Maternity & Newborn Clinical Network Statewide Clinical Guideline

Care of the Obese Pregnant Woman

and

Weight Management in Pregnancy

August 2011

Disclaimer

This guideline has been prepared to promote and facilitate standardisation and consistency in practice using a multidisciplinary approach. Information in the guideline is current at the time of publication. The Maternity and Newborn Clinical Network (MNCN) does not accept liability for any person for loss or damage incurred as a result of reliance upon the material contained in this guideline. Clinical material offered in this guideline does not replace or remove clinical judgement or the professional care and duty necessary for each specific patient case. Clinical care carried out in accordance with this guideline should be provided within the context of locally available resources and expertise. This guideline does not address all elements of standard practice and assumes that individual clinicians:

- discuss care with consumers in an environment that is culturally appropriate and which enable respectful confidential discussion. This includes the use of interpreter service where necessary;
- advise consumers of their choice and ensure informed consent is obtained;
- provide care within scope of practice, meet all legislative requirements and maintain standards of professional conduct;
- apply standard precautions and additional precautions as necessary, when delivering care;
- document care in accordance with local and mandatory requirements.

Acknowledgements

We acknowledge the Queensland Maternity and Neonatal Network, and the Centre for Maternal and Child Enquires / Royal College of Obstetricians and Gynaecologists (CMACE/RCOG) whose guidelines have been adapted in the development of the Victorian guideline.

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Summary of Key Recommendations

1. Organisations should assess physical and service delivery capabilities in determining appropriate care, referral or transfer of obese pregnant women.

2. Organisations which determine a cut off BMI due to physical and service delivery capabilities should develop a management plan that outlines the facility's response to the unplanned admission of an obese woman and the organisation should inform the community of capabilities within the service regarding the care of obese women.

3. Women of childbearing age should receive information and advice from healthcare providers about the risks of being overweight or obese to enable achievement of a more healthy weight prior to conception.

4. All obese women should be advised to take high dose (5mg) folic acid supplementation preconceptually for at least one month and continue this during the first trimester.

5. A pregnancy care plan that mitigates risk for obese pregnant women in the antenatal, intrapartum and postnatal periods should be documented and readily available.

6. Obese women require increased surveillance in the antenatal period and are not suitable for a low-risk schedule of antenatal appointments.

7. BMI should be based on height and weight measured in early pregnancy.

8. Assessment of appropriate weight gain should form part of routine antenatal care for all women.

9. All overweight or obese women should be screened for diabetes with a 75g Oral Glucose Tolerance Test (OGTT) at 26-28 weeks.

10. For women with a high BMI (e.g. ≥ 35 kg/m2) consider an early OGTT.

11. Consider antenatal thromboprophylaxis in the presence of additional clinical risk factors for venous thromboembolic disease.

12. For women with a BMI ≥ 40 kg/m2 establish baseline renal and liver function to assist in distinguishing chronic renal dysfunction secondary to maternal chronic hypertension and/or diabetes from pregnancy associated hypertensive/diabetic disorders.

13. Ultrasonography should be performed by operators experienced in the scanning of obese women.

14. Consider antenatal anaesthetic consultation, for example for women with BMI ≥ 35 kg/m2.

15. Nutritional advice should be routinely provided to all pregnant women during the antenatal period.

16. Obese pregnant women should be encouraged to be active as part of a healthy lifestyle.

17. A multidisciplinary team should address the increased risk for women with class III obesity, and those with lower classifications of obesity who have co-morbidities.

18. Ultrasound assessment to screen for fetal growth restriction should be considered in the late third trimester for obese women.

19. The increased risk of post-partum haemorrhage in obese women should be managed by ensuring adequate intravenous access in labour, preparation for the requirement for blood / blood products and active management of the third stage of labour.

20. Consider the requirement for postpartum thromboprophylaxis for obese women.

21. Provide obese women with increased support to establish breast feeding.

22. Ensure communication with the obese woman's GP, if appropriate, including advice on specific risk mitigation measures as determined by the pregnancy care plan.

