Standards for the Management of the Obese Obstetric Woman in South Australia

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Acknowledgements

This document has been developed to assist perinatal health care staff employed in the public health service in their management of the obese obstetric woman.

These standards have been developed in accordance with contemporary professional, quality and safety standards and establish the minimum standards for the provision of maternity services for overweight women in South Australia. Recommendations made by the South Australian Maternal, Perinatal and Infant Mortality Committee have been considered in the development of these standards.

The development of this criterion based framework aligns with the SA Health's Standards for Maternity and Neonatal Services in SA 2010 document.

In 2009, the SA Maternal and Neonatal Clinical Network established a work group to develop these standards in response to service demands within the perinatal health services in South Australia.

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Glossary of Terms

Bariatric Surgery

For the purposes of these standards, bariatric surgery is defined as surgery on the stomach and/or intestines to help a person with extreme obesity lose weight.

Body Mass Index (BMI)

One of the anthropometric measures of body mass; it has the highest correlation with skin fold thickness or body density. BMI is an accurate reflection of fat percentage in the majority of the adult population.

Calculated: $BMI = \frac{\text{weight (kg)}}{\text{height}^2\ (m^2)}$

Co-morbidities

Co-morbidity described as the simultaneous presence of two or more morbid conditions or diseases in the same woman that may complicate a woman's condition and treatment requirements.

GP Anaesthetist

For the purposes of these standards, a General Practitioner who is privileged to provide anaesthetics and regularly provides obstetric anaesthesia.

GP Obstetrician (three categories)

A General Practitioner who is privileged to provide obstetric shared care in accordance with the SA GP Shared Care Protocols.

A General Practitioner with a Diploma Royal Australia and New Zealand College Obstetricians and Gynaecologists privileged to provide care for 'low risk' women.

A General Practitioner with a Diploma Royal Australia and New Zealand College Obstetricians and Gynaecologists – Advanced, privileged to provide care for 'defined risk' women.

Overweight

Generally defined as having more body fat than is optimally healthy and is determined as a BMI 25-29.9kg/ m^2.

Obese

Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and defined as BMI of 30kg/ m^2 or greater. The World Health Organisation has classified obesity as:

Classification	BMI; kg/m^2	Risk of Co-morbidities
Normal	18.5 – 24.9	Average
Overweight	25 – 29.9	Increased
Obese Class 1	30 – 34.9	Moderate
Obese Class 2	35 – 39.9	Severe
Obese Class 3	≥ 40	Very severe

Specialist Anaesthetist

A medical practitioner registered with the Australian Health Practitioners Regulatory Authority as a Specialist Anaesthetist.

Specialist Obstetrician

Specialist Obstetrician is recognised in Australia by the Royal Australian and New Zealand College of Obstetricians and Gynaecologists and is registered with the Australian Health Practitioners Regulatory Authority as a Specialist Obstetrician.

Thrombo-embolic disease

A condition in which a blood vessel is obstructed by an embolus carried in the bloodstream from the site of formation.

Introduction

The World Health Organisation (WHO) has identified the 'epidemic of obesity' as one of today's most significant world-wide health problems. Obesity now affects three times more adults than it did 20 years ago.

These standards have been developed to assist maternity care providers and health policy makers in the appropriate management of women who are obese during pregnancy.

Obese women seeking obstetric care within South Australian health services must be made aware that most maternity services do not have appropriate resources available to care for all overweight women. In certain situations special arrangements, including transfer of the woman to an alternate site, may need to be undertaken to ensure the optimal health outcomes for the pregnant woman and her infant.

The obese obstetric woman presents specific challenges, resultant from the potential for adverse health outcomes and the potential risk factors for perinatal health care providers, such as lack of space, equipment for safe care, treatment and transportation.

Although this document has primarily been produced for application within the South Australian public health sector, it is acknowledged that the standards of practice outlined are also relevant to private health services and may subsequently be used as a reference for maternity services in this sector. This current version has been developed with consideration of the technological advances in equipment and research that have increased the exposure of this field of health care. It also recognises the necessity for rationalisation of resources within health care that subsequently demands a more coordinated approach to continue improving maternity services.

The South Australian Department of Health and Ageing Standards for Maternity and Neonatal Services in SA 2010 has helped inform the development of these standards. The criterion-based framework from the Standards for Maternity and Neonatal Services in SA 2010 document has been used to determine the minimum clinical standards that should be provided given the complexity of maternity services required by an obese woman during the perinatal period. In consideration of the quality and safety of care, the framework defines the relevant workforce, equipment, protocols and service arrangements that need to be formally in place to ensure an appropriate level of service is available.

These standards provide direction for the clinical management of the obese obstetric woman and it is intended that health units utilise these in conjunction with the Standards for Maternity and Neonatal Services in SA 2010 and the South Australian Perinatal Practice Guidelines. Recommendations are made regarding the level of care and the appropriate health care practitioners who should provide care for a pregnant woman who records a BMI >35 kg/m^2 at any time during her pregnancy. Notably, these standards indicate that women with a BMI of >40 kg/m^2 should have a Specialist Obstetrician manage their care, guide the assessment of pregnancy risk and to determine the presence of co-morbidities.

Background

Obesity is a significant health issue for women during pregnancy and childbirth. Estimates suggest that 35% of Australian women aged between 25 and 35 years are overweight or obese [1]. In Australia, 34% of pregnant women have a body mass index (BMI) in excess of 25kg/m^2 [1]. More recent figures from South Australia indicate that of pregnant women whose BMI was recorded, 25.9% were overweight, with a further 24.1% obese [2]. Table 1 details the proportion of pregnant women in South Australia who were overweight or obese by BMI category [2].

Table 1: Estimated proportion of pregnant women overweight or obese by BMI category

WHO Classification	BMI Category	Percentage	Number of Women
Pre-obese – overweight	25 – 29.9	26.3	2995
Obese Class 1 – Obese	30 – 34.9	13.6	1549
Obese Class 2 – Severely Obese	35 – 39.9	6.1	697
Obese Class 3 – Morbidly Obese	> 40	4	457

Pre-pregnancy

Women who present for pre-pregnancy counselling should be advised of the increased risks associated with obesity during pregnancy, and should be encouraged to make lifestyle changes to minimise the risks of developing complications during pregnancy [29].

Pregnancies in overweight or obese women have a recognised increased risk of congenital anomalies, including neural tube defects and cardiac anomalies [1, 15-17, 19]. Women planning pregnancy should be encouraged to take pre-conceptual folate supplementation to reduce the incidence of neural tube defects. There is no available evidence to suggest that the dose should be increased above that currently recommended.

Recognised complications following bariatric surgery include multiple micro-nutrient deficiencies, including folate [30]. Women planning pregnancy following bariatric surgery should be encouraged to take pre-conceptual folate. There is no evidence to support the routine laboratory investigation of micro-nutrient concentrations prior to, or during pregnancy.

Maternal and infant risks associated with overweight and obesity during pregnancy

Obesity during pregnancy is associated with well documented risks, these risks increasing as BMI increases, when compared with women of a normal BMI (Table 1) [1].

These complications include an increase in the risk of hypertension during pregnancy, including pre-eclampsia [1, 3-13] the development of gestational diabetes [1, 6, 7, 11, 12], infection [7,9,16] and thrombo-embolic disease [5, 9]. In this group of women, induction of labour is more likely [6, 9, 10, 12] as is the risk of caesarean birth [1, 6-14] with suggestions that as many as one in seven caesareans are attributable to obesity [7]. Furthermore, this risk increases by approximately 7% for every unit increase in maternal BMI [15]. The risk of both stillbirth and perinatal death are increased in women who are overweight or obese, when compared with women of normal BMI [1, 6, 8, 10, 13-18].

There are well-documented associations between obesity and depression, and other psychological disturbances [36]. Women should be offered the opportunity for an assessment of their psychological well-being.

Women who are overweight or obese should be offered an assessment by a dietician during pregnancy and again during the postnatal period prior to discharge.

