WOMEN WITH A BODY MASS INDEX ABOVE 40: MANAGEMENT OF PREGNANCY AND CHILDBIRTH IN

**Background**

Key points

Antenatal

- Classification of Body Mass Index (BMI)
- Management

Intrapartum Management

Postpartum Management

References

**PURPOSE**

To provide optimal care for obese pregnant women to decrease risk and improve outcomes for pregnancy, birth and postnatally.

**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 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 *W016 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.  

**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.

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 delivery\(^9\), shoulder dystocia\(^9\), birth trauma\(^3\)
- caesarean / instrumental delivery – 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 delivery\(^5,7\)
- 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\(^9\)

ANTENATAL MANAGEMENT

CLASSIFICATION OF THE BODY MASS INDEX\(^10\)
BMI is weight in kilograms divided by height in metres squared (i.e. kg/m\(^2\))

<table>
<thead>
<tr>
<th>Classification</th>
<th>BMI (kg/m(^2))</th>
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<tbody>
<tr>
<td>Normal</td>
<td>18.5 – 24.9</td>
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<tr>
<td>Overweight</td>
<td>25 – 29.9</td>
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<td>Obese I</td>
<td>30 – 34.9</td>
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<td>Obese II</td>
<td>35 – 39.9</td>
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<td>Obese III</td>
<td>Greater than or equal to 40.0</td>
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<td>Topic</td>
<td>Management</td>
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<td><strong>Triaging of antenatal visits</strong></td>
<td>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.</td>
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<tr>
<td><strong>Calculation of the BMI</strong></td>
<td>At the booking visit the BMI is calculated according to the pre-pregnancy weight, or the earliest weight in pregnancy.</td>
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<td><strong>Monitoring of weight</strong></td>
<td>Document the woman’s weight at each visit.</td>
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<td><strong>Anaemia monitoring and optional tests</strong></td>
<td>Ensure FBP and iron studies are obtained and followed up appropriately at 28 and 36 weeks gestation. Consider screening for:</td>
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<td><strong>Diabetes Screening</strong></td>
<td>Women with obesity should have early screening for diabetes, preferably at the time of first antenatal attendance. If early screening is normal, repeat the screening at 24 - 28 weeks gestation.</td>
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<td><strong>Anaesthetic referral</strong></td>
<td>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.)</td>
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<td><strong>Ultrasounds</strong></td>
<td>Where possible fetal morphological assessment should be performed at 20 -</td>
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<th>Topic</th>
<th>Management</th>
<th>Additional Information</th>
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<td><strong>Management</strong></td>
<td>22 weeks&lt;sup&gt;3&lt;/sup&gt; 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 &gt; 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.&lt;sup&gt;13&lt;/sup&gt;</td>
<td>screening.&lt;sup&gt;4&lt;/sup&gt; Fundal height measurements to assess growth is impeded physically by maternal body habitus.&lt;sup&gt;5&lt;/sup&gt;</td>
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<td><strong>Physician referral</strong></td>
<td>Refer women for review if the BMI is &gt; 35 with additional risk factors, or if there is a significant medical history.</td>
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<td><strong>Nutritional Management</strong></td>
<td>Refer women to the Dietician.</td>
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<td><strong>Thromboembolic Prophylaxis</strong></td>
<td>Consider prophylactic low molecular weight heparin for women with two or more additional risk factors for VTE.&lt;sup&gt;9&lt;/sup&gt;</td>
<td>Maternal obesity is associated with significant risk of thromboembolism during the antenatal and postnatal period.&lt;sup&gt;9&lt;/sup&gt;</td>
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<td><strong>History of Bariatric surgery</strong></td>
<td>Medical history should include nutritional habits. Consider performing investigations for mineral and vitamin deficiencies in early pregnancy.&lt;sup&gt;2,12&lt;/sup&gt; A multivitamin from the beginning of pregnancy may be beneficial for women who have had bariatric surgery.&lt;sup&gt;2&lt;/sup&gt; Circumstances that may require closer monitoring include vomiting or a history of poor nutrition.&lt;sup&gt;2,13&lt;/sup&gt; 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.&lt;sup&gt;13&lt;/sup&gt; Bariatric surgery may lead to increased risk for a small for gestational age (SGA) fetus, preterm delivery, and perinatal mortality.&lt;sup&gt;14&lt;/sup&gt; Neonates show a trend toward lower birth weight rates, less macrosomia, and an increase in intrauterine growth restriction (IUGR).&lt;sup&gt;2,4,14&lt;/sup&gt; Women who have had bariatric surgery are at higher risk for gestational diabetes.&lt;sup&gt;13&lt;/sup&gt;</td>
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<td><strong>Previous caesarean section</strong></td>
<td>Discuss risks and outcomes for vaginal birth after caesarean (VBAC).</td>
<td>For obese women who have previously delivered by caesarean section, the likelihood of successful VBAC is very low. Obese III women also</td>
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<tr>
<td>Elective caesarean section.</td>
<td>Book a preadmission clinic appointment</td>
<td>carry a higher risk for uterine scar dehiscence.</td>
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<td>Document the BMI on the theatre booking form.</td>
<td>Alerts the theatre and anaesthetic staff to allow preparation of equipment and personnel.</td>
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<td>Where possible urinary catheterisation should be performed prior to insertion of the epidural block.</td>
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<td>Education</td>
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<td>• Exercise</td>
<td>Encourage 30 minutes of low-intensity exercise e.g. walking.</td>
<td>Excessive weight gain is correlated to fetal macrosomia, operative vaginal and caesarean delivery and adverse neonatal outcomes.</td>
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<td>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.</td>
<td>Limiting weight gain rather than weight loss is the goal in pregnancy.</td>
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<td>Observational studies have shown that women who gain weight within the Institute of Medicine guidelines have better outcomes in pregnancy.</td>
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<td>• Weight gain in the 2nd and 3rd trimester.</td>
<td>Overweight (BMI 25-29.9) – total weight gain recommended is 7 to 11 kg.</td>
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<td>Obese (includes all classes) total weight gain recommended is 5 to 9 kg.</td>
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<td>• Birth Planning</td>
<td>Home birth or water birth is not recommended.</td>
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<td>Arrange specialised equipment as required.</td>
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**INTRAPARTUM MANAGEMENT**

