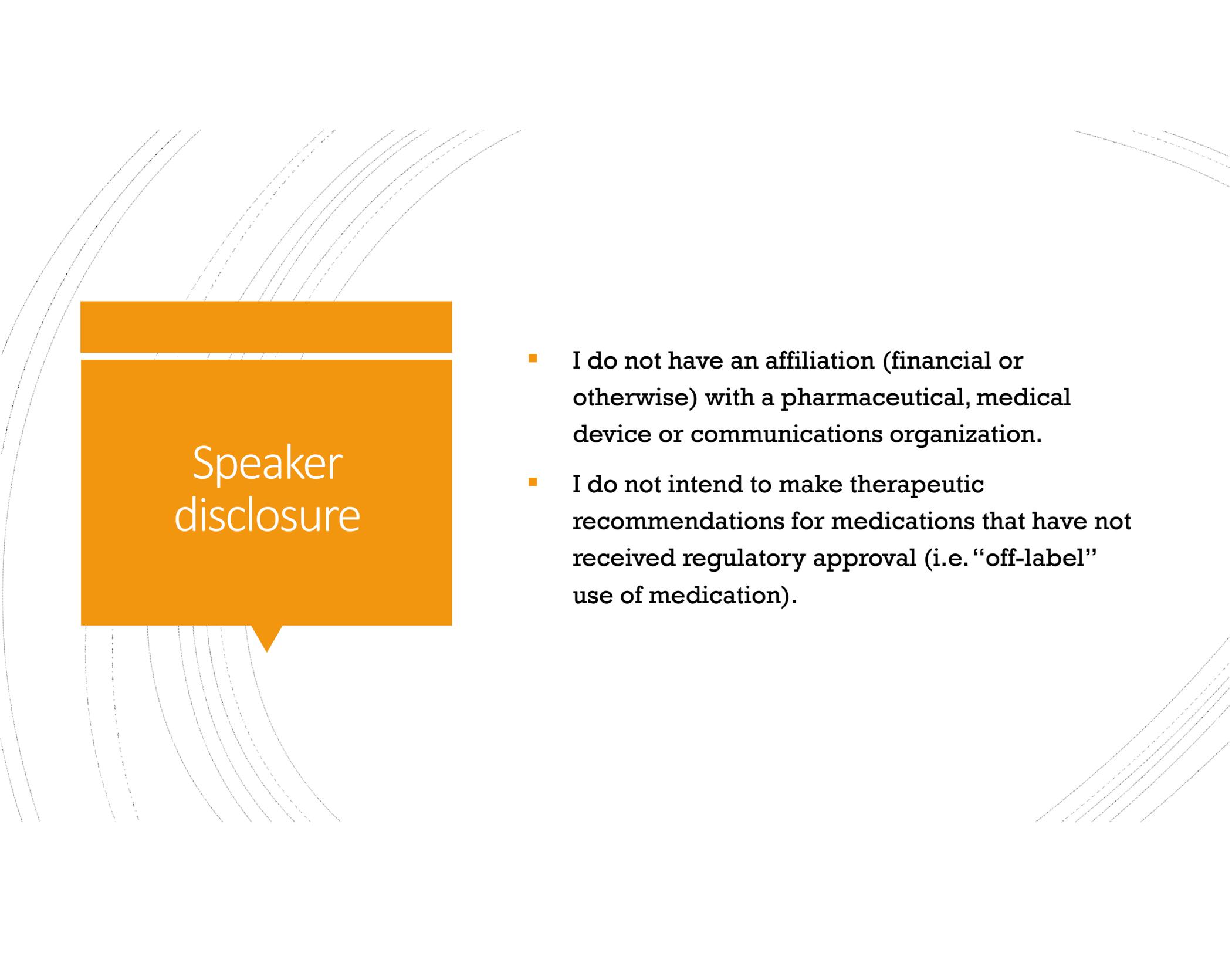


Obesity and Pregnancy Practical tips from the 'MY' clinic

November 8, 2018

Primary Care Ob Grand Rounds

Dr. Barbra de Vrijer, MFM

The background of the slide features several sets of thin, curved lines in shades of grey and white, creating a sense of motion and depth. These lines are primarily located on the left and right sides of the slide, framing the central content.

Speaker disclosure

- I do not have an affiliation (financial or otherwise) with a pharmaceutical, medical device or communications organization.
- I do not intend to make therapeutic recommendations for medications that have not received regulatory approval (i.e. “off-label” use of medication).