Blood Pressure

Overweight and obesity is associated with an increase in the risk of hypertensive conditions during pregnancy, as well as pre-eclampsia [1, 3-13] Overweight and obese pregnant women should have their upper arm measured to ascertain the most suitable size cuff for measuring the blood pressure (BP). Women with an upper arm circumference greater than 33cm should have their blood pressure recorded using an alternate sized large adult cuff 35-44cm or larger as required.

Gestational Diabetes

Overweight and obesity is associated with an increase in the risk of gestational diabetes during pregnancy [1, 6, 7, 11, 12]. Women should therefore be screened for the development of gestational diabetes. There is insufficient evidence available to make a recommendation regarding the optimal timing of testing. Refer to the SA Perinatal Practice Guidelines Chapter 65.

Assessment of the Fetus

Overweight and obesity during pregnancy are associated with an increased risk of complications. An accurate assessment of pregnancy dating should be performed late in the first or early in the second trimester of pregnancy.

The accuracy of first and second trimester serum screening tests for fetal anomalies is enhanced by an accurate assessment of gestational age and maternal BMI. This information should be routinely recorded on the laboratory request form.

Estimated Fetal Weight

Technically it may be difficult to assess fetal lie and presentation clinically by palpation. Where this is the case, ultrasound examination is warranted taking into account its inherent limitations.

It is also difficult to detect growth restriction of the fetus in obese women. Estimation of the fetal weight by ultrasound should be considered for all obese women and offered to all morbidly obese women.

As maternal BMI increases, the risk of these adverse maternal and infant health outcomes also increases [1]. Dodd and colleagues present this information where risk ratios (RR) and 95% confidence intervals (CI) for health outcomes for women in various BMI categories are compared with women with normal BMI (less than 25) who have a reference or of 1.0 (Table 2). The relationships noted below have not been adjusted for weight gain in pregnancy.

Neonate

The risk of adverse infant health outcomes also increases in women who are overweight or obese. These risks include macrosomia [11, 13, 15-17], intensive care unit admission [1, 15-17], preterm birth [1, 15-17], congenital anomalies [1, 15-17, 19] and treatment for jaundice or hypoglycaemia (Table 2) [1, 12].

Table 2: Risk of health outcomes by maternal BMI category [9]

Outcome	Overweight BMI 25.0-29.9 RR, 95% CI	Obese 1 BMI 30.0-34.9 RR, 95% CI	Obese 2 BMI 35.0-39.9 RR, 95% CI	Obese 3 BMI >40.0 RR 95% CI
Gestational Diabetes	1.37 1.11, 1.69	2.20 1.76, 2.75	3.11 2.41, 4.02	4.28 3.30, 5.54
Hypertension	1.56 1.31, 1.87	2.91 2.43, 3.49	3.32 2.67, 4.14	4.51 3.59, 5.65
Latrogenic Preterm birth	1.05 0.80, 1.39	1.68 1.25, 2.25	1.60 1.07, 2.39	1.10 0.62, 1.92
Induction of labour	1.13 1.05, 1.21	1.38 1.27, 1.49	1.34 1.20, 1.50	1.64 1.46, 1.85
Normal vaginal birth	0.89 0.86, 0.93	0.86 0.82, 0.90	0.76 0.71, 0.83	0.73 0.66, 0.80
Elective caesarean birth	1.43 1.28, 1.61	1.55 1.35, 1.78	2.06 1.74, 2.43	2.45 2.04, 2.94
Emergency caesarean birth	1.27 1.15, 1.40	1.36 1.20, 1.53	1.52 1.31, 1.77	1.47 1.22. 1.76
Birth-weight <2500grams	0.75 0.61, 0.92	0.77 0.59, 0.99	1.12 0.82, 1.52	0.56 0.34, 0.94
Birth-weight >4000grams	1.59 1.41, 1.81	1.60 1.37, 1.85	1.91 1.58, 2.30	2.17 1.76, 2.68
Need for resuscitation	1.14 1.04, 1.25	1.26 1.13, 1.41	1.33 1.15, 1.54	1.44 1.21, 1.70

Dodd JM, Grivell RM, Nguyen A-M, Chan A, Robinson JS. Maternal and perinatal health outcomes by body mass index category. ANZJOG. 2011;

Labour and birth

Women who are overweight or obese during pregnancy are at increased risk of developing a number of complications during the birthing process, including caesarean birth and post-partum haemorrhage [1, 6-14]. This is in addition to the presence of other co-morbidities, including, but not limited to, hypertension, diabetes, thrombo-embolism, and other medical conditions which can impact significantly on the administration of general and regional anaesthesia techniques. Pregnant women who are obese should have access to a comprehensive clinical assessment by an anaesthetist referred at the earliest opportunity (before 20 weeks gestation if at all possible). This assessment should be undertaken in accordance with the professional standards of the Australian and New Zealand College of Anaesthetists.

On admission to delivery suite, delivery staff are responsible for informing anaesthetic and theatre staff of the admission of the obese woman and to ensure that an obese woman has adequate intravenous access with an appropriately large bore cannula. In many circumstances access can be technically difficult. In these circumstances it is appropriate to consult early with anaesthetic staff.

Women who are obese are more likely to develop medical complications necessitating induction of labour [6, 9, 10, 12].

Women who are obese during pregnancy are at increased risk of haemorrhage during pregnancy and after a caesarean section delivery, in the post-partum period at a greater risk of wound infection [7, 9, 16] and thrombo-embolic disease [5, 9]. For these reasons, caesarean birth should be reserved for standard obstetric and medical indications. Where there is no medical or obstetric indication for early birth, the spontaneous onset of labour should be anticipated and the women should be encouraged to birth vaginally.

Infants of women who are overweight or obese are at increased risk of macrosomia [11, 13, 15-17], and the associated complications of traumatic birth, shoulder dystocia and post-partum haemorrhage. To ensure prompt response to these potential complications, senior obstetric, midwifery and anaesthetic staff should be present for birth.

Technically, both external fetal monitoring and application of a fetal scalp electrode may be difficult in women who are obese. Where possible, fetal heart rate monitoring during labour should be undertaken, ideally via fetal scalp electrode.

To reduce the risk of thrombo-embolic disease [5, 9], prolonged periods of immobility should be minimised where possible. Thromboprophylaxis, including adequate calf stimulation and anticoagulation, should be considered for prolonged periods of immobility during labour, birth and delivery by caesarean section.

Care of an obese woman in the intrapartum period requires attention to potential occupational health safety and welfare hazards. Additional obstetric, midwifery, anaesthetic, and theatre staff may be required to provide the appropriate care.

It is the responsibility of the hospital managers to ensure appropriate protocols are available to guide staff in the number of staff that should be made available to care for an obese woman in the perinatal period.

Anaesthetic management

The physiological changes of pregnancy are significant enough to have major implications on the provision of anaesthesia. In obese women these effects can be compounded and the anaesthetist may have to manage a woman with seriously limited physiological reserve [2].

From a respiratory perspective, minute volume and oxygen demand increases. Pregnancy may lead to improvement in some respiratory function parameters in obese women, eg functional residual capacity usually improves. However, compared with non-obese women, a caesarean section is more likely to reduce lung volume and capacities in obese women [2].

The increases in heart rate, cardiac output, mean arterial pressure and supine hypotension associated with pregnancy are greater in women who are obese. Obstructive sleep apnoea is not uncommon in obese women but pregnancy does have some protective effects on this condition. However, pulmonary hypertension may be present in these patients. This is associated with a risk of right ventricular failure.

There is an increased incidence of hiatus hernia. The risk of regurgitation and aspiration of stomach contents is considerably increased in an obese woman [2].

Obesity considerably increases the technical challenges in providing safe and effective anaesthesia and analgesia care. Positioning of the obese patient on the operating table requires significant skill and additional staff. Venous access can be difficult to obtain and care needs to be taken not to damage hand and forearm veins during blood sampling in the antenatal period. Ultrasound may be required to assist with venous access. Difficult or failed intubation is more likely in the obese pregnant woman [2, 3]. Regional anaesthesia can be challenging due to difficulty with landmarks [2].

