICE clinical guideline 62 (2008). Available from www.nice.org.uk/guidance/CG62
- Intrapartum care. NICE clinical guideline 55 (2007). Available from www.nice.org.uk/guidance/CG55
- Antenatal and postnatal mental health. NICE clinical guideline 45 (2007). Available from www.nice.org.uk/guidance/CG45
- Postnatal care. NICE clinical guideline 37 (2006). Available from www.nice.org.uk/guidance/CG37

**Under development**

NICE is developing the following guidance (details available from www.nice.org.uk):

- Multiple pregnancy. NICE clinical guideline. Publication expected September 2011.

# 7 Updating the guideline

NICE clinical guidelines are updated so that recommendations take into account important new information. New evidence is checked 3 years after publication, and healthcare professionals and patients are asked for their views; we use this information to decide whether all or part of a guideline needs updating. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations. Please see our website for information about updating the guideline.

# Appendix A: The Guideline Development Group, National Collaborating Centre and NICE project team

## *Guideline Development Group*

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Editor

# Appendix B: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

**Professor Mike Drummond – Chair**
Director, Centre for Health Economics, University of York

**Dr Graham Archard**
General Practitioner, Dorset

**Ms Catherine Arkley**
Lay member

**Dr David Gillen**
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**Dr Ruth Stephenson**
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# Appendix C: The algorithms

Algorithms will be available at the time of publication of the guideline.

# Appendix D: Recommendations to be deleted

| Recommendation | Comment |
|---|---|
| A competent pregnant woman is entitled to refuse the offer of treatment such as CS, even when the treatment would clearly benefit her or her baby's health. Refusal of treatment needs to be one of the patient's options.<br>(Recommendation 1.1.2.2 in 2004 guideline) | Minor changes in terminology:<br>A pregnant woman is entitled to decline the offer of treatment such as CS, even when the treatment would clearly benefit her or her baby's health. Refusal of treatment needs to be one of the woman's options. **[2004] [1.1.2.3]** |
| When considering a CS, there should be discussion on the benefits and risks of CS compared with vaginal birth specific to the woman and her pregnancy.<br>(Recommendation 1.1.2.3 in 2004 guideline). | Replaced by:<br>Discuss the risks and benefits of CS compared with vaginal birth with women, using tables 1 and 2 (see appendix E). **[new 2011] [1.1.2.1]** |
| Planned CS for uncomplicated twin pregnancy should not be carried out before 38 weeks because this increases the risk of respiratory problems in these babies.<br>(Recommendation 1.2.2.3 in 2004 guideline) | Removed.<br>The management of twin pregnancy will be covered in the forthcoming NICE guideline on multiple pregnancy (publication expected September 2011). |
| HIV-positive women who are pregnant should be offered a planned CS because it reduces the risk of mother-to-child transmission of HIV.<br>(Recommendation 1.2.7.1 in 2004 guideline) | Replaced by recommendations 1.2.8.1 to 1.2.8.5. |
| Maternal request is not on its own an indication for CS and specific reasons for the request should be explored, discussed and recorded.<br>(Recommendation 1.2.8.1 in 2004 guideline) | Replaced by:<br>When a woman requests a CS explore, discuss and record the specific reasons for the request. **[new 2011] [1.2.9.1]** |
| When a woman requests a CS in the absence of an identifiable reason, the overall benefits and risks of CS compared with vaginal birth should be discussed and recorded.<br>(Recommendation 1.2.8.2 in 2004 guideline) | Replaced by:<br>If a woman requests a CS without a clinical indication, discuss the overall risks and benefits of CS compared with vaginal birth (see tables 1 and 2, appendix E) and record that this discussion has taken place. Include a discussion with other members of the obstetric team (including the obstetrician, midwife and anaesthetist) if necessary to explore the reasons for the request, and to ensure the woman has accurate information. **[new 2011] [1.2.9.2]** |