1. Introduction

Women who are overweight or obese have increased risks of experiencing pregnancy complications (Table 1). Feedback from MNCN fora since 2007 highlighted the importance of obesity as an area of concern to maternity care clinicians. The implications of obesity as a potential contributory factor in stillbirth has also been stressed within the annual reports of the Consultative Council on Obstetric and Paediatric Morbidity and Mortality (CCOPPM) (www.health.vic.gov.au/ccopmm). Recent UK guidelines on obesity in pregnancy (CMACE/RCOG 2010) have addressed the need for special attention to risk factor management as well as the need to assess equipment and OH&S requirements.

In addition to the risks of obesity, it is becoming apparent that appropriate weight management may be important for all pregnant women. Whilst 3Centres Guidelines have previously questioned the role of routine weighing of pregnant women, this was based on the lack of sensitivity for detecting growth restriction. There is a growing consensus that attention to weight management should be an integral aspect of care. To this end, The Institute of Medicine (2009) has outlined target ranges for weight gain.

A recent MNCN audit of practice in Victoria (http://www.health.vic.gov.au/clinicalnetworks/downloads/maternity/March%202011/obesity_audit_results_2011_glyn_teale.pdf) has highlighted significant variation in the care of obese women in pregnancy. Unfortunately, to date there is limited high level evidence to support specific management of obese women in pregnancy or the use of weight gain targets in the general antenatal population. The 'Care of the Obese Pregnant Woman and Weight Management in Pregnancy Guideline' has been informed by the issues highlighted in the audit with the aim of:

- increasing the recognition of the potential complications of obesity in pregnancy;
- increasing attention to the importance of appropriate weight management in pregnancy;
- decreasing variation in practice.

The guideline synthesises current best practice and provides resources for further reading. We acknowledge the Queensland Maternity and Neonatal Network, and the Centre for Maternal and Child Enquires / Royal College of Obstetricians and Gynaecologists (CMACE/RCOG) whose guidelines have been adapted in the development of the Victorian guideline.

Much of this guideline is based on consensus recommendations by the Maternity Newborn Clinical Network Leadership Group. Whilst acknowledging the potential limitations to this approach, it is hoped that the recommendations will provide guidance for service provision with the aim of limiting the significant impact that obesity and weight change has on pregnancy and neonatal outcomes. Further resources and articles of interest are listed at the end of the guideline.

Table 1: Risks of and problems associated with obesity in pregnancy

(Reviewed in Gunatilake & Perlow 2011)

Maternal

Caesarean section
Chest, genital tract, and urinary infections
Cholecystitis
Depression
Diabetes (Gestational and Type 2)
Difficult surgical access
Failed attempts at vaginal birth after caesarean section
Failed induction of labour
Gestational hypertension
Haemorrhage
Maternal mortality
Obstructed labour
Obstructive sleep apnoea
Operative and complicated vaginal birth
Preeclampsia
Preterm birth
Reduced breastfeeding
Surgical site infections
Thromboembolic disease

Fetal / Neonatal

Admission to neonatal intensive care units
Congenital malformations including neural tube defects, congenital heart disease, omphalocele, cleft lip and palate
Macrosomia
Shoulder dystocia
Stillbirth
Suboptimal electronic fetal monitoring
Suboptimal ultrasonography

Anaesthetic

Difficult intubations
Difficult intravenous access
Increased failure of epidural analgesia during labour
Increased risk of regurgitation and aspiration of stomach contents

2. Body Mass Index (BMI)

BMI is defined as weight in kilograms divided by the square of the height in metres (kg/m2) [refer to Appendix 1: Body Mass Index chart]. Although there are some concerns with the reliability of BMI in pregnancy, it is a practical tool to determine relevant risk of complications. There is also some uncertainty around accuracy of estimated pre-pregnancy BMI (CMACE/RCOG 2010) and thus to promote consistent practice it is recommended that:

- BMI should be based on height and weight measured in early pregnancy (ideally less than 12 weeks).
    - The measurement of height and weight should form part of the initial clinical assessment of pregnancy of every woman, either in the community or at first hospital visit, whichever is earliest.

Classification of BMI

The World Health Organisation (WHO) classifies obesity according to BMI as outlined in Table 2.