In the United Kingdom (UK) report, Saving Mother's Lives: Reviewing maternal deaths to make motherhood safer – 2003-2005:

- Two of the three cases of respiratory failure in obese women occurred where anaesthetic trainees, without immediate senior backup, administered the anaesthetics. Their relative inexperience was relevant because, in both cases, the problems were avoidable and once they had happened should have been retrievable. Additional skilled help may have been able to avert these deaths. These cases highlight the need for the involvement of Registered Specialist Consultant Anaesthetists in the management of obese pregnant patients requiring anaesthesia.
- The third case involved a morbidly obese patient with asthma where signs of postoperative respiratory failure were not recognised in the postoperative period. This case highlights the need for appropriate postoperative monitoring in such cases.

In the UK report, Perinatal Mortality 2009:

- Among women who had a stillbirth, 10% of the women had a BMI≥35 kgm², compared with 5% of all women who gave birth.

Assessment of the Fetus

Overweight and obesity during pregnancy are associated with an increased risk of complications. An accurate assessment of pregnancy dating should be performed late in the first or early in the second trimester of pregnancy.

The accuracy of first and second trimester serum screening tests for fetal anomalies is enhanced by an accurate assessment of gestational age and maternal BMI. This information should be routinely recorded on the laboratory request form.

Estimated Fetal weight

Technically it may be difficult to assess fetal lie and presentation clinically by palpation. Where this is the case, ultrasound examination is warranted taking into account its inherent limitations.

It is also difficult to detect growth restriction of the fetus in obese women. Estimation of the fetal weight by ultrasound should be considered for all obese women and offered to all morbidly obese women.

As maternal BMI increases, the risk of these adverse maternal and infant health outcomes also increases. [1] Dodd and colleagues present this information where risk ratios (RR) and 95% confidence intervals (CI) for health outcomes for women in various BMI categories are compared with women with normal BMI (less than 25) who have a reference or of 1.0 (Table 2). The relationships noted in Table 3 have not been adjusted for weight gain in pregnancy..

Post partum care

Women who are obese have a recognised increase in their risk of airway compromise and obstructive sleep apnoea. This places the woman at increased risk of aspiration, particularly following the administration of narcotic and sedative medications. In this setting, more frequent observation periods are appropriate.

Women who are obese during pregnancy are at increased risk of thrombo-embolic disease [5, 9]. Prolonged periods of immobility should be minimised where possible. Immobility during labour and birth, including caesarean section delivery, requires attention for thromboprophylaxis, including adequate calf stimulation and anticoagulation.

Women who are obese during pregnancy are at increased risk of caesarean birth [1, 6-14], and in the post-partum period, wound infection [7, 9, 16]. Regular wound care (both abdominal and perineal) should be provided. There is no evidence to inform the post partum use of prophylactic antibiotics in this group of women.

Women who are obese during pregnancy are at increased risk infection, including respiratory infections [7, 9, 16]. Women should receive regular physiotherapy to minimise the risk of infection and to encourage mobilisation.

Prolonged periods of immobility should be minimised where possible. Immobility during the post-partum period requires attention to pressure area care.

Women who are obese are less likely to initiate and maintain breast feeding of their infant [37]. Women should receive appropriate encouragement and assistance to establish breast feeding.

Prior to discharge from hospital, women should receive appropriate information and advice about contraception. Where hormonal methods of contraception are considered, (particularly estrogenic compounds), a risk assessment for thrombo-embolism should also be undertaken.

Prior to discharge from hospital, women should be offered a six-week post-partum appointment.

Maternal weight gain during pregnancy

There is substantial literature relating to maternal weight gain in pregnancy that has been summarised by the United States (US) Institute of Medicine (refer Table 3, below) [20]. Since 1970, most studies have reported average weight gains during pregnancy of between 10 and 15 kg, the rate of gain between 20 and 40 weeks of gestation ranging from 0.45 – 0.52 kg per week [20]. However, the extent of weight gain varied considerably more in overweight and obese women, with many obese women having excessive weight gains in pregnancy well beyond 15kg [20]. In the US Institute of Medicine report, a favourable pregnancy outcome was defined as the birth of an infant between 39 and 41 weeks gestation, with birth weight between 3.0 and 4.0kg [20].

Table 3: US Institute of Medicine weight gain recommendations during pregnancy according to maternal pre-pregnancy BMI [20]

Pre-pregnancy BMI category	Recommended weight gain
BMI <18.5 kg/m²	12.5 – 18.0 kg
BMI 18.5 – 24.9 kg/m²	11.5 – 16.0 kg
BMI 25 – 29.9 kg/m²	7.0 – 11.5 kg
BMI >30 kg/m²	5.0 – 9.0 kg

Recent prospective population series have evaluated the effect of BMI and weight gain in pregnancy, using five categories of BMI and three of weight gain, involving more than 240,000 women in Sweden [21]. Obese women with a weight gain during pregnancy of less than 8kg had decreased rates of large-for-gestational age babies, pre-eclampsia, caesarean section and operative vaginal birth [21]. However, this was at the expense of an increase in the incidence of small for gestational age infants [21]. Cedergren concluded that the optimal weight gain for women who are overweight in pregnancy should be less than 9.0kg, while for women who are obese, weight gain should be less than 6.0kg [22].

Effect of limiting weight gain in pregnancy

While there is considerable literature describing the increased maternal and infant risks associated with overweight and obesity during pregnancy, there is limited information related to the effect this has on maternal and infant health outcomes. In a recently reported systematic review of the literature – up to nine small randomised trials were identified involving a total of 743 women who were overweight or obese [23-27]. Women who were provided with a dietary intervention during pregnancy did not differ in the amount of gestational weight gained, when compared with women who received no dietary intervention. The effect on other maternal and infant health outcomes remains unclear.

Eight randomised trials were included in a meta-analysis [43], and since then an additional published randomised trial [44], and another presented in abstract form only [45]. The results, incorporating these additional studies, are presented in Table 4, where the effect size is weighted mean difference (WMD), or risk ratio (RR) with 95% confidence intervals (CI).

Table 4: Clinical outcomes from antenatal interventions for overweight and obese women [43]

Outcome	Studies	Number	Effect Size	95% Confidence Intervals
Large for gestational age infant	3	366	2.02	0.84 to 4.86
Mean gestational weight gain	5	540	WMD -3.92kg	-7.74 to -0.09
Pre-eclampsia	5	540	0.80	0.49 to 1.31
Gestational diabetes	5	496	0.60	0.35 to 1.03

Review conclusions:

The results from this systematic review clearly highlight the limited information currently available. While antenatal dietary and lifestyle interventions for pregnant women who are overweight or obese appears effective in limiting gestational weight gain, further prompt evaluation is required by high quality randomised trials with adequate power to detect important differences in clinical maternal and infant health outcomes.

It would be beneficial if an obese woman was offered an assessment by a dietician during the antenatal period, where appropriate weight control dietary advice could be provided.

Use of the standards

These standards are confined to determining the minimal requirements for the safe management of an obese obstetric woman in consideration of current research and professional standards of clinical practice.

These standards recognise the need for a maternity unit to:

- Define their responsibilities in the clinical management of an obese obstetric woman within a comprehensive perinatal health care system.
- Establish referral practices and retrieval transport services enabling the timely transfer of care between different hospitals as determined by a woman's care requirements; if aero-medical transport is likely to be required, early consultation with the SA Retrieval Services (MedSTAR) is to occur.
- Establish the necessary professional and technical infrastructure within their hospital to appropriately support the obese obstetric woman.

It is envisaged that these standards will be used by health care providers with the aim of providing an objective, standardised system for describing the scope of maternity services that can be provided to an obese obstetric woman by their hospital. It is recognised that the facilities made available for an obese obstetric woman should be conducive to the care that meets her physiological needs.

Health managers have the opportunity and obligation to determine their hospital's role for an obese obstetric woman within this service delineation framework.

Principles of the standards

General

The levels of maternity care described in these standards are differentiated by the complexity of clinical activity that is required by a hospital's maternity service to meet the needs of an obese obstetric woman. This is determined by the workforce, facilities, equipment, support services, education and organisational quality and risk management systems available at each hospital. The Standards for Maternal and Neonatal Services in SA 2010 should be referred to for additional detail.

