NHS
Wrightington, Wigan and Leigh Teaching Hospitals
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<tr><td>Title of Guideline</td><td>Care of women undergoing caesarean section</td></tr>
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<tr><td>Statement of evidence base
<table>
<tr><td>1a</td><td>Meta analysis of RCT</td></tr>
<tr><td>1b</td><td>At least 1 RCT</td></tr>
<tr><td>2a</td><td>At least 1 well designed controlled study without randomisation</td></tr>
<tr><td>2b</td><td>At least 1 other well designed quasi experimental study</td></tr>
<tr><td>3</td><td>Well –designed non-experimental descriptive studies
(ie comparative / correlation and case studies)</td></tr>
<tr><td>4</td><td>Expert committee reports or opinions and / or clinical experiences of respected authorities</td></tr>
<tr><td>5</td><td>Recommended best practise based on the clinical experience of the guideline developer</td></tr>
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<tr><td>Consultation Process</td><td>O&G Guideline Group</td></tr>
<tr><td>Target Audience</td><td>Maternity staff</td></tr>
<tr><td>This guideline has been registered with the trust. However, clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague or expert. Caution is advised when using guidelines after the review date.</td><td></td></tr>
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Care of women undergoing Caesarean section

Written by Christian Amoah, June 2017.
[Incorporating and replacing previous guidelines - Antibiotic prophylaxis for caesarean section (Obs. 26), Preop clinic (Obs 28), Post- operative care (Obs 60) and Emergency caesarean section (Obs 103)]
Consent form updated November 2018 (version 1a). Minor amendment booking face to face interpreter and aligning post op observations with updated MEOWS guideline (v1.2). Updated October 2020 by Dhvani Lalan, Kirsten Singh, Tony Short and Audrey Livesey (v2). Waiting list proforma removed November 2020. Updated caesarean section for non-medical reasons September 2021 (v 2.2). Updated relating to antenatal corticosteroids April 2022 (v2.3) Updated by Sarah Dauleh and Stephen Traynor March 24 in line with NICE guidance (V3)

Definition

Caesarean Section (CS) is the operative delivery of the baby through the anterior wall of the uterus; it can be elective (planned) or emergency (Myles 2009).

Introduction

The Caesarean Section rate is rising in western society. The caesarean section rate for England in 2017/8 was 28.8%. The 2019 caesarean section rate for RAEI was 31.6 % (Maternity Dashboard/Euroking Database) compared to a GMEC average of 30.9%[1]. GMEC caesarean section rate has been rising steadily over the last few years from 25.9 % in 2015 to 30.9% in 2019.

“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.” *NICE Surveillance report 2017 – Caesarean section (2011) NICE guideline CG132*

The grade of caesarean section takes into consideration any concerns regarding maternal or fetal compromise.

Grades of caesarean section

GRADE 1: Immediate threat to the life of the mother or fetus. This needs to be done within 30 minutes from decision. A Paediatrician should be present for delivery in all cases.

Examples

- Prolonged fetal bradycardia,
- Cord prolapse
- Uterine rupture
- APH/abruption
- Fetal blood sample pH <7.20
- Pathological CTG

GRADE 2: Maternal or fetal compromise that is not immediately life-threatening. It needs to be performed as quickly as possible within 75 minutes from decision to avoid any deterioration of maternal or fetal condition.

Examples

- Suspicious CTG with slow progress in labour
- Failure to progress in labour

GRADE 3: No maternal or fetal compromise but needs early delivery.

Examples

- Previous caesarean section or breech presentation in labour but planned for elective caesarean section

GRADE 4: These are planned and delivery is timed to suit mother and staff.

