Manchester University
NHS Foundation Trust

DOCUMENT CONTROL PAGE

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Application:	All Staff

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1. Introduction

Maternal obesity carries significant risk for both mother and fetus. The prevalence of obesity in women in the UK has increased significantly from 16% in 1993 to 29% in 2018 (NHS Digital, 2020). Compared to women with normal body mass index (BMI), obese pregnant women have a significantly higher risk of pregnancy complications and associated comorbidities (Sebire et al, 2001).

Obesity has been shown to be independently associated with higher odds of dying and poorer outcomes from specific pregnancy complications (Knight et al 2016). In the Saving Lives, Improving Mothers' Care report (Knight et al, 2019), more than a third (34%) of the women who died in the 2015-17 triennia were obese.

This guideline will focus on three groups of women:

(1) women with a BMI of 30-34.9

(2) women with a BMI of 35-39.9

(3) women with a BMI ≥ 40

2. Detail of Guideline

2.1. Definitions and how to calculate a BMI

2.1.1. The World Health Organisation (WHO) classification of obesity will be used in this document:

$$\mathrm{BMI} = \frac{weight\ (\mathrm{kg})}{height^2(\mathrm{m}^2)}$$

WHO 2015 classification of obesity			
	Popular description	**BMI (kg/m^2)**	**Risk of co- morbidity**
Underweight	Thin	< 18.5	Low*
Normal	Normal	18.5 – 24.9	Average
Overweight	Overweight	25 – 29.9	Increased
Obese Class I	Obese	30 – 34.9	Moderate
Obese Class II	Obese	35 – 39.9	Severe
Obese Class III	Morbidly obese	> 40	Very severe
Super obese		> 50	
Super super obese		> 60	

2.1.2. All women should have their weight and height measured using appropriate equipment. BMI should be calculated and documented in the maternal records for all women at booking.

2.2. Antenatal Care

2.2.1. Antenatal care for all women with a BMI ≥30

- Women should be booked early with a midwife. Women with BMI 30–34.9 should be booked for care with the midwifery team
- Address the issue of obesity with the woman and discuss explicitly the complications associated with a raised BMI.
- As there is a lack of consensus on optimal gestational weight, a focus on a healthy diet would be more applicable than prescribed weight gain targets (RCOG, 2018).
- Dietetic advice by an appropriately trained professional should be provided early in the pregnancy where possible in line with (NICE, 2010).
- Perform booking blood pressure (BP) with appropriate large sized cuff.
- Recommend 5mg folic acid per os (PO) daily starting 1 month before conception and continuing during the first trimester of pregnancy (RCOG, 2018).
- Recommend 20 microgram (800 units) vitamin D PO supplementation daily throughout pregnancy and while breast-feeding (see local guidelines for *Vitamin D supplementation/deficiency in pregnancy*).
- Arrange a dating scan and book an anomaly scan highlighting to the woman that some problems may be experienced identifying all aspects of the baby's anatomy due to her raised BMI.
- Advise the woman of how to access the online information leaflet entitled *Raised BMI in Pregnancy* and give the woman the opportunity to discuss the information.
- Discuss the increased risk of intrapartum complications with the woman (See *Appendix 1*) and document this discussion using the relevant tick box on the antenatal booking proforma.
- Advise the woman that an oral glucose tolerance test (OGTT) at 26 weeks is recommended and arrange the appointment. If the woman has previously had gestational diabetes, then care should be discussed with the diabetes specialist midwives at booking. See *Management of Gestational Diabetes* guideline.
- In the third trimester, when developing a birth plan, a risk assessment should be undertaken for positioning in labour. This should take into account the woman's preference, her mobility, comorbidities and the woman's current or most recent weight. If the woman has reduced

mobility, consider advising a lateral position in the second stage of labour (NICE, 2019).

2.2.2. Additional antenatal care for women with a BMI between 35-39.9

- Women with BMI 35-39.9 should be booked for care under the midwife-led raised BMI (wellbeing) antenatal clinic.
- Offer serial growth scans to assess fetal size in line with local guideline *Detection and Management of Fetal Growth Restriction*.