Whilst it is recognised that variations in the services provided may occur due to unique circumstances, resources and limitations to services, these variations are to be documented and substantiated with an appropriate risk management policy and strategy.

Table 5: Best Practice Standards for the Management of the Obese Obstetric Woman

Best Practice Standard	Level of Evidence	Explanation
Although this policy pertains to pregnant women BMI >35kg/m^2, it is recommended that women with a booking BMI of >30kg/m^2 should be encouraged to limit their weight gain in pregnancy to 5 – 9kg or less.	Level 3-2 and 3-3	Good practice point (√)
Women with a BMI of >35kg/m^2 who at the antenatal booking visit or at anytime during the antenatal period should have a clinical assessment early in pregnancy, (preferably in the first trimester and before 20 weeks gestation if possible) to determine the presence of co-morbidities and risk factors. Level of expertise required to assess the woman should be determined by woman's BMI and also in consideration her co-morbidities and risk factors.	Level 3-2 and 3-3	Good practice point (√)
Women with a BMI of >35kg/m^2 who at the antenatal booking visit or at anytime during the antenatal period should plan to birth in a maternity unit with a designated birth hospital ie Level 3, 4, 5 or 6. The level of care should be determined by woman's BMI and also in consideration her co-morbidities and risk factors.	Level 3-2 and 3-3	Good practice point (√)
Women with a BMI of 35-39.9kg/m^2 who at the antenatal booking visit or at anytime during the antenatal period should have an assessment undertaken by a GP Obstetrician with an Advanced Diploma Obstetrics or Specialist Obstetrician and receive their pregnancy care and birth in a public hospital, Level 3, 4, 5 or 6.	Level 3-2 and 3-3	Good practice point (√)
Women with a BMI of >40kg/m^2 who at the antenatal booking visit or at anytime during the antenatal period should have a Specialist Obstetrician manage their care and should birth in a maternity unit with a designated birth hospital, Level 4, 5 or 6.	Level 3-2 and 3-3	Good practice point (√)
Women with a BMI of >40kg/m^2 who at the antenatal booking visit or at anytime during the antenatal period that reside more than 150kms from the public hospital, Level 4, 5 or 6 where they are booked to deliver should, in consideration of their risk factors and the potential need for more complex care, be directed, at no later than 36 weeks gestation, to relocate to a residence of their choice within the 150kms radius of that hospital.	Level 3-2 and 3-3	Good practice point (√)
Women with a BMI of >60kg/m^2 or weighs >170kg who at the antenatal booking visit or at anytime during the antenatal period should have a Specialist Obstetrician manage in their care and receive all their pregnancy care and birth in a public hospital with adult intensive care facilities.	Level 3-2 and 3-3	Good practice point (√)

The early identification of an obese woman, timely referral, assessment and provision of appropriate care and services will promote optimal health outcomes for the woman and her infant, and the efficient use of the finite health resources.

As for all pregnant women, in managing the risks associated with obesity in pregnancy and at birth, it is recommended that women:

Best Practice Standard	Level of Evidence	Explanation
Are encouraged to make lifestyle changes prior to pregnancy to minimise the risk of developing pregnancy complications.	Level 3-2 and 3-3	Good practice point (√)
Planning pregnancy should be encouraged to take peri-conceptual folate.	Level 3-2 and 3-3	Good practice point (√)
Have their BMI recorded in their SA Pregnancy Record at the first antenatal visit and upon admission for birthing.		Good practice point (√)
Have an accurate assessment of gestational age, and the woman's BMI recorded on the request form for first or second trimester serum screening used for the detection of fetal anomalies.	Level 3-2 and 3-3	Good practice point (√)
Are offered an opportunity for an assessment of their psychological well-being as part of their antenatal assessment.	Level 3-2 and 3-3	Good practice point (√)
Are screened for the development of gestational diabetes.	Level 3-2 and 3-3	Good practice point (√)
Have an ultrasound to estimate the date of confinement late in the first or early second trimester of pregnancy.	Level 3-2 and 3-3	Good practice point (√)
Are offered ultrasound for evaluation of fetal lie and presentation if this is not able to be determined clinically.	Level 3-2 and 3-3	Good practice point (√)
Undergo regular evaluation of pregnancy risk assessment, including the development of co-morbidities.	Level 3-2 and 3-3	Good practice point (√)
Have frequent observations particularly where narcotic medication is been administered.	Level 3-2 and 3-3	Good practice point (√)
With evidence of periods of immobility have thrombo-prophylaxis considered.	Level 3-2 and 3-3	Good practice point (√)
Receive appropriate advice about contraception prior to hospital discharge.	Level 3-2 and 3-3	Good practice point (√)
Be encouraged to attend a six-week post-partum check-up.	Level 3-2 and 3-3	Good practice point (√)
Have appropriate assistance to establish breast feeding.	Level 3-2 and 3-3	Good practice point (√)

Further to this, obese pregnant women:

Best Practice Standard	Level of Evidence	Explanation
Have access to appropriate equipment to enable accurate assessment ie bariatric weighing scales and appropriate sized BP cuff etc.	Level 3-2 and 3-3	Good practice point (√)
Be offered ultrasound screening at a Level 5 or 6 hospitals to better determine the presence of fetal congenital anomalies.	Level 3-2 and 3-3	Good practice point (√)
Undergo comprehensive anaesthetic review by a GP Anaesthetist or Specialist Anaesthetist at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible); if BMI > 40kg/m^2, this review should be undertaken by a Specialist Anaesthetist.	Level 3-2 and 3-3	Good practice point (√)
BMI > 40kg/m^2 at the antenatal booking visit or at anytime during the antenatal period, should, when admitted to the delivery suite, have the hospital's anaesthetic and theatre staff notified.	Level 3-2 and 3-3	Good practice point (√)
BMI > 40kg/m^2 at the antenatal booking visit or at anytime during the antenatal period, should, when admitted to the delivery suite have adequate intravenous access with an appropriately large bore cannula (16g or larger).	Level 3-2 and 3-3	Good practice point (√)
BMI > 40kg/m^2 at the antenatal booking visit or at anytime during the antenatal period, require appropriately experienced obstetric, midwifery and anaesthetic staff available for birth.	Level 3-2 and 3-3	Good practice point (√)
Have access to additional staff to provide appropriate care.	Level 3-2 and 3-3	Good practice point (√)
Will require regular attention to care of wounds (abdominal and perineal).	Level 3-2 and 3-3	Good practice point (√)
Require regular physiotherapy to minimise the risk of infection and to encourage mobilisation.	Level 3-2 and 3-3	Good practice point (√)
Require appropriate pressure area care during periods of immobility.	Level 3-2 and 3-3	Good practice point (√)
Have their care supported with detailed equipment checklists and standard operating procedures pertinent to their management made available to their health care providers.	Level 3-2 and 3-3	Good practice point (√)
Be managed in the most appropriate facility to complement their needs. The more complex obese obstetric woman and those with a BMI >60kg/m^2 or weigh >170kg who at the antenatal booking visit or at anytime during the antenatal period should only be managed in a South Australian public metropolitan hospital which provides perinatal services and has adult ICU facilities.	Level 3-2 and 3-3	Good practice point (√)
Have access to appropriate weight control dietary advice relevant to the post natal period prior to discharge.	Level 3-2 and 3-3	Good practice point (√)

Facilities

The scope of these standards does not include the standard operating procedures relevant to the use of bariatric equipment. In consideration of the Occupational Health Safety and Welfare issues for both an obese woman and staff involved in her care, each hospital providing maternity services should have detailed standard operating procedures for the safe use of all bariatric equipment, as well as equipment checklists and flow charts outlining specific service provision for an obese obstetric woman. It should be noted in the detailed standard operating procedures that an obese obstetric woman will require additional nursing, physiotherapy, and occupational therapy hours of care when compared to a non obese woman.

