NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

Caesarean section (update 2020)

This guideline will update the NICE guideline on caesarean section (CG132), and is based on the original scope.

Area covered by this update

We will look at evidence for the questions below when developing this update. We will consider making new recommendations or updating existing recommendations in this area only

1 What are the risks and benefits of caesarean section compared with planned vaginal birth at term on neonatal and maternal outcomes?

2 What methods, apart from prophylactic antibiotics, should be used to reduce infectious morbidity in women undergoing Caesarean section?

3 What are the procedures to prevent and manage hypothermia and shivering in women having a Caesarean section?

4 What is the efficacy of single-layer closure of the uterus as compared with two layer closure at Caesarean section?

5 How should women be monitored after receiving intrathecal opioids for CS?

6 Are opioids safe and effective for pain management after CS?

Outline for the guideline

The tables below outline all the areas that will be included in the guideline. They set out what NICE plans to do for each area in this update. See also the NICE surveillance report.

Section 1.1 Woman-centred care

Area in the guideline	What NICE plans to do
Provision of information	No evidence review: retain recommendations from existing guideline
Planning mode of birth	Review evidence and update existing recommendations as needed

Section 1.2 Planned CS

Area in the guideline	What NICE plans to do
Breech presentation	No evidence review: retain recommendations from existing guideline
Multiple pregnancy	No evidence review: retain recommendations from existing guideline
Preterm labour and birth	No evidence review: retain recommendations from existing guideline
Small for gestational age and CS	No evidence review: retain recommendations from existing guideline
Placenta praevia	No evidence review: retain recommendations from existing guideline

Morbidly adherent placenta	No evidence review: retain recommendations from existing guideline
Predicting CS for cephalopelvic disproportion in labour	No evidence review: retain recommendations from existing guideline
Mother-to-child transmission of maternal infections	No evidence review: retain recommendations from existing guideline
Maternal request for CS	No evidence review: retain recommendations from existing guideline
Body mass index	No evidence review: retain recommendations from existing guideline

Section 1.3 Factors affecting likelihood of CS during intrapartum care

Area in the guideline	**What NICE plans to do**
Factors reducing the likelihood of CS	No evidence review: retain recommendations from existing guideline
No influence on likelihood of CS	No evidence review: retain recommendations from existing guideline

'Failure to progress' in labour and CS	No evidence review: retain recommendations from existing guideline
Easting during labour	No evidence review: retain recommendations from existing guideline

Section 1.4 Procedural aspects of CS

Area in the guideline	**What NICE plans to do**
Timing of planned CS	No evidence review: retain recommendations from existing guideline
Classification of urgency	No evidence review: retain recommendations from existing guideline
Decision-to-delivery interval for unplanned CS	No evidence review: retain recommendations from existing guideline
Preoperative testing and preparation for CS	Review evidence on what methods, apart from prophylactic antibiotics, should be used to reduce infectious morbidity in women undergoing Caesarean section. Other recommendations to be retained.

Anaesthesia for CS	No evidence review: retain recommendations from existing guideline. Review evidence on preventing and managing hypothermia and shivering in women having a CS.
Surgical techniques for CS	Review evidence on methods to reduce infectious morbidity (by the use of skin preparations) and add new recommendations. Review evidence on the efficacy of single-layer closure of the uterus as compared with two layer closure at Caesarean section. Other recommendations to be retained.

Section 1.5 Care of the baby born after CS

Area in the guideline	**What NICE plans to do**
Presence of paediatrician at CS	No evidence review: retain recommendations from existing guideline
Thermal care for babies born by CS	No evidence review: retain recommendations from existing guideline

Maternal contact (skin-to-skin)	No evidence review: retain recommendations from existing guideline
Breastfeeding	No evidence review: retain recommendations from existing guideline

Section 1.6 Care of the woman after CS

Area in the guideline	**What NICE plans to do**
High dependency unit/intensive therapy unit admission	No evidence review: retain recommendations from existing guideline
Routine monitoring after CS	Review evidence on how women should women be monitored after receiving intrathecal opioids for CS. Other recommendations to be retained.
Pain management after CS	Review evidence on whether opioids are safe and effective for pain management after CS. Other recommendations to be retained.
Early eating and drinking after CS	No evidence review: retain recommendations from existing guideline

Urinary catheter removal after CS	No evidence review: retain recommendations from existing guideline
Respiratory physiotherapy after CS	No evidence review: retain recommendations from existing guideline
Length of hospital stay and readmission to hospital	No evidence review: retain recommendations from existing guideline

Section 1.7 Recovery following CS

Area in the guideline	**What NICE plans to do**
Recovering following CS	Review evidence on methods to reduce infectious morbidity (by the use of different wound dressings) and add new recommendations.

