

Caesarean Section and Enhanced Recovery in Obstetrics

1. Introduction and who the guideline applies to:

This guideline is aimed at Healthcare Professionals providing care for women undergoing an Elective (planned) or Emergency Caesarean Section (CS) at UHL.

Related UHL documents

- [Surgical Swabs Instruments Needles and Accountable Items UHL Policy](#)
- [Fetal Monitoring in Labour UHL Obstetric Guideline](#)
- [Bladder Care During and After Labour and Delivery UHL Obstetric Guideline](#)
- [Maternity Early Obstetric Warning Scoring System UHL Obstetric Guideline](#)
- [Analgesia within Maternity UHL Obstetric Guideline](#)
- [Antimicrobial Summary UHL Womens Guideline](#)
- [Declining Blood and Blood Products UHL Obstetric Guideline](#)
- [Post-operative Recovery in Obstetric Theatres UHL Obstetric Guideline](#)
- [Epidural Analgesia and Anaesthesia UHL Obstetric Guideline](#)
- [Referral Handover of Care and Transfer UHL Obstetric Guideline](#)
- [Consent to Examination or Treatment UHL Policy](#)
- [Mental Capacity Act UHL Policy](#)

What's New?

- Surgical drain removal process and documentation added
- A/N chronic hypoxia included in examples for grade 1 c/s categorisation
- Added statement regarding responsibilities when decision making, the rationale and documentation when grading c/s.

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2. Classification of Caesarean Section

The urgency of the CS should be graded as follows:

GRADE 1: Immediate threat to the life of the women or fetus

GRADE 2: Maternal or fetal compromise that is not immediately life threatening

GRADE 3: No maternal or fetal compromise but needs earlier delivery (including failed IOL).

GRADE 4: Delivery timed to suit woman and/or staff - Elective Caesarean Section (CS)

The grade of CS, the indication and rationale behind the clinical judgement should be documented in the patient's healthcare record (paper or electronic) by the senior obstetrician who makes the decision.

Where the CS is downgraded please ensure the new grade is the one that is documented.

2.1 Examples of Grade of Caesarean Sections

Grade 1

Placenta praevia or placental abruption – ongoing bleeding with evidence of fetal or maternal compromise

Fetal bradycardia – not recovering

Pre-terminal CTG

Chronic hypoxia in an antenatal CTG

Maternal cardiac arrest (CS should be carried out by 4mins post cardiac arrest)

Failed instrumental delivery (time from point of failed instrumental)

Grade 2

Slow or no progress in first or second stage

Suspected fetal compromise

Placenta praevia or placental abruption – ongoing bleeding with no evidence of fetal or maternal compromise

Breech in established labour (>4cm dilated), declining vaginal delivery

Grade 3

Failed induction of labour

Breech in early labour with no evidence of fetal or maternal compromise

Booked caesarean section in labour with no evidence of fetal or maternal compromise

Maternal request for caesarean section in labour

Placenta praevia where bleeding has settled but early delivery felt appropriate

Severe pre-eclampsia, eclampsia or HELLP – once stabilised if not suitable for vaginal delivery

Grade 4

These may be maternal, medical or non-medical or fetal as per NICE guidance. (see below)

Grades 1 – 3 Caesarean Section

Decision making

The decision for an emergency CS should be made by the most senior Obstetrician on site, with advice from the Consultant Obstetrician by phone as required. Please refer to the 'senior medical staff contact' in the "Maternity Responsible Clinician, Referral, Handover of Care and Transfer" guideline. This decision should be made in consultation with the patient.

Communication

The decision for an emergency CS should be communicated as soon as possible by the clinician making the decision to the midwife providing care to the woman, the delivery suite coordinator and the theatre and anaesthetic team. The communication should include information regarding the urgency and indication for the CS, along with any other relevant patient factors and should **not** be delegated wherever possible. Where a Category 1 caesarean section is planned, the obstetric emergency bleep should be activated by telephoning 2222.

Consent

Informed consent should be obtained by an appropriately trained clinician and documented as per UHL 'Consent to examination and treatment' policy'. In cases of Grade 1 CS, verbal consent should be obtained and clearly documented in the notes as a minimum. If a grade 1 CS is downgraded to a grade 2 CS (for example when a prolonged bradycardia recovers in theatre), written consent should then be obtained by an Obstetric doctor.

If a woman undergoing an Emergency CS is known to decline blood products, this should be communicated to the anaesthetic team as soon as possible and should be clearly documented in the patient's healthcare record. Please refer to the 'Women who decline blood or blood products in Maternity' guideline.

Preoperative Assessment

In an emergency situation a full pre-operative assessment is not always possible, but attention should be paid to ensuring safe information gathering and appropriate communication across the whole multi-disciplinary team.

As a minimum, the following should occur:

- The woman should be seen by the anaesthetist on call
- IV access should be obtained by an appropriately trained practitioner
- FBC and Group & Save venous blood samples should be sent.
- In women identified as being at high risk of needing a blood transfusion, cross matching blood should be considered along with the use of cell-salvage (if available). This should be agreed amongst the Obstetrician, Anaesthetist and theatre team.

Additional investigations should be obtained according to clinical need (such as pre-eclampsia or other maternal medical conditions).