Table 2: WHO Classification of obesity according to BMI

Classification	*BMI (kg/m2)*	*Risk of co-morbidities*
Underweight	Less than 18.5	Low (but risk of other clinical problems increased)
Normal range	18.5- 24.9	Average
Overweight	25-29.9	Increased
Obese I	30-34.9	Moderate
Obese II	35-39.9	Severe
Obese III	Greater than or equal to 40.0	Very severe / Extreme

3. Facility capabilities

This should form part of an organisations' self assessment as per the Capability Framework for Victorian Maternity & Newborn Services (2010).

- Organisations should assess physical and service delivery capabilities in determining appropriate care, referral or transfer thresholds of obese women, including (but not limited to):
    - facility design e.g. width of access doors and pathways, turning circles for large patient equipment etc;
    - availability of large patient equipment with appropriate safe working loads and widths;
    - workforce capabilities, for example access to a range and number of appropriately skilled health care professionals;
    - capability to manage the potential risks and complications of obesity.

- For organisations not able to manage women of all BMI categories, a management plan that outlines the facility's response to the admission of an obese woman should be formalised.

- Organisations have a responsibility to inform the community of service capability regarding the care of obese women.

    - Individual consideration may be warranted for women close to a BMI transfer threshold, especially if they have gained significant weight in pregnancy or the BMI was calculated after 20 weeks.
    - Most relative risk data are based on early pregnancy or pre-pregnancy BMI. The implications of late pregnancy BMI are less clear but if a woman has gained weight and achieves a weight above the threshold for certain equipment, for example, late referral might be warranted.
    - In most cases, however, consideration should be given to transfer of care on the basis of BMI / weight as early in pregnancy as possible to avoid the disruption of unplanned late pregnancy transfer.

4. Transport capacity

The transfer of women of high BMI may be complicated by restrictions in the weight capacity of various modes of transport. Table 3 identifies these limits. These practicalities serve to stress the need to carefully plan, as much as is possible, the need for transfer of care.

Table 3: Transport weight restrictions for Ambulance Victoria

	Standard Stretcher	*Complex patient ambulance vehicle*	*Rotary Wing*	*Fixed Wing*
Patient Weight Limit (Safe Working Load)	230kg	318 kg lifting capacity with no lift assistance; 454 kg transport capability in lowest position	159kg	240kg

5. Pre-pregnancy care

The risk of preeclampsia doubles with each 5-7 kg/m2 increase in prepregnancy BMI (O'Brien et al 2003). Attention to achieving a healthy prepregnancy BMI may reduce pregnancy risks. There is, however, no evidence to support rapid weight loss programs which may be harmful.

- Women of childbearing age should receive information and advice from healthcare providers about the risks of being overweight or obese to enable achievement of a healthy weight prior to conception.

There is an increased risk of neural tube defects for women who are obese (CMACE/RCOG 2010), therefore:

- consideration should be given to ensuring all obese women take high dose (5mg/day) folic acid supplementation, preconceptually for at least one month and continue this during the first trimester.

6. Pregnancy care plan

Optimal pregnancy care will be influenced by:

- local facilities and available resources;
- clinician experience and skill-mix;
- established referral pathways;
- access to support services and expertise;
- individual characteristics of the obese pregnant woman.

Many of the risks of obesity in pregnancy can be mitigated by appropriate pregnancy planning, taking these variables into account. The potential benefit of transfer of care, antenatal specialist review, screening for co-morbidities and complications, as detailed below, will vary on a case-by-case basis.

- A pregnancy care plan that mitigates risk antenatally, intrapartum and in the postnatal period should be documented and made readily available.

7. Antenatal Care

In recognition of the additional risks posed by obesity in the antenatal period, specific additional measures to routine care are recommended:

- a first trimester ultrasound scan to provide accurate dating.
    - Ovulatory dysfunction is more common in obese women and there is an association between obesity and the need for post-term induction.
- increased surveillance in the antenatal period for women who are obese.
    - The schedule of antenatal appointments needs to reflect the increased risk of complications and therefore a ‘low-risk’ schedule is not appropriate.
    - Consider, in particular, an increased frequency of antenatal visits in the third trimester (risk of preeclampsia and undetected growth restriction).

