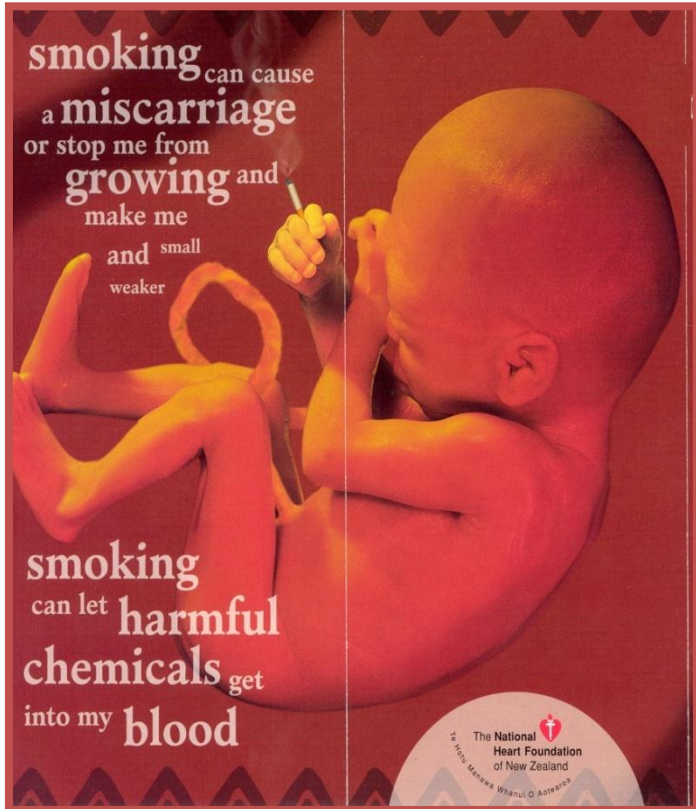


Smoking in Pregnancy



Dr Deralie Flower

June 2011

IS BAD FOR YOUR BABY.

The End.



Smoking in pregnancy

What's Your Poison?

When you smoke you inhale up to 4000 chemicals including these poisons:

Hydrogen Cyanide
(Poison used in gas chambers)

Toluidine

Ammonia
(Floor Cleaner)

Urethane

Acetone
(Paint Stripper)

Naphthylamine

Methanol
(Rocket fuel)

Toluene
(Industrial solvent)

Pyrene

Arsenic
(White Ant Poison)

Dibenzacridine

Dimethylnitrosamine

Phenol

Napthalene
(Mothballs)

Butane
(lighter fuel)

Cadmium
(used in car batteries)

Polonium - 210

Carbon Monoxide
(Poisonous gas in car exhausts)

DDT
(Insecticide)

Benzopyrene

Vinyl Chloride

It's enough to make you sick. Very sick.

Quit

Known cancer causing substances

Victorian Smoking & Health Program
Telephone: (03) 663 7777

- Nicotine is not the main problem,
- BUT....
- It CAN be part of the solution

Smoking and reproductive outcomes

- Infertility ↑ 25%
- Miscarriage ↑ 25%
- Ectopic pregnancy ↑ 90%
- Cleft lip ↑ 35%
- Abruptio & placenta praevia ↑ 60%
- Preterm birth ↑ 70%
- SGA ↑ 100-200%
- Stillbirth ↑ 100%
- Preeclampsia ↓ 30%



Smoking and pregnancy complications

- Effects are dose dependent
- Risks are reversed by stopping smoking
- Smoking is THE single most avoidable risk factor for pregnancy complications
- Smoking cessation is probably THE most important intervention in antenatal care in NZ

NZ Smoking in Pregnancy Data



MMPO 2004-7, n=61,000 births

	Smokes at booking(14-16w)	Smokes 4-6wks postpartum
European	15.7%	9.5%
Maori	45.3%	29.1%
Pacific	16.4%	7.5%
Asian	1.7%	0.9%
Age <20	43%	26%