Section 1.8 Pregnancy and childbirth after CS

Area in the guideline	**What NICE plans to do**
Pregnancy and childbirth after CS	No evidence review: retain recommendations from existing guideline

Recommendations in areas that are being retained from the existing guideline may be edited to ensure that they meet current editorial standards, and reflect the current policy and practice context.

Scope for existing guideline CG132 (last updated August 2019)

1 Guideline title

Caesarean section (partial update of NICE clinical guideline 13)

1.1 Short title

Caesarean section (update)

2 The remit

This is a partial update of NICE clinical guideline 13 (2004): Caesarean section'. In the original remit, the Department of Health asked NICE to produce evidence based guidelines on, 'When a caesarean section is appropriate and the circumstances under which routine procedures in normal labour may be unnecessary'. Following changes to current practice and changes to the evidence base the following areas of the guideline have been prioritised for updating: morbidly adherent placenta, women who are HIV positive, time from decision to delivery, planned vaginal birth versus planned caesarean section following previous caesarean birth, and antibiotic prophylaxis. Other areas of the original scope will be considered for review at a later date.

3 Clinical need for the guideline

3.1 Epidemiology

a) Caesarean rates have been rising in developing countries over the past four decades. In England the rate in 1992 was 13%, whereas in 2008/9 it was 23%.

b) The likelihood of a woman having a caesarean section is influenced by several factors. Maternal factors include age, ethnicity, number of previous pregnancies, body mass index, socioeconomic status, and medical disorders. Fetal factors include fetal presentation, size, health and gestational age. However, differences in rates of

caesarean section are not accounted for by hospital populations and case-mix alone.

c) The overall risk of a placenta praevia is about 1:400 if there has been no previous caesarean section. If a woman has had a previous caesarean section there is an increased risk of placenta praevia. Thus, for example, the literature reports risks of placenta praevia as 1:160 after one previous CS, 1:60 after 2, 1:30 after 3 and 1:10 after 4. Of women who have a placenta praevia following one previous caesarean section, at least 2% will have a morbidly adherent placenta (though higher rates have been quoted). The risk of this complication increases with the number of previous caesarean sections: at least 17% with two and 25% with three previous caesarean births. However, figures of 50% have been reported after 2 or more caesarean sections. The morbidity associated with morbidly adherent placenta includes excessive blood loss, the potential need for hysterectomy, and complications associated with surgery. There is also an increased mortality risk, although the reported maternal mortality rate due to this condition in the UK is not high, being less than 1 in 100,000 maternities. More women are giving birth by caesarean section and thus the incidence of morbid placental adherence and its consequences are also increasing.

d) Whilst the great majority of babies born by caesarean section have a healthy outcome, there is some evidence of increased perinatal risk (mortality and morbidity) to the baby in a pregnancy following a caesarean section.

3.2 Current practice

A striking feature of pregnancy care in developed countries over recent decades has been the progressive rise in caesarean section rates. There are many reasons for this. These include the safety of the lower uterine segment technique, improved anaesthetic techniques, the availability of blood products and antibiotics, a

greater range of indications, the increasing use of electronic fetal monitoring and the concept of the fetus as a patient. More recently caesarean birth has become an issue of choice for women as a preferred mode of delivery. As a consequence of the rising rates there has been a secondary rise in repeat caesarean delivery with its increased rates of severe complications, especially morbidly adherent placenta.

Caesarean sections can be classified according to whether they are carried out as planned procedures (approximately 40% of cases) or as an emergency/unplanned procedure (approximately 60% of cases). The four main clinical indications for caesarean section are dystocia (prolonged labour), suspected fetal compromise, fetal malpresentation and previous caesarean birth. These account for more than 70% of caesarean births. Programmes designed to alter caesarean delivery rates have tended to focus on modifying these four primary operative indications.