The detailed standard operating procedures should ensure an obese obstetric woman only has access to shower facilities and restricts an obese obstetric woman's access to baths in the hospital. Hospital unit managers and medical practitioners and registered midwives have a responsibility to inform the community of the limitations regarding the management of obese obstetric women within their hospital's perinatal services in their district.

Workforce implications

It is recommended that staff, facilities and equipment for the provision of maternity services at each level of hospital be appropriate to optimise the health outcomes for obese obstetric women and their babies. It is recognised that the management of an obese obstetric woman will at times demand additional resources than those required for contemporary care.

Determinants of the suitability of staff for the provision of maternity services, available at each level of hospital, are included in these standards, but credentialing, admitting rights and clinical privileges for these staff remain the responsibility of the employing health service.

To ensure optimal health outcomes, it should be recognised that an obese woman requires more complex care and should have access to a range of allied health staff to help reduce potential risks and adverse outcomes associated with obesity in pregnancy.

Health services providing less complex care must have the capacity to refer an obese obstetric woman early in pregnancy at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to more qualified perinatal staff for advice, whilst also providing the clinical capabilities to support the obese obstetric woman.

Workforce education

The level of service described in these standards determines the complexity of clinical activity that a hospital can provide to an obese obstetric woman. The presence of suitable professionals who hold specialist care qualifications compatible with the defined level of care is necessary.

Perinatal health service providers require appropriate education and training to ensure they are aware of the limitations and scope of obstetric services provided by their hospital and have appropriate competencies in the use of the specialist equipment used for an obese obstetric woman.

Description of perinatal service delineation for an obese obstetric woman

Level 1: Complexity of perinatal clinical care for an obese obstetric woman

Level 1 hospitals, as defined in the Standards for Maternity and Neonatal Services in SA 2010, and their available staff cannot provide a safe perinatal service. There is no capacity for the Level 1 hospital providing perinatal services to manage an obstetric woman including an obese obstetric woman.

Hospitals deemed to provide Level 1 health services as defined in the Standards for Maternity and Neonatal Services in SA 2010, should have appropriate formal policy/protocols in accordance with these standards which guide staff, ensuring all pregnant women are referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a maternity unit equipped with appropriate, suitable staff and facilities to manage the complexity of maternity care.

Level 1: Perinatal facilities for an obese obstetric woman

Hospitals deemed to provide Level 1 perinatal services, as defined in the Standards for Maternity & Neonatal Services in SA 2010, have:

- No designated maternity care facility requirements for the management of an obese obstetric woman.
- A responsibility to ensure an obese obstetric woman is safely transported by road or air, in vehicles with bariatric capacity. The transport plans for an obese obstetric woman should be cognisant of the following information:
  - Where appropriate, an obese obstetric woman should organise her own transport for travel.
  - If aero-medical transport of a woman is likely to be required, early consultation with MedSTAR is required.
  - Royal Flying Doctor Service (RFDS) Central Operations – fixed wing can accommodate a woman weighing < 150kg.
  - Australian helicopters can accommodate a woman weighing < 200kg.
  - SA Ambulance Service road ambulances can accommodate a woman weighing ≤ 180kg.
  - SA Ambulance Service can, upon request, facilitate additional equipment to transport a woman weighing <450kg.

Level 2: Complexity of perinatal clinical care for an obese obstetric woman

Level 2 hospitals providing perinatal services as defined in the Standards for Maternity and Neonatal Services in SA 2010, have a locally based general practitioner service and access to midwives who collectively provide 'low risk' antenatal and postnatal care, usually within the South Australian GP obstetric shared care program. There is no capacity for a Level 2 hospital, as defined in the Standards for Maternity and Neonatal Services in SA 2010, to manage an obese obstetric woman.

Perinatal service providers working in a Level 2 hospital are restricted to providing antenatal care for a woman with no complications who has a BMI of <35kg/ m^2 at the antenatal booking or any time during the antenatal period.

Pregnant women with a BMI of >35 – 39.9kg/m^2 at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside more than 150kms from a Level 3, 4, 5 or 6 public maternity hospital as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to birth their baby should be directed to relocate to a residence of their choice, within the 150kms radius of that Level 3, 4, 5 or 6 public hospital at no later than 36 weeks gestation.

Pregnant women with a BMI of >40 – 59.9kg/m^2 at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside more than 150kms from a Level 4, 5 or 6 public maternity hospital as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to deliver their baby should be directed to relocate to a residence of their choice within the 150kms radius of that Level 4, 5 or 6 public hospital at no later than 36 weeks gestation.

Pregnant women with a BMI of ≥60kg/m^2 or weighs ≥170kg at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside more than 150kms from a Level 5 or 6 public maternity hospital with an onsite intensive care unit as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to deliver their baby should be directed to relocate to a residence of their choice within the 150kms radius of that Level 5 or 6 public hospital at no later than 36 weeks gestation.

Hospitals deemed to provide Level 2 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, should have appropriate formal policy/protocols which guide staff, ensuring that any woman, who at the antenatal booking or at anytime during the antenatal period and has a:

- BMI of >30 – 34.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician with a Diploma Obstetrics, or a GP Obstetrician with an Advanced Diploma Obstetrics or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.
- BMI of >35 – 39.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician with an Advanced Diploma, or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.
- BMI of >40kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a Specialist Obstetrician, and a Specialist Anaesthetist; for assessment of pregnancy risk, determination of the presence of co-morbidities and to plan the management of her ongoing perinatal care.
- An anaesthetic assessment undertaken in accordance with the professional standards of the Australian and New Zealand College of Anaesthetists and can be undertaken by phone, teleconference, video conference or with the woman in person. The assessment should include:
  - Assessment of co-morbidities, particularly those associated which increased the risks of anaesthesia.
  - Assessment of difficulty of venous access.
  - Assessment of difficulty of intubation and plan for intubation if required.
  - Assessment for regional anaesthesia.
  - A plan for delivery including the consideration for early notification of an Anaesthetist (privileged to provide obstetric anaesthesia) on admission in labour.
- Be booked to birth in a hospital with a designated birthing unit (Level 3 to 6 perinatal facility), as defined in the Standards for Maternity and Neonatal Services in SA 2010.
- Safely transported by road or air, in vehicles with bariatric capacity. The transport plans for an obese obstetric woman should be cognisant of the following information:
  - Where appropriate, an obese obstetric woman should organise her own transport for travel.
  - If aero-medical transport of the woman is likely to be required, early consultation with MedSTAR should occur.
  - Royal Flying Doctor Service (RFDS) Central Operations – fixed wing can accommodate a woman weighing <150kg.
  - Australian helicopters can accommodate a woman weighing <200kg
  - SA Ambulance Service road ambulances can accommodate a woman weighing ≤180kg.
  - SA Ambulance Service can, upon request, facilitate additional equipment to transport a woman weighing <450kg.

Level 2: Perinatal facilities for an obese obstetric woman

Hospitals providing Level 2 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have:

- Limited antenatal facilities with no designated birthing facilities and therefore have no designated maternity care facility requirements for the management of an obese obstetric woman.
- A responsibility to have appropriate equipment available in the perinatal treatment areas, suitable for the management of an obese obstetric woman, including:
  - Alternate sized large adult cuff 35-44cm or larger as required for measurement of blood pressure.
  - Scales with the capacity to accurately weigh women ≤ 200kg.
  - Waiting room chairs able to accommodate a woman weighing ≤ 200kg.
  - Only floor mounted toilets installed – these comply with the Australian Standards 1172.1 and able to accommodate a woman weighing ≤ 400kg whereas wall mounted toilets do not comply with these standards.
  - Access to standard barouches able to accommodate a woman weighing ≤ 250kg
  - Standard wheel chairs able to accommodate a woman weighing ≤ 120kg.

Level 3: Complexity of perinatal clinical care for an obese obstetric woman

Hospitals providing Level 3 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have appropriate staffing and facilities enabling the provision of comprehensive care for an uncomplicated pregnancy deemed to be 'low risk' in accordance with the South Australian Perinatal Practice Guidelines.

Perinatal service providers working in a Level 3 hospital are restricted to managing the perinatal period, including birth, for a woman deemed 'low risk' who has a BMI of <35kg/m^2 at the antenatal booking or any time during the antenatal period.