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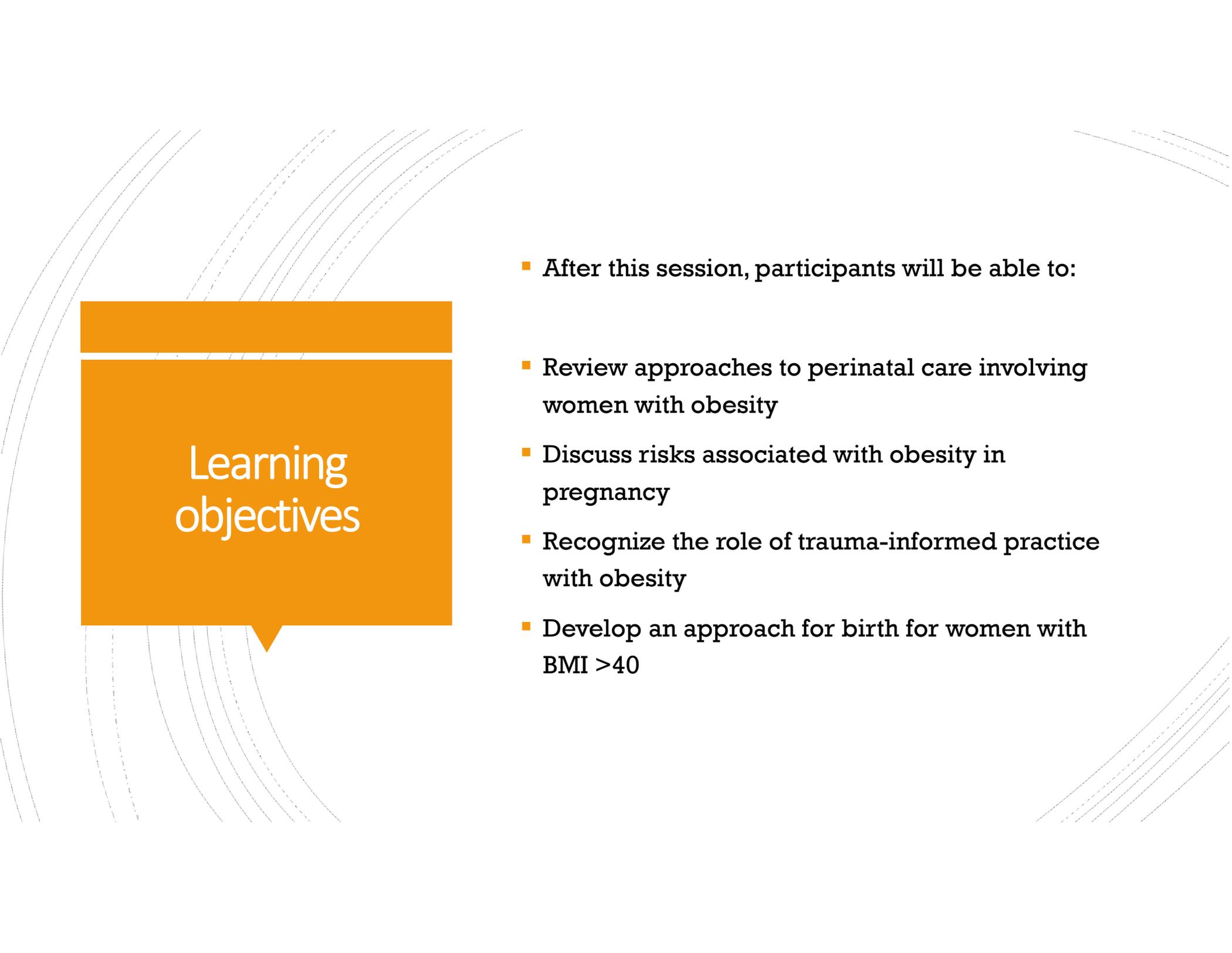
Presentation disclosure

- **This program has received no commercial financial support.**
- **This program has received no in-kind support.**

The slide features a decorative background of thin, curved lines in shades of grey and white, creating a sense of motion and depth. On the left side, there is a large orange shape that resembles a speech bubble or a callout box, containing the main title text.

Mitigating potential bias

- The presenter received a detailed letter from the Organizing Committee outlining the learning objectives and content expectations for each presentation.
- *Conflict of Interest* disclosure form has been completed by the presenter and reviewed by the Organizing Committee.

The slide features a decorative background of thin, curved lines in shades of grey and white, creating a sense of movement and depth. On the left side, there is a large orange shape that resembles a speech bubble or a callout box, containing the text 'Learning objectives'.