The risk of respiratory morbidity is increased in babies born by caesarean section before labour, but this risk decreases significantly after 39 weeks. Therefore, a planned caesarean section should not routinely be carried out before 39 weeks unless there is a MEDICAL reason to do so. Antenatal corticosteroids to reduce the risk of respiratory morbidity should be discussed for all elective caesarean sections prior to 38^{+6} weeks of gestation. (Refer to Antenatal Steroid Therapy Obs 10)

ELECTIVE CAESAREAN SECTION

At antenatal clinic when women are booked for elective caesarean section,

- Where a woman requests a caesarean section explore, discuss and record the specific reasons for the request as well as a record of discussion of the overall risks and benefits of caesarean section compared with vaginal birth. If she has anxiety about childbirth, an offer of referral to a healthcare professional with expertise in providing perinatal mental health support (birth after thoughts provides an appropriate forum for this) should be made to help her address this in a supportive manner. Alternatively she can be referred to the Low Risk and Continuity Lead Midwife. If after discussion and offer of support (including perinatal mental health support for women with anxiety about childbirth), a vaginal birth is still not an acceptable option, offer her a planned caesarean section. This should be discussed with a Consultant Obstetrician and the approval recorded in the notes. If a Consultant does not wish to approve the request then a second Consultant opinion should be requested.
- Women who have an uncomplicated singleton breech pregnancy at 36 weeks' gestation should be offered external cephalic version (External cephalic version Guideline Obs 1). Exceptions include women in labour and women with a uterine scar or abnormality, fetal compromise, ruptured membranes, vaginal bleeding or medical conditions.
- If a woman chooses to plan a vaginal birth after she has previously given birth by caesarean section, she should be fully supported in her choice as "clinically there is little or no difference in the risk associated with a planned caesarean section and a planned vaginal birth in women who have had up to 4 previous caesarean sections." (NICE qs32. 2013). This discussion should be documented in the woman's notes (Delivery after previous caesarean section Guideline Obs 51).

Procedure for elective caesarean section

	Action	Rationale
Decision and booking in clinic		
1.	Booking of caesarean sections should be made after discussion with Consultant in clinic.	The involvement of a consultant is intended to ensure that the best possible outcomes are achieved for the woman and the baby.

2.	On booking the elective CS, provide a copy of the patient information leaflets 'Preparing for your Caesarean Section Operation', Labour Pains - Caesarean section information sheet, RCOG leaflet about caesarean section, Skin to Skin Contact.	To ensure that the relevant information is received.
3.	• The indication for elective caesarean section should be discussed. • A description of the procedure should be discussed. • Risks and benefits should be highlighted including implication for future pregnancy. • Written consent should be obtained using the pre-printed consent form (Appendix 1)	To ensure informed consent is obtained and documented
4.	Book the caesarean section on the electronic caesarean section calendar in Outlook. All elective caesarean sections are completed in general theatres. Currently a maximum of 5 patients may be booked for each full day theatre session but this is under regular review and the number of slots available is indicated in the electronic diary for booking elective caesarean sections. Please also refer to the Elective caesarean section SOP.	As everyone uses the same calendar this should avoid double booking. Having a separate general theatre caesarean section list means that delays due to emergencies on labour ward are less likely and thus provides a better quality experience for the women. This also Improves patient safety for all women as maternity theatre (Theatre 7) is kept free for obstetric emergencies.

5.	The pre-op assessment for elective caesarean sections is usually completed by the anaesthetist on the day of the surgery. This should also include a discussion regarding post-operative analgesia. Earlier antenatal anaesthetic review is indicated for patients at higher risk of complications. See guideline on intranet.	Anaesthetic review before surgery is important but uncomplicated patients can be seen on the day of surgery.
6.	Bloods (FBC & Group and Save) should be arranged 48 hours before surgery.	Group and save samples are only kept for 48 hours
7.	Obtain MRSA swabs with consent and give information leaflet	To screen for MRSA infection and treat if necessary.
8.	COVID Swabs need to be arranged at least 3 days before surgery by making an appointment in ANC.	In the current COVID situation, All women who are booked for elective surgery should have COVID swabs taken before surgery. COVID swabs can take at least 48 – 72 hrs for the results to be available.
9.	Advise women to attend maternity ward at allocated time on the day of surgery. This will be dependent on place on list as decided by hot week consultant the week before Refer also to Elective caesarean section SOP. Patients will receive a phone call the day before the caesarean section to clarify the time they are to attend.	To prepare for operation. Allow for timely preparation by midwife
10.	Advise nothing to eat or drink from midnight on the day before surgery if planned for a morning case and from 0700 hrs for afternoon cases.	To reduce the risk of regurgitation and inhalation of stomach contents on induction of anaesthetic.
Admission to antenatal ward		

