Maidstone and Tunbridge Wells NHS Trust

Ref: FOI/GS/ID 6363

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03 November 2020

Freedom of Information Act 2000

I am writing in response to your request for information made under the Freedom of Information Act 2000 in relation to Caesarean sections.

You asked:
1. Can you tell me what guidance or material midwives or specialist midwives are given for consideration regarding caesarean sections.
This could include - research, the cost of a caesarean and related medical procedures for the hospital/Trust or NHS. If research, please include a brief description - for example, whether the research relates to a possible link between a c-section and autism in children,
2. Please breakdown whether staff are advised whether to share this information with a patient or not (it may be left up to them of course).
If it does not take me over the limit, I would also like to know -
3. Please confirm whether medical staff (including doctors, nurses and midwives) have targets or measured in any other way in terms of the number of caesareans carried out at the hospitals.
4. If there are targets or performance measurement, what are these please and what have the figures been for the last three years?

Trust response:
1. The multi-disciplinary team follow the local Management of Caesarean Section guideline. A copy is attached.

MAIDSTONE AND TUNBRIDGE WELLS NHS TRUST

Management of Caesarean Sections

Requested/ Required by:	Obstetrics, Gynaecology & Sexual Health Directorate
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Directorate:	Obstetrics, Gynaecology & Sexual Health Directorate
Speciality:	Obstetrics
Supersedes:	Management of Caesarean Sections (2016); Vs 3.2
Approved by:	Clinical Risk Management Group **Date:** 19 October 2016
Ratified by:	Clinical Risk Management Group **Date:** 19 October 2016
Review date:	October 2019

Document History

Requirement for document:	To ensure evidence based practice is undertaken on women requiring an Elective or Emergency Caesarean Section: • NICE • RCOG • Audit

Cross References (external):	1. Department of Health. (2004). *Maternity Standard, National Service Framework for Children, Young People and Maternity Services*. London: COI. Available at: www.dh.gov.uk 2. National Institute for Health and Clinical Excellence. (2013). *Caesarean Section*. London. NICE. Available at: www.nice.org.uk 3. Royal College of Obstetricians and Gynaecologists. (2001). The *National Sentinel Caesarean Audit.* London. Available at: www.rcog.org.uk 4. Royal College of Obstetricians and Gynaecologists Clinical Effectiveness Support Unit. (2001). *The National Sentinel Caesarean Section Audit Report.* London: RCOG Press. Available at: www.rcog.org.uk 5. Royal College of Obstetricians and Gynaecologists. (2010) Classification of Urgency of caesarean Section – A continuum of Risk. Good Practice No. 11. London: RCOG. Available at: www.rcog.org.uk 6. RCOG Patient Information Leaflet. (2015) "*Choosing to have a caesarean section*". Available at: www.rcog.org.uk/en/patients/patient-leaflets/choosing-to-have-a-caesarean-section
Associated Documents (internal):	• Venous thromboembolism (VTE) in pregnancy and puerperium: Prophylaxis, Diagnosis and Management (2016) • Postpartum Haemorrhage Guideline (2016) • General Anaesthesia for Caesarean Section Guideline (2015) • Preparing for your Caesarean Section Leaflet. Link is: http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-OPLF-PWC82 • Care of your Caesarean Section Surgical Wound at Home Leaflet. Link is http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-OPLF-PWC78 • Pain Relief after birth and while breastfeeding Leaflet. Link is: http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-MAT-LEA-PAT-10 • Elective Caesarean Birth Enhanced Recovery Pathway for Mothers and babies Information Leaflet. The link is: http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-MAT-LEA-PAT-4

Version Control:

Issue:	Description of changes:	Date:
1.0	First iteration of document	November 2009
2.0	Minor amendments to address service reconfiguration and review Audit Tool	October 2011
3.0	Review and update of guideline	April – October 2016
3.1	• Information regarding Women requesting 'Vaginal seeding' at caesarean section (see Section 5.3.8) • Minor formatting changes	21 April 2017
3.2	Further amendment following agreement at 08/05/2017 Guideline Group that in section 5.3.8 'tampon' should be replaced with 'a piece of fabric'	7 June 2017
3.3	Correction of a typo in section 5.3: • Erroneous reference to 'tampon' replaced with 'a piece of fabric' as per other text	12 February 2018

Management of Caesarean Sections

Contents

1.0 Introduction and Scope of Procedural Document

This guideline applies to all staff caring for women who may require an elective and emergency caesarean section.

The incidence of caesarean section (CS) is variable but is generally about 25% of all deliveries. Emergency caesarean section is associated with increased morbidity for both the mother and the infant.

Once a decision to deliver by Caesarean Section has been made, delivery should be carried out with urgency appropriate to the risk to the baby and the safety of the mother.