Pregnant women with a BMI of ≥35 – 39.9kg/m^2 at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside more than 150kms from a Level 3, 4, 5 or 6 public maternity hospital as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to birth their baby should be directed to relocate to a residence of their choice, within the 150kms radius of that Level 3, 4, 5 or 6 public hospital at no later than 36 weeks gestation.

Pregnant women with a BMI of >40 – 59.9kg/m^2 at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside more than 150kms from a Level 4, 5 or 6 public maternity hospital as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to deliver their baby should be directed to relocate to a residence of their choice within the 150kms radius of that Level 4, 5 or 6 public hospital at no later than 36 weeks gestation.

Pregnant women with a BMI of ≥60kg/m^2 or weighs ≥170kg (which ever is the lowest) at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside more than 150kms from a Level 5 or 6 public maternity hospital with an onsite intensive care unit as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to deliver their baby should be directed to relocate to a residence of their choice within the 150kms radius of that Level 5 or 6 public hospital with an onsite intensive care unit at no later than 36 weeks gestation.

Hospitals deemed to provide Level 3 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, should have appropriate formal policy/protocols which guide staff, ensuring that any woman, who at the antenatal booking or at anytime during the antenatal period and has a:

- BMI of >30 – 34.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician with a Diploma Obstetrics, or a GP Obstetrician with an Advanced Diploma Obstetrics or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.
- BMI of >35 – 39.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician (Diploma or Advanced Diploma), or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.

- BMI of ≥40kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a Specialist Obstetrician, and a Specialist Anaesthetist; for assessment of pregnancy risk, determination of the presence of co-morbidities and to plan the management of her ongoing perinatal care.
- An anaesthetic assessment undertaken in accordance with the professional standards of the Australian and New Zealand College of Anaesthetists and can be undertaken by phone, teleconference, video conference or with the woman in person. The assessment should include:
  - Assessment of co-morbidities, particularly those associated which increased the risks of anaesthesia.
  - Assessment of difficulty of venous access.
  - Assessment of difficulty of intubation and plan for intubation if required.
  - Assessment for regional anaesthesia.
  - A plan for delivery including the consideration for early notification of an Anaesthetist (privileged to provide obstetric anaesthesia) on admission in labour.
- Safe transport needs; by road or air, in vehicles with bariatric capacity. The transport plans for an obese obstetric woman should be cognisant of the following information:
  - Where appropriate, an obese obstetric woman should organise her own transport for travel.
  - If aero-medical transport of a woman is likely to be required, early consultation with MedSTAR is required.
  - Royal Flying Doctor Service (RFDS) Central Operations – fixed wing can accommodate a woman weighing <150kg.
  - Australian helicopters can accommodate a woman weighing <200kg.
  - SA Ambulance Service road ambulances can accommodate a woman weighing ≤180kg.
  - SA Ambulance Service can, upon request, facilitate additional equipment to transport a woman weighing <450kg.

Level 3: Perinatal facilities for an obese obstetric woman

Hospitals providing Level 3 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have:

- A range of antenatal, birthing and postnatal care facilities in addition to the support services as indicated in the Standards for Maternity and Neonatal Services in SA 2010.
- A responsibility to manage the Occupational Health Safety and Welfare of perinatal staff and have appropriate equipment available in the perinatal treatment areas, suitable for the management of an obese obstetric woman, including:
  - Alternate sized large adult cuff 35-44cm or larger as required for measurement of blood pressure.
  - Appropriately sized woman gowns that will ensure a woman's modesty is maintained.
  - Scales with the capacity to accurately weigh women ≤ 200kg.
  - Waiting room chairs able to accommodate a woman weighing ≤ 200kg.
  - Examination couch able to accommodate a woman weighing ≤ 200kg.
  - Only installing floor mounted toilets – these comply with the Australian Standards 1172.1 and able to accommodate a woman weighing ≤ 400kg whereas wall mounted toilets do not comply with these standards.
  - Access to standard barouches able to accommodate a woman weighing ≤ 250kg.
  - Access to shower facilities only and restrict the bariatric obstetric woman who weighs ≥ 130kg access to baths in the hospital.
  - Wheel chairs able to accommodate a woman weighing ≤ 160kg.
  - A 'Hover matt' – a lateral Transfer Device able to accommodate a woman weighing ≤ 300kg.
  - Standard labour ward bed able to accommodate a woman weighing ≤ 227kg.
  - Patient lifter and slings able to accommodate a woman weighing ≤ 200kg.

– Standard electric hospital 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 ≤ 267kg NB without self help poles fitted as these are only able to accommodate a woman weighing ≤ 75kg.

– Electric bed mover able to fit electric beds and wheel chairs.

– Electric recliner chair able to accommodate a woman weighing ≤ 250kg.

– Electronic calf stimulators.

Level 4: Complexity of perinatal clinical care for an obese obstetric woman

Hospitals providing Level 4 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have appropriate staffing with facilities enabling the provision of comprehensive care for a pregnancy deemed to be 'low risk' in accordance with the South Australian Perinatal Practice Guidelines and able to extend this care for some pregnancy related illnesses that remain stable.

Perinatal service providers working in a Level 4 public hospital, as defined in the Standards for Maternity and Neonatal Services in SA 2010, are restricted to managing the perinatal period for a woman deemed 'low risk' with complications that remain stable and who has a BMI <40kg/m^2 at antenatal booking or any time during the antenatal period. Perinatal service providers working in a Level 4 public hospital can provide this care for the woman with a BMI 40-59.9kg/m^2 when the care is provided by an on site Specialist Obstetrician and there is access to assessment by a Specialist Anaesthetist.

Whilst Level 4 public hospital service delineation as defined in the Standards for Maternity and Neonatal Services in SA 2010 includes the management of 'low risk' twins ≥ 35 weeks gestation, where the neonates weigh ≥ 2000g, in the presence of a BMI 35-39.9kg/m^2 the Level 4 perinatal service is restricted to manage the woman with a dichorionic twin pregnancy ≥ 38 weeks gestation.

Pregnant women with a BMI of ≥35 – 39.9kg/m^2 at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside less than150kms from a Level 3, 4, 5 or 6 public maternity hospital as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to birth their baby should be directed to relocate to a residence of their choice, within the 150kms radius of that Level 4, 5 or 6 public hospital at no later than 36 weeks gestation.

Pregnant women with a BMI of >40 – 59.9kg/m^2 at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside less than 150kms from a Level 4, 5 or 6 public maternity hospital, as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to deliver their baby should be directed to relocate to a residence of their choice within the 150kms radius of that Level 5 or 6 public hospital at no later than 36 weeks gestation.

Pregnant women with a BMI of ≥60kg/m^2 or weighs ≥170kg (which ever is the lowest) at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside less than 150kms from a Level 5 or 6 public maternity hospital with an onsite intensive care unit as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to deliver their baby should be directed to relocate to a residence of their choice within the 150kms radius of that Level 5 or 6 public hospital with an onsite intensive care unit at no later than 36 weeks gestation.

Hospitals deemed to provide Level 4 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, should have appropriate formal policy/protocols which guide staff, ensuring that any woman, who at the antenatal booking or at anytime during the antenatal period and has a:

> BMI of >30 – 34.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician with a Diploma Obstetrics, or a GP Obstetrician with an Advanced Diploma Obstetrics or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.

> BMI of >35 – 39.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician (Diploma or Advanced Diploma), or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.