11.	Group, FBC, MRSA and COVID result to be checked prior to admission by the allocated staff member – normally HCA. The results will be available on the front of the notes for the midwife who will provide maternity care for the woman.	To determine any need for blood to be cross matched and consequently avoid delays.
12.	Cross match 4 units blood if • Placenta praevia. • Fibroids in the lower segment. • Planned classical section. **Mark transfusion request form as 'elective caesarean section – high risk' so that it can be processed as a priority** There is no need to cross match blood for • Planned Caesarean sections of twins or triplets, • Planned Caesarean sections for women with Hb ≤ 80 g/l, • Planned Caesarean sections for women with previous PPH, • Planned Caesarean sections for women with ≥ 3 previous sections.	These are situations in which blood may be required during the caesarean section
13.	Give omeprazole 20mg at least 2 hours prior to surgery.	To neutralise stomach contents and assist in the prevention of acid aspiration syndrome (Mendelson's syndrome). The pharmacokinetics of omeprazole are that the anti-secretory effect is evident at 1 hour, peaking at 2 hours. Although ranitidine is more effective there are long term supply issues with this so it is not available.

14.	When a caesarean section has been arranged for a breech/ transverse presentation the obstetrician should perform an ultrasound scan in order to confirm presentation.	To confirm the presentation and mode of delivery with the patient
15.	Allocated Midwife to complete full antenatal assessment/care as per SOP on the day of surgery. Please also refer the Elective caesarean section SOP. Midwife to transfer patient to theatre when called for by General theatre when staff are ready to commence.	To ensure maternal and fetal wellbeing prior to theatre To ensure safe and timely transfer

EMERGENCY CAESAREAN SECTIONS

Procedure

	Action	Rationale
1.	Categorise Caesarean Section and document the reason for decision.	To facilitate communication between professionals and enable smooth flow of events while ensuring safety of mother and baby.
2.	Inform the consultant on-call and document this.	To discuss the appropriateness and their attendance as necessary eg. for BMI > 50 or Placenta Previa.
3.	Inform labour ward shift leader so that a theatre team can be organised	To avoid any delays that could further compromise the health of the mother and baby.
4.	Contact on call anaesthetist (Bleep 5107) and ODP stating the grade of CS. If bleeping for a Cat 1 caesarean section, Ring 2222 and ask switch board to crash bleep the on-call Obstetric team (Registrar and SHO), on call anaesthetist , neonatal Registrar and SHO and maternity theatre team to come to maternity theatre.	Indicate the level of urgency for each delivery.
5.	Contact the Paediatrician. For cases with preterm infants or infants suspected to be severely compromised, a senior paediatrician should be called.	To have a practitioner skilled in resuscitation of the newborn present in cases of CS under general anesthesia or if suspected fetal compromise.
6.	Informed consent, using the pre-printed consent form (Appendix 1), should be obtained and documented in the patient's notes. Verbal consent may be appropriate in some extremely urgent cases.	Outline the benefits of the procedure and alternatives, as well as risks so that the patient makes an informed choice.
7.	Check blood (FBC, G&S) has been taken.	To ensure pre-operative haemoglobin is known and blood is available for cross-matching.

8.	Transfer to theatre	To perform caesarean section

PROCEDURE IN THEATRE

1.	WHO check list for caesarean section (Appendix 3) to be completed before and after the procedure. Accommodate a women's preference for her caesarean birth whenever possible.	To reduce risk of incorrect procedure being undertaken and to avoid omissions of care. Such as music playing in theatre, lowering screen to see baby being born.
2.	Offer prophylactic antibiotics. Give **Cefuroxime 1.5g iv plus metronidazole 500mg iv stat** or if penicillin allergic: **Gentamicin 1.5mg/kg iv plus metronidazole 500mg iv stat** These should be given **before** skin incision	To reduce the incidence of post-operative infection To avoid allergic reactions.