- multidisciplinary care to address the increased risk for women with class III obesity, and women with lower levels of obesity who have co-morbidities.

    - This team should include midwives, obstetricians, GPs, physicians, ultrasonographers, anaesthetists, dietitians and physiotherapists as determined by local availability, access and clinical risk.
    - Particular attention should be paid to the risk of preeclampsia and fetal growth restriction. Specific assessment for fetal growth is recommended in the CCOPPM annual report (www.health.vic.gov.au/ccopmm) as a result of concerns over the frequency of stillbirths associated with unrecognised growth restriction in obese women.
    - an ultrasound scan should be considered in the late third trimester for obese women.
        - One practical approach is to undertake a growth restriction screening scan at 35 weeks for women with a BMI of ≥ 35 kg/m2 (Class II obesity).
        - It is important to note that ultrasound assessment of growth is hindered in obese women and the appropriateness of growth parameters must be assessed in the context of the BMI. It is therefore important that these scans be undertaken and interpreted by an experienced clinician.

- consider antenatal thromboprophylaxis for venous thromboembolic disease, particularly for those with Class III obesity and/or in the presence of additional clinical risk factors (see CMACE/RCOG 2010).

- obese pregnant women should be advised to cease taking any prescription and over-the-counter weight loss medications and complementary alternative medications.

- in the third trimester, consider an individual mobility assessment to identify equipment, workforce and procedural requirements for safe delivery of care.

8. Weight

Excessive gestational weight gain has been correlated with fetal macrosomia, operative vaginal delivery, caesarean section, low Apgar scores and admission to neonatal intensive care units (reviewed Gunatilake & Perlow 2011). Although uncertainties remain, there is an increasing consensus that assessment of appropriate weight gain should form part of routine antenatal care for all women. To this end, revised pregnancy weight gain targets were produced by the Institute of Medicine (2009); these have recommended lower maximum weight gains (depending on BMI category) than previously recommended (table 4).

- Women should be advised that limited weight gain, rather than weight loss, is the primary goal of weight management during pregnancy.

- Discussion of recommended desirable total weight gain range and rate of gain should be discussed with the woman early in pregnancy, as it may aid achievement of a target weight gain.

Table 4: Target weight gain ranges (IOM 2009)

Pre-pregnancy BMI (kg/m^2)	*Rate of gain 2nd and 3rd trimester (kg/week)**	*Recommended total gain range (kg)*
Less than 18.5	0.45	12.5 to 18
18.5 to 24.9	0.45	11.5 to 16
25.0 to 29.9	0.28	7 to 11.5
Greater than or equal to 30.0	0.22	5 to 9

Recommended weight gain ranges for teenagers, short women and racial and ethnic groups are the same as those for the whole population.

Recommendations for total weight gain for women pregnant with twins per BMI classification are:

- normal: 16-24 kg
- overweight: 14-22 kg
- obese: 11-19 kg

9. Maternal investigations

Increased screening for potential co-morbidities and pregnancy complications may help to prevent late diagnosis and aid timely intervention. The benefit of these tests will be influenced by the level of obesity, previous obstetric and medical history and presence of other symptoms.

9.1 Blood tests

The risk of diabetes is increased in women who are overweight or obese:

- All overweight or obese women should be screened for diabetes with a 75g Oral Glucose Tolerance Test (OGTT) at 26-28 weeks.
- For women of high BMI (e.g. ≥ 35 kg/m2) consider an early OGTT (below 14 weeks gestation if possible) to assess for pre-existing diabetes.
  - Repeat at 26-28 weeks if the initial OGTT is negative.

In view of the high risk of preeclampsia, it may be useful to undertake baseline investigations of renal function to assist in diagnosis and management later in pregnancy.

- For women with Class III Obesity it is recommended that baseline renal function (presence of proteinuria, serum creatinine and urea) and liver function is established to assist in distinguishing chronic renal dysfunction secondary to maternal chronic hypertension and / or diabetes from pregnancy associated hypertensive disorders.

9.2 Assessment of co-morbidities

- Consider a cardiac risk assessment for women with pre-existing medical conditions especially for women with Class III obesity who have other risk factors such as smoking and type II diabetes.