2.2.3 Additional antenatal care for women with a BMI ≥40

Women with BMI ≥40 should be referred to the consultant specialist clinic for women with a raised BMI (*See section 2.3*) unless they have additional medical issues, in which case the woman should be referred to the appropriate medical clinic with liaison with the BMI clinic. Booking should be conducted as per standard hospital policy, but the midwife must:

- Ensure that referral to the local Raised BMI consultant-led clinic has been made
- Advise the woman that anti-embolism stockings are recommended (explaining the risk factors) and if she agrees, measure and dispense.
- Explain to the woman that venous-thromboprophylaxis in the form of subcutaneous low molecular weight heparin (LMWH) may be recommended depending on the venous-thromboembolism risk assessment proforma.
- Women with BMI>50 will be offered OGTT at 16 and 26 weeks. If their BMI is 40-50 only one OGTT is required at 26 weeks.
- Make a referral to the antenatal anaesthetic clinic and advise the woman that a referral has been made.

2.3. Raised BMI clinic

Women will be seen as soon as possible by a doctor in the raised BMI clinic. At the raised BMI clinic:

- Women should be encouraged to discuss a referral to the community dietitian with their GP.
- The raised BMI proformas will be used
- Unless contraindicated, women should be prescribed Aspirin 150mg PO, once daily, at night, from at least 8 weeks gestation through to 36 weeks to reduce the risk of pre-eclampsia in accordance with the risk factors outlined on the booking proforma.
- Venous thromboembolism (VTE) prophylaxis will be discussed with the woman in accordance with their risk factors, which can be determined from the relevant page on the antenatal booking proforma. All those with

BMI>40 will be considered to have at least 2 current risk factors and BMI > 50 will be considered to have at least 3 current risk factors.

- Advise that they are at significant risk of developing a VTE and advise them to have 10 days of subcutaneous LMWH postnatally, irrespective of mode of delivery.
  See local *Prevention of Venous Thromboembolism in Pregnancy/thromboprophylaxis* guidelines.
- The increased risk of intrapartum complications (*Appendix 1*) will be discussed and documented using the relevant tick box on the antenatal booking proforma.
- Ensure that the referral to the antenatal anaesthetic clinic has been made (see 2.2.3), to enable a documented discussion for an obstetric anaesthetic management plan for labour and delivery.
- Serial growth scans will be arranged according to the local guideline *Detection and management of fetal growth restriction*. As a minimum this will involve serial scans every 3 weeks from 32 weeks until delivery.
- Women will be re-weighed by 36 weeks gestation and the weight recorded in the maternal records. Women will be assessed to identify any additional manual handling requirements and issues with tissue viability at this time; the assessment and management plan, where applicable, will be documented in the handheld records.

2.3.1 Antenatal mode of delivery discussion

Women should be seen in the third trimester in order to discuss induction of labour (IOL) and document a personalised plan of care regarding mode of delivery. BMI ≥ 50 alone should not be used as an indication to offer elective Caesarean section (NICE, 2011). Discussion should include the potential difficulties with performing a grade 1 Caesarean section. This should be documented using the raised BMI clinic proforma (Appendix 2).

Induction of labour:

Elective induction of labour at 39 weeks in women with BMI >40 may reduce the chance of caesarean birth without increasing the risk of adverse outcomes (Nulliparous women OR 0.77, 95% CI 0.63–0.95; multiparous OR 0.67, 95% CI 0.56–0.81); the option of induction should be discussed with each woman on an individual basis.

Vaginal birth after CS:

Women with a booking BMI >40 should have an individualised decision for VBAC following informed discussion and consideration of all relevant clinical factors. Obesity is a risk factor for unsuccessful VBAC and a retrospective cohort study by Durnwald et al.142 showed that only 54.6% of obese pregnant women had successful VBAC compared with 70.5% of those with a normal BMI (P = 0.003) Durnwald et al 2005. Among morbidly obese women,

trial of labor carried greater than five-fold risk of uterine rupture/dehiscence (2.1% versus 0.4%). (Hibbard et al 2006)

2.4. Intrapartum Care - Obstetric considerations

2.4.1. All women with BMI ≥30:

- Active management of the third stage of labour should be recommended and this should be documented in the maternal records and discussed with the woman (RCOG, 2018).
- Intrapartum fetal monitoring may be more difficult, and the use of a fetal scalp electrode should be considered and discussed with the woman if there are difficulties.
- Consider an ultrasound scan where there is any uncertainty of fetal presentation at the start of established labour (NICE, 2019).
- Consider a lateral position in the second stage of labour if the woman has had reduced mobility at any point in the third trimester onwards (NICE, 2019).