3.	Anaesthetist to provide an appropriate anaesthetic assisted by operating department assistant. This will usually be a regional technique including intrathecal or epidural preservative-free diamorphine.	To perform surgery without pain
	Blood pressure should be maintained at 90% or more of baseline through the use of prophylactic phenylephrine infusion, boluses of ephedrine and co-administration of crystalloid.	A fall in maternal blood pressure will cause a reduction in placental blood flow.
	When a general anaesthetic is performed this should be a rapid sequence induction using pre-oxygenation and cricoid pressure.	To reduce the risk of hypoxia or aspiration of gastric contents.
	FH should be continuously monitored in theatre by the midwife once the woman is transferred into theatre (allowing for time taken to adjust patient into appropriate position for anaesthesia).	To detect any changes in the fetal heart rate pattern which may affect the grading of caesarean section or mode of anaesthesia
4.	Catheterise	To empty the bladder to reduce likelihood of bladder injury during the operation and prevent over-distension of the bladder especially as anaesthetic block interferes with normal bladder function.

5.	Clean and drape, use alcohol based chlorhexidine or alcohol based iodine if the former not available for abdominal skin prep before caesarean birth.	To provide a clean operative field and reduce the risk of infection.
	If the woman has ruptured membranes use aqueous iodine vaginal prep or aqueous chlorhexidine vaginal prep if the woman has an allergy to iodine or it is contraindicated.	To reduce the risk of endometritis.
	Perform caesarean birth using transverse incision 3cm above the pubic symphysis.	Allows for shorter operative time and reduces postop febrile morbidity.
	Subsequent layers opened bluntly, if necessary, use scissors not a knife, that includes if there is a well formed lower uterine segment.	To reduce blood loss and incidence of PPH or blood transfusion.
	Remove placenta using controlled cord traction not manual removal.	To reduce the risk of endometritis
	Perform intraperitoneal repair of the uterus using single- or double-layer closure.	Exteriorisation of the uterus is associated with more pain. Note single layer closure does not increase risk of post op bleeding or uterine rupture in subsequent pregnancies.
	Do not close visceral or parietal peritoneum. Close if >2cm of subcutaneous fat.	To reduce incidence of wound infection.
	If midline abdominal incision used for caesarean birth, mass closure using slowly absorbable continuous suture.	Results in fewer incisional hernias and less dehiscence.

6.	Record clearly: • The time of decision • Arrival time in theatre • 'Knife to skin' • 'Knife to uterus' • Forceps applied if used • Paediatrician bleeped if not already present • Time of delivery of baby. • Delivery of placenta • The reasons for any delay	As part of risk management, the decision to delivery interval for emergency caesarean sections should be subject to continuous audit.
7.	Undertake VTE prophylaxis and consider LMWH post-natally if indicated (see Guideline Obs 18 - Thromboprophylaxis). LMWH should not be given until 4 hours after spinal anaesthesia or removal of epidural catheter.	LMWH must be prescribed as per the VTE score to reduce morbidity from thromboembolism
8.	Cord arterial and venous samples should be taken for blood gas assessment for all emergency cases.	To provide additional information about the baby's welfare before delivery.
9.	Follow wound management pathway (Appendix 4) for appropriate dressing use.	To appropriately dress wound To reduce the rates of wound infection in high risk patients
10.	A clear operation note should be entered on Euroking and printed and filed in the case notes	To provide documentation of the procedure.
11.	Report on Datix any emergency caesarean section that meets the criteria for reporting.	In order to monitor and investigate adverse events so as to improve practice.
12.	In the event of moderate or severe harm (extended stay in hospital for more than 3 days or required an additional procedure) duty of candour must be followed. This can be documented on the debrief sheet which can be attached to the datix form.	Legal requirement under duty of candour. Be aware it is rare for women to require intensive care after child birth, this may occur after a caesarean.
13.	If severe harm has occurred, a formal written letter to the patient must be sent within 10 days.	Legal requirement under duty of candour.