3.3 Topic areas to be updated

a) Imaging techniques (colour-flow ultrasound and magnetic resonance imaging [MRI]) are sometimes used as diagnostic aids for placental problems such as morbidly adherent placenta, but their use in practice is variable and there is uncertainty about whether they are accurate as diagnostic tools. There is also uncertainty about whether a diagnosis using these techniques improves outcomes for women and their babies.

b) The 2004 caesarean section guideline recommended that HIV-positive women who are pregnant should be offered a planned caesarean section ‘because it reduces the risk of mother-to-child transmission (MCT) of HIV’. New evidence that challenges this recommendation needs evaluating. In particular, vaginal birth may be possible in the presence of low viral counts and modern

antiretroviral treatment with no significant increase in the risk of mother-to-child transmission.

c) The original caesarean section guideline addressed issues relating to maternal request including the prevalence of request, fear of childbirth and how obstetricians should respond to such requests. In the light of new evidence and a strong concern amongst stakeholders that this area needs to be re-examined this topic will be addressed in the update.

d) A great deal of support has been expressed by stakeholders for the usefulness of Table 3.1 in the original guideline summarising risks and benefits of caesarean section vs. vaginal birth. Given that this table is often used as the basis of information given to women and underpins informed consent there is a need to ensure this information is as accurate and up to date as possible and therefore it will be included in the update.

e) The 2004 guideline made no recommendations on planned caesarean section versus planned vaginal birth in women who have had a previous caesarean birth. This is an important issue for women who have had a caesarean section and new evidence published in this area will be reviewed.

f) The 2004 guideline made a recommendation for research into how the timing of administering antibiotic prophylaxis in relation to cord clamping affected neonatal outcomes. It is anticipated that there will be new evidence in this area to review.

g) Since the publication of the original guideline there has been much debate in the literature about the recommendation relating to the use of a decision-to-delivery interval of less than 30 minutes as an audit standard for maternal or fetal compromise. This 30-minute audit standard has in some instances been adopted as a clinically significant threshold, but the evidence for this is poor and there is

ongoing discussion about whether it is an appropriate clinical standard.

4 The guideline

The guideline development process is described in detail on the NICE website (see section 6, 'Further information').

This scope defines what the guideline will (and will not) examine, and what the guideline developers will consider.

The areas that will be addressed by the guideline are described in the following sections.

4.1 Population

4.1.1 Groups that will be covered

a) Women who plan for or may require a caesarean section.

b) Women with clinical conditions arising during pregnancy, such as pre-eclampsia or gestational diabetes that require specialist care will be included in the population for questions relating to morbidly adherent placenta, HIV transmission, maternal request, vaginal birth after caesarean section and timing of prophylactic antibiotics. These groups are not included in any other topic area (i.e. areas that are not being updated, plus the risk/benefit summary). Additional care needed relating specifically to the co-morbidity will not be addressed.

c) Particular consideration will be given to the following subgroups:

- women who have had a previous caesarean section
- women who are pregnant and HIV positive, with high or low viral load
- women in labour who require emergency or urgent caesarean section
- women who are morbidly obese

4.1.2 Groups that will not be covered

a) Pregnant women or babies with rare conditions or with complex or unusual co-morbidities, such as maternal congenital heart disease, that require specialist care.

b) Women with clinical conditions arising during pregnancy, such as pre-eclampsia or gestational diabetes that require specialist care will not be included in the risks and benefits summary table or in any of the areas not being updated (see 4.1.1b)

4.2 Healthcare setting

Primary, community, secondary and tertiary healthcare.

4.3 Clinical management

4.3.1 Key clinical issues that will be covered

a) Imaging techniques (colour-flow ultrasound and MRI) for diagnosis of a morbidly adherent placenta in pregnant women who have had a previous caesarean section and are currently diagnosed with placenta praevia.

b) Does a diagnosis of morbidly adherent placenta using imaging techniques lead to improved outcomes in pregnant women with a previous caesarean section currently diagnosed with placenta praevia?

c) Effectiveness of elective caesarean section compared with vaginal birth at decreasing the mother-to-child transmission of the virus in pregnant women with HIV, for both low and high viral load.

d) The appropriate care of women who request a caesarean section

e) Risks and benefits of caesarean section compared with vaginal birth for both women and babies

f) Effectiveness of planned vaginal birth compared with planned caesarean section at term at improving maternal and neonatal outcomes in women who have had a previous caesarean section.

