Guideline

Body mass index (BMI) and the care of women with low/ high BMI

Audit standards

1. All pregnant women should have their weight, height and BMI recorded in their hand held notes.
2. Women with a BMI ≥35 should be referred for an obstetric opinion in pregnancy.
3. All women with a BMI ≥30 should have a GTT at 28 weeks.
4. All women with a BMI ≥40 should be referred to the antenatal anaesthetic clinic.
5. Women with a BMI ≥40 should have a patient handling risk assessment and a pressure damage risk assessment completed at booking, if admitted in pregnancy, and when admitted in labour/ for delivery.
6. All women should have a risk assessment for VTE and receive appropriate thromboprophylaxis.

1 Scope

This guideline is applicable to Maternity Services and is for use by all hospital and community staff involved in caring for women within Maternity Services. It should be read in conjunction with the Trust's safe handling of overweight/ obese people protocol.

2 Purpose

To offer advice and guidance to staff on the recording of BMI in pregnancy and in planning appropriate care, taking into consideration a woman's booking BMI. A summary of the recommended guidance is in appendix 1.

3 Abbreviations used

BMI	body mass index
BP	blood pressure
CEMACH	Confidential Enquiry into Maternal and Child Health
DU	Delivery Unit
GTT	glucose tolerance test
MEL	Medical Equipment Library
MFAU	Maternal-Fetal Assessment Unit
MLBU	Midwifery-Led Birth Unit
NICU	Neonatal Intensive Care Unit
SFH	symphysis-fundal height
USS	ultrasound scan
VE	vaginal examination
VTE	venous thromboembolism

4 BMI calculation and recording in pregnancy

BMI is a simple index of weight-for-height and is calculated by dividing a person's weight in kilograms (kg) by the square of the person's height in metres (m^2). BMI index charts are available for quick automatic reference.

BMI is classified as follows:			**BMI**
Underweight			<18.5
Healthy/ normal range			**18.5-24.9**
Overweight			25 - 29.9
Obese			≥30
	Class I		30 - 34.9
	Class II		35 - 39.9
	Class III	(morbid obesity)	≥40
		super-morbid obese	≥50

It is the responsibility of the midwife conducting the antenatal booking consultation to record height, weight and BMI and to document the result in the woman's hand held notes. In the antenatal clinic, the midwife should use the height measuring device (stadiometer) and scales to calculate BMI; in the community, this method is also recommended, where possible. However, if the community midwife does not have access to this equipment and clinical judgment (or verbal reporting by the woman) suggests an extreme of BMI, arrangements must be made for this to be recalculated using appropriate measuring devices when the woman attends the antenatal clinic. Verbal reporting by the woman is not advisable as this has been shown to lead to under-reporting. **B** **C**

Ideally the BMI should be calculated at ≤12 weeks gestation before normal pregnancy associated weight gain tends to begin. However, if the woman is booking at an advanced gestation, eg after 24 weeks, estimate BMI from early pregnancy weight, if known.

5 BMI <18.5

Women with a booking BMI of <18.5 are classed as underweight and are at a higher risk of giving birth to a baby who is small for gestational age. There is also an association between inadequate maternal weight gain and low birth weight which is much more significant for women who have a low pre-pregnancy weight. Accordingly, women with a BMI of <18.5 should be booked for a hospital-based care pathway.

5.1 Ultrasound scans

Ultrasound assessment for fetal growth should be considered, at 28 and 34 weeks, if additional risk factors are present eg:

- smoking
- drug abuse
- young maternal age (<16)
- poor maternal weight gain during the pregnancy
- concurrent medical problems.

5.2 Dietary advice

A careful history should be taken to identify women with anorexia nervosa or bulimia. Women with an ongoing eating disorder may require emotional or psychiatric support during the pregnancy and an appropriate referral should be made, with the woman's agreement, to the Psychiatric Services or Eating Disorders Service. Initial referral may be appropriate to the lead nurse for perinatal mental health so that she can direct the woman to the right service (see high risk antenatal guideline 1.55: identification and management of women at risk of an episode or recurrence of a serious mental illness).

If **BMI is <18.5** discuss diet in detail. Refer for obstetric opinion and to a dietitian for advice. Women with BMI <18.5 need careful monitoring; a static weight or loss of weight may require further investigation or fetal monitoring. **C**

For women with a BMI <18.5 regular antenatal weights should be recorded in the hand held notes along with accurate symphysis fundal measurements from 24 weeks gestation. **A**

If diet is poor or restricted, eg vegan, gluten free or wheat-free, offer and encourage referral to a dietitian. Any discussion and agreed plan should be recorded in the maternity notes by a midwife, medical staff and/or dietitian.