Smoke free outcomes MOH 2008



Pregnancy Outcomes- SPTB



	Non smoker	Ceased by 15 weeks	<i>P</i> -value#	Current smoker	<i>P</i> -value*
SPTB	88 (4.4%)	10 (3.8%)	0.66	25 (10%)	0.006
Gestation at birth	39.5 (2.3)	39.7 (2.4)	0.80	38.6 (3.6)	<0.001
PPROM	33 (1.7%)	3(1.2%)	0.47	9 (3.6%)	0.07

non smoker vs ceased smoker

*current smoker vs ceased smoker





Pregnancy Outcomes- SGA



	Non smoker	Ceased by 15 weeks	<i>P</i> -value#	Current smoker	<i>P</i> -value*
SGA	195 (9.8%)	27 (10.3%)	0.80	42 (16.7%)	0.03
Birthweight	3409 (592)	3479 (560)	0.09	3139 (751)	<0.001
Customised Centile	48.9 (28.7)	49.3 (28.5)	0.88	41.3 (29.7)	0.002

non smoker vs ceased smoker

*current smoker vs ceased smoker



Conclusions



Ceased Smokers vs Non smokers

- Women who cease smoking by 15 weeks have rates of SPTB and SGA the same as non-smokers
- Maternity care providers should strive to assist pregnant smokers to become smoke-free early in pregnancy, by 15 weeks'



Conclusions



Current smokers vs Ceased Smokers

- Continued smokers had a 3x ↑ risk of SPTB
- Continued smokers also had > rates of SGA babies than ceased smokers

BMJ

27 March 2009

RESEARCH

Spontaneous preterm birth and small for gestational age infants in women who stop smoking early in pregnancy: prospective cohort study

Lesley M E McCowan, associate professor of obstetrics and gynaecology,¹ Gustaaf A Dekker, professor of obstetrics and gynaecology,⁶ Eliza Chan, research fellow,¹ Alistair Stewart, statistician,² Lucy C Chappell, senior lecturer in maternal and fetal medicine,⁴ Misty Hunter, medical student,¹ Rona Moss-Morris, professor of health psychology,⁵ Robyn A North, professor in obstetric medicine³ On behalf of the SCOPE consortium



Smoking and risks for the offspring

- SUDI
- Deaths from childhood respiratory illnesses
- Respiratory infections & asthma
- Glue ear
- Reduced height
- Obesity
- Hypertension

Maternal smoking in pregnancy: a lifelong legacy for the offspring – as children and adults



‘Natural history’ of smoking behaviour in pregnancy



- About 25-33% of women who smoke stop smoking completely in pregnancy (with no intervention)
- Of those who continue to smoke, about half reduce the amount they smoke whilst pregnant
- Factors associated with quitting
 - Education level, financial security, stable relationship
 - First pregnancy
 - Morning sickness
 - Early bookers
 - Non-smoking partner



Smoking cessation in pregnancy in NZ

- Survey of GPs and midwives published in 2007 by Auckland Tobacco Control research centre, University of Auckland
- GPs significantly more likely than midwives to
 - ask about smoking at the first antenatal visit (92% vs 82%)
 - advise women who smoke to stop completely (71% vs 11%)
 - report that they usually discuss smoking with a pregnant woman who is known to smoke at *every* visit (69% vs 47%)
 - refer pregnant women to Quitline
 - recommend evidence-based smoking cessation methods
- No difference in likelihood of recommending NRT (about 50% in both groups)



NRT Treatment in pregnancy

4 trials, 1131 women

- ↓ smoking with NRT : RR 0.94 (0.89, 1.0)
- Only 2 trials reported pregnancy outcome
 - NRT group 200-300g heavier at birth
 - one trial Nicotine gum ↓ preterm birth
- More high quality studies needed
- Large UK RCT of NRT in pregnancy-(SNAP) is planned

Lumley et al Cochrane Review 2007,

Oncken, RCT nicotine gum: O+G 2008;112;859-67



Nicotine Replacement Therapy in Pregnancy



- One cigarette delivers about 1mg nicotine
- Patches
 - A 21 mg patch worn for 16 h/day still only delivers half the nicotine of 30 cigs/d
- Advise
 - Stop smoking without NRT if possible
 - If need NRT try gum/lozenges
 - DO use patches if unable to quit without them
 - **NRT is safer than continuing to smoke**