g) Does the administration of antibiotics at the start of a caesarean section rather than after cord clamping improve maternal and neonatal outcomes?

h) Decision-to-delivery interval in caesarean section in cases of maternal or fetal compromise

4.3.2 Clinical issues that will not be covered

a) The risks and benefits of caesarean section as a therapeutic intervention for specific clinical conditions arising during pregnancy such as pre-eclampsia or gestational diabetes.

b) Additional specialist care required by women with clinical conditions that arise during pregnancy (see section 4.1.1a)

c) The care of pregnant women or babies with rare conditions, or with complex or unusual comorbidities such as maternal congenital heart disease.

d) Areas addressed in the 2004 guideline that will not be updated are:

- Woman centred care: provision of information, consent for caesarean section, and classification of urgency.
- Planned caesarean section: breech presentation, multiple pregnancy, preterm birth, small for gestational age, predicting caesarean section for cephalopelvic disproportion in labour, mother-to-child transmission of Hepatitis B, Hepatitis C, and Herpes simplex.
- Factors affecting likelihood of caesarean section during intrapartum care: place of birth, factors reducing the likelihood,

factors with no influence on the likelihood, caesarean section and prolonged labour, and eating during labour.

- Procedural aspects of caesarean section: timing of planned caesarean section, preoperative testing and preparation, anaesthesia and surgical techniques
- Care of the baby born by caesarean section: presence of appropriately trained practitioner at caesarean section, neonatal encephalopathy/cerebral palsy, birth injuries, thermal care for babies, maternal contact (skin to skin) and breastfeeding (however, these issues will be considered for inclusion as key outcomes in the evidence reviews undertaken for this update).
- Care of the woman after caesarean section: routine monitoring, pain management, early eating and drinking, urinary catheter removal, respiratory physiotherapy, debriefing, and length of hospital stay and readmission to hospital.
- Post-operative recovery following caesarean section.

4.4 Main outcomes

a) Diagnostic accuracy of colour-flow ultrasound and MRI.

b) Maternal outcomes: mortality, blood loss, admission to intensive care units, thromboembolic disease, infection, breastfeeding, women's experiences and satisfaction, psychological sequelae such as postnatal depression. Uterine rupture will be an additional outcome for women having a planned vaginal birth after a previous caesarean section. Hysterectomy will be a specific outcome for women diagnosed with a morbidly adherent placenta.

c) Baby outcomes: 5 minute Apgar score, preterm birth rate, respiratory complications, neurological complications, length of stay. Mother-to-child transmission will be included for babies born to HIV positive women.

4.5 Economic aspects

Developers will take into account both clinical and cost effectiveness when making recommendations involving a choice between alternative interventions. A review of the economic evidence will be conducted and analyses will be carried out as appropriate. The preferred unit of effectiveness is the quality-adjusted life year (QALY), and the costs considered will usually be only from an NHS and personal social services (PSS) perspective. Further detail on the methods can be found in 'The guidelines manual' (see 'Further information').

4.6 Status

4.6.1 Scope

This is the final scope

4.6.2 Timing

The development of the guideline recommendations will begin in July 2010.

5 Related NICE guidance

5.1 Related NICE guidance

- 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
- Maternal and child nutrition. NICE public health guidance 11 (2008). Available from www.nice.org.uk/guidance/PH11
- 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

- Urinary incontinence NICE clinical guideline 40 (2006). Available from www.nice.org.uk/guidance/CG40

5.2 Guidance under development

NICE is currently developing the following related guidance (details available from the NICE website):

- Hypertensive disorders during pregnancy. NICE clinical guideline. Please see NICE website for anticipated publication date.
- Pregnancy and complex social factors. NICE clinical guideline. Publication expected September 2010.
- Multiple pregnancy. NICE clinical guideline. Publication expected September 2011.
- Weight management in pregnancy and after childbirth. Publication expected July 2010.

6 Further information

Information on the guideline development process is provided in:

- 'How NICE clinical guidelines are developed: an overview for stakeholders the public and the NHS'
- 'The guidelines manual'.

These are available from the NICE website (www.nice.org.uk/GuidelinesManual). Information on the progress of the guideline will also be available from the NICE website (www.nice.org.uk).