Safety Checks

All safety checks must be performed as detailed within the following policies:

[Safety Standards for Invasive Procedures UHL Policy B31/2016](#)

[Surgical Swabs Instruments Needles and Accountable Items UHL Policy B35/2007](#)

[Safer Surgery UHL Policy B40/2010](#)

Decision to Delivery Interval

The time from decision for caesarean section agreed with patient to delivery of the baby (also known as the decision to delivery interval) should be as follows:

Grade 1 Caesarean Section – 30 minutes

Grade 2 Caesarean Section – 75 minutes

Grade 3 Caesarean Section – Once woman is stable and safe staffing levels allow the procedure to commence

NB The time for the decision for caesarean section in the case of failed instrumental delivery, is when the instrumental has been deemed to have failed, not when the decision to deliver was made.

The time the decision for CS was made should be documented in the patient's healthcare record. The safety of the mother is paramount and this should be prioritised above an exact decision to delivery interval.

Reasons for any deviation to this time frame, where applicable, should also be documented in the patient's electronic healthcare record.

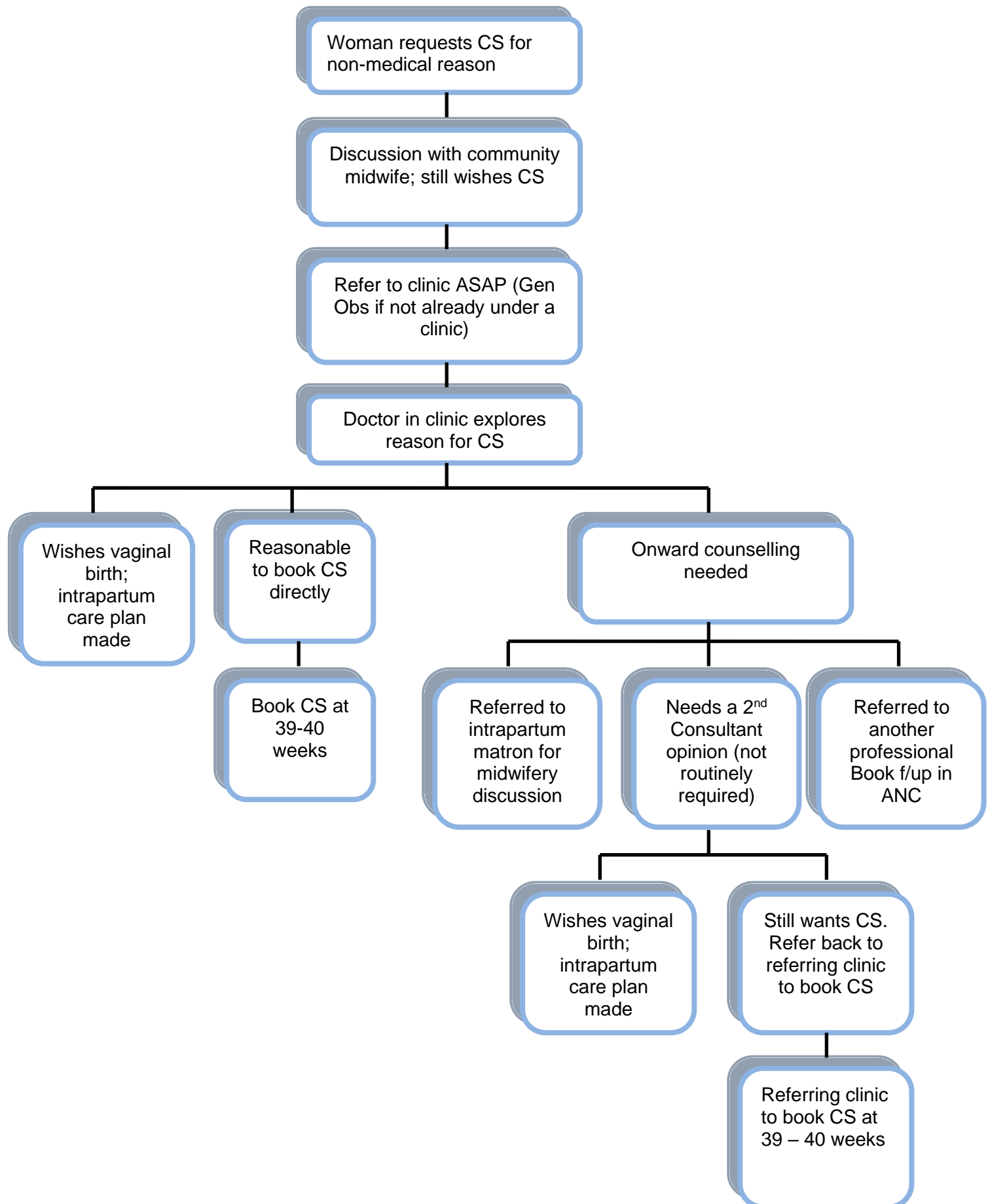
Grade 4 / Elective Caesarean Section

Indications for Elective Caesarean Section

University Hospitals Leicester NHS Trust follows NICE guidelines regarding the offering of caesarean section for medical, fetal and non-medical indications. The decision to proceed with (or decline) a caesarean section, should be made between an Obstetric doctor and the pregnant woman, taking into account her preferences, medical and obstetric history and the events of her current pregnancy.

