OBSTETRICS AND GYNAECOLOGY
CLINICAL PRACTICE GUIDELINE

Increased Body Mass Index : management of a woman with

Scope (Staff):	All staff
Scope (Area):	Obstetrics and Gynaecology

This document should be read in conjunction with the Disclaimer.

Contents

Aim

To provide optimal care for pregnant women with an increased BMI to decrease risk and improve outcomes for pregnancy, birth and postnatally.

Background

There is substantial evidence to indicate that obesity in pregnancy contributes to increased morbidity and mortality for both the mother and baby. The Confidential Enquiry into Maternal and Child Health (CEMACH) Perinatal Mortality 2005 report found that approximately 30% of mothers who had a stillbirth or a neonatal death were obese. The CEMACH (2007) report indicated that more than half of the women who died from direct / indirect causes were obese.[1]

Maternal Risks Associated with Obesity

These include:

- early miscarriage[2, 3]
- stillbirth[2, 4] – obesity carries a 2-3 fold increased risk for intrauterine fetal death even after co-existing medical complications have been controlled (e.g. hypertension and diabetes)[5]
- hypertension and pre-eclampsia [2, 5-8] A raised BMI increases risk for pre-eclampsia by 50%[9]
- diabetes – is about three times more common in obese women[2, 4]
- labour – increased risk for induced labour[5, 9], failed induction of labour[5], failure to progress[8], instrumental birth[8], shoulder dystocia[5], birth trauma[5]
- caesarean / instrumental birth – due to failed or obstructed labour[5], and likelihood of successful vaginal birth after caesarean is very low[5]
- nutritional and micronutrient deficiency e.g. folate deficiency[4]
- anaesthetic complications[9]
- wound infections[9]
- preterm labour and birth[5, 7]
- less likelihood of initiation and maintenance of breastfeeding[9]. Delayed lactogenesis is common.[7]
- thromboembolism[8]
- postpartum haemorrhage[5]

Fetal and Neonatal Risks Associated with Obesity

These include:

- congenital anomalies e.g. neural tube defects, congenital heart defects[8]
- macrosomia[4, 8] and associated birth injuries[4]
- early neonatal death[4, 9]
- increased risk of development of obesity and metabolic disorders in childhood[9]

Key Points

1. All antenatal women attending KEMH should have their BMI (according to their pre-pregnancy weight or the earliest weight in pregnancy) done at the first visit.

2. Women with a BMI ≥ 35(FBC) or > 40 Low risk midwives clinic at booking are not suitable to attend a low risk midwives clinic and should be referred to an obstetric medical team for pregnancy.

3. All antenatal women with an increased BMI should be referred to the Dietician.

4. Women should be monitored for anaemia, and iron supplementation commenced as per KEMH Clinical Guidelines Anaemia in pregnancy .

5. Women with a BMI ≥ 50 or (< 50 but with significant co-morbidities) shall be referred to the high-risk anaesthetic clinic for review between 28 – 34 gestation.

6. Women who have had bariatric surgery require closer monitoring for nutritional deficiencies, and monitoring of fetal growth. Studies have indicated a trend towards increased risk for the small for a gestational age fetus, intra-uterine growth restriction, and a decrease in birth weight. Referral to the Dietician should be considered.

7. Women with a BMI >35 with additional risk factors for hypertension or other significant medical history should have an obstetric physician review.

8. Patient handling shall comply with the WNHS Policy Heavy Patient Management

9. All women with a BMI ≥ 40 ,where there is difficulty assessing fetal growth abdominally, must have an additional ultrasound assessment of fetal growth performed at 38 weeks, or earlier during the third trimester if indicated.[19]

