

Caesarean section

Summary of effects and procedural aspects

**Clinical
practice algorithm**

April 2004

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

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

- Abdominal pain
- Bladder injury
- Ureteric injury
- Need for further surgery
- Hysterectomy
- Intensive therapy/high dependency unit admission
- Thromboembolic disease
- Length of hospital stay
- Readmission to hospital
- Maternal death
- Antepartum stillbirth in future pregnancies
- Placenta praevia
- Uterine rupture
- Not having more children
- Neonatal respiratory morbidity

No difference after CS

- Haemorrhage
- Infection
- Genital tract injury
- Faecal incontinence
- Back pain
- Dyspareunia
- Postnatal depression
- Neonatal mortality (except breech)
- Intracranial haemorrhage
- Brachial plexus injuries
- Cerebral palsy

Reduced with CS

- Perineal pain
- Urinary incontinence
- Uterovaginal prolapse

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. Appendix E of the NICE guideline has 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

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

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

- 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

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 H₂ 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
- ✗ Exteriorise 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 analgesics
- ✓ 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

This algorithm should, where necessary, be interpreted with reference to the full guideline.

Clinical Guideline 13
Caesarean section

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This document forms part of the NICE guideline on caesarean section (see above), which is available from the NICE website (www.nice.org.uk/CG013NICEguideline).

An abridged version of this guidance (a 'quick reference guide') is also available from the NICE website (www.nice.org.uk/CG013quickrefguide). Printed copies of the quick reference guide can be obtained from the NHS Response Line: telephone 0870 1555 455 and quote reference number N0478.

Information for the public is available from the NICE website in English and Welsh (www.nice.org.uk/CG013publicinfo). Printed copies are available from the NHS Response Line (quote reference number N0479 for an English version and N0480 for a version in English and Welsh).

Information about the full guideline, from which the NICE guideline has been prepared, is given in Section 5 of the NICE guideline.

This guidance is written in the following context:

This guidance represents the view of the Institute, which was arrived at after careful consideration of the evidence available. Health professionals are expected to take it fully into account when exercising their clinical judgement. The guidance does not, however, override the individual responsibility of health professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

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