A flowchart has been designed to assist clinicians where a woman is requesting a caesarean section for non-medical reasons. It should be noted that psychology referral is not routinely required for women requesting a caesarean section. This should only be offered where the woman and her doctor feel that she may benefit from this and should occur at an early enough stage in the pregnancy when psychological support may alter the outcome.

2.2 Caesarean Section for Non-Medical Indications (Maternal Request CS)



2.3 Booking Process

A planned Caesarean Section (CS) should be booked by a member of the clinical team providing care for the patient and the women consented at the time of booking. The woman should receive the relevant leaflets relating to caesarean section and enhanced recovery as well as a copy of the consent form.

The Caesarean Section Booking Form should be completed in full, in particular documenting the patient's details including contact number, the indication and gestation for CS (with a medical reason if <39 weeks), and if steroids have been given or will be required if CS date is booked for <38 weeks. The flowchart on page 7 should be used to assist this process.

Dates will be allocated, approximately two weeks ahead, by a team involving the booking coordinator, senior Obstetrician, senior Midwife and a senior member of the theatre team. All data will go onto the electronic diary and other members of the multi-disciplinary team will be contacted as necessary. Women will be allocated to their preferred site wherever possible, taking into account the complexity of their case, medical history and the spaces available.

Women will be contacted by telephone two weeks before their booked date for CS to confirm their allocated date, time and hospital site (LRI or LGH). The booking coordinator will also ensure that the appropriate pre clerking appointment is made and check if the patient has had or requires steroids to be administered before the date for the CS and inform the patient of these appointments as necessary during the phone call. They will send out supporting paperwork to reiterate this information.

Preoperative assessment for Elective Caesarean Section

Use of Steroids

Steroid administration should be advised and given (if not received earlier in pregnancy) when the CS is to be performed before 38 weeks. Where the woman has diabetes, the obstetric diabetic team will make a patient specific plan but will usually avoid the use of steroids after 37 weeks gestation. Deviation from the guideline is the responsibility of the booking Consultant with the agreement of the woman. Steroid use at these gestations balances the risk between admission to the neonatal unit with respiratory distress and the potential issues surrounding neurodevelopmental problems associated with steroid administration. The safest course of action for most babies is to delay delivery until 39 weeks.

MRSA Screening

All patients booked for a planned CS should be offered MRSA screening as long as the time frame permits. This can be performed up to 11 weeks prior to the planned procedure and screening swabs should be taken at the time of booking the caesarean to allow for treatment and repeat swabs prior to the procedure. Please see the 'Infection prevention and control' guideline and 'MRSA Prevention, Management and Screening' guideline for further information.

Covid-19 and the Elective Pathway

All women undergoing elective caesarean section should be offered Covid-19 screening approximately 48 hours prior to surgery, unless they have had Covid-19 infection within the last 90 days.

Where women are currently isolating after contact with a person with Covid-19 or where they have a current positive test, consideration should be given to delaying their caesarean section until after the isolation period has ended. Where this will significantly delay their caesarean section or increase the risk of stillbirth, it will be reasonable to continue with the planned date of surgery, but a specific care plan will need to be made to ensure they can be isolated in the waiting area, in recovery and on the ward. They should usually have their caesarean section last on the list to facilitate this.

Carbapenem Resistant Organism (CRO) screening

Patients who have had hospital treatment and/or which included an overnight stay both inside and outside of the UK within the last 12 months should have three sets of CRO swabs if they have not already done so when they attend for antenatal care.

Investigations

All patients should have a Full Blood Count and Group and Save taken within 48 hours of their date for CS (to allow use up to 72 hours post sample).

Women identified antenatally as being at high risk of needing a blood transfusion should have blood cross-matched on the day of their CS. When booking the CS, the possible need for cell salvage should be considered and appropriate clinical information documented clearly on the booking form.

Women with atypical antibodies should have a group and save taken, and the care plan from Haematology Obstetrics should be followed regarding the cross matching of blood.

Anaesthetic Assessment

Anaesthetic assessment may have been carried out at the time of pre-assessment or in the Anaesthetic clinic. However, all women should meet and discuss their anaesthesia and analgesia with an Anaesthetist on the day of surgery.

Consent for Surgery

Informed consent should be obtained by an appropriately trained clinician and documented as per UHL 'Consent to Examination and Treatment' Policy.

Consent for Blood Transfusion

All women for Grade 4 caesarean section should ideally be consented for blood transfusion at the same time as their caesarean section to ensure they receive adequate counselling. For Grade 1-3 caesarean section, consent for blood transfusion should be done wherever time allows for this. The appropriate stickers should be attached to the consent for CS. Please refer to the UHL Trust guideline on Blood Transfusion.

Women who decline a blood transfusion should be referred to an anaesthetist and this should be clearly documented in the notes. Women should be informed that cell

salvage availability is better at Leicester Royal Infirmary and that it is recommended that they plan to deliver there. Please refer to 'Women Declining Blood and Blood Products' in Maternity' guideline.

Preoperative Information

All patients should receive access to the relevant Trust leaflets relating to Caesarean Birth and Enhanced Recovery where appropriate.

Day of Surgery

On the day of surgery, women should be seen by a Midwife, an Anaesthetist and an Obstetrician using obstetric theatre care pathway. Consent should be confirmed and questions answered. At Leicester Royal Infirmary, some women will attend later and will need to be reviewed separately.