2.4.2. Women with BMI 30-34.9 at booking

Women can opt for intrapartum care at home, at the Manchester Birth Centre or the consultant led unit at any site, assuming no other risk factors.

2.4.3. Women with BMI 35-39.9 at booking

Women can opt for intrapartum care at the Manchester Birth Centre or the consultant led unit at any site assuming no other risk factors.

2.5. Intrapartum Care - Admission in labour (women with BMI ≥40 at booking only)

2.5.1. On admission to the delivery unit the obstetric consultant and registrar (ST3 or above/equivalent), obstetric anaesthetist on-call and theatre team should be alerted. If a woman has a BMI ≥50 then the consultant anaesthetist must be informed of their admission.

2.5.2. Staff should be conscious of individual plans for care outlined antenatally, including anaesthetic plans. On admission the obstetric anaesthetist on-call should discuss analgesia in labour, especially if induction of labour is planned.

2.5.3. Venous access should be established early in labour as it may prove difficult to obtain. Anaesthetic expertise should be sought early.

2.5.4. Blood for a full Blood Count (FBC) and group & antibody screen should be taken during labour; if Hb < 100g/L, cross match two units of blood in anticipation of increased blood loss.

2.5.5. Women should have continuous one to one midwifery care once in established labour.

2.5.6. Fetal monitoring in labour is recommended according to local guidelines, see *Fetal Monitoring in Labour*. Electronic fetal monitoring is only indicated if intermittent auscultation cannot be performed reliably or other risk factors are present according to the above policy. The woman's preferences should always be a part of discussions surrounding monitoring.

2.6 Intrapartum Care - Anaesthetic considerations – See also *appendix 3*

2.6.1 Should a woman request an epidural the following should occur;

- The woman should be advised that an epidural block is the most effective form of analgesia in labour.
- Request for an epidural should be met as soon as possible.
- Discuss risks and benefits of epidurals and obtain consent before the procedure
- Establish IV access with preferably 16G cannula (but 18G cannula will suffice, if difficult) and commence IV fluids
- Prior to epidural placement, the midwife should perform observations and document modified early obstetric warning score as well as the fetal heart rate.
- Early epidural placement is advised as it is technically more challenging to site mainly from loss of anatomical landmarks.
- Epidural failure rate is higher and multiple attempts are common. Consider
    - Asking for senior help.
    - Ask the parturient for guidance in directing the needle to the midline
    - Use ultrasound guidance to locate and determine depth of epidural space.
- Depth of epidural space is deeper but rarely greater than 8cm. Use longer epidural needles (11cm) if necessary.
- Successfully placed epidural catheters can easily be dislodged by the drag of the back fat pad, so leave extra catheter in the space (i.e. 5 – 6 cm) and consider tunneling to fix the epidural catheter.
- Patient Controlled Epidural Anaesthesia (PCEA) can be used as normal with no adjustment to the pre-set programme.

  See *Epidural Analgesia in Obstetrics* guideline

2.6.2 Patients who decline an epidural should be offered alternative forms of labour analgesia – Entonox and/or patient-controlled analgesia (PCA) with remifentanil). Please note that intramuscular pethidine or diamorphine is unreliable in the obese, but should be offered, particularly where PCA remifentanil is unavailable.

See *Remifentanil Patient Controlled Analgesia (PCA) for women in labour* guideline.

2.7 Intrapartum Care - Women with BMI ≥40 who need to go to theatre

2.7.1 Certain considerations must be made including that;

- Surgery is technically more difficult in the obese patient as a result of reduced surgical access and increased risk of bleeding.
- Operating times are often longer.
- Larger operating theatre tables may be required;
  - At Saint Mary's ORC, the standard operating theatre tables in Theatres 43/44 can support pregnant women weighing up to 280kg.
  - At Saint Mary's at Wythenshawe site, Theatre 1 table can support weights up to 180Kg and Theatre 2 weights up to 220Kg.
  - At Saint Mary's at North Manchester, the tables in both theatres can support patients up to 225 kgs. Side attachments and specialist leg supports for lithotomy position for high BMI patients are available. Oxford HELP pillows and Hover air mattress are available. All these are kept in theatre only.
- If theatre is required for the delivery of a woman with a BMI ≥40 the consultant anaesthetist should be informed and will make a decision about whether they need to attend based on the individual patient and the experience of the anaesthetic staff available. The resident consultant obstetrician should attend theatre.
- If theatre is required for the delivery of a woman with a BMI ≥50 the consultant anaesthetist and obstetrician should attend.
- Establish IV access with suitable sized cannula
- Attach monitoring - appropriate sized BP cuff, pulse oximeter probe, ECG electrodes. Consider radial arterial cannulation, if non-invasive BP is difficult to measure.
- Appropriate transfer equipment and staff (trained in manual handling) should be present in theatre to assist with moving the patient safely and quickly. The hover mattress (HoverMatt Air Transfer Mattress®) is especially useful.
- For planned obstetric surgical procedures, anaesthetic technique of choice is central neuraxial blocks. Use of ultrasound imaging of the lumbar spines can facilitate identification of anatomical landmarks and performance of the blocks.
- For surgical procedures under general anaesthesia the following should be considered:
  - Anaesthetic complications are higher