| | |
|---|---|
| When a woman requests a CS because she has a fear of childbirth, she should be offered counselling (such as cognitive behavioural therapy) to help her to address her fears in a supportive manner, because this results in reduced fear of pain in labour and shorter labour.<br>(Recommendation 1.2.8.3 in 2004 guideline) | Replaced by:<br>When a woman requests a CS because she has a fear of childbirth, offer referral to a healthcare professional with expertise in providing perinatal mental health support to help her address her fears in a supportive manner. **[new 2011] [1.2.9.3]** |
| An individual clinician has the right to decline a request for CS in the absence of an identifiable reason. However the woman's decision should be respected and she should be offered referral for a second opinion.<br>(Recommendation 1.2.8.4 in 2004 guideline) | Replaced by:<br>If after providing support, a vaginal birth is still not an acceptable option to the woman, offer a planned CS. **[new 2011] [1.2.9.5]**<br>An obstetrician has the right to decline a woman's request for a CS. If this happens, they should refer the woman to an obstetrician who will carry out the CS. **[new 2011] [1.2.9.6]** |
| Delivery at emergency CS for maternal or fetal compromise should be accomplished as quickly as possible, taking into account that rapid delivery has the potential to do harm. A decision-to-delivery interval of less than 30 minutes is not in itself critical in influencing baby outcome, but has been an accepted audit standard for response to emergencies within maternity services.<br>(Recommendation 1.4.1.2 in 2004 guideline) | Replaced by<br>Perform category 1 and 2 CS (see 1.4.2.1) as quickly as possible, particularly for category 1. **[new 2011] [1.4.3.1]**<br>Take into account the condition of the woman and the unborn baby when making decisions about rapid delivery. Remember that rapid delivery may be harmful in certain circumstances. **[new 2011] [1.4.3.2]**<br>To measure the overall performance of an obstetric unit the following decision-to-delivery intervals should be used:<br>• 30 minutes for category 1 CS<br>• 30 and 75 minutes for category 2 CS.<br>These should be used as audit standards only and not to judge multidisciplinary team performance for any individual CS. **[new 2011] [1.4.3.3]** |
| Women who are having induction of regional anaesthesia for CS should be cared for in theatre because this does not increase patient anxiety.<br>(Recommendation 1.4.3.3 in 2004 guideline) | Minor change in terminology:<br>Women who are having induction of regional anaesthesia for CS should be cared for in theatre because this does not increase women's anxiety. **[2004]** |
| Women who have had a CS should be offered the opportunity to discuss with their healthcare providers the reasons for the CS and the implications for the child or future pregnancies.<br>(Recommendation 1.6.12 in 2004 | Replaced by:<br>While women are in hospital after having a CS, give them the opportunity to discuss with healthcare professionals the reasons for the CS and provide both verbal and printed information about birth |

| | |
|---|---|
| guideline) | options for any future pregnancies. **[new 2011] [1.7.1.9]** |
| The risks and benefits of vaginal birth after CS compared with repeat CS are uncertain. Therefore the decision about mode of birth after a previous CS should take into consideration:<br>• maternal preferences and priorities<br>• a general discussion of the overall risks and benefits of CS<br>• risk of uterine rupture<br>• risk of perinatal mortality and morbidity.<br>(Recommendation 1.8.1 in 2004 guideline) | Replaced by:<br>The risks and benefits of vaginal birth after CS compared with repeat CS are uncertain. Therefore when deciding about the mode of birth after a previous CS consider:<br>• maternal preferences and priorities<br>• the overall risks and benefits of repeat CS. **[new 2011] [1.8.1]** |
| Pregnant women who have a previous CS and who want to have a vaginal birth should be supported in this decision. They should be informed that:<br>• uterine rupture is a very rare complication, but is increased in women having a planned vaginal birth (35 per 10,000 women compared with 12 per 10,000 women having planned repeat CS)<br>• the risk of an intrapartum infant death is small for women who have a planned vaginal birth (about 10 per 10,000), but higher than for a planned repeat CS (about 1 per 10,000)<br>• the effect of planned vaginal birth or planned repeat CS on cerebral palsy is uncertain.<br>(Recommendation 1.8.2 in 2004 guideline) | The GDG felt it was inappropriate to focus on these particular adverse events given that their overall risk is very low. Instead there should be a discussion of the overall risks and benefits of CS as recommended in 1.8.1. |
| Women who have had a previous CS should be offered:<br>• electronic fetal monitoring during labour<br>• care during labour in a unit where there is immediate access to CS and on-site blood transfusion services.<br>(Recommendation 1.8.3 in 2004 guideline) | Minor style changes:<br>Offer women who have had a previous CS:<br>• electronic fetal monitoring during labour<br>• care during labour in a unit where there is immediate access to CS and on-site blood transfusion services. **[2011] [1.8.3]** |