2.0 Definitions

Category 1	Immediate threat to the life of women or fetus	Delivery recommended within 30 minutes
Category 2	Maternal or fetal compromise which was not Immediately life threatening	Delivery recommended within 75 minutes
Category 3	No maternal or fetal compromise but needs early delivery	
Category 4	Delivery timed to suit the woman or staff, includes all planned caesarean sections. See Section 5 for planned caesarean sections.	

3.0 Duties

It is the registered professional's responsibility to deliver care that is based on current evidence, always acting in the woman's best interest.

4.0 Training / Competency Requirements

Registered midwives and Medical Staff caring for obstetric patients have a professional responsibility to maintain their competence.

No further training required for implementation of this guideline

5.0 Procedures for Caesarean Section

5.1 Planned Caesarean Sections (Category 4)

The decision for a planned caesarean section should be approved by the Consultant Obstetrician or deputy in consultation with the woman. This discussion is likely to take place during a scheduled antenatal clinic consultation and timed according to the clinical situation.

A planned caesarean section may be offered to women with a number of indications, which may include:

- Placenta praevia - placenta completely or partially covering the os
- A term singleton breech (if external cephalic version is declined, contraindicated or has failed)
- A twin pregnancy with first twin breech or transverse
- Previous complications such as previous caesarean section
- Maternal HIV not on HAART or with viral load > 50 copies/ml
- Concurrent HIV and hepatitis C
- Primary genital herpes in the third trimester

This list is not exhaustive and individual risk factors will be considered by the obstetrician when planning a caesarean section.

All discussions, which should include risks of the surgery, and decisions made, should be **documente**d in the woman's maternity notes.

Once the decision is made, the **Consent Form** should be signed in the Antenatal Clinic (ANC); usually after 34 weeks.

The following **Trust leaflets** should be given to the woman:

- Preparing for your Caesarean Section. Link is: http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-OPLF-PWC82

- Care of your Caesarean Section Surgical Wound at Home. Link is http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-OPLF-PWC78

- Pain Relief after birth and while breastfeeding. Link is: http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-MAT-LEA-PAT-10

A **Caesarean Section booking form** should be completed and given to the ANC midwife. The woman should be informed that they will be notified of the date for CS within 5 days.

Women suitable for the **Enhanced Recovery programme** (uncomplicated caesarean section and anticipated discharge is after 24hours and within 36 hours) should be informed at the time of booking the CS they are eligible and informed of what it entails.

The **Trust Elective Caesarean Birth Enhanced Recovery Pathway for Mothers and babies Information Leaflet** can be given to the woman in Antenatal Clinic. The link is:

- http://twhqpulse01:84/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-MAT-LEA-PAT-4

Enhanced Recovery programme includes:

- Optimising pre op: having a high carbohydrate meal the night before surgery e.g. potatoes, rice, bread or pasta and to drink 400mls of Ribena or still Lucozade Sport (unless diabetic and should have 400mls of water instead).
- Removing catheter as soon as patient mobile
- Encouraging early mobilisation with a TTO pack of post-operative analgesia to facilitate early discharge

An appointment will also be made to attend the **pre-assessment clinic**. For healthy women with an uncomplicated pregnancy FBC and Group & Save are recommended. Crossmatching or clotting screen is not routinely required.

Following admission on the day of surgery, women will be seen by the **anaesthetist** for an assessment of their anaesthetic needs and risks. If additional anaesthetic issues are identified antenatally, an appointment can be made in the Obstetric Anaesthetic Clinic.

Planned caesarean sections should be scheduled for 39 weeks of gestation unless clinically indicated otherwise. Planned caesarean sections take place on the Delivery Suite on weekdays in a dedicated theatre at TWH with an allocated team of anaesthetic, theatre, obstetric and midwifery staff. The on call paediatrician for Delivery Suite will be available to attend as required.

Fetal monitoring prior to a planned caesarean section should be performed as clinically appropriate. Routine CTG monitoring is not required. If twins are present ultrasound localisation of both fetal hearts should be undertaken.

Women will be asked to walk to theatre accompanied by a midwife and their birth partner unless this is contraindicated.