  - There is a greater oxygen consumption and carbon dioxide production
  - Decrease in functional residual capacity (FRC) increases risk of hypoxaemia
  - Prolonged gastric emptying with reduced gastric pH increases risk of pulmonary aspiration (Mendelson syndrome)
  - Preoperative assessment should include detailed history of comorbidities, previous surgeries and anaesthetic challenges (airway difficulties, IV access), drug history, allergies
  - Investigations should include FBC, U/E, ABG, blood glucose, liver function test, ECG, echocardiography (as indicated)
  - Group and crossmatch 2 units of blood if Hb <100 g/L
  - Administer oral proton pump inhibitors, omeprazole 20mg; a prokinetic, metoclopramide 10mg and antacid, 0.3 M sodium citrate 30ml
  - Patient should be in the head-up, ramped position. The HELP device may facilitate this position.
  - Pad all pressure points
  - Apply compression TED stockings and calf compression (Flowtrons®)
  - Preoxygenation with 100% oxygen
  - Monitoring should include SaO2, ECG, NIBP (or invasive BP and CVP), EtCO2, hourly urine output, temperature and peripheral nerve stimulator

- Anticipate increased blood loss at Caesarean section and increased risk of PPH.
- Women undergoing Caesarean section with more than 2cm of subcutaneous fat should have suturing of the subcutaneous space and consideration should be given to the use of interrupted skin sutures.
- Women with a BMI ≥ 40 requiring operative delivery should be given IV antibiotics in line with the *Surgical Prophylaxis for Obstetric Procedures.* Repeat dose(s) of antibiotics 4 hours later.
- Additional anaesthetic information is given in *Appendix 3*

2.6. Postnatal care

2.6.1. Post-operatively women with a BMI ≥40 should be assessed individually to determine if they need to have an extended recovery period and stay on delivery suite for the first 24 hours.

2.6.2. Post-operatively women with a BMI ≥50 should be assessed individually. They are highly likely to need an extended recovery period and stay on the obstetric high dependency unit for the first 24 hours.

2.6.3. Early postnatal and postoperative mobilisation is vital.

2.6.4. A risk assessment and plan for VTE prevention should be carried out and documented. Any prophylaxis should be suitably prescribed before transfer from the recovery room.

See *VTE Prophylaxis in Pregnancy and the Puerperium* guideline.

3. Communication and Documentation

All women with learning disabilities, visual or hearing impairments or those whose first language is not English must be offered assistance with interpretation where applicable, and where appropriate a telephone interpreter must be used. It is paramount that clear channels of communication are maintained at all times between all staff, the women and their families. Once any decisions have been made/agreed, comprehensive and clear details must be given to the woman thereby confirming the wishes of the women and their families.

The contents of any leaflet issued must be explained in full at the time it is issued. All communication difficulties (including learning difficulties) and language barriers must be addressed as outlined in the previous paragraph at the time the leaflet is issued.

Ensure the provision and discussion of information of the risks and benefits with women during the antenatal, intrapartum and postnatal periods.

4. Equality, Diversity and Human Rights Impact Assessment

This document has been equality impact assessed using the Trust's Equality Impact Assessment (EqIA) framework. The EqIA score fell into medium priority; a review of the policy will be completed annually with the Divisional Equality and Diversity coordinator.

5. Consultation, Approval and Ratification Process

During development this guideline has been reviewed by senior anaesthetists, obstetricians and midwives from both Saint Mary's at Wythenshawe ~~and~~, Oxford Road Campus and North Manchester. It has been ratified by the Site Obstetric

Quality and Safety committee and approved by the Lead Medicines Optimisation Pharmacist.

