

# Caesarean section

## Key priorities for implementation

### Making the decision

- When considering a caesarean section (CS), there should be discussion on the benefits and risks of CS compared with vaginal birth specific to the woman and her pregnancy.
- Maternal request is not on its own an indication for CS and specific reasons for the request should be explored, discussed and recorded. 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.

### Carrying out the procedure

- The following interventions should be used to decrease morbidity from CS:
  - regional anaesthesia
  - antibiotic prophylaxis
  - thromboprophylaxis
  - antacids
  - anti-emetics.
- 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.

CS is the end point of a number of care pathways. This algorithm includes the common reasons for caesarean section (CS), but the list is not exhaustive. CS may be required for complex or rare conditions that are outside the scope of this guideline.

## Caesarean section

Pregnant women should be given evidence-based information on caesarean section (CS) – as 1 in 5 will have a CS – including indications, what the procedure involves, risks and benefits, and implications for future pregnancies.

### Offer planned CS to women with:

- A term singleton breech (if external cephalic version is contraindicated or has failed)
- A twin pregnancy with breech first twin
- HIV
- Both HIV and hepatitis C
- Primary genital herpes in the third trimester
- Grade 3 and 4 placenta praevia

### Do not routinely offer planned CS to women with:

- Twin pregnancy (first twin is cephalic at term)
- Preterm birth
- A 'small for gestational age' baby
- Hepatitis B virus
- Hepatitis C virus
- Recurrent genital herpes at term

### Maternal request for CS

- Is not on its own an indication for CS
- Explore and discuss specific reasons
- Discuss benefits and risks of CS
- Offer counselling if fear of childbirth
- The clinician can decline a request for CS, but should offer referral for a second opinion

### Planning place of birth

Inform healthy pregnant women with anticipated uncomplicated pregnancies that:

- Home birth reduces CS
- Birth in a 'midwifery-led unit' does not affect CS

### Reducing CS rates

- Offer external cephalic version if breech at 36 weeks
- Facilitate continuous support during labour
- Offer induction of labour beyond 41 weeks
- Use a partogram with a 4-hour action line in labour
- Involve consultant obstetricians in CS decision
- Do fetal blood sampling before CS for abnormal cardiotograph in labour
- Support women who choose vaginal birth after caesarean section (VBAC)

### No influence on likelihood of CS

- Walking in labour
- Non-supine position during the second stage of labour
- Immersion in water during labour
- Epidural analgesia during labour
- Active management of labour or early amniotomy to augment the progress of labour
- Raspberry leaves during labour

These measures may affect other outcomes that are outside the scope of this guideline

## Summary of the effects of CS compared with vaginal birth for women and their babies

Increased with CS	No difference after CS	Reduced with CS
<ul style="list-style-type: none"> <li>Abdominal pain</li> <li>Bladder injury</li> <li>Ureteric injury</li> <li>Need for further surgery</li> <li>Hysterectomy</li> <li>Intensive therapy/high dependency unit admission</li> <li>Thromboembolic disease</li> <li>Length of hospital stay</li> <li>Readmission to hospital</li> <li>Maternal death</li> <li>Antepartum stillbirth in future pregnancies</li> <li>Placenta praevia</li> <li>Uterine rupture</li> <li>Not having more children</li> <li>Neonatal respiratory morbidity</li> </ul>	<ul style="list-style-type: none"> <li>Haemorrhage</li> <li>Infection</li> <li>Genital tract injury</li> <li>Faecal incontinence</li> <li>Back pain</li> <li>Dyspareunia</li> <li>Postnatal depression</li> <li>Neonatal mortality (except breech)</li> <li>Intracranial haemorrhage</li> <li>Brachial plexus injuries</li> <li>Cerebral palsy</li> </ul>	<ul style="list-style-type: none"> <li>Perineal pain</li> <li>Urinary incontinence</li> <li>Uterovaginal prolapse</li> </ul>

This table shows the direction of the effects of CS on risk of complications, but not the size of the effects. The risks do not apply to all women in all circumstances. The NICE and full guidelines (see below) have details of the absolute and relative risks.

## Pregnancy and childbirth following CS

The decision about mode of birth should consider maternal preferences and priorities, general discussion of the overall risks and benefits of CS (specific risks and benefits uncertain), risk of uterine rupture and perinatal mortality and morbidity.