POST-OPERATIVE CARE

Post-operative care commences immediately following the completion of the operation. Initial care is covered by the guideline for care in the recovery room (Obs 91). An individual assessment of the care needs of both the mother and the baby is made upon transfer to the postnatal ward.

Procedure

	Action	Rationale
1.	The physical and psychological care of the mother is monitored frequently for the first 24 hours and then according to individual needs. Once discharged from the recovery room observations of BP, pulse, temperature, oxygen saturations, respiration rate and conscious level • on admission to the ward; • every 30 minutes for 2 hours; • at least 6 hourly until mobile then • 12 hourly until discharge If the patient has risk factors for respiratory depression (such as obstructive sleep apnoea, severe respiratory disease, severe obesity, use of sedating medication) the observations should be performed hourly for 12 hours. Record on the Modified Early Obstetric Warning Score (MEOWS) chart (Guideline Obs 121). Each patient's post-op care to be individualised – on discussion with on-call Obstetric middle grade/Consultant	To ensure the early detection of complications or deterioration in the mother's condition.

2.	Women who have a CS should be prescribed and encouraged to take regular analgesia for postoperative pain, using: • Regular paracetamol • Regular ibuprofen (unless contra-indicated) • Oral morphine or dihydrocodeine for break through pain. If discharged home with opioids, then advise the patient to contact a healthcare provider if they are concerned about their baby (such as breathing difficulties, constipation or difficulty feeding).	To maintain the mother's comfort and review as required. 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. Codeine is contraindicated if breast feeding.
3.	If pain control is a problem seek anaesthetic advice.	Anaesthetists have expertise in pain control.
4.	Ensure VTE prophylaxis. Check thromboembolic deterrent stockings are being worn correctly and LMWH is prescribed and given (4 hours after spinal anaesthetic or removal of epidural catheter).	To reduce the chance of thromboembolic complications
5.	Anaesthetic follow up on 1st post-operative day.	To check there are no anaesthetic complications or debriefing required.

6.	Debriefing by an obstetrician should take place for all women who have had a caesarean section on 1st post-operative day using the standard debrief proforma (Appendix 2). 3 copies to be made: 1 to be filed in the notes, and 1 for the woman and 1 sent to her GP. Documentation on the form must include both the reasons for the caesarean section and a discussion relating to the implication for future pregnancies. This is a good opportunity to discuss contraception.	To ensure women understand why they needed an operation to deliver their baby and to discuss any concerns they may have arising from this. To encourage early discussion on the mode of delivery for a future pregnancy
7.	Intravenous fluids should be administered initially but should be discontinued when tolerating diet and fluids. Encourage intake of oral fluids and light diet once patient is sat up and able to tolerate same	To maintain hydration following surgery Ensure hydration and dietary requirements are met post op.
8.	Throughout the early postnatal period, assistance is provided to the mother to help her care for baby. Encourage early skin to skin contact, normally in theatre/recovery. Encourage and assist the women to freshen up, dress and mobilise as soon as able to weight bear	Reduced mobility means mother requires more support caring for her baby. Improves maternal perception of care and bonding with baby. Improves BF success Leads toward enhanced recovery. Promotes dignity, self-care. and caring for baby

9.	A urinary catheter must remain in situ until mobility is established. Measure first urinary void checking it is within 6 hours of removal of the urinary catheter.	To observe the colour of the urine and to detect any bladder trauma. To prevent over distension of the bladder due to difficulty in voiding urine in the post-operative period. To aid monitoring of fluid balance. To prevent infection To exclude urinary retention with the associated risks of over distension of the bladder. See post-partum bladder care guideline (Obs 117).
10.	TTO's to be prescribed.	To facilitate timely discharge.
11.	Check HemoCue on Day 1 post-op or sooner if clinically indicated or as per the surgeon. Obtain venous FBC if EBL >800, if Hb < 80g/l or if symptomatic of anaemia.	To detect anaemia promptly and treat accordingly. To prevent unnecessary venepuncture.
12.	Accurate and contemporaneous records are made of all observations, treatments and care given.	To maintain accurate record keeping.
13.	Contact numbers for advice / assistance to be discussed and made available. Provide leaflet on 'birth afterthoughts' 'What to expect from your Caesarean section' information card to be given. Information contained in the hand held Mothers' postnatal notes should be discussed and explained.	Ensure the mother is still able to access care and information as required To ensure the availability of relevant information and advice.