5.1.1 Maternal request as a single indication for CS

- Every patient who falls into this category should be reviewed in a Consultant led antenatal clinic
- Maternal request as the single factor for planned caesarean section should be explored and discussed and the specific reasons for the request documented in the notes
- The overall risks and benefits of CS compared with vaginal birth should be discussed and recorded in the antenatal notes. Ensure the woman has accurate information
- Consider a referral to the anaesthetic clinic if the request relates to the management of pain.
- Consider a referral to senior midwife/supervisor of midwives who can focus on explaining normal labour and birth and maybe able to address their specific concerns
- If after thorough discussion, a caesarean section is still requested, then a planned CS may be considered. A named Consultant Obstetrician should be involved in this decision

- An Obstetrician unwilling to perform a CS should refer the woman to an Obstetrician who will carry out the CS

Please utilise the **RCOG Patient Information Leaflet**: "Choosing to have a caesarean section" (Available at: www.rcog.org.uk/en/patients/patient-leaflets/choosing-to-have-a-caesarean-section)

5.2 Emergency Caesarean Section

5.2.1 Categories

Category 1	Immediate threat to the life of women or fetus	Delivery recommended within 30 minutes
Category 2	Maternal or fetal compromise which was not Immediately life threatening	Delivery recommended within 75 minutes
Category 3	No maternal or fetal compromise but needs early delivery	
Category 4	Delivery timed to suit the woman or staff, includes all planned caesarean sections. See section 5 for planned caesarean sections.	

Once a decision to deliver has been made, delivery should be carried out with urgency appropriate to the risk to the baby and the safety of the mother.

Urgency of caesarean section represents a continuum of risk. Four broad categories of risk are defined, but all staff should be aware that, within each category, the degree of risk in individual cases can vary. There needs to be a case-by-case approach in deciding the specific decision-to-delivery interval (DDI).

The expected time frames that have been set by the Maternity Unit for decision to delivery intervals for Emergency Caesarean Sections (Grades 1 – 3) are as follows:

Category 1 – Immediate Caesarean Section where it is deemed there is an immediate risk to the life of mother &/or baby. Urgent delivery of the fetus is required as soon as possible and **within 30 minutes** of the decision to deliver wherever possible. Examples of such situations are:-

- Prolonged fetal bradycardia – (move to theatre at 6 mins. Decision at 9 mins)
- Presumed fetal hypoxia with pathological CTG, or FBS pH less than 7.20
- Failed trial of instrumental delivery
- Uterine rupture
- Cord prolapse
- Intrapartum haemorrhage with maternal or fetal compromise

Category 2 – Urgent Caesarean Section where it is deemed that significant delay to delivery will lead to an adverse maternal or fetal outcome. Urgent delivery of the fetus is required **within 75 minutes** of the decision to deliver wherever possible. Examples include:-

- Failure to progress in 2nd stage when instrumental delivery is not feasible
- Delayed delivery of the 2nd twin without apparent fetal distress
- Failure to progress / obstructed labour in the 1st stage

If the CS cannot be performed within these guidelines, the reasons should be clearly documented in the notes.

Category 3 – Emergency "non-urgent" Caesarean Section where it is deemed there is no immediate risk to the life of mother &/or baby, or that significant delay to delivery will not lead to an adverse maternal or fetal outcome. Delivery of the fetus is required as soon as possible, practical and feasible when other labour ward risks have been considered. The timing of delivery is at the discretion of the Obstetrician, Anaesthetist and Labour Ward Coordinator, but should be **within 8 hours** wherever possible. Examples include:-

- Undiagnosed breech presentation in early labour
- Premature delivery for PET after BP stabilisation

The clinical picture needs to be continually reviewed as the situation may change.

5.2.2 Reasons for Delay

If there is any delay in carrying out a Caesarean Section (i.e. if unable to meet the decision to delivery interval according to the grade for the Caesarean Section) the reasons for delay must be clearly documented in the notes. Evidence suggests that any delay is usually associated with the delay in transfer to theatre.

5.2.3 Decision to undertake an Emergency CS

The option for performing an Emergency Caesarean Section will be taken by the Senior Obstetrician who is providing care at the time; however this should be agreed with an **Obstetric Consultant** (unless doing so would cause potentially life threatening delay for the woman or the fetus. In that case the task of informing Consultant Obstetrician can be delegated to other suitably qualified member of staff e.g. senior midwife).

5.2.4 Documentation

Documentation in the notes, by the person who makes the decision, should include:

- Indication for the caesarean section
- Category (1-4) of the Caesarean
- Fetal condition
- Maternal condition

If Syntocinon is being administered in labour, this should be discontinued once the decision for Caesarean Section has been made. The solution should be detached from the cannula to prevent accidental infusion.

5.2.5 Theatre preparation

The Labour Ward Co-ordinator will inform the following that a caesarean section needs to be undertaken including the indication for operation and the degree of urgency:

- Anaesthetist
- Theatre staff
- Paediatrician (Middle Grade must be called for all Category 1 Caesareans)
- Obstetric Operating Department Practitioners
- Junior obstetric trainee (SHO grade)

If a Category 1 Caesarean Section is required then a 2222 emergency call should be activated.

