

South Australian Paediatric Clinical Guidelines

Women with High body mass index

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Introduction

- > *The Standards for the Management of the Obese Obstetric Woman in SA* (at URL <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=276>) is a statewide policy presented as a DIRECTIVE for all South Australia public health units
- > All pregnant women with a BMI > 35kg/m² at any time in her pregnancy requires a specific management plan and women with a BMI > 40kg/m² require a Specialist Obstetrician to manage their care (as per *The Standards for the Management of the Obese Obstetric Woman in SA*)
- > This guideline is based on the statewide policy and provides a quick guide for the management of the obese obstetric woman in South Australia

Definition¹¹

Maternal obesity may be defined as:

- > A body weight above 80 kg
- > A weight 50 % or more above the ideal pre-pregnancy weight for height
- > According to maternal body mass index (preferred method – WHO criteria)
 - > 25kg/m² to 29.9kg/m² (overweight)
 - > 30kg/m² to 34.9kg/m² (obese I)
 - > 35kg/m² to 39.9kg/m² (obese II)
 - > Greater or equal to 40kg/m² (obese III or morbidly obese)
- > Body mass index (BMI) refers to the weight in kilograms divided by the square of the height in metres (kg ÷ m²)
- > Although useful, BMI gives no indication of fat distribution (e.g. abdominal girth) or the proportion of lean tissue to fat tissue
- > BMI is used to define obesity as a risk factor in other parts of the Perinatal Practice Guidelines (PPG)

Aetiology

- > Genetic predisposition
- > High caloric intake
- > Neuroendocrine disorders (e.g. polycystic ovary syndrome)
- > Steroid or antidepressant use

Pre-pregnancy counselling

- > Encourage women with high BMI (≥ 30kg/m²), who are planning pregnancy, to participate in weight reduction and exercise programs before becoming pregnant
- > Encourage a well balanced diet
- > See 'pre-pregnancy counselling for women who have had bariatric surgery' below

Risks of obesity in pregnancy

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The following pregnancy complications are increased by obesity:

Maternal¹⁵

- > Diabetes (pre-gestational and gestational)
- > Hypertension (chronic and preeclampsia)
- > Respiratory disorders (asthma and sleep apnoea)
- > Infections (urinary tract, wound, endometritis)
- > Thromboembolic disorders (link to thromboembolism in pregnancy)
- > Anaesthetic (difficult intubation, placement of epidural)
- > Caesarean section
- > Depression

Fetal and neonatal¹⁵

- > Preterm birth
- > Higher perinatal mortality
- > Congenital malformations
- > Macrosomia

And

- > Intensive care unit admission
- > Treatment of jaundice or hypoglycaemia
- > And later
- > Childhood obesity

Management¹⁵

- > The SA Health 2012 policy “[Standards for the management of obese obstetric woman in South Australia](http://www.health.sa.gov.au/PPG/Default.aspx?tabid=276)” at URL <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=276> recommends that the level of care be determined by the woman's BMI along with any co-morbidities and risk factors:
 - > BMI <35kg/m² women can plan to birth at any maternity unit in SA
 - > Obese II (BMI 35kg/m² to 39.9kg/m²) women should plan to birth in a level 3, 4, 5, or 6 hospital (see levels of care in [Standards for Maternal and Neonatal Services in South Australia](#))
 - > Obese III (BMI ≥ 40kg/m²) women require a specialist obstetrician to manage their care in a designated level 4, 5, or 6 hospital
 - > Obese III (BMI ≥ 40kg/m²) women who reside more than 150 kilometres away from the designated (level 4, 5, or 6) hospital should be advised, at no later than 36 weeks gestation, to relocate to a residence within 150 kilometres radius of that hospital
- > Women with a BMI > 60kg/m² or weighing > 170 kg require a specialist obstetrician to manage their care and receive all their pregnancy care and birth in a public hospital with adult intensive care facilities

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- > It should be noted that the obese pregnant woman will require additional midwifery, physiotherapy, and occupational therapy hours of care when compared to the non obese pregnant woman

Antenatal

- > The obese pregnant woman should be cared for in a health care facility capable of managing the potential complications of her obesity. The facilities and staff needed may vary according to the woman's BMI and other complicating factors (see above)

Regular antenatal care

- > Calculate and record BMI at booking visit and on admission for all women
- > Consider estimation of fetal weight by ultrasound as growth restriction in the fetus is difficult to detect in the obese pregnant woman. Accurate pregnancy dating should be performed late in the first or early in the second trimester of the pregnancy
- > Appropriate counselling as indicated (e.g. balanced diet, exercise)
- > Consider dietician review
- > Encourage screening for neural tube defects and Down syndrome
- > Careful history to identify any associated risk factors (see above)
- > Referral to Specialist Obstetrician for identified risk factors
- > Consider early oral glucose challenge test (especially if estimated fetal weight > 90th centile on routine ultrasound)
- > Individualise management according to ongoing antenatal assessment
- > Closely monitor blood pressure using an appropriately sized blood pressure cuff (if the woman's arm circumference is greater than 33 cm, use an alternate sized large adult cuff 35-44 cm or larger as required)
- > Women who present with a BMI $\geq 40\text{kg/m}^2$ any time during their pregnancy need to have their ongoing care referred to a Specialist Obstetrician at a level 4,5 or 6 maternity unit as per *The Standards for the Management of the Obese Obstetric Woman in SA* at <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=276>