14.	Wound care: Daily observations of the wound area to assess the healing process and any signs of wound infection i.e. redness, tenderness. Remove wound dressing if soiled, and replace with a clean dressing using aseptic or non-touch technique Remove standard dressings (Leukomed control) at 24 hours. Community Midwives to remove intermediate dressings (Leukomed sorbact and PICO) at day 7. Note whether non absorbable sutures (usually interrupted) have been used and arrange removal after 7 days. See also Post op wound care guideline (Obs128) and PICO dressings (SOP 11)	To minimise risk of infection. To ensure that timely action is taken in the event of the wound becoming infected. Contact tissue viability team / postnatal ward or Triage if any concerns
15.	Respiratory physiotherapy after caesarean: Do not offer routine respiratory physiotherapy to women after caesarean birth under general anaesthetic.	Does not improve respiratory outcomes

Discharge

- Midwives may discharge low risk women and those who have had an elective caesarean section from day 2 if there has been an uneventful post-operative period. They may also discharge on day 1 if advised by medical staff that they may do so at the time of debriefing
- High risk women will be discharged by medical staff.
- Check that all medications are prescribed as soon as possible to ensure the availability of take home medications as this will facilitate a timely transfer home.
- Ensure that all relevant discharge information forwarded to other health professionals i.e. Community Midwife, GP and Health Visitor, and ensure Postnatal discharge sheet is placed in community discharge book.

References

1. GMEC SCN Maternity dashboard Quality improvement project 2019 -end of year report
2. World Alliance for Patient Safety. Safe surgery saves lives. WHO/IER/PSP/2008.07
3. Caesarean section NICE CG132 (2011)
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5. Caesarean section. NICE Quality standard [QS32] Published date: June 2013
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7. Manual of Clinical Nursing Procedures 5th ed. Edited by J. Mallet and C. Bailey (2000) ch.30, p.446 – 450. Blackwell Science : Oxford.
8. Surgical Site Infection (Prevention and treatment of surgical site infection NICE clinical guideline 74.
9. The National Sentinel Caesarean Section Audit Report from the RCOG 2002
10. International Journal of Obstetric Anesthesia (2013) 22, 92–95 Enhanced recovery in obstetrics – a new frontier? Elsevier Ltd.
11. OAA / AAGBI Guidelines for Obstetric Anaesthetic Services 2013

Process for audit

- A continuous audit will be undertaken which will be presented and reviewed quarterly at the monthly departmental multidisciplinary audit meeting which will evaluate
    a. the interval between decision and delivery for all emergency caesarean sections
    b. the classification of all caesarean sections as agreed by the maternity service and following the guidance of NICE
    c. whether there has been discussion with a consultant and whether the consultant was in attendance
    d. any reasons for delay in undertaking the caesarean section
    e. whether prophylactic antibiotics were offered and given
    f. whether thromboprophylaxis was given

In addition to this

- An audit will be undertaken at least every 3 years which will audit compliance with this guideline. The audit will include as a minimum set of standards the following criteria
    a. the requirement to document the reason for performing *emergency or urgent caesarean sections* in the health records by the person who makes the decision
    b. the need to include a consultant obstetrician in the decision making process unless doing so would be life threatening to the women or the fetus.
    c. whether prophylactic antibiotics were offered and given
    d. the requirement to discuss with women the implications for future pregnancies before discharge

- The audit will be presented at a monthly departmental multidisciplinary audit meeting following which an action plan will be formulated to correct any deficiencies identified and a date for re-audit planned.
- The implementation of the action plan will be reviewed at the monthly audit meeting 3 months after presentation

Appendices

Appendix 1	Consent form for caesarean section
Appendix 2	Debrief sheet for caesarean section
Appendix 3	WHO checklist for caesarean section
Appendix 4	Wound care