Antenatal Care

Topic	Management	Additional Information
Triaging of antenatal visits	Routine scheduled antenatal visits may need to be adjusted to be more frequent according to the level of obesity and risk factors. Refer to BLOOM, RANZCOG brochure "Weight management during Pregnancy" sent to patient with appointment.	
Calculation of the BMI	At the booking visit the BMI is calculated according to the pre-pregnancy weight or the earliest weight in pregnancy.	
Monitoring of weight	Document the woman's weight at each visit.	The Institute of Medicine recommendation for women with a BMI ≥30 is 5–9 kg in pregnancy.[2, 8]
Supplements	Folate supplementation (usually as Folic Acid) is known to prevent neural tube defects • Obese women have lower serum concentrations of folate than non-obese women[9] • Recommend Folic Acid 5 mg daily, ideally commencing one month before conception and continuing until the end of the first trimester[9]	
Anaemia monitoring and prevention and optional tests	Ensure FBP and iron studies are obtained and followed up appropriately at 28 and 36 weeks gestation. Consider screening for: • Vitamin D deficiency • Liver function tests • B12 • Folate	Women with a BMI ≥ 30 are at increased risk of vitamin D deficiency.[9, 11] Obesity increases risk for fatty liver disease.[7] Dietary habits may result in nutritional deficiencies including iron, B_{12}, vitamin C and folate.[11]
Diabetes Screening	Women with obesity should have early screening for diabetes, preferably at the time of first antenatal attendance.[7]	Obesity promotes exaggeration of insulin resistance that is observed in pregnancy, therefore these women may have

Topic	Management	Additional Information
	If early screening is normal, repeat the screening at 24 - 28 weeks gestation.	pre-existing diabetes mellitus.[5] Diabetes is three times more common in obese women.[4] See Clinical Guideline: Diabetes.
Anaesthetic Referral	Arrange an anaesthetic review in the high risk anaesthetic clinic between 28 - 34 weeks gestation for women with a BMI ≥ 50 ≤50 if significant co-morbidities exist (OSA, IDDM, Previous complications with anaesthesia, back problems, previous difficult epidural placement etc.)	Obese women have up to a 33% higher risk for difficult intubation[12], are at increased risk of aspiration, postoperative atelectasis, and difficulties with epidural placements.[9]
Ultrasounds	Include BMI on requests for USS Where possible fetal morphological assessment should be performed at 20 -22 weeks[3] rather than 18 – 20 weeks gestation. Note the presence of obesity on the ultrasound form. Perform an ultrasound for fetal weight, amniotic fluid volume, and umbilical Doppler studies in the third trimester (28-34 weeks) to assess fetal growth. A minimum of two growth scans are recommended with additional scans if indicated. All women with a BMI > 40 ,where there is difficulty assessing fetal growth abdominally, must have an additional ultrasound assessment of fetal growth performed at 38 weeks, or earlier during the third trimester if indicated.[19] Consider serial scans if there is a documented growth issue.	Obesity leads to reduced ascertainment of anatomy at screening.[4] Fundal height measurements to assess growth is impeded physically by maternal body habitus.[5]
Physician referral	Refer women for review if the BMI is > 35 with additional risk factors, or if there is a significant medical history.	

Topic	Management	Additional Information
Thromboembolic Prophylaxis	Actively assess for clinical risk for VTE[20] Consider prophylactic low molecular weight heparin for women with two or more additional risk factors for VTE.[9]	Maternal obesity is associated with significant risk of thromboembolism during the antenatal and postnatal period.[9]
History of Bariatric surgery	Routinely refer to a dietician as part of the multidisciplinary health care approach. Medical history should include nutritional habits. Consider performing investigations for mineral and vitamin deficiencies in early pregnancy.[2, 12] A multivitamin from the beginning of pregnancy may be beneficial for women who have had bariatric surgery.[2] Circumstances that may require closer monitoring include vomiting or a history of poor nutrition.[2, 13] Monitor fetal growth. Perform ultrasound assessment for growth and fetal wellbeing as required.	Nutritional deficiencies such as low levels of vitamin B12, folic acid, ferritin, and calcium have been found in some studies, however systematic studies have failed to confirm this.[13] Bariatric surgery may lead to increased risk for a small for gestational age (SGA) fetus, preterm birth, and perinatal mortality.[14] Neonates show a trend toward lower birth weight rates, less macrosomia, and an increase in intrauterine growth restriction (IUGR).[2, 4, 14] Women who have had bariatric surgery are at higher risk for gestational diabetes.[13]
Previous caesarean section	Discuss risks and outcomes for vaginal birth after caesarean (VBAC).	For obese women who have previously delivered by caesarean section, the likelihood of successful VBAC is very low. Obese III women also carry a higher risk for uterine scar dehiscence.[5]
Elective caesarean section.	Book a preadmission clinic appointment Document the BMI on the theatre booking form. Where possible urinary catheterisation should be performed prior to insertion of the epidural block.	Alerts the theatre and anaesthetic staff to allow preparation of equipment and personnel.