6 BMI 18.5 – 29.9

Women in this group are classed as having a normal to overweight BMI range and can follow a community based care pathway, unless further risk factors are identified that warrant consultant-led care. ✓

7 BMI ≥30

7.1 Introduction

Maternal obesity is one of the most common risk factors in obstetrics and is defined as a BMI ≥30. Obesity in pregnancy has risen from 9-10% in the early 1990s to 16-19% in the 2000s.

Obesity in pregnancy is associated with a number of adverse outcomes including:

- miscarriage
- fetal congenital anomaly
- thromboembolism
- gestational diabetes
- pre-eclampsia
- dysfunctional labour
- postpartum haemorrhage
- wound infection
- stillbirth
- neonatal death.

There is also an associated risk of delivery by caesarean section and lower breastfeeding rates compared to women with a normal BMI.

Obesity is also a risk factor for maternal death with the CEMACH 2003-2005 report showed that 28% of mothers who died were obese whereas the prevalence of obesity in the general population within the same time period was 16-19%.

7.2 Antenatal care for all women with a BMI ≥30

7.2.1 Booking visit

Women with a **BMI 30-34.9** and no other risk factors may be booked for **community based care**. ✓

Women with a **BMI ≥35** should be referred for a **consultant led appointment** for an individual delivery plan, with the advice to deliver in a consultant led unit (on the Delivery Unit). Women with a **BMI ≥35** who decline to deliver in the consultant led DU should have a detailed plan of care documented. This may include input from the community midwife in conjunction with a consultant obstetrician and a supervisor of midwives. **B**

A moving and handling risk assessment of the chosen place of birth must form part of this plan. This will identify any additional or specialist equipment and resources needed (see the moving and handling and equipment section below).

The midwife conducting the booking interview should:

- measure the woman's weight and height and document the calculated BMI in the hand held maternity notes
- give information and advice about risks of obesity and pregnancy **C**
- advise 5mg folic acid daily up to 12 weeks gestation
- advise 10mcg vitamin D daily throughout pregnancy
- assess VTE risk and refer if indicated (see guideline 2.28: management of obstetric thromboprophylaxis: pre-conceptual/ antenatal/ post delivery)
- give dietetic advice and refer to a dietitian, as required, using the standard referral form.

In addition, at the initial antenatal clinic appointment for women with a BMI of **≥35**, an obstetrician should:

- consider advising aspirin 75mg daily from 12 weeks if additional moderate risk factor for pre-eclampsia
  - (first pregnancy,
  - maternal age >40 years,
  - family history of pre-eclampsia,
  - multiple pregnancy)
- book a GTT for 28 weeks (this should be booked by the community midwife if the BMI is 30-34.9)
- arrange additional ultrasound scans as outlined below **C**
- **If BMI ≥40**, refer the woman for an anaesthetic review (consultant anaesthetist, Box 93)

- ensure ongoing care as described below.

7.2.2 Ongoing care

Measure BP using the appropriate size of BP cuff. Record size of cuff used in hand held notes if community appointment and also in hospital notes if hospital based appointment (see the blood pressure cuffs section below).

Women with a booking BMI ≥35 with no additional risk factors should have monitoring of blood pressure at least three-weekly between 24-32 weeks gestation, and two-weekly from 32 weeks until delivery.

Repeat VTE risk assessment (see guideline 2.28: management of obstetric thromboprophylaxis: pre-conceptual/ antenatal /post delivery) for any antenatal admissions.

Give advice and support regarding benefits, initiation and maintainance of breastfeeding (see low risk 4.4.1 breastfeeding policy).

If BMI ≥40 further measurement of maternal weight during the third trimester will help to identify any patient handling risks and allow appropriate plans to be made for any additional or specialist equipment and personnel required during labour and delivery. For women with a BMI ≥40 the Moving and Handling Team should be informed antenatally by an antenatal clinic midwife and, if needed, specialist advice sought. The need for any specialist equipment or additional resources required should be documented on the Trust's 'patient handling risk assessment' form and a copy placed in the hand held notes.

7.2.3 Ultrasound scans

Ultrasound scan is technically more difficult as maternal adiposity may restrict views of the fetus and may adversely affect the quality of the images obtained and measurements taken. Inaccuracies may therefore occur.

The routine anomaly scan should be booked between 20 and 21 weeks. If the fetal anatomy check cannot be completed at this visit, one further appointment will be booked, at 22-23 weeks. If an adequate assessment of the fetal anatomy still cannot be made, the woman should be informed that her routine anomaly screening test was suboptimal.