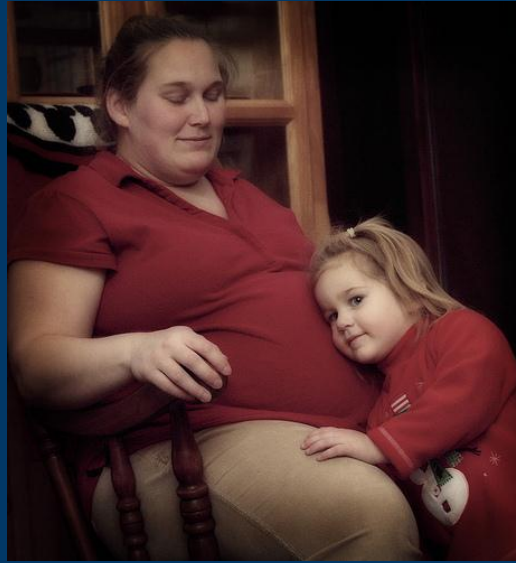
Promoting healthy pregnancies



**Practice Nurse update
GP CME Rotorua, June 2011
Drs Deralie Flower & Ngaire Anderson**

Outline

- Dr Deralie Flower
 - Smoking in pregnancy
- Dr Ngaire Anderson
 - Pre-pregnancy BMI and gestational weight gain



PRE-PREGNANCY BMI AND GESTATIONAL WEIGHT GAIN

Pre-pregnancy BMI and Gestational Weight Gain (GWG)

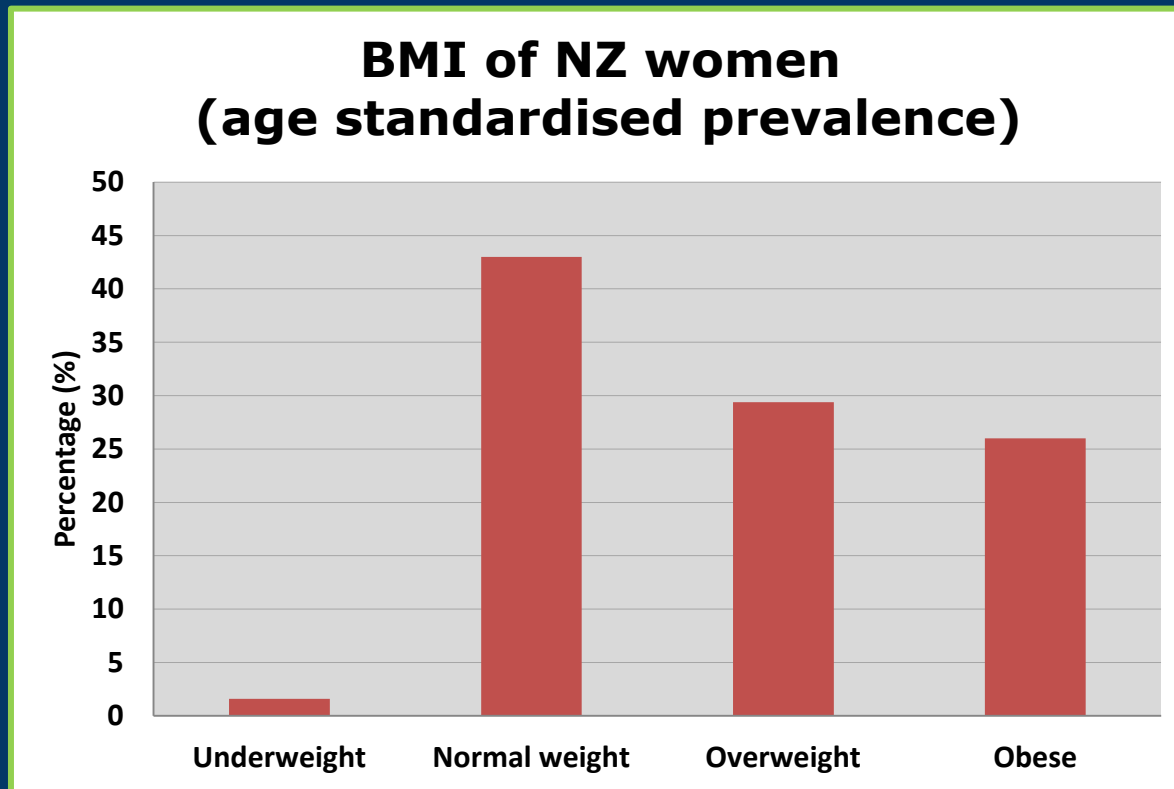
- Obesity is increasingly prevalent in New Zealand women
- What are the adverse pregnancy outcomes associated with increased pre-pregnancy BMI?
- How does gestational weight gain affect pregnancy outcomes?