Safety Checklists

The WHO team brief for obstetrics must be carried out before starting work in theatre and should involve all staff involved in the cases. Where women attend later in the day and have not yet been reviewed, there will need to be a further briefing prior to commencing those cases.

The UHL safer surgery pathway must be completed in full before and after every elective case and list.

Discharge Medication

Routine discharge medication should be prescribed prior to the woman leaving recovery following an elective procedure, wherever this is known.

2.4 Enhanced Recovery

All women booked for an elective caesarean section should be considered for the enhanced recovery pathway.

Some women having category 3 caesarean section may also be suitable for the pathway.

There are few absolute contraindications for participation in the enhanced recovery pathway. All women will benefit from optimal temperature control, fluid management and consideration of early mobilisation with the majority also benefitting from pre-operative carbohydrate loading and avoiding dehydration. Therefore, every woman undergoing an elective (category 4) caesarean section should be offered the opportunity to experience as many aspects of the pathway as her medical condition and caesarean section allow.

Antenatal care should focus on pre-operative optimisation of existing medical conditions, for example, good glycaemic control in diabetes, iron therapy to treat anaemia and cessation of smoking or illicit drug use.

Antenatal Assessment:

All women can be considered for enhanced recovery providing they have a full understanding of the process and give their consent.

Women should attend an outpatient 'pre-clerking' clinic within antenatal services in the usual manner.

Women will be reviewed for suitability to remain on the enhanced recovery pathway at each point of contact with maternity services.

Category 3 Caesarean Section and enhanced recovery

Many women undergoing category 3 caesarean section will be suitable for the enhanced recovery pathway.

Examples include (but are not limited to):

- Women who have ruptured their membranes but do not wish to proceed with induction of labour.
- Women whose cervixes remain too unfavourable to proceed with induction after prostaglandins or Foleys catheter balloon
- Women who need to have their caesarean section brought forward or booked at short notice

Women who are not suitable for enhanced recovery include:

- Women who have received oxytocin augmentation
- Women who have had bleeding
- Women with pre-eclampsia
- Women who were not starved for 6 hours pre-operatively

Note, this is not an exhaustive list and that discussion and agreement between the anaesthetist (ST3 or above) and obstetrician (ST3 or above) is vital.

There may be occasions where the full enhanced recovery pathway cannot be undertaken due to a lack of staff or beds available to facilitate early discharge from the recovery area. In this instance, early mobilisation, trial without catheter and discharge on the next calendar day may be still appropriate.

All women will be involved in shared decision making, to enable understanding and management of expectations regarding enhanced recovery.

All women will be given written guidance on the process of enhanced recovery.

This will include advice about antenatal preparation, the day of surgery and post-natal recovery.

Although all women should be encouraged to take part in the enhanced recovery pathway, there will be a significant number of women who are not able to complete all parts of it. For example:

- Those who may not be suitable for carbohydrate loading, such as patients with diabetes, particularly those taking insulin
- Those who may not be suitable for early oral intake and mobilisation, such as post-partum haemorrhage, admission to critical care and conversion to general anaesthesia

- Those who may not be suitable for 24hr discharge even if all other parts of the pathway have been completed, such as:
 - Women undergoing midline laparotomy
 - Mothers of babies that are planned (or unplanned) neonatal admissions
 - Couples in which neither partner speak English
 - Women in whom significant medical risk continues in the post-natal period, such as those with cardiac disease or require therapeutic anticoagulation

These women will need advising that they may follow as much of the Enhanced Recovery Pathway as possible but not all components. This will be confirmed and agreed with the patient by the operating team on the day of surgery.

Perioperative Assessment

Women should eat a high carbohydrate meal on the evening before surgery (for example pasta, rice, potatoes or pizza).

Women should wash in antimicrobial gel wash and use nasal antibiotic ointment as per instructions given in the outpatient 'pre-clerking' clinic.

Women should avoid prolonged periods of starvation and dehydration. To reflect this, a suitable admission time (related to the planned surgery) should be arranged by the hospital and the following guide used for eating and drinking prior to surgery:

If the operation is planned for the morning:

1. Women should be nil by mouth from 0200h (water is allowed between 0200h and 0600h)
2. At 0600h women should consume 400ml (2x 200ml bottles supplied at outpatient 'pre-clerking' clinic) of high energy carbohydrate drink before they attend hospital.
3. Omeprazole and all routine medications (unless directed otherwise on the intrapartum care plan) should be taken at 0600h. Women on anticoagulation (such as Enoxaparin or Dalteparin) should pay careful attention to their personalised plan, usually omitting this on the day of surgery.
4. Women should then remain nil by mouth.

If the operation is planned for the afternoon:

1. A light breakfast such as cereal, toast and fruit) should be eaten before 0600h on the morning of the surgery.
2. Women should remain nil by mouth, except for water until 1000h.
3. At 1000h women should consume 400ml (2x 200ml bottles supplied at outpatient 'pre-clerking' clinic) of high energy carbohydrate drink before they attend hospital.
4. Omeprazole and all routine medications should have been taken by 1000h. Women on anticoagulation (such as Enoxaparin or Dalteparin) should pay careful attention to their personalised plan, usually omitting on the day of surgery.

All women who are suitable for enhanced recovery should continually be assessed for their suitability to remain in the enhanced recovery process.