Manual handling and mobility risk assessment

Liaise with the appropriate staff to identify and document the following:

- > Any mobility limitations
- > Any special equipment requirements for lifting / transfer in labour / postnatal (e.g. slippery sam, roller board, hover matt)
- > Maternal weight to ensure that an appropriately rated bed for weight is available in the intrapartum and postnatal period and that an appropriately rated operating table is available for any operative procedure

Anaesthetic considerations

- > Arrange antenatal anaesthetic referral / review for any pregnant woman who presents with a BMI $\geq 35\text{kg/m}^2$ at any time during her pregnancy
- > Consider the level of anaesthetic service available at the planned place of birth and transfer as appropriate depending on anaesthetic review as per *The*

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Standards for the Management of the Obese Obstetric Woman in SA at <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=276>

Thromboembolic prophylaxis¹²

- > After previous venous thromboembolism, immobility carries the highest odds ratio of all acquired risk factors. Consider low molecular weight heparin (LMWH) for antepartum prophylaxis if the woman is admitted and immobile, with two or more risk factors as per chapter 71 thromboprophylaxis and thromboembolic disease in pregnancy at <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=106>
- > Consider graduated elastic compression stockings (TEDS) if significant lower limb varicosities or inpatient admission and risk factors

Antenatal Education

Randomised controlled trials have found antenatal dietary and lifestyle interventions for pregnant women who are overweight or obese are effective in limiting gestational weight gain; however, further evaluation is required to detect important differences in clinical maternal and infant health outcomes¹⁶

Intrapartum

- > There are conflicting data on the effects of maternal obesity on labour
- > Maternal obesity has been associated with increased rates of:
 - > Induction of labour
 - > Meconium stained liquor
 - > Prolonged labour
 - > Failed induction
 - > Macrosomia
 - > Signs of fetal compromise
 - > Caesarean section
 - > Postpartum haemorrhage
 - > Wound infection/delayed healing after caesarean section
- > Where there is no medical or obstetric indication for early birth, the spontaneous onset of labour should be anticipated and the woman should be encouraged to birth vaginally¹⁶
- > Infants of women who are overweight or obese have an increased risk of macrosomia and associated complications. Ensure senior obstetric, midwifery, anaesthetic and paediatric assistance is on hand¹⁶

Management of spontaneous labour

- > Routine care in labour
- > Encourage to remain active during labour
- > The obese pregnant woman with a BMI > 35 or a weight at or above 100 kg is precluded from the following:
 - > Home birth

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(For further information, see SA Home birth policy at http://www.health.sa.gov.au/PPG/Portals/0/planned_home_birth_policy_SA.pdf)

- > Access to the bath during labour or birth

(For further information see SA policy for first stage labour and birth in water at <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=234>)

- > Ensure bed in birthing room is appropriate for high maternal weight
- > Consider the load capacity of available stirrups
- > Consider continuous electronic fetal monitoring (EFM) as indicated (e.g. meconium stained liquor or signs of fetal compromise)
- > In the event of continuous EFM, consider applying fetal scalp electrode if unable to obtain continuous external tracing (exclude positive serology such as HIV, Hepatitis B or C to minimise risk of seroconversion of the infant)

Anaesthetic considerations

- > Early anaesthetic review
- > Obesity in pregnancy can result in difficult insertion of regional anaesthesia and difficult intubation
- > For further information on the management of anticoagulation around delivery and anaesthesia refer to <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=106#2518>
- > Regional anaesthesia (epidural or spinal) is contraindicated during anticoagulation treatment due to an (unquantified) increased risk of spinal haematoma
- > Consider oral Ranitidine 150 mg every 12 hours in labour for those women at relatively high risk of surgical intervention (risk of aspiration during anaesthesia)
- > If oral medication is not possible (vomiting) or surgical intervention is likely within the next two hours, Ranitidine 50 mg may be administered by slow intravenous injection (diluted in 20 mL of sodium chloride 0.9 % and given over 5 minutes)
- > Consider **postpartum** thromboembolic prophylaxis according to [risk assessment profile](#) (e.g. prophylactic low molecular weight heparin, graduated elastic compression stockings [TEDS], and / or electrical calf stimulators)

Caesarean section considerations

- > Prophylactic antibiotics decrease the risk of wound infection
- > Close observation in the early postnatal period (risk of sleep apnoea)