Classification of Obesity

Classification	Body mass index (kg/m ²)	Class	Disease risk [*]
Normal weight ⁺	18.5–24.9		–
Overweight	25.0–29.9		Increased
Obese			
Mild	30.0–34.9	I	High
Moderate	35.0–39.9	II	Very high
Extreme	≥ 40.0+	III	Extremely high

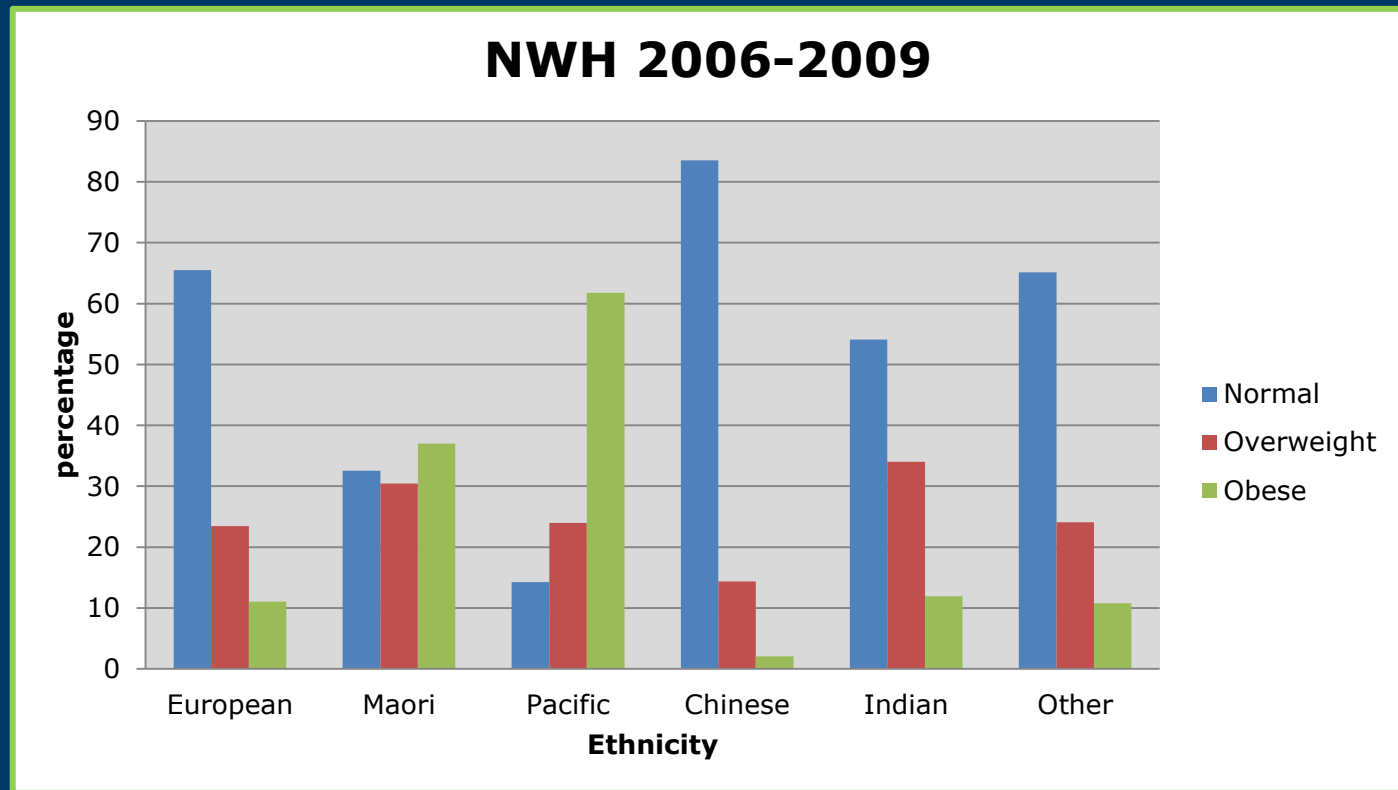
* Disease risk for type 2 diabetes, hypertension, and cardiovascular disease.