Learning objectives

- **After this session, participants will be able to:**
- **Review approaches to perinatal care involving women with obesity**
- **Discuss risks associated with obesity in pregnancy**
- **Recognize the role of trauma-informed practice with obesity**
- **Develop an approach for birth for women with BMI >40**

What is the 'MY' Clinic?

- A clinic at LHSC-Victoria shared by Dr. deVrijer and Dr. Penava
 - Initiated 2012 to provide intraprofessional care for pregnant women with BMI>35 or past gastric bypass surgery, now for BMI>40
 - What do we provide?
 - Assessment/follow-up based upon the 5A's of obesity care
 - Focus on development of ultrasound protocols for second trimester screening
 - Nutrition assessment and follow-up
 - Advise and plan for safe delivery
 - Research and translation of improved health outcomes for this population of women

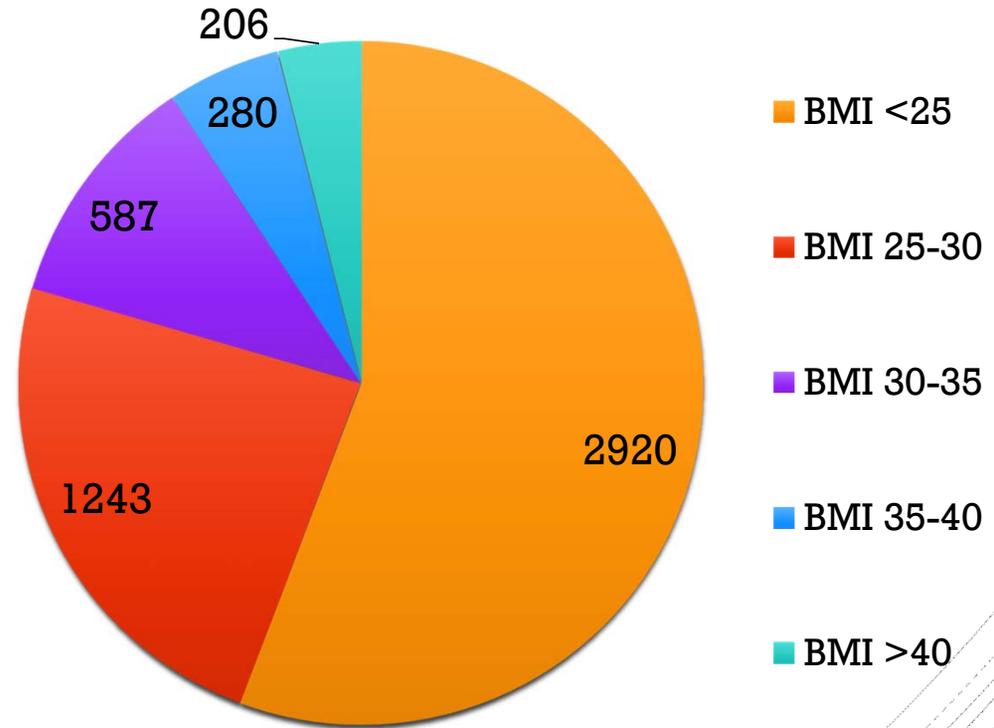
Obesity and Pregnancy





**Obese
(BMI>30)
20%**

**Overweight
or Obese
(BMI>25)
44%**



Source: LHSC Perinatal Database 2013-2014

Apples and Pears – BMI does not tell you everything



Metabolically Healthy Obesity: Fat and Fit?

metabolically healthy obesity eventually becomes unhealthy obesity



- Increased risk of **coronary artery disease**
- Increased risk of **cerebrovascular disease**
- Increased risk of **heart failure**

Biophysical Markers of Preeclampsia, Metabolically Unhealthy Obesity and Cardiovascular Disease

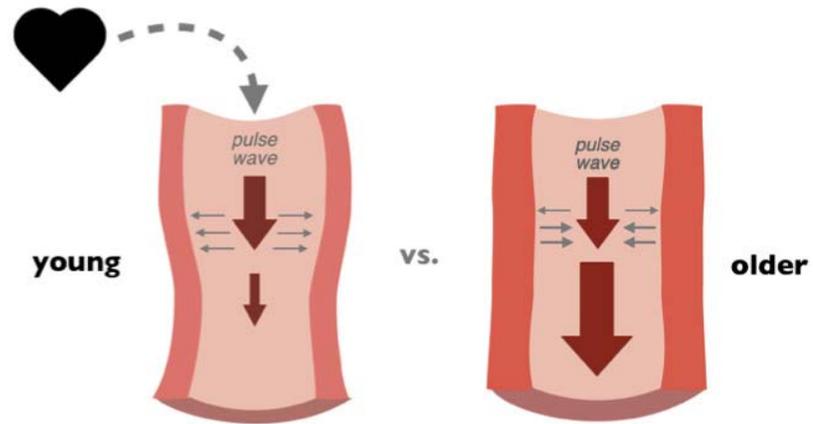
Predictive Biophysical Markers	Preeclampsia	Metabolically Unhealthy Obese	Cardiovascular Disease
Obesity	↑	NA	↑
Metabolic Syndrome	↑	↑	↑
Mean Arterial Pressure	↑	↑	↑
Endothelial Function (EndoPAT - RHI)	↓	↓	↓
Endothelial-dependent FMD	↓	↓	↓
Pulse Wave Velocity	↑	↑	↑