5.3 Preparation for Caesarean

5.3.1 Consent for Operation

All women should have written consent obtained prior to Caesarean Section. The consent form should include that the following risks have been discussed:

- Anaesthetic complications (as discussed with anaesthetist)
- Infection (wound, bladder, endometrium, chest)
- Haemorrhage, longer stay, thromboembolism
- Injury to nearby organs (bladder, bowel, ureter)
- Need for secondary surgery (e.g. laparotomy, ERPC, hysterectomy)
- Fetal skin injury, breathing problems

Occasionally only verbal consent can be obtained, but should be clearly documented

5.3.2 Antacid therapy

The following pre-operative medication is given:

- Metoclopramide 10mgs IM, if not given in last 8 hours
- Ranitidine 50mgs IV, if not given in last 6 hours
- Sodium Citrate 30 ml orally immediately before commencement of operation

This should be discussed with anaesthetist in cases of Category1, 2, 3 CS

5.3.3 Haematology investigations

IV access should be obtained using a size 16 G cannula and bloods taken for the following:

- FBC

- Group and Save

Other investigations such as:

- Cross Match 2-6 units
- Clotting screen (if there is a possibility of coagulopathy)
- Biochemistry if concerns regarding PET or Hypertension

may be required depending on the clinical situation. The Platelet count should be above 80 $x10^9$/litre if a regional anaesthetic is to be used.

Pregnant women having Caesarean Section for antepartum haemorrhage, abruption, uterine rupture, placenta praevia and prolonged labour at full dilatation are at increased risk of blood loss of more than 1000mls.

5.3.4 Catheterisation

If a catheter is not already in situ, this should be inserted in theatre according to Trust guideline, once analgesia has been given (either spinal or GA).

5.3.5 Position of mother

When being transferred to theatre the mother should be asked to lie in left lateral position (unless knee chest is indicated for cord prolapse). The theatre table should be tilted to 15% left lateral until the baby is delivered.

5.3.6 Fetal Monitoring

If continuous monitoring is in progress this should continue until transfer to theatre. CTG should be continued during the siting of the spinal and if there is any delay in theatre, continuous monitoring should continue.

5.3.7 Resuscitation of newborn

A Paediatrician should be present at all Emergency Caesarean Sections where there is a risk of neonatal respiratory depression. The grade of staff will normally be a Senior House Officer or Advanced Neonatal Nurse Practioner; however the **Paediatric Middle Grade should attend all Category 1 Caesarean Sections or any delivery where is it is felt that the baby may be born in poor condition.**

5.3.8 Women requesting 'Vaginal Seeding' at a Caesarean Section

Background

The term 'vaginal seeding' describes the use of a gauze swab to transfer maternal vaginal fluid and hence vaginal microbes on to an infant born by caesarean section.

The composition of the early microbiota of infants is heavily influenced by mode of delivery. In infants born by caesarean the microbiota resembles that of maternal skin, whereas in vaginally born infants it resembles that of the maternal vagina. These differences have led to the hypothesises that there may be a causative link between the rise in chronic auto immune diseases seen for babies born by caesarean section and the gut flora of these babies compared to those born vaginally. This has generated a significant amount of interest and scientific debate and has led to a number of women wanting to 'seed' their newborn infant with vaginal flora by rubbing a previously inserted vaginal swab onto their baby's face and mouth immediately after birth.

There is currently no research evidence demonstrating this is beneficial for their baby's health, and there is also no evidence around safety. It is possible that neonates may develop infections from exposure to certain vaginal pathogens on a vaginal swab, potentially abrogating the protection from infection afforded by elective caesarean (such as Group B streptococcus, chlamydia and herpes simplex virus)

The present position is that this practice cannot be actively supported until research evidence becomes available. However, women are free to make their own choices about their bodies. The following guideline is intended to support staff and women in these circumstances.

1 Woman to be counselled that there is currently no research evidence to support this practice and no evidence to show whether or not there may be harmful effects, such as increased incidence of Group B Strep. A discussion may be useful around early breastfeeding and avoiding unnecessary antibiotics which may be much more important to the baby's developing microbiota than worrying about transferring vaginal fluid on a swab.

2 It should be clearly documented in the notes if the woman is intent on performing vaginal seeding. Parents should be advised that if the baby subsequently becomes unwell, that they should alert staff that 'vaginal seeding' has taken place.

3 A piece of fabric, rather than a swab should be utilised, so that it is clearly different from any swabs used in theatre.

4 Advise that the 'vaginal seeding' should ideally take place away from the theatre environment to reduce the risk of having extra 'swabs' in theatre which could potentially interfere with the theatre swab counts. However women who wish to do this are often very determined and it is better to have a safe system to address this, rather than driving it 'underground' and risking women doing it secretively.