Obesity in NZ women



*A portrait of health: MOH 2006-7 NZ
Health Survey*

BMI by ethnicity at NWH



What are the Pregnancy Complications with a BMI >30?

Early pregnancy

RR

- Miscarriage
- Birth defects

2.0
1.6

Antenatal

RR

- Gestational Diabetes
- Hypertensive disorders

3.0
2.7

Perinatal

RR

- Venous Thromboembolism
- Caesarean
- Shoulder dystocia
- Postpartum Haemorrhage
- Wound infection
- Maternal death

9.7
2.1
3.0
1.9
2.2
1.5

Neonatal

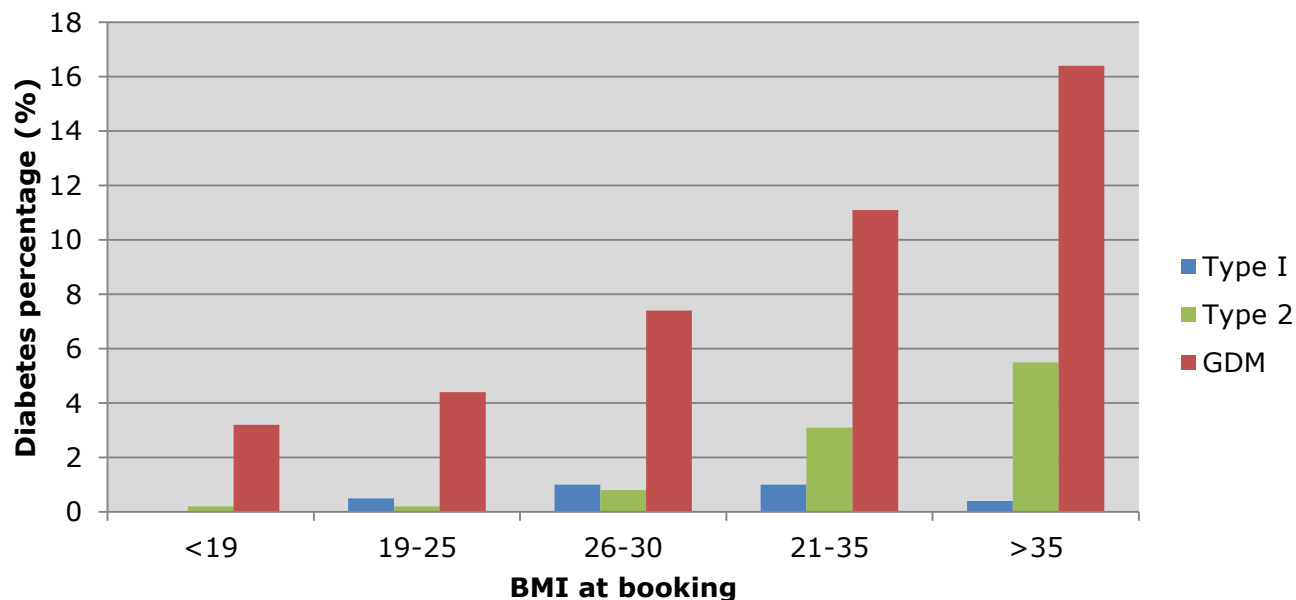
RR

- Prematurity
- Macrosomia
- SGA
- Admission to NICU
- Stillbirth
- Neonatal death