There will be specific checks in the antenatal period, on arrival to hospital, on the day of surgery, at the end of their caesarean section (STOP THE LINE and WHO sign out) and upon discharge from theatre recovery.

On admission:

Women will have a full maternal and fetal assessment to include fetal heart auscultation. CTG need not be performed unless indicated.

Women will be assessed for suitability in participating in the enhanced recovery pathway by the Anaesthetist and Obstetrician

Women should be encouraged to manage their routine medications where possible and appropriate

For women who require additional/alternative medication to the routine discharge prescriptions (see appendix for routine discharge prescriptions) pharmacy will be informed at the earliest convenient time by the perioperative team.

Intra-operative Conduct:

Women should have their temperature measured before entering theatre. Measures to prevent passive heat loss should be taken (such as warmed fluids, Inditherm ® heat mattress and minimising exposure time between anaesthesia and beginning surgery.

Excessive intraoperative IV fluids should be avoided.

Operative technique should minimise operative time without compromising patient safety.

Drains should be avoided where possible.

Post-operative analgesia regimes should spare the use of IV opioids where possible.

Consideration of antiemetic drugs to enable early oral hydration and nutrition.

Intraoperative complications (for example post-partum haemorrhage) should prompt re-evaluation of suitability to remain on the enhanced recovery pathway at the STOP THE LINE and WHO checklist 'sign out' procedure by both senior anaesthetist and obstetrician.

The following practical aspects of recovery care should be followed:

The patient's birth partner may accompany her from theatre into recovery following regional anaesthesia

No other friends or relatives should be admitted to recovery regardless of the mode of anaesthesia. An exception to this is made for professional interpreters.

Recovery is a critical area, and as such, videos and mobile phones must not be used by patients or visitors.

Enhanced Recovery Care:

Following the WHO sign out procedure at the end of surgery women should be reassessed by the anaesthetist and the obstetrician for their suitability to remain in the

enhanced recovery pathway. Patient discharge medications will be prescribed at this point (see appendix for routine discharge medications).

Specific points of interest:

Women with epidural catheters in place in recovery can follow standard procedures providing the 'catheter removal time' and post-operative Thromboprophylaxis regime has been clearly prescribed

Clinical observation must be supplemented by the following monitoring devices:

- Pulse oximeter
- Non-invasive blood pressure monitor
- Electrocardiograph
- Nerve stimulator
- Thermometer
- Capnography must also be immediately available

Refer to the [Delivery Suite Medical Equipment UHL Obstetric Guideline](#)

The following information should be recorded and documented on specially designed recovery charts:

- Level of consciousness (sedation score)
- Oxygen administration (facial oxygen)
- Pulse oximetry (SpO2)
- Temperature
- Blood pressure
- Respiratory rate
- Heart rate
- Pain score
- Intravenous cannula site
- Urinary catheter volume
- Wound drain volume (if applicable)
- Vaginal loss
- State of wound
- Wound dressing type
- Fundal height
- Patient colour
- Leg power score

Recovery observations must be taken as follows:

Hour 1 - every 5-10 minutes for first 45 minutes ensuring a set of observations are carried out immediately before transfer to the ward.

Hour 2 (on the ward) – every 30 minutes

Hours 3 and 4 – (on the ward) every hour

Hours 5 and onwards – Observations as per Maternity Early Obstetric Warning Score MEOWS guideline and in addition observations of pain, sedation and respiratory rate should be should be recorded every 2 hours until 8 hours if the woman has received intrathecal (spinal) diamorphine or morphine

Where the MEOWS score is >1, the MEOWS guideline should be followed. Where the MEOWS guideline recommends informing or requesting review by the medical staff the MAU Consultant (Obstetrics) or the Senior Anaesthetist on for Labour Ward should be contacted and a review requested if necessary.

Where there are concerns and the medical staff are unavailable in a reasonable time the Outreach Team should be contacted and a review requested.

Observation of the fundal height should also be noted and recorded by the Midwife at the initial observation check in recovery and then again at 45 minutes post admission to recovery.

After 30 minutes in the recovery area, women should be encouraged to eat a light snack (for example a biscuit, cereal bar or sandwich) and drink some water whilst in theatre recovery.

IV fluids can be discontinued, providing fluid and diet has been tolerated. If an Oxytocin infusion is in progress it should continue and women may still be transferred to the ward. IV cannulae should remain in place for at least 6 hours post-operatively.

Where women are nauseous or unable to eat a high energy snack they may remain in the enhanced recovery pathway. An anti-emetic should be administered. If the nausea settles women may continue on the pathway. If the nausea does not settle she should be reviewed by the anaesthetist.

Transfer of care from recovery is the responsibility of the anaesthetist and the obstetrician who will give instructions for discharge as documented in the Maternity Enhanced Recovery paperwork.

Analgesia should be administered regularly and breakthrough analgesia available as required. This will have been prescribed by the anaesthetist. Please see the UHL [Analgesia within Maternity UHL Obstetric Guideline](#)

Post-natal care on the ward:

Women should be transferred to the designated recovery area on the ward.

Observations should be taken as described above and in conjunction with the MEOWS chart.

Abnormal vital signs should be acted upon in accordance with the MEOWS guideline and appropriate referral to the obstetrician/anaesthetist made. This referral should be to the Obstetric Consultant on for MAU / the Anaesthetist or Consultant on for Labour Ward. Where they are unavailable and the Midwife is concerned about the woman's condition the Outreach Team may be contacted.