Eastabrook *et al*, Pregnancy Hypertension 2018

Biomarker Group	Biomarkers	Preeclampsia	Metabolically Unhealthy Obese	Cardiovascular Disease
Angiogenic Factors	PlGF	↓		↑
	VEGF	↓	↓	
Anti-angiogenic Factors	sFlt-1	↑		↑
	Endothelin-1	↑		↑
Inflammatory Markers	CRP	↑	↑	↑
	TNF-α	↑	↑	↑
	Interleukins	↑	↑	↑
Adhesion Molecules	ICAM-1	↑		↑
	E-selectin	↑	↑	↑
Adipokines	Leptin	↑	↑	↑
	Adiponectin	↓/↑	↓	↓
	Resistin	↑		↑
Oxidative Stress	Ox-LDL	↑	↑	↑
Apoptotic Markers	DNA fragmentation	↑		↑
Other	Vitamin D	↓	↓	↓
	Uric Acid	↑	↑	↑

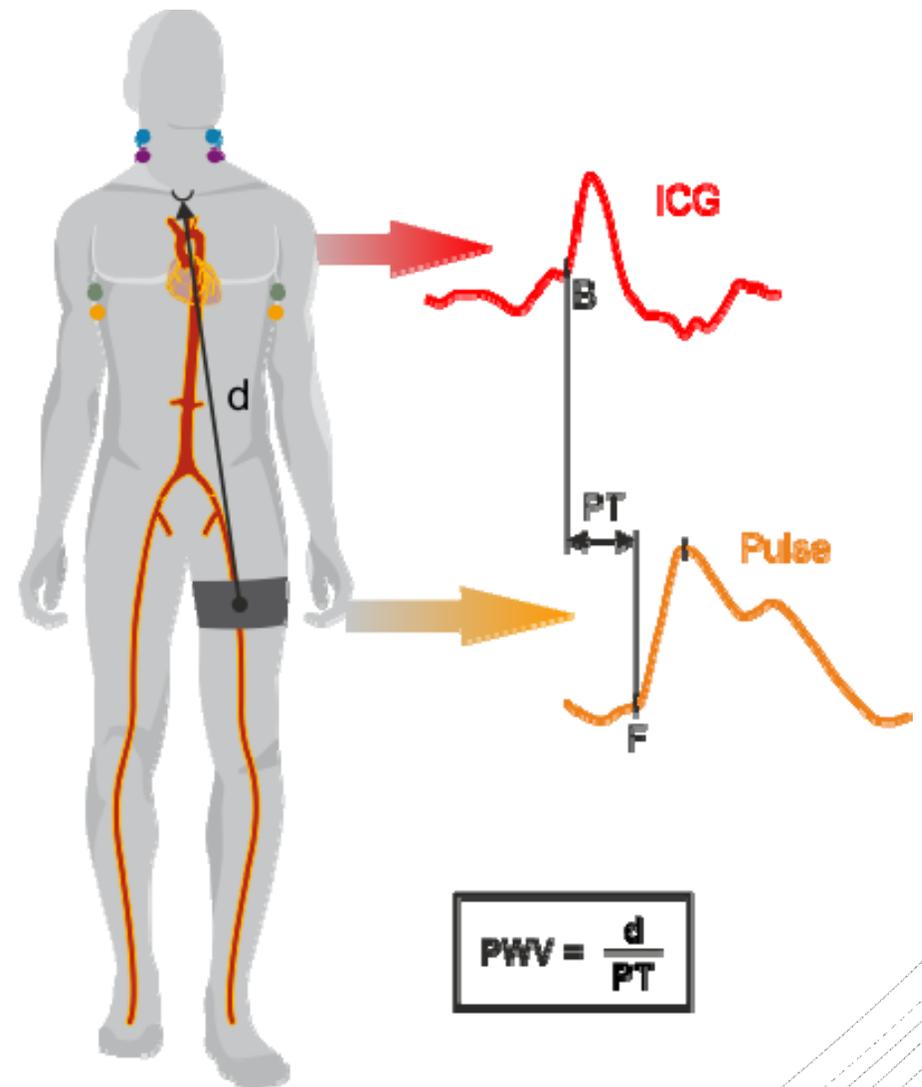
Eastabrook *et al*, Pregnancy Hypertension 2018

