KEY MESSAGES

• Pre-pregnancy obesity is associated with significant adverse pregnancy outcomes for mother and infant.

• The rates of pre-pregnancy obesity are rising and strategies to address this concerning trend are urgently required.

• Women need to be provided with appropriate information on the importance of a healthy weight for themselves and future children.

• Health professionals should be educated in providing information to women throughout their reproductive lifespan to ensure adequate sensitive counselling and referral to a weight reduction specialist, if required.

• Further research is needed to identify appropriate public health messages and information for individual women to reduce pre-pregnancy obesity.

• The lack of evidence on the effectiveness of pre-conception or inter-conception interventions in overweight or obese women to improve pregnancy outcomes precludes specific practice recommendations beyond encouraging appropriate diet and physical activity. Further research is required.

• The lack of evidence for effective interventions to prevent postpartum weight retention also precludes clear recommendations. Further research is required.

• The complex issue of weight loss and the inter-relationship with social and environmental determinants should be considered by health professionals when offering advice.
1 Purpose of this statement

This statement is designed to provide information based on the best evidence available at the time of publication to assist in decision-making for women with pre-pregnancy or inter-pregnancy obesity. The contents of this statement are based on evidence identified from a search conducted in June 2017 of existing clinical practice guidelines and position statements from relevant professional organisations/governments, Google, Medline, the Guideline International Network guideline library and the Cochrane Database of Systematic Reviews.

We considered evidence from existing clinical practice guidelines for women who are overweight or obese pre-pregnancy or inter-pregnancy. We considered evidence for any intervention aimed at achieving an optimal weight or in reducing weight for women who are overweight or obese pre-pregnancy or inter-pregnancy. The outcomes of interest were weight loss, weight at time of subsequent pregnancy and outcome of subsequent pregnancy.

2 Pre-pregnancy obesity rates

Rates of obesity have been rising globally over the last few decades.\(^1\) Pre-pregnancy obesity is generally classified using the World Health Organization definitions of overweight (body mass index [BMI] of 25 to 29.99 kg/m\(^2\)) and obese ( >30 kg/m\(^2\)).\(^1\)

The New Zealand Health Survey 2012/13 reported 28% of women aged between 25 to 34 years were classified as overweight and 29% as obese. For women aged 35 to 44 years, 28% were classified as overweight and 33% as obese. Māori women have rates of obesity 1.5 times greater than all women and Pacific Island women have rates 2 times greater.\(^2\)

Data from the Australian Health Survey 2011-2012 reported that 21% of women aged 25 to 34 years were classified as overweight and 21% as obese. For women aged 35 to 44 years, 28% were classified as overweight and 28% as obese.\(^3\) Aboriginal and Torres Strait Islander women had rates of obesity 1.8 times that of non-Indigenous women.\(^4\) The rising obesity rates are placing a concerning number of women and their babies at risk.

3 Obstetric risks associated with a high BMI pre-pregnancy

For the mother, obesity is associated with increased risk of caesarean section.\(^5\)
induction of labour, instrumental birth, postpartum haemorrhage, infection, longer duration of hospital stay, gestational diabetes, pre-eclampsia, gestational hypertension, preterm prelabour rupture of membranes, antenatal and postnatal depression, delay in the initiation of breastfeeding and earlier cessation of breastfeeding. The National Institute for Health and Care Excellence notes that reduced mobility during labour can increase the requirement for analgesia, which may be difficult to administer in obese women, and this in turn may increase the need for general anaesthesia with its associated risks.

For the infant, maternal obesity has been associated with an increased risk of birth trauma; miscarriage, stillbirth, neonatal and infant death; being born preterm (<37 weeks’ gestation) and very preterm (< 32 weeks’ gestation); macrosomia; large-for-gestational age (LGA); admission to the neonatal intensive care unit (NICU); as well as some congenital abnormalities including neural tube defects, cardiac abnormalities and anorectal anomalies. Overweight and obesity is the leading potentially modifiable contributor to stillbirth in high income settings.

There is some evidence to suggest that children of obese mothers have an increased risk of later cognitive and neurodevelopmental problems and overweight/obesity and metabolic syndrome.

**Are there any effective interventions for reducing pre-pregnancy obesity?**

Expert opinion suggests that controlling pre-pregnancy weight and prevention of obesity in women of child-bearing age can have a significant impact on improving maternal and infant outcomes. A Cochrane systematic review found no randomised controlled trials that assessed the effect of pre-conception health programmes and interventions in overweight and obese women with the purpose of improving pregnancy outcomes.

Successful weight loss involves a complex interaction of multiple interventions which are influenced by social and environmental determinants which can limit the effectiveness.

Poston et al. identified one behavioural intervention targeted at pre-conception or inter-conception in women. Changes were seen in the consumption of folic acid and in the reading of nutritional labels, although the latter behavioural change was short term. The intervention group had lower weight and BMI at 12 months follow-up. The authors suggested that the intervention may be effective in helping women reduce weight pre-pregnancy, especially for women who are obese.