Topic	Management	Additional Information
Education		
• Exercise	Encourage 30 minutes of low-intensity exercise e.g. walking[15] on most days of the week. Women who are not physically active should be encouraged to increase activity by gradually walking up to 30 minutes a day – this can be achieved by dividing the times of exercises if preferable.[15]	Excessive weight gain is correlated to fetal macrosomia, operative vaginal and caesarean birth and adverse neonatal outcomes.[5] Limiting weight gain rather than weight loss is the goal in pregnancy.[5]
• Weight gain in the 2nd and 3rd trimester.	Overweight (BMI 25-29.9) – total weight gain recommended is 7 to 11 kg.[16] Obese (includes all classes) total weight gain recommended is 5 to 9 kg.[16]	Observational studies have shown that women who gain weight within the Institute of Medicine guidelines have better outcomes in pregnancy.[17]
• Birth Planning	Home birth or water birth is not recommended for women with a BMI >35.	
Occupational Health and Safety Issues and Manual Handling Assessment	Note and document any physical limitations. Arrange specialised equipment as required.	

Timing and Mode of Birth

Previous Caesarean Section

- VBAC is less likely for obese women.
- There are higher operative and anaesthetic risks.[19]
- Women with a BMI > 40 have an increase on composite maternal morbidity and risk of neonatal injury compared to women in overweight or obese classes I and II [21]
- Discuss risk in a manner that supports shared decision making.
- Anaesthetic consultation early in labour is recommended.

Induction of Labour

- In the absence of other obstetric or medical indications, obesity alone is **not** an indication for IOL[9]
- There is a higher incidence of IOL among obese women compared to women of normal BMI likely due to the increased association with prolonged pregnancy and pre-existing medical comorbidities and pregnancy related complications.
- Obese women have increased rates of failed IOL compared to women of normal BMI which may be associated with
    - Increase failure to achieve active labour with prostaglandin alone[22]
    - Increase dose and duration of oxytocin requirements[22]
    - Slower progress of labour and greater time to transition to active labour[23]
- Individualise decision making about mode and timing of birth based on an assessment of potential risk factors for poor birth outcomes[24]

Intrapartum management

- Ensure manual handling equipment is available and used e.g. hoists, hover mats
- Inform the Midwifery Co-ordinator and Obstetric Team when a woman with a BMI ≥ 40 arrives in labour.
- Ensure venous access with a large gauge cannula when labour is established.
- Collect a blood group and hold when the intravenous access is performed. Women with an increased BMI are at higher risk for postpartum haemorrhage and intrapartum complications.
- Blood pressure measurement should be taken with an appropriately sized cuff.[9]
- Consider the use of a scan to confirm presentation, particularly if there is uncertainty regarding presentation.
- Measure and fit graduated compression stockings.
- Restriction of oral intake to clear high- calorie fluids during active labour, preferably isotonic drinks.[25]
- H_2-receptor antagonists oral every 6 hours for antacid prophylaxis in labour[25]
- If anaesthesia is required for birth give an H_2- receptor antagonist IV(if not already administered) to reduce the risk of aspiration at extubation.[25]
- Early epidural placement should be considered.

Fetal Monitoring

- When BMI is ≥ 40 continuous intrapartum fetal monitoring is recommended.
- A fetal scalp electrode may be required to assess the fetal heart rate when continuous external monitoring is unable to be obtained.
- An intrauterine pressure transducer may be required if assessment of the uterine activity is unable to be done effectively with a toco transducer.

Anaesthetic Considerations

- Inform the Anaesthetist/Anaesthetic Registrar and theatre Co-ordinator on admission of any women with a BMI ≥ 50.[9]
- If regional analgesia is the preferred choice of pain relief, the epidural catheter should be sited early.

Maternal Care

- Obese nulliparous and multiparous women have longer duration and slower progression of the latent phase of the first stage of labour than normal weight women but there is no difference in median time of labour after 6cm dilation.[26,27]
- Increasing BMI is not associated with a longer second stage.[28]
- Maintain an awareness of the increased risk of shoulder dystocia.
- Water immersion is not recommended if the BMI is greater than 35.