- BMI of ≥40kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a Specialist Obstetrician, and a Specialist Anaesthetist; for assessment of pregnancy risk, determination of the presence of co-morbidities and to plan the management of her ongoing perinatal care.
- An anaesthetic assessment is undertaken in accordance with the professional standards of the Australian and New Zealand College of Anaesthetists and can be undertaken by phone, teleconference, video conference or with the woman in person. The assessment should include:
  - Assessment of co-morbidities, particularly those associated which increased the risks of anaesthesia.
  - Assessment of difficulty of venous access.
  - Assessment of difficulty of intubation and plan for intubation if required.
  - Assessment for regional anaesthesia.
  - A plan for delivery including the consideration for early notification of an Specialist Anaesthetist on admission in labour.
- Safely transported by road or air, in vehicles with bariatric capacity. The transport plans for an obese obstetric woman should be cognisant of the following information:
  - Where appropriate, an obese obstetric woman should organise her own transport for travel.
  - If aero-medical transport of a woman is likely to be required, early consultation with MedSTAR should occur.
  - Royal Flying Doctor Service (RFDS) Central Operations – fixed wing can accommodate a woman weighing <150kg.
  - Australian helicopters can accommodate a woman weighing <200kg.
  - SA Ambulance Service road ambulances can accommodate a woman weighing ≤ 180kg.
  - SA Ambulance Service can, upon request, facilitate additional equipment to transport a woman weighing <450kg.

Level 4: Perinatal facilities for an obese obstetric woman

Hospitals providing Level 4 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have:

- A range of antenatal, birthing and postnatal care facilities in addition to the support services as outlined in the Standards for Maternity and Neonatal Services in SA 2010.
- A responsibility to have appropriate equipment available in the perinatal treatment areas, suitable for the management of an obese obstetric woman, including:
  - Alternate sized large adult cuff 35-44cm or larger as required for measurement of blood pressure.
  - Appropriately sized woman gowns that will ensure a woman's modesty is maintained.
  - Scales with the capacity to accurately weigh women ≤200kg.
  - Waiting room chairs able to accommodate a woman weighing ≤200kg.
  - Examination couch able to accommodate a woman weighing ≤200kg.
  - Only installing floor mounted toilets – these comply with the Australian Standards 1172.1 and able to accommodate a woman weighing ≤400kg whereas wall mounted toilets do not comply with these standards.
  - Access to standard barouches able to accommodate a woman weighing ≤250kg.
  - Access to shower facilities only and restrict the bariatric obstetric woman who weighs ≥130kg access to baths in the hospital.
  - Wheel chairs able to accommodate a woman weighing ≤160kg.
  - A 'Hover matt' – a lateral Transfer Device able to accommodate a woman weighing ≤300kg.
  - Standard labour ward bed able to accommodate a woman weighing ≤227kg.

– A suitable ultrasound machine should be available for the anaesthetist to assist with insertion of venous cannula in those women with difficult venous access.

– A patient lifter and slings able to accommodate a woman weighing ≤200kg.

– Standard electric hospital 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 ≤267kg NB without self help poles fitted as these are only able to accommodate a woman weighing ≤75kg.

– Electric bed mover able to fit the unit's electric beds and wheel chairs.

– Electric recliner chair able to accommodate a woman weighing ≤250kg.

– Electronic calf stimulators.

Level 5 or 6 without an onsite adult Intensive Care Unit: Complexity of perinatal clinical care for an obese obstetric woman

Hospitals without an onsite adult Intensive Care Unit providing Level 5 or Level 6 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have appropriate staffing and facilities enabling the provision of comprehensive care for a pregnancy deemed 'medium – high' risk, in accordance with the South Australian Perinatal Practice Guidelines and are able to extend this care for most pregnancy related illnesses.

Perinatal service providers working in a Level 5 or Level 6 unit public maternity hospital, as defined in the Standards for Maternity and Neonatal Services in SA 2010, without an onsite adult Intensive Care Unit are restricted to managing the woman, who at antenatal booking or any time during the antenatal period is deemed to be 'medium – high' risk, who has a BMI of <60/ kgm^2 or weighs <170kg (which ever is the lowest).

Pregnant women with a BMI of ≥60kg/ m^2 or weighs ≥170kg (which ever is the lowest) at the antenatal booking or any time during the antenatal period or those deemed to be of significant risk who reside more than 150kms from a Level 5 or 6 public maternity hospital with an onsite intensive care unit, as defined in the Standards for Maternity and Neonatal Services in SA 2010, where they are booked to deliver their baby should be directed to relocate to a residence of their choice within the 150kms radius of that Level 5 or 6 public hospital with an onsite intensive care unit at no later than 36 weeks gestation.

Hospitals without an onsite adult Intensive Care Unit deemed to provide Level 5 perinatal services, public maternity hospital as defined in the Standards for Maternity and Neonatal Services in SA 2010, should have appropriate formal policy/protocols which guide staff, ensuring that any woman that has a:

- BMI of >30 – 34.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician with a Diploma Obstetrics, or a GP Obstetrician with an Advanced Diploma Obstetrics or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.
- BMI of >35 – 39.9kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a GP Obstetrician (Diploma or Advanced Diploma), or Specialist Obstetrician and a GP Anaesthetist (privileged to provide anaesthesia and regularly provides obstetric anaesthesia) or a Specialist Anaesthetist.
- BMI of ≥40kg/m^2 is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a Specialist Obstetrician, and a Specialist Anaesthetist.
- BMI of ≥60kg/m^2 or weighs ≥170kg (which ever is the lowest) at antenatal booking or any time during the antenatal period is referred at the earliest opportunity, (preferably in the first trimester and before 20 weeks gestation if at all possible) to a Specialist Obstetrician who will perform an assessment of pregnancy risk, determine the presence of co-morbidities and manage her ongoing perinatal care in a public Level 6 hospital public maternity hospital, as defined in the Standards for Maternity and Neonatal Services in SA 2010, with adult Intensive Care Unit facilities within the Adelaide metropolitan area.

- Supported by an anaesthetic risk assessment, at the earliest opportunity that is undertaken by a Specialist Anaesthetist. This assessment should be undertaken in accordance with the professional standards of the Australian and New Zealand College of Anaesthetists. This assessment should include:
  - Assessment of co-morbidities, particularly those associated which increased the risks of anaesthesia.
  - Assessment of difficulty of venous access.
  - Asessment of difficulty of intubation and plan for intubation if required.
  - Assessment of for regional anaesthesia.
  - A plan for delivery including the consideration for early notification of a Specialist Anaesthetist on admission in labour.
- Safely transported by road or air, in vehicles with bariatric capacity. The transport plans for an obese obstetric woman should be cognisant of the following information:
  - Where appropriate, an obese obstetric woman should organise her own transport for travel.
  - If aero-medical transport of a woman is likely to be required, early consultation with MedSTAR is required.
  - Royal Flying Doctor Service (RFDS) Central Operations – fixed wing can accommodate a woman weighing <150kg.
  - Australian helicopters can accommodate a woman weighing <200kg.
  - SA Ambulance road ambulances can accommodate the woman weighing ≤180kg.
  - SA Ambulance can, upon request, facilitate additional equipment to transport a woman weighing <450kg.

Level 5 or 6 without an onsite adult Intensive Care Unit: Perinatal facilities for an obese obstetric woman

Hospitals providing Level 5 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have:

- A range of antenatal, birthing and postnatal care facilities in addition to the support services as outlined in the Standards for Maternity and Neonatal Services in SA 2010.
- A responsibility to have appropriate equipment available in the perinatal treatment areas, suitable for the management of an obese obstetric woman, including:
  - Alternate sized large adult cuff 35-44cm or larger as required for measurement of blood pressure.
  - Appropriately sized woman gowns that will ensure a woman's modesty is maintained.
  - Scales with the capacity to accurately weigh women ≤200kg.
  - Waiting room chairs able to accommodate a woman weighing ≤200kg.
  - Examination couch able to accommodate a woman weighing ≤200kg.
  - Only installing floor mounted toilets – these comply with the Australian Standards 1172.1 and able to accommodate a woman weighing ≤400kg whereas wall mounted toilets do not comply with these standards.
  - Access to standard barouches able to accommodate a woman weighing ≤250kg.
  - Access to shower facilities only and restrict the bariatric obstetric woman who weighs ≥130kg access to baths in the hospital.
  - Wheel chairs able to accommodate a woman weighing ≤160kg.
  - A 'Hover matt' – a lateral Transfer Device able to accommodate a woman weighing ≤300kg.
  - Standard labour ward bed able to accommodate a woman weighing ≤227kg.
  - A suitable ultrasound machine should be available for the anaesthetist to assist with insertion of venous cannula in those women with difficult venous access.
  - A patient lifter and slings able to accommodate a woman weighing ≤200kg.