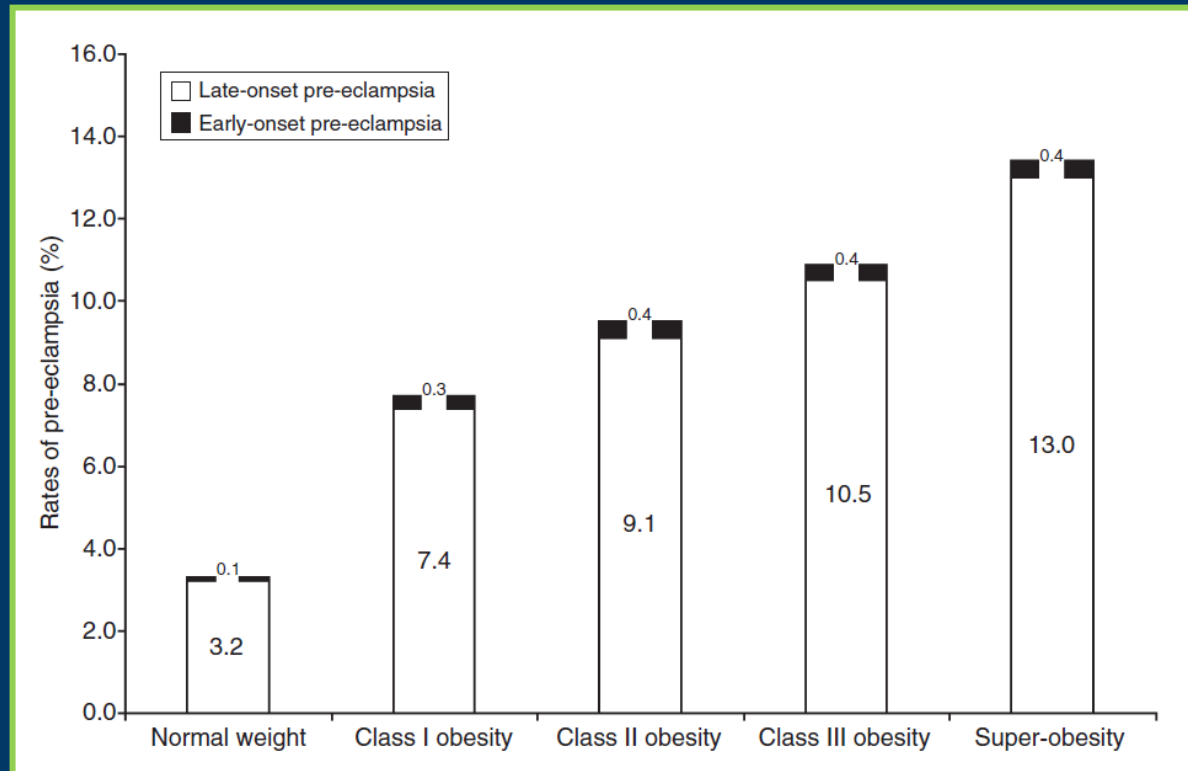
1.2
2.8
1.3
1.4
2.1
2.6

BMI and Diabetes

**Rates of Diabetes by Maternal BMI
NWH 2010**

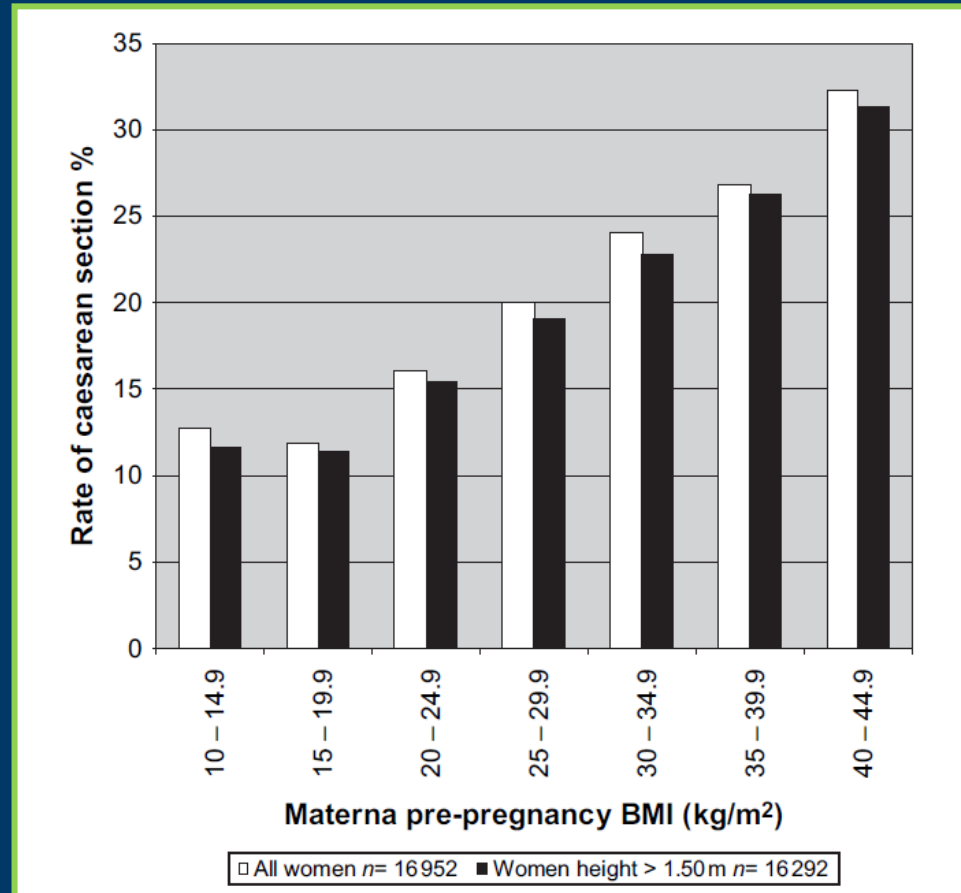