Third Stage

- Active management of the third stage is recommended to decrease the risk of postpartum haemorrhage.
- Maintain an awareness of the increased risk of postpartum haemorrhage.
- Recommend active third stage management
    - Consider factors which may impact on the effectiveness of uterotonic drugs, including the site of administration and the length of needle used.
- Consider the possible requirement for additional blood products
- Consider blood group and hold

Caesarean Section

- In the absence of other obstetric or medical indication, obesity alone is not an indication for elective CS.
- CS is frequently technically more difficult.
- Women with a BMI greater than or equal to 30 have an increased risk for wound infection and excessive blood loss following CS compared to healthy weight women.
- CS on a woman with a BMI greater than 40 is complex surgery – ensure sufficiently skilled, experienced and credentialed staff are available.
- Consider the use of negative pressure dressings on closure to reduce fluid collection in the wound.[29]

Postpartum management

Consider transfer of the woman back to a peripheral hospital (if no other complications) after birth.

Strategies to Decrease Risk Factors

- More frequent clinical observation may be required due to the increased risk of aspiration from airway compromise and / or obstructive sleep apnoea (particularly following opioid and sedative medications).
- Due to the increased risk of infection (chest, urinary wound or breast) increase clinical surveillance for signs of infection including
    - Regular wound care (abdominal and perineal).
    - Thorough assessment of elevated maternal temperature.
- Encourage early mobilisation.[5, 8, 9]
- Consider pressure area care during periods of immobilisation.
- Avoid dehydration.[8]
- Management to decrease risk of venous thromboembolism (VT10E):
    - All women with a BMI ≥40 should be given postnatal thromboprophylaxis regardless of the mode of birth.[9]
    - ***Post caesarean*** – women should wear graduated compression stockings and VTE prophylaxis (pharmacological) should be given.[8, 18] This should be continued for 5-7 days or until the patient is fully mobile, however, it should be extended for 6 weeks postnatally in high risk women.[18]
    - ***Post vaginal birth*** – if other risk factors are present for VTE, then prophylaxis (pharmacological) should be given to all women with obesity, and the women encouraged to wear graduated compression stockings.
- Educate the woman about strategies to decrease risk for VTE.

Breastfeeding

Women may require additional assistance with breastfeeding e.g. positioning.

Obese women are more likely to experience reduced initiation, duration and exclusivity of breastfeeding than normal weight women[32]

Rh Immunoglobulin

For women with a high BMI (e.g. 30 or more), particular consideration should be given to factors which may impact on the adequacy of the injection, including the site of administration, access to underlying muscle and the length of needle used.[30]

Bed sharing / co-sleeping

The risk of sudden infant death associated with shared sleep surface environments is significantly increased by maternal obesity.[31]

Contraception

Discuss contraception options.

Inform the women that oral contraceptives are less efficacious in women over 90kg. However, this has not been the case with intrauterine devices or injectable or implantable contraceptives.[7]

Preconception Counselling

Provide advice regarding:

- The risks for falling pregnant in the future[8]
- The associated risks of further caesarean sections for women with two or more caesarean sections, including information of operative procedures in obese III women as well as the risk of placenta praevia/accreta.
- The commencement of folic acid 5mg/day to decrease the risk of neural tube defects[8]
- Bariatric surgery – if the woman is considering this option it is recommended to delay pregnancy for 18 months during the rapid weight loss period.[8]
- Postpartum depression – this has been reported to correlate positively with BMI and can be as high as 40% in class III obesity.[5]

General Practitioner follow-up

Women who have gestational diabetes should have an oral glucose tolerance test at 6 weeks postpartum.

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Related WNHS policies, procedures and guidelines

North Metropolitan Health Service (NMHS) Policy: Bariatric Patient Management

Obstetrics and Gynaecology Clinical Practice Guideline: Anaemia and Iron Deficiency: Management In Pregnancy and Postpartum

Obstetrics and Gynaecology Clinical Practice Guideline: Diabetes

Obstetrics and Gynaecology Clinical Practice Guideline: Caesarean Birth (see section: Prevention of Gastric Aspiration in Pregnant Women)

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1.0	July 2009	First version
2.0	November 2016	Updated version
3.0	August 2024	Clinical decision by Executive to extend review date by 12 months