For women with a BMI ≥35, additional ultrasound scans should be arranged for primiparous women at **30** and **36** weeks gestation to assess fetal growth and to confirm presentation prior to delivery. For multiparous women, there is data suggesting that the risk of intrauterine growth restriction is very low in women with a previous normal birthweight baby, therefore in this group of women, serial scans for growth are probably not necessary. These women should receive one scan at **36** weeks only to determine presentation and check fetal growth. Other scans may be requested at the clinician's discretion. ✓

7.3 Intrapartum care for women with a BMI ≥30

A moving and handling risk assessment should be completed again for all women regardless of chosen place of delivery. The assessment should be completed on on the Trust's 'patient handling risk assessment' form.

The community/ antenatal clinic midwife should assess, document and ensure that any specialist equipment required within the hospital is obtained, preferably prior to hospital admission (see the moving and handling and equipment section below).

All women should have a VTE risk assessment completed according to the Trust's high risk guideline 2.28: management of obstetric thromboprophylaxis: pre-conceptual/ antenatal/ post delivery.

Active management of the third stage of labour should be recommended.

Confirm presentation on admission to the delivery unit, either by abdominal palpation and VE; or if a VE is inappropriate (eg spontanous ruptured membranes and not contracting) or inconclusive, by an ultrasound scan.

Inform the duty anaesthetist for Delivery Unit when a women with a BMI ≥40 is admitted in labour. Venous access should be established early in labour for women with a BMI ≥40.

Theatre staff should be notified of any woman weighing more than 120kg.

Measure BP using the appropriate size of BP cuff. Record size of cuff used in intrapartum notes (see the blood pressure cuffs section below).

Fetal monitoring in labour may be more difficult and consideration should be given to application of a fetal scalp electrode if abdominal monitoring is unsatisfactory.

To maintain the woman's privacy and dignity, especially those women who are going to theatre, larger gowns are available from Hotel Services on extension 56123.

Women who deliver by caesarean section should receive antibiotic prophylaxis. Consider extending the length of use of prophylactic antibiotics following surgery to reduce the risk of wound infection. Closure of the subcutaneous tissue is recommended for women with subcutaneous fat layer of >2cm because this has been shown to reduce the risk of wound disruption. There is no evidence at present for the benefit of any particular suture type. An absorbable suture (3-0 or 2-0) is a reasonable choice. **A** **A**

7.4 Home birth

C

A home birth is not advisable for women who have a BMI ≥35, due to the increased risks to the mother and baby including the risk of shoulder dystocia, postpartum haemorrhage and the increased risk of NICU admission for the baby, as well as the potential problems of monitoring the fetal heart rate in labour abdominally. If a woman with a BMI ≥35 chooses this place of birth, then she should be weighed again at 36 weeks for information due to the risks associated with ambulance transfer and informed that no special equipment (see the assessing the availability of equipment section below) will be available to her, except for larger BP cuffs. The discussion concerning all of the above should be documented in the maternal notes.

7.5 Postnatal care

Encourage early mobilisation.

Women should have a VTE assessment according to the Trust's high risk guideline 2.28: management of obstetric thromboprophylaxis: pre-conceptual/ antenatal/ post delivery.

8 Moving and handling and equipment

8.1 Moving and handling assessment

On admission, a **patient handling risk assessment** must be completed for all women and a **pressure damage risk assessment** (eg revised Waterlow score) for women with a BMI ≥40, and documented in accordance with Trust policy. The assessment will help identify any equipment and additional resources needed. Equipment normally used by the patient should be included in any assessment.

The moving and handling and pressure damage risk assessment should be reviewed, as a minimum, seven days after the initial assessment for inpatient women. However, the assessments may need to be reviewed more often, for example, in line with the woman's changing needs and condition.

The completed moving and handling risk assessment and any other relevant information must accompany the patient at all times. This will include when they leave the ward/ department to visit other areas such as x-ray, theatre and ward transfers.

8.2 Assessing the availability of equipment

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An assessment must be undertaken, where possible in the **antenatal** period by an antenatal clinic midwife for any women with a BMI ≥40, to assess the need for any specialist equipment, in advance, for any inpatient admission including delivery. This may be documented on the moving and handling form and placed in the hospital notes. This assessment must be repeated for any subsequent hospital admission.

The Trust, through the Moving and Handling Team, has undertaken a Trust-wide assessment of bariatric equipment needs. All areas within the Trust, including the Rosie Hospital, have access to equipment to accommodate the obese individual. This equipment is available either locally or through the Trust's central store.