An FBC sample should be taken the morning after the CS. Haemoglobin results lower than 100g/l should be discussed with the operating team. On-going bleeding or results less than 80g/l should warrant urgent discussion.

Urinary catheter can be removed after mother is mobile (after regional anaesthetic) but not sooner than 6 hours and if complicated 10-12 hours after delivery or the last epidural top up does whichever is later.

If the woman is late into recovery or asleep, then remove at the earliest sensible opportunity. This is providing the woman both wishes to and is able to mobilise as per instructions below:

Mobilisation is essential and should be encouraged following removal of urinary catheter. Women should take 3 to 4 short walks (lasting 5 to 10 minutes) within 24 hours, for example mobilising to the toilet or wash facilities.

If the timing for removal of catheter falls after 00:00hrs, removal should be delayed until 06:00hrs, to avoid disturbing the woman's sleep and retention occurring unnoticed overnight.

Women should void urine 3 times with a minimum of 150 ml for each sample. Women may be discharged by the midwife on the next calendar day.

Contact numbers for the ward must be given along with advice about common and specific problems that require discussion with the enhanced recovery team.

All relevant documents must be completed and accompany the patient.

2.5 Management of Emergency and Elective CS

Preparation for CS

Use of antacids before CS

Proton Pump Inhibitors (Omeprazole) should be given on admission and then every 24 hours until delivery to all women who have, or develop, risk factors that make a general anaesthetic more likely.

Women who are booked for a planned CS, who are coming in from home, should be given a packet of Omeprazole and instructed to take 40mg omeprazole at lunchtime on the day before the planned CS, and 20mg at 0600hrs on the day of the procedure.

Women who are booked for a planned CS, who are inpatients, should be prescribed (PGD) and given 40mg Omeprazole the day before the planned CS (usually at the lunchtime ward round) and then 20mg Omeprazole at 06:00hrs on the day of the procedure.

All women in labour who have, or develop risk factors that make a general anaesthetic more likely (or could progress to Caesarean section) should be given 40mg Omeprazole orally on admission and then 20mg Omeprazole every 24 hours until delivery.

Where women are undergoing category 1, 2 or 3 Caesarean section and they have only had one dose of 40mg Omeprazole, a further dose of 20mg omeprazole can be given IF the last dose given was more than 12 hours previously. Alternatively, the Anaesthetist may choose to administer an IV infusion of omeprazole for women who are at particularly high risk of aspiration.

Infection control measures

Antibiotic prophylaxis

All women undergoing Elective or Emergency CS should receive antibiotic prophylaxis as per the [Antimicrobial Summary UHL Womens Guideline](#)

In women with a history of a severe allergic reaction to antibiotics, the risks of antibiotic administration may outweigh the benefits of prophylaxis. This should be taken into account when considering prophylaxis.

Joint responsibility for the administration of prophylactic antibiotics lies with the Obstetrician and the Anaesthetist

Please see note on page 18 regarding antimicrobial choice.

If an Anaesthetist gives a drug at a surgeon's request, both share responsibility. It is then the responsibility of the Anaesthetist to administer the prescribed antibiotic, and to document this on both the drug chart and the anaesthetic chart.

Preoperative Shaving

Refer to the UHL Trust guideline on Infection prevention and control. Clipping of the preoperative site is recommended rather than shaving. This should ideally be performed prior to the transfer to theatre.

Disinfectant body wash

For women who are MRSA positive (either newly diagnosed or previous colonisation) see UHL Trust guidelines 'Infection Prevention Policy' and MRSA Prevention, Management and Screening Policy' For all other patients; offer antimicrobial body-wash as per UHL guidance.

Skin Preparation

The skin should be cleaned as per Trust guidance. This involves using chlorprep for a minimum of 30 seconds at the site of the proposed incision and then cleaning the rest of the abdomen.

Vaginal Cleansing

At the start or end of all Grade 1, 2 or 3 caesarean sections, the vagina should be cleansed with antiseptic solution and this should be documented on the operations page.

Surgical and Anaesthetic Seniority

A Consultant Anaesthetist and Consultant Obstetrician are available 24 hours a day and should be consulted where a difficult caesarean section is anticipated. They are responsible for assessing whether they should deliver the care themselves or supervise a more junior doctor either directly or indirectly.

Where massive obstetric haemorrhage or surgical difficulties anticipated either due to maternal condition or known impacted fetal head, Consultant presence is required. Consultant Obstetricians should attend trials of instrumental delivery at Leicester General Hospital wherever possible, unless these are being carried out by a "Senior Registrar" level doctor.

Impacted Fetal Head

Where disimpaction of the fetal head is required, it is inappropriate to ask untrained midwives to carry out the 'push technique' i.e. pushing the fetal head up from the vagina. Where this is done by a senior doctor prior to the commencement of a caesarean section, it would involve a whole hand technique used to gently flex and lift the fetal head, preventing individual finger tips pressing into vulnerable skull bones. Whilst University Hospitals Leicester recognise that this is a challenging emergency situation, the recommended techniques for delivery of a baby in these circumstances include tocolytic drugs such as salbutamol (5mg Salbutamol nebulised or 2 puffs of a salbutamol inhaler), 400mcg glyceryl trinitrate (GTN) (1 spray or sublingual tablet) or 250mcg s/c terbutaline and the 'pull technique' – comprising a breech extraction of the baby +/- an inverted T incision on the uterus.