If a woman insists on 'vaginal seeding' taking place straight after birth (i.e. whilst she is in theatre), the 'piece of fabric' must be removed on

the postnatal ward, before the woman enters the operating theatre. It should be placed in a clear sealed plastic bag that is given to her birth partner to bring into theatre to be used when they are ready

5 On admission to theatre, the accompanying midwife will verify with the woman that the 'piece of fabric' has been removed from the vagina. The 'piece of fabric' will remain in the possession of the birth partner. It's presence in theatre will be recorded on the swab count board

5 After it has been used, the 'piece of fabric' must be disposed of in a clinical waste bin outside the theatre. The midwife must sign in the notes that she has witnessed safe disposal.

5.4 Performing a caesarean section

5.4.1. Surgical technique for CS

These points should be considered when performing Caesarean section:

- Wear double gloves for CS for women are HIV, Hep B or C positive
- Use a transverse lower abdominal incision (Joel-Cohen incision)
- When there is a well formed lower uterine segment use blunt extension of the uterine incision
- If a midline abdominal incision is used, use mass closure with slowly absorbable continuous sutures
- Only use forceps if there is difficulty delivering the baby's head
- Remove the placenta using controlled cord traction
- Suture the uterine incision with two layers and blunt needles
- Do not routinely exteriorise the uterus
- Avoid manually removing the placenta
- Do not routinely close the subcutaneous tissue space unless the woman has more than 2 cm subcutaneous fat
- Do not use superficial wound drains

5.4.2 Delayed cord clamping and skin to skin

Delayed cord clamping

For most caesarean births it should be possible to delay clamping and cutting the umbilical cord until a minute has passed. This is especially important for a preterm baby as research demonstrates better clinical outcomes for the baby including a reduction in requirement for blood transfusion, reduction in intraventricular haemorrhage and a trend towards a reduction in severe sepsis and necrotising enterocolitis. For term babies it reduces the risk of iron deficiency anaemia during the first 6 months of life.

If the mother or baby's clinical condition requires early cord clamping, the cord can be milked up to 3 times towards the baby before the cord is cut.

Position of the baby

The baby can be placed on the mother's legs or abdomen whilst waiting for the minute to pass. The screen may be lowered and the mother's head slightly raised so she can see her baby; however the baby should not be lifted up as it could potentially cause the blood in the cord to flow in the wrong direction (away from the baby).

A short film (5 mins long) demonstrates this on the link below:
https://youtu.be/fR-39ITbJOQ

The length of time from birth until the cord is clamped and cut must be documented in the notes.

Skin to skin (kangaroo care)

Where possible this should be facilitated at a caesarean birth, depending on the clinical condition of mother and baby.

Kangaroo care can be facilitated at Elective Caesarean Section:

- Women will be offered the opportunity to wear a KangaWrapKardi under their operation gown so that they can experience immediate skin to skin contact with their baby as soon as it is born

- The gown must be taped out of the way during insertion of the spinal anaesthesia so that there is no risk of contamination of the injection site

- Once the spinal has been inserted, the KangaWrapKardi should be un-taped so the woman can lie down comfortably

- The KangaWrapKardi is left untied. The ties should be placed so they do not become contaminated with blood

- The woman should have 2 pillows under her head and shoulders to prevent her from lying completely flat, unless stated otherwise by the anaesthetist. If the woman is required to lie flat Kangaroo care should be discontinued

- Women with increased BMI may have an Oxford pillow, or require 2 or more pillows to ensure they are not lying flat

- If the mother feels unwell at any point then the baby may have to be removed from her chest and given to her partner or midwife

- The baby must be closely observed by the midwife. He / she must not leave theatre unless another member of the team is happy to observe the baby in his / her absence. This must be recorded in the woman's notes

- On completion of the operation, the baby can remain skin to skin whilst the woman is transferred to a bed

- The woman should then be sat up and the KangaWrapKardi can be tied to give some support

- The baby must be observed closely. If the woman is tired and needing to sleep, Kangaroo care should be discontinued unless supervised constantly by her partner or other person

5.4.3 Placenta and Cord Bloods

With Category 1 or 2 Caesarean Section, the surgeon should double-clamp the umbilical cord once the baby is delivered (but see Section 5.4.2) and paired samples should be taken by the midwife as soon as possible and analysed.

If the arterial pH is below 7.10 the Paediatrician should be notified.

The placenta should be checked for completeness, any retro-placental clots noted. The placenta from any baby born in either a poor condition or stillborn should be sent for histology. Swabs should be taken for microbiology from the placenta if there is any suspicion of chorioamnionitis.

5.4.4 Antibiotics

All women who have an Emergency Caesarean Section should be offered one dose of antibiotics before skin incision:

- IV Cefuroxime 1.5G
  Or
- IV Clindamycin 600 mg. plus IV Gentamicin 120 mg. If severe allergy to Penicillin

Co-Amoxiclav should NOT be used before skin incision

5.4.5 Management of blood loss during Caesarean Section

All women should receive 5 IU Syntocinon IV.