### Women who want VBAC should be supported and:

- Be informed that uterine rupture is very rare but is increased with VBAC (about 1 per 10,000 repeat CS and 50 per 10,000 VBAC)
- Be informed that intrapartum infant death is rare (about 10 per 10,000 – the same as the risk for women in their first pregnancy), but increased compared with planned repeat CS (about 1 per 10,000)
- Be offered electronic fetal monitoring during labour
- Should labour in a unit where there is immediate access to CS and on-site blood transfusion
- If having induction of labour should be aware of the increased risk of uterine rupture (80 per 10,000 if non-prostaglandins are used, 240 per 10,000 if prostaglandins are used)
- Be informed that women with both previous CS and a previous vaginal birth are more likely to give birth vaginally

## Reducing the likelihood of CS

- 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.
- Women should be informed that continuous support during labour from women with or without prior training reduces the likelihood of CS.
- Women with uncomplicated pregnancies should be offered induction of labour beyond 41 weeks, because this reduces the risk of perinatal mortality and the likelihood of CS.
- 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.
- Consultant obstetricians should be involved in the decision making for CS, because this reduces the likelihood of CS.
- 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.

This quick reference guide should be interpreted, where necessary, with reference to the full guideline (see Further information for details).

## Making the decision for CS

- Communication and information should be provided in a form that is accessible
- Consent for CS should be requested after providing pregnant women with evidence-based information
- 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

**Timing of planned CS:** CS should be carried out after 39 weeks' gestation to decrease the risk of respiratory morbidity. **Emergency CS:** In cases of suspected or confirmed acute fetal compromise, delivery should be accomplished as soon as possible. The accepted standard is within 30 minutes.

### Document the urgency of CS

- Immediate threat to the life of the woman or fetus
- Maternal or fetal compromise which is not immediately life-threatening
- No maternal or fetal compromise but needs early delivery
- Delivery timed to suit woman or staff

## Procedural aspects of CS

### Preoperative assessment

- Check haemoglobin
  - Prescribe antibiotics (one dose of first-generation cephalosporin or ampicillin)
  - Assess risk for thromboembolic disease (offer graduated stockings, hydration, early mobilisation and low molecular weight heparin)
  - Site an indwelling bladder catheter
- For healthy women with an uncomplicated pregnancy, don't offer:
- Grouping and saving of serum
  - Cross-matching of blood
  - Clotting screen
  - Preoperative ultrasound to localise the placenta

### Anaesthetic care

- Discuss post-CS analgesia options
  - Offer antacids and H<sub>2</sub> receptor analogues
  - Offer anti-emetics
  - Offer regional anaesthesia
  - Reduce risk of hypotension using:
    - intravenous ephedrine or phenylephrine infusion
- volume preloading with crystalloid or colloid  
– lateral tilt of 15°  
✓ General anaesthesia for emergency CS should include preoxygenation and rapid sequence induction to reduce the risk of aspiration  
*Maternity units should have a drill for failed intubation*

## Surgical techniques (For pregnancies at term where there is a lower uterine segment. These techniques may need modification in situations such as repeat CS or placenta praevia.)

- Do**
- Wear double gloves for CS for women who are HIV-positive
  - Use a transverse lower abdominal incision (Joel Cohen incision)
  - Use blunt extension of the uterine incision
  - Give oxytocin (5 IU) by slow intravenous injection
  - Use controlled cord traction for removal of the placenta
  - Close the uterine incision with two suture layers
  - Check umbilical artery pH if CS performed for fetal compromise
  - Consider women's preferences for birth (such as music playing in theatre)
  - Facilitate early skin-to-skin contact for mother and baby
- Don't**
- Close subcutaneous space (unless > 2 cm fat)
  - Use superficial wound drains
  - Use separate surgical knives for skin and deeper tissues
  - Use forceps routinely to deliver baby's head
  - Suture either the visceral or the parietal peritoneum
  - Exterioise the uterus
  - Manually remove the placenta
- The effects of different suture materials or methods of skin closure are uncertain

A practitioner skilled in the resuscitation of the newborn should be present at CS with a general anaesthetic or with presumed fetal compromise

## Postoperative monitoring

- Recovery area – one-to-one observations until the woman has airway control and cardiorespiratory stability and can communicate
- In the ward – half-hourly observations (respiratory rate, heart rate, blood pressure, pain and sedation) for 2 hours, then hourly if stable
- Intrathecal opioids – hourly observation of respiratory rate, sedation and pain scores for 12 hours for diamorphine and 24 hours for morphine
- For epidural opioids and patient-controlled analgesia with opioids – hourly monitoring during the CS, plus 2 hours after discontinuation

## Care of the woman and her baby after CS

- Provide additional support to help women to start breastfeeding as soon as possible
- Offer diamorphine (0.3–0.4 mg intrathecally) or epidural diamorphine (2.5–5 mg) to reduce the need for supplemental analgesia
- Offer non-steroidal anti-inflammatory analgesics to reduce the need for opioid analgesia
- Women who are feeling well and have no complications can eat or drink when they feel hungry or thirsty
- After regional anaesthesia remove catheter when woman is mobile (> 12 hours after top-up)
- Remove wound dressing after 24 hours; keep wound clean and dry
- Discuss the reasons for the CS and implications before discharge from hospital
- Offer earlier discharge (after 24 hours) to women who are recovering, are apyrexial and have no complications