Bladder Care

An indwelling catheter should be inserted prior to any grade Caesarean section. The urinary care pathway in the theatre care pathway booklet should be followed.

Postpartum haemorrhage prophylaxis

Women should receive 5 units oxytocin IV routinely for management of the third stage during caesarean section. The PPH risk assessment tool should be used to guide where prophylactic ergometrine up to 500mcg IM/IV, a 40 unit oxytocin infusion (at 10 units per hour) and /or 250mcg IM carboprost should be used in addition to reduce the risk of postpartum haemorrhage (PPH). Where PPH occurs, management should be as per the PPH guideline Thromboprophylaxis

All women undergoing CS should have a VTE risk assessment performed as per standard VTE risk assessment form.

Women who have 3 or more pre-existing risk factors should wear pneumatic compression calf garments in theatre and recovery in addition to thromboprophylaxis with low-molecular weight heparin.

Most women receiving LMWH prior to CS will have been on thromboprophylaxis for some time. Advice about administration the day before surgery and the safety of omitting the morning dose should be assessed when the CS is booked.

For women who are on prophylactic Dalteparin during their pregnancy; the last dose of Dalteparin should be given the day before the planned CS and the dose omitted on the day of the caesarean section. The exception for this is where a specific plan has been made in advance by the woman's medical, obstetric or anaesthetic teams.

N.B. Occasionally a regional block may be the preferred anaesthetic or the woman may decline a general anaesthesia for CS within 12 hours after the last prophylactic dose of LMWH. In this case there is a small risk of vertebral canal haematoma and a consultant anaesthetist must be involved in the decision making process.

After a spinal, the first dose of Dalteparin may be given four hours after insertion, provided there is no risk of bleeding or coagulopathy.

Epidural catheters are normally removed at the end of the surgical procedure i.e. CS in theatre (except when the Consultant Anaesthetist decides on an individual patient basis to keep the epidural in). Dalteparin can be given four hours after an epidural catheter is removed (for both CSE and Labour Epidural).

In all cases the time of removal of the epidural catheter should be recorded in the notes.

The timing of dalteparin can be moved forward or backwards by up to four hours in 24 hours for the convenience of both the administering midwives and the woman. The default thromboprophylaxis regime is Dalteparin 5000 units once daily. The first dose is **not** always given during the day, so the subsequent doses should be 'encouraged' towards 18.00. (One dose of 5000 units in a 24 hour period +/- 4 hours from the previous dose).

Prescribe doses according to the patients' weight:

Booking or most recent weight	Dalteparin Dose
Body weight <50 kg Or e-GFR <30/ml	2500 units OD
50-90kg	5000 units OD
91-130kg	7500 units OD
131-170kg	10 000 units OD
>170kg	75 units/kg/day

Women should be assessed using the UHL Obstetric VTE scoring system and LMWH prescribed for a minimum of 7 days.

Women discharged before day 7 should be prescribed the remainder of the 7 day course of LMWH to be administered at home.

2.6 Transfer of the woman to the ward outside of the Enhanced Recovery Pathway

Handover

Once the woman is received onto the postnatal ward from theatre, a verbal handover takes place between transferring member of staff and ward staff following the SBAR

tool. Specific instructions should be noted, including thromboprophylaxis and removal of epidural catheter (if still in situ).

Observations and healthcare review

Initial review of mother should include:

- Temperature, Pulse, Respiratory Rate, Blood Pressure
- Wound check for obvious signs of leakage/ooze
- Lochia check for obvious signs of postpartum haemorrhage
- Foley's catheter check draining adequately
- Adequacy of post-operative analgesia

These observations should be repeated 4 hourly for at least 24 hours, or longer where clinically indicated, and as per MEOWS guidance thereafter until discharge. Observation intervals should be adjusted as per MEOWS score where the score is not 0. The fluid balance chart should be continued as per 'Bladder Care during and after labour and Delivery' Guideline unless otherwise instructed. All observations should be documented on the Maternity Early Warning Score (MEOWS) or in the health care record as appropriate.

VTE risk scoring should be performed every 48 hours and classification modified where appropriate, taking into account any additional risk acquired risk factors (e.g. sepsis, reduced mobility, etc).

Obstetric review should be carried out 24 – 48 hours after delivery, unless the woman is on the enhanced recovery pathway. This should include the opportunity to discuss the reason for CS if needed.

A full blood count sample should be considered on the first post-operative day, depending on the history and clinical condition of the woman.

Wound Care

Wound care should be provided on a daily basis:

- Dressing removed the day following surgery
- If pressure dressing has been applied remove after 6 hours
- Observation for signs of infection (increasing pain, redness or discharge), separation or dehiscence
- Advice on cleanliness and comfort
- Removal of sutures or staples (if necessary) 5 days after surgery, unless otherwise instructed in the healthcare record

Removal of a surgical drain

- The woman should be informed that the drain is to be removed; what the removal process is and possible associated pain.