It will be formally reviewed 3 years following its ratification or sooner if there are significant changes in evidence-based practice.

6. References and Bibliography

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7. Appendices

Appendix 1: Increased risks of intrapartum complications for women with a BMI>30
Appendix 2: Raised BMI clinic plan
Appendix 3: Additional anaesthetic information
Appendix 4a: Bariatric equipment available at Saint Mary's ORC
Appendix 4b: Bariatric equipment available at Saint Mary's at Wythenshawe
Appendix 4c: Bariatric equipment available at Saint Mary's at North Manchester

Appendix 1:

Increased risks of intrapartum complications in women with a BMI >30

These include:

- Slower progress in the first stage of labour
- Double the risk of Caesarean section.
- 1.5 to 2 times the risk of postpartum haemorrhage
- Double the risk of a wound infection
- 2-3 times the risk of macrosomia
- 3 times the risk of a shoulder dystocia

(RCOG, 2018)

Please note that these risks will not apply in an uniform manner to all women with a BMI>30

Appendix 2 Raised BMI Clinic Proforma – available on HIVE once live

EDD:- _____Gravida_____ Para _____(Attach Patient Label Here)

Booking visit **Gestation**	**Signature**	**Date**
BMI Weight stabilisation discussed		
Referral to dietitian offered declined/accepted		
VTE risk assessment ……. risk factors		
Subcutaneous LMWH considered as per VTE policy		
Vitamin D (PO) prescribed		
Aspirin (PO) prescribed (in accordance with booking proforma risk factors)		
High dose folic acid (PO) prescribed if T1		
GTT booked for □ 16 weeks (BMI ≥50) □ 26 weeks (BMI ≥40)		
Anaesthetic referral made (BMI > 40 or other clinical indication)		
Growth scans to be performed at □ 32 weeks □ 35 weeks □ 38 weeks		

3rd Trimester 34-36 weeks	**Signature**	**Date**
Weight in 3rd trimester kg. If weight ≥180 kg notify antenatal ward, theatres and labour ward so that special equipment is in place.		
Omit subcutaneous LMWH if signs of labour (regular contractions, SROM etc)		
Discuss difficulties with fetal monitoring in labour and need for FSE.		
Discuss possible delay with category 1 CS which could lead to poor fetal outcome		
Discuss increased risk of PPH and recommend active 3rd stage		
Vaginal birth after one CS	**Signature**	**Date**
Success rate 54.6% compared with 70.5% in women with a normal BMI.		
Five-fold increased risk of uterine rupture/dehiscence in women with BMI>40 (2.1% versus 0.4%).		

Induction of labour admission plan	Signature	Date
IOL booked for		
IOL at 39 weeks may reduce the risk of CS (OR 0.77 and 0.66 in nulliparous and multiparous women respectively).		
If applicable omit LMWH at signs of labour/SROM/bleeding		
Below Knee Antiembolism Stockings (BKAS) on throughout		

Caesarean section admission plan	Signature	Date
Elective CS booked for		
If applicable omit subcutaneous LMWH on the day of the surgery		
BKAS on throughout procedure		

Intrapartum Care and Management	Signature	Date
Establish IV access on admission to labour ward		
Epidural/ Spinal anaesthetic OK if > 12 hrs from last LMWH dose (unless on higher prophylactic dose)		
BKAS on throughout labour		
Continuous EFM in labour for women with BMI>40 only if intermittent auscultation not possible.		

Postnatal Management	Signature	Date
Start subcutaneous LMWH …….		
Continue subcutaneous LMWH for □ 10 days □ 6 weeks		