- Obesity is one of the strongest risk factors for obstructive sleep apnoea, which may worsen during pregnancy. For women with Class III Obesity consider a risk assessment for this condition.

9.3 Ultrasound

Maternal obesity can limit the accuracy and effectiveness of antenatal ultrasound examinations of the fetus and therefore increases the likelihood of an undetected fetal structural abnormality. It is helpful to document the BMI of women who are obese on a referral for scanning to permit adequate time for anomaly scanning of the obese woman.

- Ultrasonography should be performed by operators experienced and skilled in the scanning of obese women.

10. Anaesthetic considerations

Up to 75% of all anaesthesia-related maternal deaths occur in obese pregnant women (CMACE/RCOG 2010). An anaesthetic review in pregnancy may provide the opportunity to assess co-morbidities, particularly those that increase anaesthetic risk including difficulty of intubation, regional anaesthesia and obtaining venous access. This is particularly pertinent to services without 24 hours a day specialist support.

- Consider antenatal anaesthetic consultation for women with BMI >35 kg/m2.

    - This is particularly relevant for organisations that may need to consider transfer on the basis of a woman's BMI and/or co-morbidities.

- An anaesthetic management plan should be developed and documented in consultation with the treating maternity team.

11. Nutrition

Nutritional advice should be routinely provided to all pregnant women. General advice should include the recommendation:

- to eat a healthy diet as per the 'Australian Guide to Healthy Eating'.

- not to restrict dietary intake below the recommended food group requirements for pregnancy.

- to adhere to recommended weight gain ranges (Table 4).

Additional support by a dietitian should be considered for obese and underweight pregnant women.

12. Physical activity

Obese pregnant women should be encouraged to be active as part of a healthy lifestyle:

- A woman's overall health, including obstetric and medical risks should be evaluated before prescribing an exercise program.
- In the absence of obstetric or medical complications 30 minutes of moderate exercise on most days of the week is recommended.
- Health care professionals should use their professional judgement as to the type, intensity, duration and frequency of exercise that is advised for individual women.
- Consider physiotherapy consultation to assist with assessment and individual exercise prescription.

13. Intrapartum care

A number of obesity related risks increase the likelihood of intrapartum complications. Reduction of these risks may be aided by the following management:

- a team approach that includes frequent communication between care providers.
- ensure appropriate equipment is accessible in the intrapartum and postnatal period, for example bed, hoists, limb lifters, transfer equipment, ultrasound (may be required to visualise veins).
- restriction on the use of water birth or water immersion for analgesia may be appropriate depending on local facilities.
- caution regarding attempts at vaginal birth after caesarean section (VBAC).
    - There is an increase in complications and a reduction in success of VBAC relative to increasing BMI. The low likelihood of VBAC success, particularly for extremely obese women, the increased risk of uterine rupture and the difficulties in undertaking an emergency caesarean supports a cautious approach to VBAC for these women.
- anaesthetic and theatre staff should be notified of women who have a high BMI presenting to birth suite in labour or for induction of labour.
    - This is particularly relevant for primigravida as there may be in excess of a 50% chance of caesarean.
    - Intravenous access may be difficult to achieve.
- continuous electronic fetal monitoring for women with Class II or III obesity.
    - Whilst BMI itself is not a specific indication for continuous fetal monitoring according to RANZCOG, the frequency of complications in obese women and the potential for undiagnosed growth restriction supports routine continuous monitoring.

- Internal fetal monitoring should be considered if a satisfactory recording cannot be obtained by external fetal monitoring.

- the risk of post-partum haemorrhage should be managed by adequate intravenous access, preparation for requirement for blood / blood products and active management of the third stage of labour.

14. Postpartum care

- More frequent clinical observations of the obese woman, including respiratory rate, may be required postnatally due to the risk of airway compromise and obstructive sleep apnoea and subsequent increased risk of aspiration, particularly following administration of narcotic and sedative medications.

- Consider the requirement for postpartum thromboprophylaxis (see CMACE/RCOG 2010):

  - Pregnancy, obesity and operative delivery (vaginal or abdominal) are all risk factors for thromboembolism.
    - Consider graduated compression stockings and / or calf compression.
    - The dose of anticoagulants should be appropriate for maternal weight.
  - Encourage early mobilisation and regular physiotherapy, particularly of women who have had a caesarean birth.