- Analgesia should be considered prior to removing the drain
- Using standard aseptic technique, clean around the drain site and remove any sutures
- The drain should be removed using a smooth, continuous traction
- A dry dressing should be applied to the drain site
- If there is any resistance and no movement of the drain tube despite a firm pull do not proceed any further and notify the Obstetric team.
- Excessive force should not be used as this can result in drain tube fracture or tissue damage.
- The ORMIS drain care plan should be checked to see the type and length of drain inserted and whether the drain tube was trimmed upon insertion.
- If the drain tubing was trimmed on insertion, the length of the residual tubing will be measured and documented in the operations page.
- The removed drain should be measured and the length compared with the length documented on the ORMIS drain care plan to ensure that it is complete
- If it is suspected that the drain has fractured and a piece of tubing has been retained inside the patient the Obstetric team should be informed.
- The Obstetric team should arrange for appropriate imaging of the drain site
- Arrangements should be made for the removal of the remained piece of drain
- The woman should be informed of the drain fracture; management should be discussed with her and an apology given (Duty of Candour).
- A datix form should be completed

Bladder Care

Urinary catheter can be removed after mother is mobile (after regional anaesthetic) but not sooner than 12 hours from the time of anaesthesia. The operation note should specify if alternative management is required. Refer to “Bladder Care during Labour and Delivery” guideline.

Chewing Gum

A meta-analysis and systematic review shows that women who are encouraged to chew sugar-free chewing gum have earlier return to intestinal function. Women who are fully conscious and who are able to sit up (at least 45degrees) should be encouraged to chew sugar-free, mint chewing gum for 15-30mins three times a day, starting from 2 hours post surgery. This should be recommended until passage of first flatus. Where a return to theatre is anticipated, and women are ‘nil by mouth’, women should avoid chewing gum during this time.

Chewing gum should be disposed of into a dustbin or paper medicine pot after use.

Patient information

Encourage the mother to eat and drink when she is hungry or thirsty if no complications are present. Remove intravenous cannula when oral fluids tolerated but not earlier than 12 hours after surgery unless on the enhanced recovery pathway.

Gentle encouragement of and help with mobility should be given no later than 24 hours after surgery.

Support the mother with care of the baby or babies and establishing feeding; 'Rooming in' is encouraged to support infant feeding.

Review by Physiotherapy Team one day after surgery. If Physiotherapy Team is not available, physiotherapy information leaflets should be given.

3. Training and Education

None

4. Monitoring Compliance

What will be measured to monitor compliance	How will compliance be monitored	Monitoring Lead	Frequency	Reporting arrangements
The Indication for performing the CS is documented in the health records by the person who makes the decision	Audit of records	D/S lead Consultant		
The CS has been graded and this is documented in the health record (paper or electronic)	Audit of records	D/S lead Consultant		
All CS identified as Grade 1 have a decision to delivery interval of no more than 30 minutes	Audit of records	D/S lead Consultant		
Time of decision is documented	Audit of records	D/S lead Consultant		
An incident form is completed for all Grade 1 CS	Review of cases	D/S lead Consultant		

5. Supporting References

NICE guideline Caesarean Section – March 2021

<https://www.nice.org.uk/guidance/ng192>

Chewing gum for intestinal function recovery after caesarean section: a systematic review and meta-analysis. Wen et al, Pregnancy and Childbirth 2017

Note about deviation from NICE Guidelines

Since 2011, NICE have suggested that Co-amoxiclav should not be used for Caesarean Section prophylaxis. This is based on no evidence and has been extrapolated from the ORACLE trial. Having performed an extensive literature review (April 2019), we can still find no evidence that this is an unsafe option for antibiotic prophylaxis for caesarean section and are therefore going to continue to recommend this.

6. Key Words

Caesarean Section, CS, Elective, Emergency

The Trust recognises the diversity of the local community it serves. Our aim therefore is to provide a safe environment free from discrimination and treat all individuals fairly with dignity and appropriately according to their needs.
As part of its development, this policy and its impact on equality have been reviewed and no detriment was identified.

Contact and review details			
Guideline Lead (Name and Title) The guidelines above were originally written by Multidisciplinary Working Parties. N Ling Consultant Obstetrician			Executive Lead Chief Medical Officer
Details of Changes made during review:			
Date	Issue Number	Reviewed By	Description Of Changes (If Any)
August 2021	V1	Nichola Ling, Consultant Obstetrician Andrew Ling, Consultant Anaesthetist Rachel Henson, Ward Manager, Midwife	Combined Caesarean section g/l C17/2017 & Elective Caesarean section enhanced recovery g/l C15/2017 Change of decision to delivery time to 30 and 75 minutes to fit in with NICE Updated to match new unfractionated heparin use Update of Ranitidine to Omeprazole and diamorphine to morphine Added use of chewing gum to aid return of intestinal function Added reference to pressure dressing use and removal
February 2022	V1.1	R Henson	Amended enhanced recovery observations pre-transfer to ward to - Hour 1 - every 5-10 minutes for first 45 minutes ensuring a set of observations are carried out immediately before transfer to the ward.
May 2023	V2	D Brookes – Quality & Safety Co-ordinator N Archer – Consultant Obstetrician Maternity Governance	Added wound drain removal guidance Added Chronic hypoxia in an antenatal CTG to the list of grade 1 C/S and added statement regarding decision making and rationale behind categorisation of C/S. Removed specification of ward base for enhanced recovery as now underway in all wards.