Further utertonic should be given as for PPH management:

- Syntocinon 5 units by intravenous injection. (Follow this with bolus of normal saline 5ml IV)

- Syntocinon infusion (40 units in 500 ml Hartmann's solution at 125 ml/hour) unless fluid restriction is necessary (40 units in 40ml at 10 ml/hour, delivered via a syringe driver, may be used as an alternative but must be set up by the Anaesthetist)

- Ergometrine 500 mcg by intramuscular injection. IV Ergometrine may ONLY be given if prescribed by Consultant Obstetrician or Anaesthetist

- Carboprost 0.25 mg by intramuscular injection OR by direct intramyometrial injection, repeated at intervals of not less than 15

minutes to a maximum of 8 doses i.e. 2mg. (Note that Carboprost is contraindicated in women with asthma and that caution needs to be exercised in cardiac patients, as maternal deaths are known to have occurred following its administration. Always discuss with the Anaesthetist prior to administration)

- Misoprostol 800 micrograms rectally

Blood loss should be estimated during the operation and if excessive (>1000mls) the theatre staff should weigh the swabs and inform the anaesthetist.

Fluids should be given at rate approximately double the EBL. The need for transfusion of blood and blood products is based on an estimation of loss of circulating volume.

- 15% loss of blood volume (750 ml in adult) – no need to transfuse unless loss is superimposed on pre-existing anaemia or patient unable to compensate because of severe cardiac or respiratory disease.

- 15–30% loss of blood volume (800–1500 ml in adult) – treat with crystalloids or synthetic colloids. Unlikely to need red cell transfusion unless the patient has pre-existing anaemia or reduced cardio-respiratory reserve.

- 30–40% loss of blood volume (1500-2000 ml in adult) – rapid volume replacement with crystalloids or synthetic colloids. Red cell transfusion will probably be required.

- 40% loss of blood (>2000 ml in adult) – if 2000mls of EBL and the blood loss is ongoing order a "**code red"** and provide rapid volume replacement including red cell transfusion. Aim to keep Hb >8 g/dl**. Do not delay in ordering blood in situations where blood loss is acute and rapid**

5.4.6 Use of cell salvage equipment

Use of cell salvage equipment should be considered in case of caesarean section in the presence of major placenta praevia, morbidly adherent placenta (see below) and women declining blood transfusion. This procedure should only be performed by multidisciplinary teams with expertise in intraoperative cell salvage.

Cell salvage may reduce the incidence of transfusion reaction and transfusion related infection. It may also be useful in case of difficulties with cross-matching i.e. in the presence of atypical antibodies in maternal blood.

A leucocyte depletion filter should be used to reduce the amount of amniotic fluid contaminants in transfused blood to levels approaching those in maternal blood.

5.5 Post-operative Care

5.5.1 Post-operative care in first 24 hours

Immediate post-operative care will usually take place in theatre recovery. During this time pulse & blood pressure will be recorded every 5 – 10 minutes for 15 – 30 minutes. The mother will then be transferred to Delivery Suite.

It is important that the woman's partner is adequately supported during this time as leaving partners alone in uncleaned Delivery Suite rooms can be a frightening experience; especially in the case of an emergency c/section.

As a minimum the mother should be cared for on Delivery Suite for at least 2 hours before transfer to the postnatal ward. During this time observations of temperature, pulse & blood pressure will be recorded. The wound, lochia and height of fundus will be observed. When it is felt that the condition is stable, the woman may be transferred to the postnatal ward.

If patient is still suitable for Enhanced Recovery Programme then please identify this on E3 and put suitable for midwifery discharge. The EDN must be completed on Labour Ward prior to patient transfer to Postnatal Ward.

The EDN must include:

- Paracetamol 1g PO QDS
- Ibuprofen 400mg PO TDS (if no contraindications)
- Oramorph (morphine sulphate 10mg/5ml): Supply 30ml (please free text this) 10-20mg 4 hourly Oral for 2 days (Supply from Pharmacy)
- Prophylactic Dalteparin (dose dependent on weight) if required from VTE assessment

Catheter should be removed once mobile or at 12 hours unless specific alternative instructions by operating surgeon.

Frequency of observations for normal care:

Pulse & BP:	Every 15 minute for the first hour then: Hourly for 4 hours then 4 hourly for 24 hours Daily until transfer home
Temperature:	4 hourly for 48 hours
Oxygen Saturation:	For 2 hours if GA was given otherwise on advice of Anaesthetist
Urinary Output:	Urinary catheter to remain in situ for 12 hours post-op or until fully mobile unless specified by the surgeon. A fluid balance chart should be maintained. The mother should be given advice when the

catheter is removed and asked to measure her urine following removal. She should also be informed that she should inform staff if she has not voided within 4-6 hours following removal.

5.5.2 Post-operative analgesia

Staff should be aware that analgesia that is given by the Anaesthetist in theatre will be documented on the Anaesthetic Chart and this chart should be checked before any further analgesia is given.