- Consider pressure area care requirements during periods of immobility.

- Due to the increased risk of infection in obese women (chest, urinary, wound or breast):

  - prophylactic antibiotics should be given at caesarean section;
  - increased clinical surveillance for signs of infection is required including:
    - regular wound care (abdominal and perineal),
    - thorough assessment of elevated maternal temperature.

- Ensure communication and clinical handover with the woman's GP, if appropriate, including advice on specific risk mitigation measures as determined by the pregnancy care plan.

- Obese women should be encouraged to continue with nutritional counselling and exercise programs postnatally.

- If hormonal methods of contraception are considered for use by the obese woman, (particularly oestrogenic compounds) risk assessment of venous thromboembolism should be undertaken.

- Women with gestational diabetes should be offered an OGTT at 6 weeks postpartum.

15. Breast feeding

Breastfeeding should be encouraged and supported, not only for the benefit of the newborn, but also to promote postpartum weight loss. Unfortunately obese women are at an increased risk of unsuccessful lactation and delay in establishment of lactation for a variety of reasons. Furthermore, specific recommendations about bed-sharing and the risks of smothering during breast feeding for obese women were outlined in a recent Queensland Coroners report which highlighted the need for increased supervision (http://www.courts.qld.gov.au/cif-heidrich-b-20110629.pdf)

Therefore, consider:

- referral to a lactation consultant (ideally in the antenatal period);
- increased supervision during breast feeding;
- discourage bed sharing;
- early postpartum breastfeeding support;
- access to breastfeeding support services following discharge.

16. Inter-pregnancy care

Obesity is a modifiable risk factor and weight reduction should be advised as an important goal for the obese woman who is anticipating future pregnancy. An increase in prepregnancy weight between a first and second pregnancy from an overweight BMI to an obese BMI increases the risk of preeclampsia over three fold (odds ratio 3.7; 95% confidence interval 3.1-4.3). Conversely a decrease in prepregnancy weight between first and second pregnancies from obese to a normal BMI decreases the risk of caesarean and large-for-gestational age infants (reviewed in Gunatilake & Perlow 2011).

Therefore:

- overweight and obese women should be encouraged to lose weight before considering a future pregnancy.
- women in a healthy BMI range should be advised of the importance of maintaining a healthy BMI between pregnancies.

17. Pregnancy after bariatric surgery

Pregnant women who have previously undergone bariatric surgery (diversionary or malabsorptive procedures) should be managed by a multidisciplinary team that includes an obstetrician, midwife, obstetric physician, bariatric surgeon, dietitian, anaesthetist, maternal fetal medicine specialist, physiotherapist, social worker and occupational therapist.

- The type of bariatric surgery should be ascertained and documented in the clinical notes.
- Encourage continuation of prescribed nutritional supplements (in particular B12, folate and iron).

- Nutritional deficiencies are common after bariatric surgery. Evaluation of nutritional deficiencies and correction by appropriate supplements should be considered.

- Intestinal obstruction as a complication of gastric bypass surgery may present as abdominal complaints, morning sickness, reflux or uterine contractions. Increased clinical surveillance and a high index of suspicion is required.

- Early pregnancy nausea and vomiting may require partial or complete deflation of laparoscopic–adjustable gastric banding.

Bariatric surgery is not a contraindication to breast feeding. Maternal nutritional supplementation may be required (see: ACOG Practice Bulletin No. 105).

18. References

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- CMACE / RCOG Joint Guideline: Management of Women with Obesity in Pregnancy. http://www.rcog.org.uk/files/rcog-corp/CMACERCOGJointGuidelineManagementWomenObesityPregnancya.pdf

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- Queensland Statewide Maternity and Neonatal Clinical Guideline 'Obesity.' (http://www.health.qld.gov.au/cpic/documents/mguideg_obesityv4.0.pdf)

19. Recommended Reading

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Appendix A: Body mass index chart

Source:
http://www.health.qld.gov.au/patientsafety/pupp/documents/bodymassindex.pdf