– Standard electric hospital 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 ≤267kg NB without self help poles fitted as these are only able to accommodate a woman weighing ≤75kg.

– Electric bed mover able to fit electric beds and wheel chairs.

– Electric recliner chair able to accommodate a woman weighing ≤250kg.

– Electronic calf stimulators.

Level 5 or 6 with an onsite adult Intensive Care Unit: Complexity of perinatal clinical care for an obese obstetric woman

Hospitals providing Level 5 or 6 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, with an adult Intensive Care Unit on site have appropriate staffing and facilities to provide comprehensive care for 'low – high risk' obese obstetric women. The management model is multidisciplinary and provides for the care for those more complex conditions associated with obesity in pregnancy including those requiring intensive care.

Perinatal service providers working in a Level 6 perinatal service, as defined in the Standards for Maternity and Neonatal Services in SA 2010, with an adult Intensive Care Unit onsite are able to manage the perinatal period for all obese obstetric women, regardless of their BMI or body weight and should have appropriate formal policy/protocols which guide staff in this care. A Level 6 hospital, as defined in the Standards for Maternity and Neonatal Services in SA 2010, with an adult Intensive Care Unit on site should be prepared to accept the perinatal care responsibility of any obese obstetric woman from across South Australia with a BMI of ≥60kg/m^2 or weighs ≥170kg at antenatal booking or any time during the antenatal period.

Level 5 or 6 with an onsite adult Intensive Care Unit: Perinatal facilities for an obese obstetric woman

Health units with an adult Intensive Care Unit on site, providing Level 6 perinatal services, as defined in the Standards for Maternity and Neonatal Services in SA 2010, have:

> A comprehensive range of antenatal, birthing and postnatal care facilities in addition to the support services as outlined in the Standards for Maternity and Neonatal Services in SA 2010.

> A responsibility to have appropriate equipment available in the perinatal treatment areas, suitable for the management of an obese obstetric woman.

Equipment required in all treatment areas:

> Alternate sized large adult cuff 35-44cm or larger as required for measurement of blood pressure.

> Appropriately sized woman gowns that will ensure a woman's modesty is maintained.

> Scales with the capacity to accurately weigh women ≤200kg.

> Waiting room chairs able to accommodate a woman weighing ≤200kg.

> Examination couch able to accommodate a woman weighing ≤200kg.

> Only installing floor mounted toilets – these comply with the Australian Standards 1172.1 and able to accommodate a woman weighing ≤400kg whereas wall mounted toilets do not comply with these standards.

> Access to standard barouches able to accommodate a woman weighing ≤250kg.

> Access to shower facilities only and restrict an obese obstetric woman who weighs ≥130kg access to baths in the hospital.

> Wheel chairs able to accommodate a woman weighing ≤160kg.

> A 'Hover matt' – a lateral Transfer Device able to accommodate a woman weighing ≤300kg.

> A patient lifter and slings able to accommodate a woman weighing ≤200kg.

> Standard electric hospital 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 ≤267kg NB without self help poles fitted as these are only able to accommodate a woman weighing ≤75kg.

> Electric bed mover able to fit electric beds and wheel chairs.

> Electric recliner chair able to accommodate a woman weighing ≤250kg.

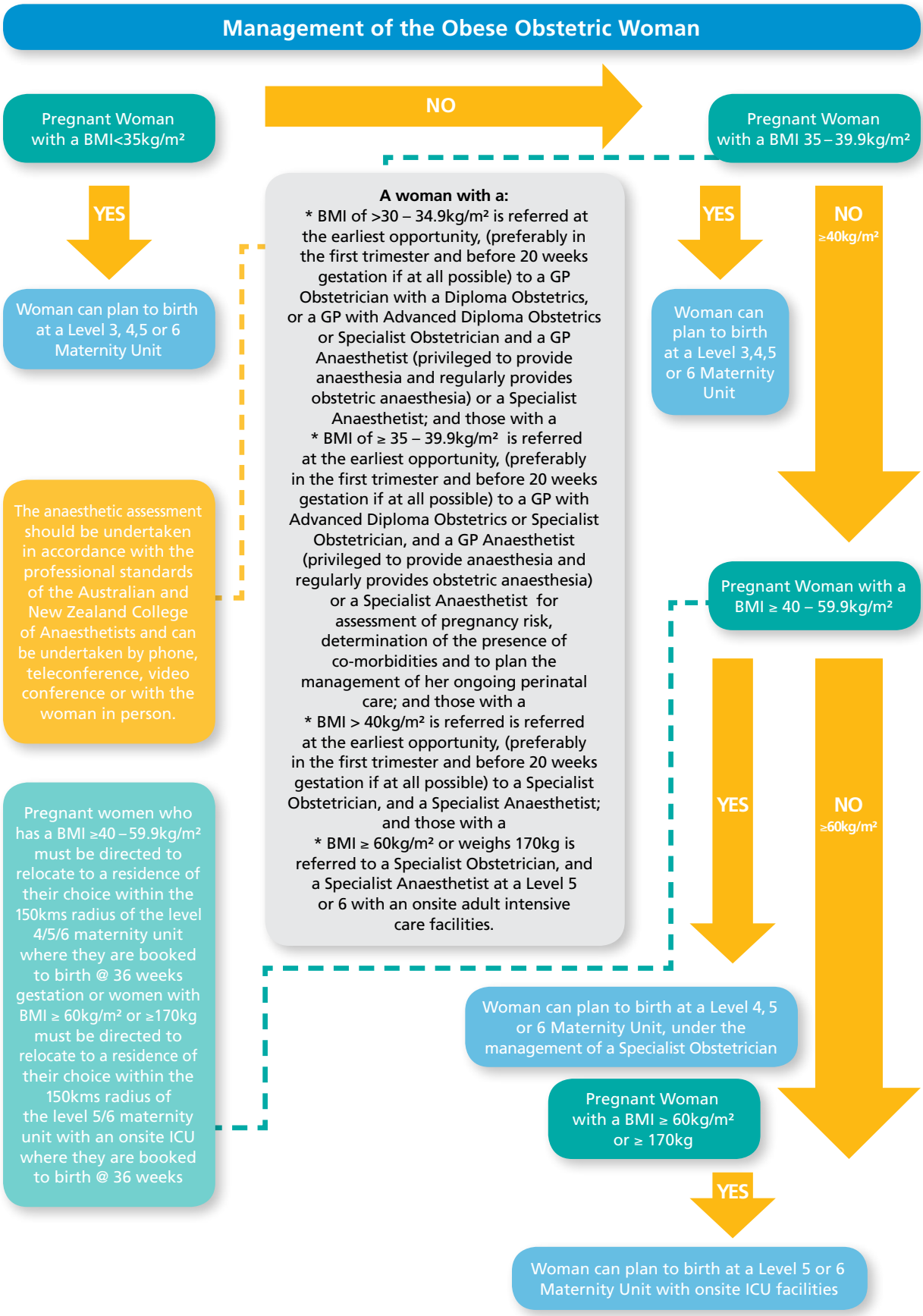
Equipment required in Labour Wards:

- Standard labour ward bed able to accommodate a woman weighing ≤227kg.
- A suitable ultrasound machine should be available for the anaesthetist to assist with insertion of venous cannula in those women with difficult venous access.

Equipment required in Operating Rooms:

- Theatre bed able to accommodate a woman weighing >160kg up to and including <450kg in supine position only (225kg – <450kg has specific restrictions when not in supine position). Theatre bed should include:
  - at least two (2) bed width extenders
  - additional arm boards
  - safety straps used to support the patent when in lateral tilt position
  - stirrups able to support woman >160kg – <360kg
  - some restrictions on the tilting capabilities for a woman >225kg.
- Positioning wedge sandbags (used when the bed is unable to be tilted).
- Retractors suitable for retracting the panis/apron for a woman weighing >160kg.
- Long and large surgical equipment.
- Electronic calf stimulators.

Flow Chart – Management of Obese Obstetric Women in South Australia



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