Appendix 3: Additional information for anaesthesia in women with a raised BMI

- Obesity-related diseases of anaesthetic relevance include:
    - ☐ obstructive sleep apnoea (OR 6.0)
    - ☐ obesity hypoventilation syndrome
    - ☐ asthma (RR 2.7)
    - ☐ hypertension (OR 4.8)
    - ☐ heart failure (RR 2.12)
    - ☐ ischaemic heart disease
    - ☐ type 2 diabetes mellitus (RR 7.28)
    - ☐ hyperlipidaemia (OR 2.2)
    - ☐ metabolic syndrome
    - ☐ hypercoagulopathy, venous thromboembolism (2.2-2.5)
    - ☐ non-alcoholic fatty liver
    - ☐ gastric-oesophageal reflux (1.94)
    - ☐ osteoarthritis (RR 1.25)
    - ☐ depression (OR 1.21)
- Women with BMI 40 and above should be seen in anaesthetic clinic and a comprehensive antenatal anaesthetic assessment should be carried out.
- FBC, coagulation, U/E, glucose, lipid profile, liver function tests and ECG should be performed
- Additional tests should include arterial blood gases (ABG), echocardiography should be requested for women with significant medical problems.
- Aim to optimise chronic medical conditions before delivery and where necessary early referral to the appropriate specialist.
- Airway assessment should be thorough, as obesity is associated with difficulty airway management. Record the Mallampati scores, Calder class, Thyromental distance and neck extension.
- Examine the back (lumbar area) and assess ease of insertion of epidurals and spinal block. Ultrasound imaging can be used to identify pertinent anatomical landmarks, accurately identify lumbar intervertebral levels, visualise lumbar epidural space and determine depth to epidural space.

- Preparation for potentially difficult mask ventilation and tracheal intubation should be considered

- Adequate numbers of staff (trained in manual handling) should be present in theatre to assist with moving the patient.

- Appropriate operating table and other equipment should be used for safe anaesthesia of obese patients (see Appendix 4 Special equipment for obese patients).

- Minimum standards of monitoring as per AAGBI guidelines should be applied - pulse oximetry (SaO2), ECG, NIBP (with appropriate sized cuffs), urine output, temperature and neuromuscular function monitoring.

- Please note that normal sized NIBP cuffs can be applied to the forearm to monitor NIBP, if appropriate sized cuffs are unavailable.[12]

- Insert an arterial line for direct arterial pressure monitoring if NIBP is impracticable or patient is haemodynamically unstable.

- IV access with 16G cannula. For difficult venous cannulation perform central venous catheterization with the aid of *ultrasound guidance*.

- Start IV Hartmann's solution through a fluid warmer and maintain normovolaemia, as fluid overload is poorly tolerated

- Maintain normothermia using forced warm air blankets (Bair Huggers) and fluid warmers

- Pad all pressure areas and joints (elbows, heels) to prevent pressure sores and nerve injury

- Effective preoxygenation takes longer in the morbidly obese patient. Starting high flow oxygen via a reservoir and non-rebreathing facemask in the delivery room prior to transfer to theatre. High flow nasal oxygen and/or the THRIVE device can also be used to improve preoxygenation.

- Use the Oxford HELLP pillow or the 'ramped 'position to facilitate mask ventilation and to improve tracheal intubating conditions.

- Tilt the operating table 15 degrees to the left to displace uterus and reduce aortocaval compression.

- Single shot spinal anaesthetic is still the most common anaesthetic technique for majority of Caesarean sections for obese women however combined spinal and epidural anaesthetist is rapidly becoming an attractive alternative.

- Video laryngoscopes should be available to facilitate tracheal intubation.

- Drug dosing should be based on the following pharmacokinetic principles:

    - Lipophilic drugs have increased volume of distribution (Vd), drug dose is based on actual or total body weight (TBW) e.g. thiopentone, propofol, fentanyl, succinylcholine, atracurium, sugammadex

    - Lipophobic drugs have unchanged Vd, drug dose is based on lean body weight (LBW), LBW is ideal body weight (IBW) + 20-40% IBW e.g. rocuronium, vecuronium, remifentanil (lipophilic)

- Antibiotic prophylaxis is as per Trust Guidelines on Antibiotic Prophylaxis in Obstetrics

- Risk of postoperative nausea and vomiting (PONV) is significantly reduced with one intraoperative administration of IV ondansetron 4 mg and IV dexamethasone 6 mg

- VTE prophylaxis should include appropriate sized TED stockings and calf compression devices. Subcutaneous LMWH should be prescribed. (See *Prevention of Venous Thromboembolism in Pregnancy and Puerperium* guideline).

- Antagonize completely residual neuromuscular block.

- Tracheal extubation should be performed fully awake, preferably in a sitting position; use of CPAP may be helpful to decrease incidence of postoperative atelectasis and improve oxygenation.

- Postoperative care in HDU or monitored setting should be planned for the high-risk obese patients.

- Keep accurate records of events in theatre including the following times: start of anaesthesia, start of surgery (incision), incision to delivery interval and total surgical duration.