| | |
|---|---|
| Women who have had a previous CS can be offered induction of labour, but both women and healthcare professionals should be aware that the likelihood of uterine rupture in these circumstances is increased to:<br>• 80 per 10,000 when labour is induced with non-prostaglandin agents<br>• 240 per 10,000 when labour is induced using prostaglandins.<br>(Recommendation 1.8.4 in 2004 guideline) | This recommendation has been deleted as there is a more up-to-date recommendation in the induction of labour guideline. |

# Appendix E: Planned CS compared with planned vaginal birth

**The following tables have been summarised from tables 4.3 and 4.4 (pages 24–28) in the full version of the guideline.**

**Table 1 Summary of the effects on women's health of planned CS compared with planned vaginal birth for women with an uncomplicated pregnancy**

| Effect | Planned CS | Planned vaginal birth (including % unplanned CS in planned vaginal birth group) | Relative effect (95% confidence interval) |
|---|---|---|---|
| **Effects which may be reduced after planned CS** | | | |
| Perineal and abdominal pain during birth[1] | Median score 1.0 | Median score 7.3 (10.3%) | NC |
| Perineal and abdominal pain 3 days postpartum[1] | Median score 4.5 | Median score 5.2 (10.3%) | NC |
| Injury to bladder, ureter or genital tract | 0.0% | 1.0% (14.7%) | NC |
| Early postpartum haemorrhage | 1.1%<br>3.9% | 6.0% (20.7%)<br>6.2% (8.3%) | OR 0.23 (0.06 to 0.94)<br>RR 0.06 (0.4 to 0.9) |
| Obstetric shock | 0.006% | 0.018% (8.2%) | RR 0.33 (0.11 to 0.99) |
| **Effects which may be reduced after planned vaginal birth** | | | |
| Length of hospital stay | 3.2 days<br>3.96 days | 2.6 days (20.7%)<br>2.56 days (8.2%) | Mean difference 1.58 (1.27 to 2.17)<br>Adjusted mean difference 1.47 (1.46 to 1.49) |
| Postpartum haemorrhage requiring hysterectomy | 0.03% | 0.01% (8.2%) | RR 2.31 (1.30 to 4.09) |
| Cardiac arrest | 0.19% | 0.03% (8.2%) | RR 4.91 (3.95 to 6.11) |
| **No difference found in studies** | | | |
| Perineal and abdominal pain 4 months postpartum[1] | Median score 0.0 | Median score 0.17 (10.3%) | NC |
| Iatrogenic surgical injury | 0.00% | 0.00% (14.7%) | NC |
| Pulmonary embolism | 0.00% | 0.003% (14.7%) | NC |
| Wound infection | 0.01%<br>1.5% | 0.00% (20.7%)<br>0.9% (8.3%) | p = 1.0<br>RR 1.7 (0.9 to 3.2) |
| Intraoperative trauma | 0.1% | 0.3% (8.3%) | RR 0.5 (0.1 to 3.5) |