**PREPARATION**
Ensure manual handling equipment is available and used e.g. hoists, hover mats

**MATERNAL MANAGEMENT**
- 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.
• Consider commencing treatments to decrease risk for gastric aspiration should the woman have a caesarean section. Extremely obese women have a greater likelihood of emergency caesarean section.\(^5\) See Clinical Guideline: Prevention of gastric aspiration in pregnant women.
• Early epidural placement should be considered.
• Where possible insert urinary catheters (if required) prior to an epidural insertion.
• Active management of the third stage is recommended to decrease risk of postpartum haemorrhage

FETAL MONITORING
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 $\geq 50$.\(^9\)
• If regional analgesia is the preferred choice of pain relief, the epidural catheter should be sited early.

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

STRATEGIES TO DECREASE RISK FACTORS
• Encourage early mobilisation.\(^8, 9\)
• Avoid dehydration.\(^8\)
• Management to decrease risk of venous thromboembolism (VT6E):
  ➢ All women with a BMI $\geq 40$ should be given postnatal thromboprophylaxis regardless of the mode of delivery.\(^3\)
  ➢ 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

CONTRACEPTION
Discuss contraception options.
Inform the women that oral contraceptives are less efficacious in women over 90kgs. 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
- 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
- Bariatric surgery – if the woman is considering this option it is recommended to delay pregnancy for 18 months during the rapid weight loss period.
- Postpartum depression – this has been reported to correlate positively with BMI and can be as high as 40% in class III obesity.

GENERAL PRACTITIONER FOLLOW-UP

Women who have gestational diabetes should have an oral glucose tolerance test at 6 weeks postpartum.
**REFERENCES (STANDARDS)**


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**Responsibility**

<table>
<thead>
<tr>
<th>Policy Sponsor</th>
<th>Nursing &amp; Midwifery Director OGCCU</th>
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<tbody>
<tr>
<td>Initial Endorsement</td>
<td>July 2009</td>
</tr>
<tr>
<td>Last Reviewed</td>
<td>September 2013</td>
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<tr>
<td>Last Amended</td>
<td>May 2014</td>
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<tr>
<td>Review date</td>
<td>September 2016</td>
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