Appendix 4a: Bariatric equipment available at Saint Mary's ORC

Equipment	Weight Capacity	Location	Min no available
Bariatric Weighing Scale Seca Model 862	150 kg/200kg	ANC	1
Bariatric Beds Hill-Rom Profile Beds and Mattress	180 kg/185 kg	Ward 65/66	4
Bariatric Birthing beds Hill-Rom Birthing Beds	227 kg	Delivery Unit (Ward 64)	15
Bariatric Wheelchairs		Available within the clinical area	N/A
Bariatric Examination couches Bristol Maid EC045/BB	190 kg	ANC	4
Bariatric Chairs Model Dream. DC156931		ANC Saint Mary's	3
Theatre Tables Maquet Alphastar +/_ width extensions	222 kg/280 kg	Theatres 43/44	1
Huntleigh flowtron DVT prophylaxis system calf garment	up to 35 inches or 89 cm	Theatres 43/44	Always available
Large NIBP cuffs	Mid arm circumference > 33 cm (or > 13 inches)	Theatres 43/44	1
		Delivery Unit (Ward 64)	2
		Ward 65/66	1
		Antenatal clinic	1
		Community	1 per team

Variety of spinal, epidural and combined spinal and epidural sets with extra-long needles		Theatres 43/44	Always available
Emergency transfer sheet on resus trolley		Theatres 43/44 Delivery Unit	1 per trolley
Slide sheets	127kg	Delivery unit	1
Handling slings	127kg	Delivery unit	1
Pat slide		Theatres 43/44	1
Hovermat	No limit	On special order	
Hoist	205kg	Wards 65/66	
Viking		Midwifery led unit	1 per room
		Delivery Unit	1 per room
Hoist Liko Golvo 7007	200kg	Ward 65/66	1
Pool hoist		Delivery unit	1

Appendix 4b: Bariatric equipment available at Saint Mary's at Wythenshawe

Equipment	Weight Capacity	Location	Min no available
Bariatric Weighing Scale Seca Model 862	500kg	Recovery	1
Bariatric Beds Hill-Rom Profile Beds and Mattress	180 kg/185 kg	Rm1, Rm14 and Recovery	1/2/2
Bariatric Birthing beds Hill-Rom Birthing Beds	227 kg	Delivery suite	11
Bariatric Wheelchairs		Rm7	1
Bariatric Examination couches Bristol Maid EC045/BB	190 kg	DCAU	3
Bariatric Chairs Model Dream. DC156931		Rm7	1
Theatre Tables Maquet Alphastar +/_ width extensions	222 kg/280 kg	F Block	
Huntleigh flowtron DVT prophylaxis system calf garment	up to 35 inches or 89 cm	Rm7	
Large NIBP cuffs	Mid arm circumference > 33 cm (or > 13 inches)	Rm7	
Variety of spinal, epidural and combined spinal and epidural sets with extra-long needles		Rm7	

Emergency transfer sheet on resus trolley		Rm7	
Slide sheets	127kg	Theatre	
Handling slings	127kg	Rm7	
Pat slide		Theatre	
Hovermat	No limit	Theatre	
Hoist	205kg	F Block	

Appendix 4c: Bariatric equipment available at Saint Mary's at North Manchester

Equipment	Weight Capacity	Location	Min no available
Bariatric Weighing Scale Seca Model 862	500kg	LW ANC ANW	3
Bariatric Beds Hill-Rom Profile Beds and Mattress	180 kg/185 kg	Recovery room	2
Bariatric Birthing beds Hill-Rom Birthing Beds	227 kg	Labour ward	10
Bariatric Wheelchairs		ANW	1
Bariatric Examination couches Bristol Maid EC045/BB			0
Bariatric Chairs Model Dream. DC156931		On order for triage waiting room	
Theatre Tables Maquet Alphastar +/_ width extensions	222 kg/280 kg	Theatre 1 Theatre 2	2
Huntleigh flowtron DVT prophylaxis system calf garment	up to 35 inches or 89 cm	Recovery	2
Large NIBP cuffs	Mid arm circumference > 33 cm (or > 13 inches)	HD room Store room	3
Variety of spinal, epidural and combined spinal and epidural sets with extra-long needles		Theatre 1 Theatre 2 Epidural trolley	20

Emergency transfer sheet on resus trolley		Recovery	1
Slide sheets	127kg	Theatre 1 Theatre 2	2
Handling slings		N/A	0
Pat slide		Theatre 1 Theatre 2	2
Hovermat		Theatre 1	2
Hoist			Currently none available in maternity