| **Table 1 contd** | | | |
|---|---|---|---|
| Uterine rupture | 0.02% | 0.03% (8.2%) | RR 0.51 (0.25 to 1.07) |
| Assisted ventilation or intubation | 0.01% | 0.005% (8.2%) | RR 2.21 (0.99 to 4.90) |
| Acute renal failure | 0.004% | 0.001% (8.2%) | RR 2.17 (0.58 to 8.14) |
| Major maternal morbidity (including PPH, septicaemia or admission to ICU) | 6.3% | 4.3% (30.5%) | OR 1.49 (0.69 to 3.23) |
| **Conflicting findings from studies** | | | |
| Maternal death | 9/737 (cases/controls) | 49/9133 (cases/controls) [of maternal deaths occurring in the planned vaginal birth group 13/49 (26.5%) were women who gave birth by unplanned CS] | OR 2.28 (1.11 to 4.65) |
| | 0.00% | 0.00% (14.7) | NC |
| | 0.00% | 0.002% (8.2%) | NC |
| Deep vein thrombosis | 0.00% | 0.03% (14.7%) | NC |
| | 0.06% | 0.03% (8.2%) | RR 2.20 (1.51 to 3.20) |
| Blood transfusion | 1.7% | 1.9% (20.7%) | OR 0.87 (0.27 to 2.78) |
| | 0.3% | 0.3% (14.7%) | RR 0.89 (0.20 to 3.99) |
| | 0.3% | 0.4% (8.3%) | RR 0.7 (0.2 to 2.7) |
| | 0.02% | 0.07% (8.2%) | RR 0.20 (0.20 to 0.64) |
| Infection – wound and postpartum | 22% | 26% (30.5%) | OR 0.79 (0.46 to 1.35) |
| | 0.6% | 16.5% (20.7%) | OR 0.15 (0.05 to 0.40) |
| | 1.1% | 0.8% (14.7%) | RR 1.36 (0.75 to 2.4) |
| | 0.6% | 0.21% (8.2%) | RR 2.85 (2.52 to 3.21) |
| Hysterectomy | 0.6% | 0.1% (21%) | p = 0.13 |
| | 0.1% | 0.01% (14.7%) | RR 9.09 (1.36 to 60.33) |
| | 0.06% | 0.02% (8.2%) | RR 3.60 (2.44 to 5.31) |
| Anaesthetic complications | 0.4% | 0.3% (14.7%) | RR 1.24 (0.34 to 4.59) |
| | 0.53% | 0.21% (8.2%) | RR 2.5 (2.22 to 2.86) |

[1] score/10, higher scores indicate higher pain levels

CS, caesarean section; ICU, intensive care unit; OR, odds ratio; PPH, postpartum haemorrhage; RR, relative risk

**Table 2 Summary of the effect on babies' health of planned CS compared with planned vaginal birth for women with an uncomplicated pregnancy**

| Effect | Finding for planned CS | Finding for planned vaginal birth (%) (including % unplanned CS in vaginal birth group) | Relative effect (95% confidence interval) |
|---|---|---|---|
| **Effects which may be reduced after planned CS** | | | |
| NICU admission | 15.5 | 8.3 (30.5) | OR 2.06 (1.20 to 3.54) |
| | 13.9 | 6.3 (34) | RR 2.20 (1.4 to 3.18) |
| **No difference found in studies** | | | |
| Hypoxic-ischemic encephalopathy (CNS depression, seizures, pH < 7) | 0.2 | 0.2 (14.7) | RR 0.81 (0.22 to 3.00) |
| Intracranial haemorrhage | 0.00 | 0.01 (14.7) | NC |
| Neonatal respiratory morbidity | 12.0 | 11.5 (14.7) | RR 1.04 (0.88 to 1.23) |
| **Conflicting findings from studies** | | | |
| Neonatal mortality | 0.6 | 0.5 (30.5) | OR 1.19 (0.10 to 13.3) |
| | 0.0 | 0.1 (14.7) | NC |
| | 0.17 | 0.07 | RR 2.4 (2.20 to 2.65) |
| Apgar score at 5 mins < 7 | 0.0 | 0.5 (14.7) | NC |
| | 0.6 | 1.2 (34) | RR 0.44 (0.07 to 2.51) |
| CNS, central nervous system; CS, caesarean section; NICU, neonatal intensive care unit; OR, odds ratio; RR, relative risk | | | |