Occupational health and safety considerations

- > Document current maternal weight
- > Wheel chairs able to accommodate patient weight $\leq 160\text{kg}$
- > Standard labour ward bed able to accommodate patient weight $\leq 227\text{kg}$
- > Patient lifter and slings able to accommodate patient weight $\leq 200\text{kg}$
- > Notify operating room and anaesthetic staff if maternal BMI $> 40\text{kg/m}^2$. Standard operation tables (e.g. RX500, J3) will only accommodate weight to 135 kg and this is without taking the effect of a lateral tilt into account. Alternative operation

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tables may take larger weights (e.g. the Macquet operation table will accommodate weight to 350 kg)

- > Use of electronic calf stimulators

Management of the newborn baby

- > Large size for gestation is not a risk factor for hypoglycaemia if maternal glucose challenge or tolerance tests are known to be normal. Such babies do not require routine screening (For further information refer to, neonatal hypoglycaemia at <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=127>)

Postpartum

- > Encourage early ambulation
- > Consider referral to physiotherapist to reduce the risk of respiratory infection and thrombo-embolism
- > Use standard hospital electrical bed only, with electric functions to tilt, head down, head up, feet down, feet up, raise and lower bed, able to accommodate a woman weighing ≤ 267 kg. **NB** without the self help poles attached as these are only able to support a woman weighing ≤ 75 kg
- > Following caesarean section, encourage adequate analgesia, deep breathing, coughing and leg exercises, early ambulation and perform wound care to minimise the risk of infection

Long term risks of obesity

- > Stress incontinence
- > Depression
- > Medical complications associated with obesity

Follow up

- > Follow up oral glucose tolerance test at 6 weeks postpartum for women with gestational diabetes
- > Further advice on healthy life styles

Perinatal care after bariatric surgery^{20,21}

- > Many women remain obese following bariatric surgery. However, maternal outcomes and morbidity in pregnancy are better than for women who are similarly obese and are comparable with that of the general population. Long-term cardiac and metabolic outcomes for infants born following bariatric procedures are also improved
- > Perinatal birth outcomes are acceptable, provided that adequate nutrition and vitamin supplementation is maintained

Types of surgery

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- > Laparoscopic adjustable gastric banding (LAGB)
 - > An adjustable silicone band is placed around the upper part of the stomach to create a small upper-stomach pouch that limits hunger and food intake while also promoting an early feeling of satiety after meals
- > Vertical banded gastroplasty (VBG)
 - > A primarily restrictive procedure in which staples are used to create a smaller stomach pouch
- > Laparoscopic Roux-en-Y gastric bypass (RYGB)
 - > A bypass type procedure in which a small stomach pouch is isolated from the rest of the stomach and empties directly into the lower portion of the jejunum, thereby delaying mixing of food with bile and pancreatic juices. The result is an early sense of satiety which reduces the desire to continue to eat
- > Biliopancreatic diversion (BPD) and biliopancreatic diversion with duodenal switch (DS)
 - > Malabsorptive procedures which reduce nutrient absorption by bypassing a large portion of the small intestine

Pre-pregnancy counselling

- > Advise the woman to remain on life-long vitamin supplementation
- > Avoid pregnancy during the initial weight loss phase, when in a state of negative energy balance (12 to 24 months)
- > Malabsorptive bariatric procedures are associated with more adverse pregnancy outcomes than restrictive procedures e.g. fetal growth restriction, prematurity and nutritional deficiencies. Offer appropriate advice about contraception (particularly younger women due to high rates of unplanned pregnancy)
- > Advise to delay pregnancy until successful surgery is confirmed to avoid surgical complications such as suture leaks and band displacements during pregnancy

Antenatal care

- > Careful evaluation of gastrointestinal symptoms such as nausea, vomiting and abdominal pain (consult with a bariatric surgeon if abdominal pain)
- > Arrange dietician review
 - > VBG, LAGB and RYGB are not malabsorptive procedures, however, maintaining adequate nutrition during pregnancy may be influenced by the reduction in fat-soluble vitamin uptake, particularly in RYGB
- > Early consultation with a bariatric surgeon
 - > Deflation of the gastric band during pregnancy to ensure sufficient nutrition needs to be balanced against the likely regain of excess

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weight and subsequent renewed risk of gestational diabetes or relapse from previously improved diabetes

- > Delayed gastric emptying may disrupt the interpretation of glucose tolerance testing
 - > The diagnosis of gestational diabetes is best performed on a diurnal blood glucose profile rather than by formal glucose tolerance testing
- > Observe for signs of fetal growth restriction (For further information on fetal growth restriction, refer to <http://www.health.sa.gov.au/PPG/Default.aspx?tabid=66>)

Labour and birth

- > Care as for the obese woman

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Abbreviations

| | |
|----------------|-------------------------------|
| BMI | Body mass index |
| EFM | electronic fetal monitoring |
| e.g. | For example |
| et al. | And others |
| i.e. | That is |
| kg | Kilogram(s) |
| LMWH | Low molecular weight heparin |
| m ² | Metres squared |
| mg | Milligram(s) |
| mL | Millilitre(s) |
| PPG | Perinatal Practice Guidelines |

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