Post-operative analgesia will be prescribed by the Anaesthetist. All analgesia that is given must be recorded on the medication chart.

5.5.3 Thromboprophylaxis

All women who undergo caesarean section should have assessed risk of venous thromboembolism (VTE) and offered and prescribed thromboprophylaxis accordingly.

Graduated elastic compressions stockings should be put on prior to surgery and women should be advised that these should be worn until fully mobile. Their use should be extended to six weeks in woman who are high risk for VTE.

During surgery a sequential compression device should be applied to the lower legs and this should remain in situ for the following 24hrs or till the woman is mobile.

All women who undergo emergency caesarean section are at high risk of developing VTE and should have the first thromboprophylaxis dose of Dalteparin given 6 hours after surgery (unless directed by the operating surgeon or Anaesthetist); followed by the routine dose the following day.

Those women having an elective caesarean section and at low risk of VTE do not routinely require prophylactic Dalteparin (LMWH).

Refer to: MTW Guideline, Management of Venous Thromboembolism (VTE) in pregnancy and puerperium. Link is:
http://twhqpulse01:85/QPulseDocumentService/Documents.svc/documents/Active/attachment?number=RWF-WC-OPG-MAT-CG57

5.5.4 Implications for future pregnancies

Prior to the mother being discharged home the medical team should discuss with her the reasons for the emergency delivery and any implications that it may have on future pregnancies. This discussion should be documented in the notes.

5.6 Special circumstances

5.6.1 Morbidly adherent placenta

At the fetal anomaly scan when a woman has previously had a caesarean section delivery and the placenta is anterior, low-lying or placenta praevia there is a risk of morbidly adherent / placenta acreta.

At 28 weeks in women with suspected placenta accrete/Percreta the placenta should be considered to be potentially adherent or invasive. Colour-flow Doppler ultrasound and placental morphology should be used as the first diagnostic test to seek evidence for a morbidly adherent placenta. If a colour-flow Doppler ultrasound scan suggests morbidly adherent placenta refer to fetal medicine for 32–34 weeks scan. MRI may be offered as a second line investigation, as it sometimes adds complementary information and may help to clarify degree of invasion.

Woman should be informed that current experience suggests that MRI is safe, but that there is a lack of evidence about any long-term risks to the baby.

The ultrasound scan and MRI if performed can assess the likelihood of placenta accrete/ percreta but cannot exclude the possibility and all cases should be treated as high risk of massive haemorrhage.

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

- a Consultant Obstetrician has been involved in the planning and the timing of delivery and are present
- a Consultant Anaesthetist has been involved in the planning of delivery and are present
- an experienced Paediatrician is present
- a critical care bed is available
- sufficient cross-matched blood and blood products are readily available and a senior haematologist is available for advice

6.0 Monitoring and Audit

Monitoring and audit of this guideline will be identified with issues raised via Clinical Risk / Clinical Governance.

APPENDIX 1

Process Requirements

1.0 Implementation and Awareness

1.1 Once approved this policy/procedural document will be published on the Trust intranet by the Maternity Compliance & Safety Co-ordinator or Maternity Secretary (as appropriate).

1.2 On publication of any Maternity document, the Maternity Compliance & Safety Co-ordinator will ensure that an email is sent to all Maternity staff and other stakeholders, as appropriate.

1.3 On receipt of notification, all managers should ensure that their staff members are aware of the new publications.

2.0 Review

2.1 It is essential that Trust Policy/procedural documents remain accurate and up to date; this policy/procedural document will be reviewed three years after approval, or sooner if there are changes in practice, new equipment, law, national and local standards that would require an urgent review of the policy/procedure. It is the responsibility of the Document Lead for this policy/procedure to ensure this review is undertaken in a timely manner.

2.2 The Document Lead should review the policy/procedure and, even when alterations have not been made, undertake the consultation process as detailed in **Section 5.5 Consultation** of MTW Policy and Procedure '*Production, Approval and Implementation of Policies and Procedures*'.

3.0 Archiving

3.1 The Trust intranet retains all superseded files in an archive directory in order to maintain document history

3.2 Old paper guideline copies pre-dating Datix Guidelines are stored at:

Chatham Archive & Storage Document Co.
Anchor Wharf
Chatham
ME4 4TZ
Telephone: 01634826665

APPENDIX 2

CONSULTATION ON: Management of Caesarean Sections

Consultation process – Use this form to ensure your consultation has been adequate for the purpose.