BMI and Preeclampsia



*Mbah et al 2010
n= 854 085 singleton births*

BMI and Caesarean section



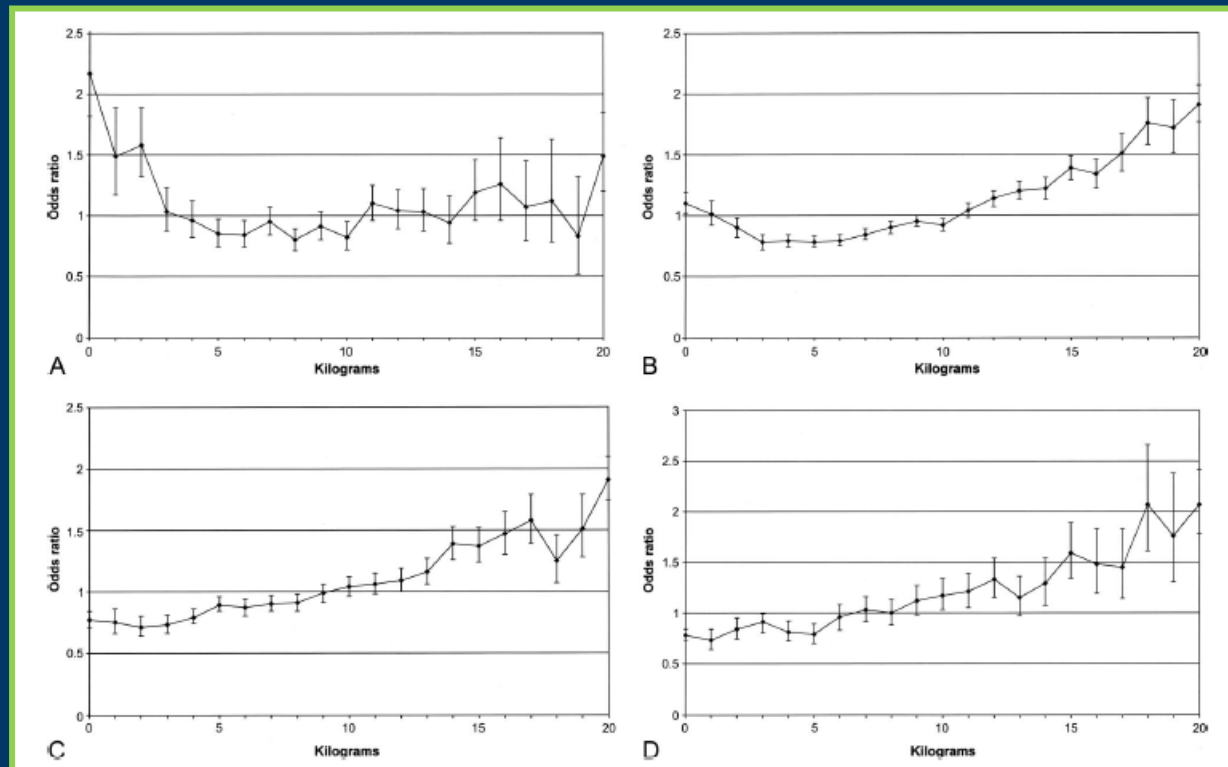
Barau et al. 2006 n=16952

Gestational Weight Gain (GWG)