8.2.1 Equipment available locally

The Rosie Hospital has the following equipment available and the current maximum weight limits of the equipment in use is, as follows:

Item of equipment	**Weight limit**
Delivery unit beds - Hill Rom Affinity 4	227 kg
Rosie theatre operating tables Alpha Maxx Alpha Star	360 kg 225 kg
Scan couches	146 kg
Couch on Daphne Ward	178 kg
Enterprise beds electric profiling beds	250 kg
ARJO hoist available Delivery Suite (normal and bariatric attachment available with this hoist)	228 kg
Medium - Extra large slings(specified on slings)	190-220 kg

8.2.2 Trust's central store

The Trust has a central store with bariatric equipment that is available to all wards and departments. The store is operated as part of the Medical Equipment Library (MEL). The store is open seven days a week, 24 hours a day and equipment can be obtained by contacting **extension 2696**. Further details are available on the moving and handling equipment including bariatric article on Connect.

If the specific equipment required is not available or currently being used, staff can contact the Moving and Handling Team (extension 56808/ 6660) who can supply hire details.

8.3 Blood pressure cuffs

In order to ensure an accurate blood pressure reading is obtained it is essential that the correct size of cuff is used. This is achieved by measuring around the woman's upper arm between the shoulder and elbow and selecting a suitable cuff size (see table below).

Upper arm blood pressure monitor cuff sizes				
Location	**Cuff make**	**Measure-ment (cm)**	**Cuff size**	**Type**
Antenatal Clinic	SK Welch Allyn	34-52	Adult large	Manual
	SK Welch Allyn	29-42	Adult	Manual
MFAU	Accosan	34.3 max	Adult	Manual
	Accosan	48.2 max	Outsize adult	Manual
	Phillips	25-35	Adult	Automatic
	Phillips	33-47	Adult large	Automatic
	Dura	23-33	Adult	Automatic (Carescape)
	Dura	31-40	Adult large	Automatic (Carescape)
Community (for use by community midwives)	Various makes		All midwives have adult and adult large size cuffs	Manual
Delivery Unit	SK Welch Allyn	29-42	Adult	Manual
	SK Welch Allyn	34.3	Adult large	Manual
	Dura	23-33	Adult	Automatic (Carescape)
	Dura	31-40	Adult large	Automatic (Carescape)
	Phillips	33-47	Adult large	Manual
	Datex Ohmeda	33-47	Adult large	Automatic
	Solaris	27-35	Adult	Manual
Lady Mary Annex	SK Welch Allyn	34-52	Adult large	Manual
	SK Welch Allyn	29-42	Adult	Manual
	Phillips	46-66	Adult large	Manual
	Dura	31-40	Adult large	
	Dura	23-33	Adult	Automatic
	Dura	31-40	Adult large	Automatic
	Dura	17-25	Small adult	Automatic
Lady Mary	SK Welch Allyn	29-42	Adult	Manual
	SK Welch Allyn	34-52	Adult large	Manual
MLBU	SK Welch Allyn	29-42	Adult	Manual

9 Women with gastric bands

The presence of a gastric band in pregnancy may be associated with malnourishment with resultant maternal and fetal complications. It is generally advisable therefore to release the gastric band for the duration of pregnancy. Women who have had bariatric surgery should therefore be referred for obstetric led care early in pregnancy for advice in order for timely assessment and referrals to be made. ✓

10 Monitoring compliance with and the effectiveness of the guideline

The use and effectiveness of this guideline, in particular, the key standard that BMI should be recorded for all women and appropriate referrals made for women with raised BMI, will be monitored, either continuously or on an ad-hoc basis, through the following processes:

- risk management
- notes evidence for CNST assessment
- clinical audit
- individual patient case reviews
- user/ clinician feedback
- patient complaints
- practice development
- midwifery supervision.

Results will be fed back to the research midwife and/or author, who will consult with the appropriate obstetric and midwifery staff, and initiate change(s) to the guideline and/or practice, as required.

11 References

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12 Associated documents

- LR 4.4.1 breastfeeding policy
- HR 2.28 management of obstetric thromboprophylaxis: pre-conceptual/ antenatal/ post delivery guideline
- HR 1.55 women at risk of mental illness guideline
- safe handling of overweight/ obese people protocol

Equality and diversity statement

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Document management

Document control/ change history					
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Draft 2	A Wilson & K Parker	As above	July 2007	All consultant obstetricians, J Pickett, Consultant Anaesthetist; T Chudleigh, Advanced Practitioner Radiology; J Goddard, ANC Sister; Polices & Procedures Group (Maternity)	Several changes made.
Draft 3	A Wilson & K Parker	As above	Aug 2007	Obstetric Divisional Group	
Draft 4	H Morrison & S Bhatti	As above	July 2010	J Pickett, Anaesthetist; Polices & Procedures Group (Maternity); Perinatal Services Management Group	Extensive review: many significant changes made based upon RCOG guidance. Document moved from low to high risk.

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Appendix 1: Summary of recommended guidance in pregnancy in relation to BMI