Please return comments to: Dr Claire Redfearn (email: clare.redfearn@nhs.net)

By date: 11 October 2016 *(all documents must undergo a minimum of two weeks consultation)*

Name	Date sent	Date reply	Modification	Modification

		received	suggested? Y/N	made? Y/N
Consultant Obstetricians	28/09/16		Y (x3)	Y
Consultant Anaesthetists (Obstetric Leads)	28/09/16			
Consultant Paediatricians	28/09/16			
Head of Midwifery	28/09/16	20/09/2016	Y	Y
Matrons for Inpatients & Outpatients	28/09/16			
Maternity Risk Manager	28/09/16	19/10/2016	Y	Y
Supervisors of Midwives	28/09/16			
Midwifery Staff	28/09/16			
Theatre Staff leads	28/09/16			
Team Leads	28/09/16	28/09/2016	Y	Y
Consultant Haematologist	28/09/16			
The role of those staff being consulted upon as above is to ensure that they have shared the policy for comments with all staff within their sphere of responsibility who would be able to contribute to the development of the policy.				

APPENDIX 3

Equality Impact Assessment

In line with race, disability and gender equalities legislation, public bodies like MTW are required to assess and consult on how their policies and practices affect different groups, and to monitor any possible negative impact on equality.

The completion of the following Equality Impact Assessment grid is therefore mandatory and should be undertaken as part of the policy development and approval process. Please consult the Equality and Human Rights Policy on the Trust intranet, for details on how to complete the grid.

Please note that completion is mandatory for all policy development exercises. A copy of each Equality Impact Assessment must also be placed on the Trust's intranet.

Title of Policy or Practice	Management of Caesarean Sections

What are the aims of the policy or practice?	To ensure best practice care for women receiving maternity care
Identify the data and research used to assist the analysis and assessment	See references on page 2
Analyse and assess the likely impact on equality or potential discrimination with each of the following groups.	Is there an adverse impact or potential discrimination (yes/no).
Males or Females	Applies to women only
People of different ages	No
People of different ethnic groups	No
People of different religious beliefs	No
People who do not speak English as a first language	The Trust offers a Translator Service
People who have a physical disability	No
People who have a mental disability	No
Women who are pregnant or on maternity leave	No
Single parent families	No
People with different sexual orientations	No
People with different work patterns (part time, full time, job share, short term contractors, employed, unemployed)	No
People in deprived areas and people from different socio-economic groups	No
Asylum seekers and refugees	No
Prisoners and people confined to closed institutions, community offenders	No
Carers	No
If you identified potential discrimination is it minimal and justifiable and therefore does not require a stage 2 assessment?	N/A
When will you monitor and review your EqIA?	Alongside this policy/procedure when it is reviewed.
Where do you plan to publish the results of your Equality Impact Assessment?	As Appendix 3 of this policy/procedure on the Trust approved document management database on the intranet, under 'Trust policies, procedures and leaflets'.

APPENDIX 4

Audit of Process for undertaking an Emergency Caesarean Section

Hospital Record No: .....

Age / DOB: .....

Gestation at delivery: .....

Previous Caesarean: .....

Cervical Dilatation at delivery: .....

Grade of Urgency: ☐ Grade 1 ☐ Grade 2 ☐ Grade 3 ☐ Grade 4

Date and time of decision: .....

Date and time of knife to skin: .....

Date and time of delivery of baby: .....

Reason for decision to deliver:

Reason documented by person who made decision:

Reasons for the delay in the caesarean section if any: .....

Decision made by: Grade
If not Obstetric Consultant, agreement obtained: ☐ Yes ☐ No

Syntocinon being administered: ☐ Yes ☐ No
If **YES:** Solution removed from cannula ☐ Yes ☐ No

Consent form completed: ☐ Yes ☐ No

Theatre preparation:
The following informed: ☐ Anaesthetist ☐ Theatre ☐ Paediatrician

Grade of Anaesthetist: .....

Grade of Paediatrician: .....

Grade of Obstetrician: .....

APGAR score: 1 min…… 5 mins……

Was baby admitted to NNU: ☐ Yes ☐ No

Post-operative Care:
Antibiotics offered: ☐ Yes ☐ No
If **YES:** ☐ IV Cefuroxime 1.5g ☐ IV Clindamycin 600 mg and IV Gentamicin 120mg ☐ Offered but refused

Time on delivery Suite: Transferred to:
Care of the mother in the first 24 hours following delivery follows guidance and is documented – Yes/No

Thromboprophylaxis:
Risk assessment recorded ☐ Yes ☐ No

Discussion of Implications for future pregnancies recorded in notes: ☐ Yes ☐ No

An assessment as to whether a caesarean takes place is based on clinical need.

The Trust uses NICE and RCOG as sources of evidence based research and recommendations.

2. There is information available on our Maternity website and women are directed to RCOG and NHS website for further information.

3. Medical staff do not have targets to achieve. The Trust records the mode of birth for all women

4. Benchmarking figures are available in the public domain on the NMPA website. https://maternityaudit.org.uk/pages/home