- How much weight is normal to gain in pregnancy?
- GWG modifies the effect pre-pregnancy BMI has on pregnancy outcomes



Gestational Weight Gain (GWG)



A=underweight, B=normal weight, C=overweight, D=obese

*Cedergren Optimal GWG O&G 2007
n=298,000*

GWG Recommendations

Pre-pregnancy BMI	Cedergren et al. (O&G 2007)	Kiel et al. (O&G 2007)	US Institute of Medicine (2009)
Normal	2-10kg	-	11-16kg
Overweight	<9kg	-	7-11kg
Obese	<6kg	-	5-9kg
Class I (30-34)		5-11kg	
Class II (35-39)		0-4kg	
Class III (≥ 40)		Weight LOSS 0-4kg	

Limited or no weight gain in obese women is associated with improved pregnancy outcomes

What can we do?

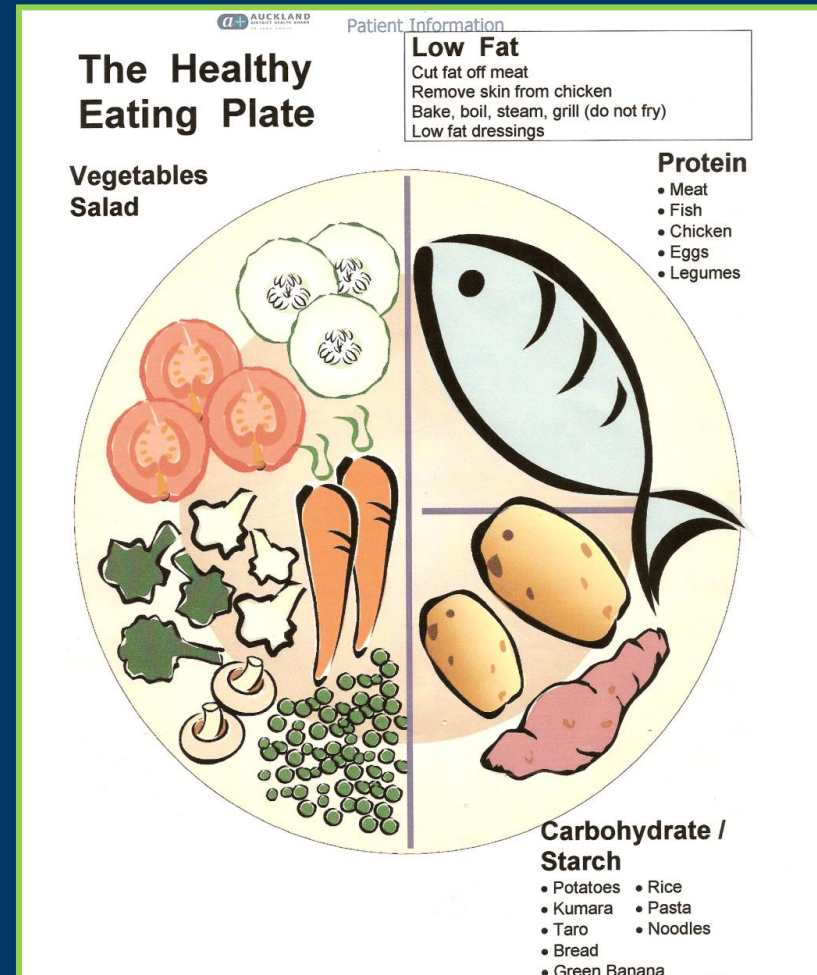
- **Pre-pregnancy**
 - Weight loss
 - **Diet**
 - **Exercise**
 - Smoke Free
 - Diabetes screening
 - BP check



What can we do?

Antenatal:

- Advice about healthy eating & portion size
- Set goals for weight gain/loss
- Serial weight measurements throughout pregnancy
- Exercise plan
- Evidence that simple advice is just as powerful as multidisciplinary management



Take Home Messages

- Maternal obesity is a major obstetric risk factor
- The greater the BMI the greater the risk
- Risk is modifiable with limited gestational weight gain and monitoring / planning for complications
- Maternal obesity will have a huge impact on obstetric resources in the next ten years