## Recovery following CS

- Offer postnatal care, plus specific post-CS care, and management of pregnancy complications
  - Prescribe regular analgesia
  - Monitor wound healing
  - Inform women that they can resume activities (such as driving, exercise) when pain not distracting or restricting
- Consider CS complications:
- Endometritis if excessive vaginal bleeding
  - Thromboembolism if cough or swollen calf
  - Urinary tract infection if urinary symptoms
  - Urinary tract trauma (fistula) if leaking urine

## Implementation in the NHS

Local health communities should review their existing practice for providing pregnant women with information on CS against this guideline as they develop their Local Delivery Plans. The review should consider the resources required to implement the recommendations set out above, the people and processes involved and the timeline over which full implementation is envisaged. It is in the interests of women that the implementation timeline is as rapid as possible.

Relevant local clinical guidelines, care pathways and protocols should be reviewed in the light of this guidance and revised accordingly.

The guideline will complement the Children's National Service Framework (England and Wales), which is in development and which will produce standards for service

configuration, with emphasis on how care is delivered and by whom, including issues of ensuring equity of access to care for disadvantaged women and women's views about service provision. (For more information, see [www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/ChildrenServices/ChildrenServicesInformation/fs/en](http://www.dh.gov.uk/PolicyAndGuidance/HealthAndSocialCareTopics/ChildrenServices/ChildrenServicesInformation/fs/en) for England and [www.wales.nhs.uk/sites/page.cfm?orgid=334&pid=934](http://www.wales.nhs.uk/sites/page.cfm?orgid=334&pid=934) for Wales.)

Further information on caesarean section may be obtained from evidence-based websites such as the Cochrane Library ([www.update-software.com/clibng/cliblogn.htm](http://www.update-software.com/clibng/cliblogn.htm)) and the National Electronic Library for Health ([www.nelh.nhs.uk/maternity](http://www.nelh.nhs.uk/maternity)).

The *Pregnancy Book* (published by health departments in England and Wales) may also be a useful resource for patients.

## Further information

### Quick reference guide

This quick reference guide to the Institute's guideline on caesarean section contains the key priorities for implementation, summaries of the guidance, and notes on implementation. The distribution list for this quick reference guide is available on the NICE website at [www.nice.org.uk/CG013distribution](http://www.nice.org.uk/CG013distribution) list

### NICE guideline

The NICE guideline *Caesarean section* contains the following sections: Key priorities for implementation; 1 Guidance; 2 Notes on the scope of the guidance; 3 Implementation in the NHS; 4 Research recommendations; 5 Full guideline; 6 Related NICE guidance; 7 Review date. The NICE guideline also gives details of the scheme used for grading the recommendations, membership of Guideline Development Group and the Guideline Review Panel, and technical details on criteria for audit. The NICE guideline is available on the NICE website at [www.nice.org.uk/CG013NICEguideline](http://www.nice.org.uk/CG013NICEguideline)

### Full guideline

The full guideline includes the evidence on which the recommendations are based, in addition to the information in the NICE guideline. It is published by the National Collaborating Centre for Women's and Children's Health. It is available from [www.nice.org.uk/mainpages.asp?PageID=117](http://www.nice.org.uk/mainpages.asp?PageID=117) and [www.nice.org.uk/CG013fullguideline](http://www.nice.org.uk/CG013fullguideline)

### Information for the public

NICE has produced information describing this guidance for pregnant women, their partners and the public. This information is available in English and Welsh from [www.nice.org.uk/CG013publicinfo](http://www.nice.org.uk/CG013publicinfo)

### Review date

The process of reviewing the evidence is expected to begin 4 years after the date of issue of this guideline. Reviewing may begin earlier than 4 years if significant evidence that affects the guideline recommendations is identified sooner. The updated guideline will be available within 2 years of the start of the review process.

## Related guidance

National Institute for Clinical Excellence (2001) The use of electronic fetal monitoring: the use and interpretation of cardiotocography in intrapartum fetal surveillance. *NICE Inherited Clinical Guideline C*, London: National Institute for Clinical Excellence. Available from [www.nice.org](http://www.nice.org)

NICE is in the process of developing the following guidance:

- Intrapartum care: management and delivery of care to women in labour. *Clinical guideline*. (Publication expected January 2006)

Postnatal care: routine postnatal care of recently delivered women and their babies. *Clinical guideline*. (Publication expected Summer 2006)

National Institute for Clinical Excellence (2003) *Antenatal*

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The guidance is written in the following context:  
The guidance is written for the professional who is responsible for the care of the individual patient, in consultation with the patient and/or guardian or carer.

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Quick reference guide

Caesarean section

Clinical Guideline 13  
Developed by the National Collaborating Centre for Women's and Children's Health

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