Two recent systematic reviews reported that combined diet and exercise were effective in reducing weight in the postpartum period compared with usual care.

Bariatric surgery is an option for some women to reduce their weight and there is evidence to suggest that there are improved maternal and infant outcomes compared with no bariatric surgery for reduced risk of pre-eclampsia, gestational diabetes, LGA infants, preterm birth and admission to neonatal intensive care. Following bariatric surgery, there is an increased risk of having a small-for-gestational age (SGA), preterm birth and admission to NICU. The risk for being born SGA is reduced when the procedure used is laparoscopic adjustable gastric banding. Risks for preterm birth and admission to NICU are increased when the time from surgery to birth is less than two years.
### Key points for health professionals in identifying and managing obesity pre-pregnancy

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<th>Management</th>
<th>Key points</th>
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<td>Care of obese women considering pregnancy</td>
<td>- Weight loss is a complex issue and the inter-relationship with social and environmental determinants should be considered by health professionals when offering care and advise.</td>
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<td>- Periodic health examinations and other appointments for gynaecological care prior to pregnancy offer ideal opportunities to raise the issue of weight loss before conception.</td>
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<td>- If obesity is identified, offer appropriate antenatal referral to a dietician/exercise specialist.</td>
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<td>- Health professionals should use any appropriate opportunity to provide those women with a BMI of 30 or more with information about the health benefits (for themselves and the infant they may conceive) of losing weight before becoming pregnant. This can include information on the increased health risks their weight poses to themselves and would pose to their unborn child.</td>
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<td>- Sensitivity towards the woman is required to ensure information is provided within a positive, supportive framework.</td>
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<td>- General Practitioners, dietitians and other appropriately trained health professionals should advise, encourage and help women with a BMI of ≥30 kg/m² to reduce weight before becoming pregnant by explaining that even losing 5-10% of their weight could have significant health benefits and increase their chance of a pregnancy. Encourage further weight loss, to achieve a BMI within the healthy range (between 18.5 and 24.9 kg/m²), using evidence based behaviour change techniques, without stigmatising the woman if weight loss goals are not achieved.</td>
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<td>Provide information about the impact of obesity on pregnancy outcome for women of child-bearing age</td>
<td>- Health professionals should support and encourage women to participate in weight reduction programmes including diet, physical activity and behaviour modification before the woman attempts the first pregnancy and between subsequent pregnancies.</td>
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<td>- Maternity and primary care providers should identify women who are obese at pre-conception appointments, monitor weight and encourage women in making lifelong sustainable lifestyle (nutrition and exercise) changes that support ongoing health and weight management.</td>
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<td>- Pre-conception advice should include encouraging women to engage in daily exercise as per national guidelines.</td>
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<td>- Nutrition consultation should be offered to all overweight or obese women, and they should be encouraged to follow an exercise programme. Nutrition and exercise counselling should continue postpartum and before attempting another pregnancy.</td>
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<td>- Women considering pregnancy should be encouraged to take a supplement containing 5 mg folate and 150 µg iodine pre-conception.</td>
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<td>- Offer psychological support and appropriate referral if antenatal depression is identified.</td>
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<td>Postpartum health information</td>
<td>- In the postpartum period, health professionals should provide information and support, in a sensitive manner on appropriate dietary and exercise interventions to prevent retention of gestational weight gain, as this is an important factor for inter-pregnancy weight gain and increasing BMI in subsequent pregnancy.</td>
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<td>- Information should include that even a modest gain 1-2 BMI units (kg/m²) between pregnancies may increase the risk of gestational hypertension, gestational diabetes and infant macrosomia.</td>
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<td>Care of women after bariatric surgery</td>
<td>- Conception during a period of rapid weight loss (such as seen immediately following bariatric surgery) is not encouraged.</td>
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<td>- Women who have had bariatric surgery pre-pregnancy should be referred to a dietician, since they may require additional nutritional supplementation during pregnancy including vitamin B12, iron, folate, vitamin D and calcium.</td>
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<td>- Following gastric bypass surgery, women may be unable to tolerate oral glucose screening/tolerance tests. Consider using HbA1c as a pre-conception screening tool for type 2 diabetes.</td>
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<td>- Women should be made aware of increased risks of preterm birth and admission to neonatal intensive care if baby if birth occurs less than two years after surgery.</td>
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6 Working Group

Working group: Julie Brown (NZ), Penny Sheehan (Aus), Catherine Nagle (Aus), Emma McGoldrick (NZ), Chris McKinlay (NZ), Jane Raymond (Aus), Helena Teede (Aus), Christopher Nolan (Aus), Alison Kent (Aus), Paige van der Pligt (Aus), Andrea Walker (Aus), Helen Paterson (NZ), Linda Sweet (Aus), Jodie Dodd (Aus), Danielle Quittner (Aus), Rosalie Grivell (Aus), Vicki Flanady (Aus).

7 References

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