Pulse Wave
Velocity:
Measurement of
Central Arterial
Stiffness

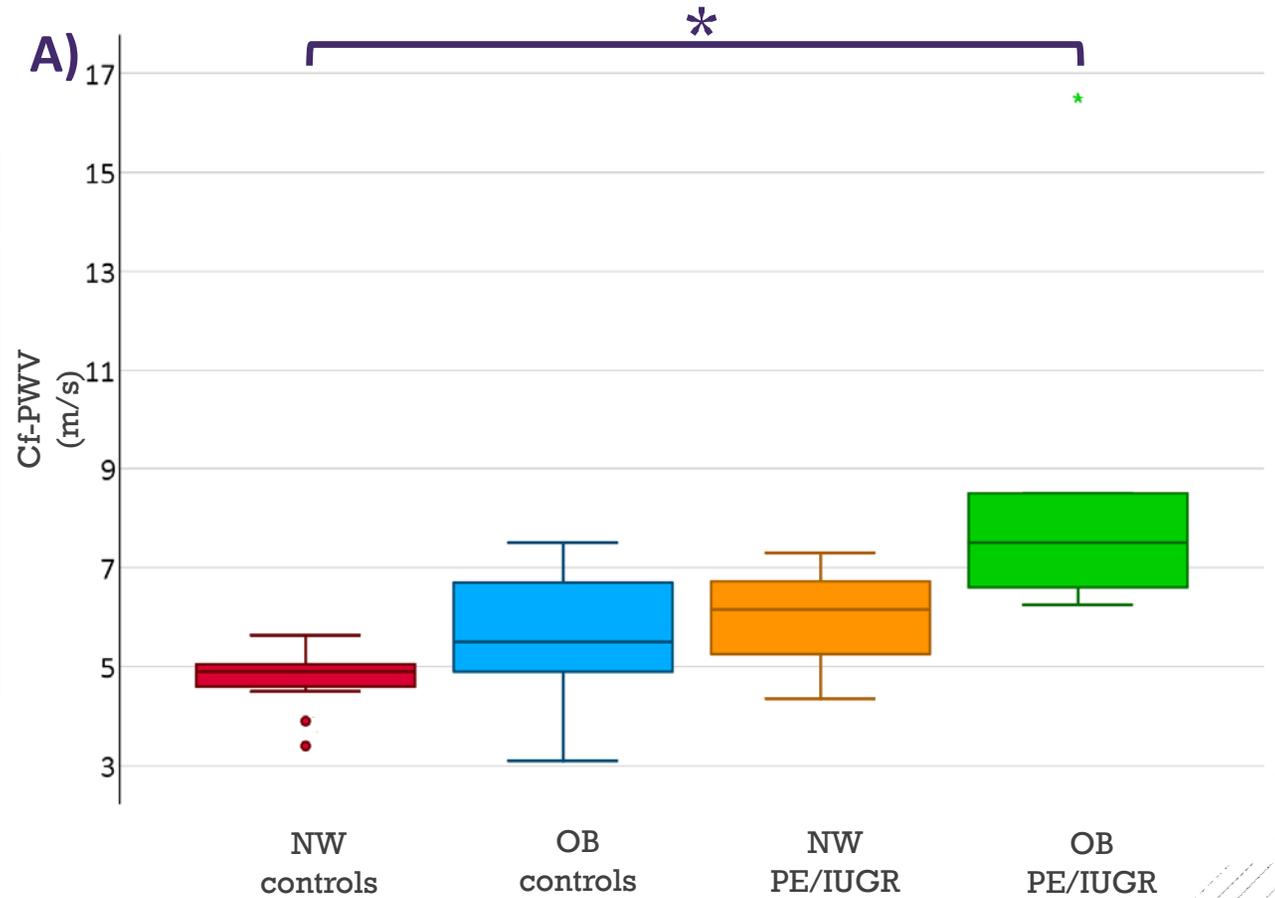


- BMI
- HTN
- Metabolic syndrome
- Renal disease
- DM

Pulse Wave Velocity:
Measurement of
Central Arterial
Stiffness

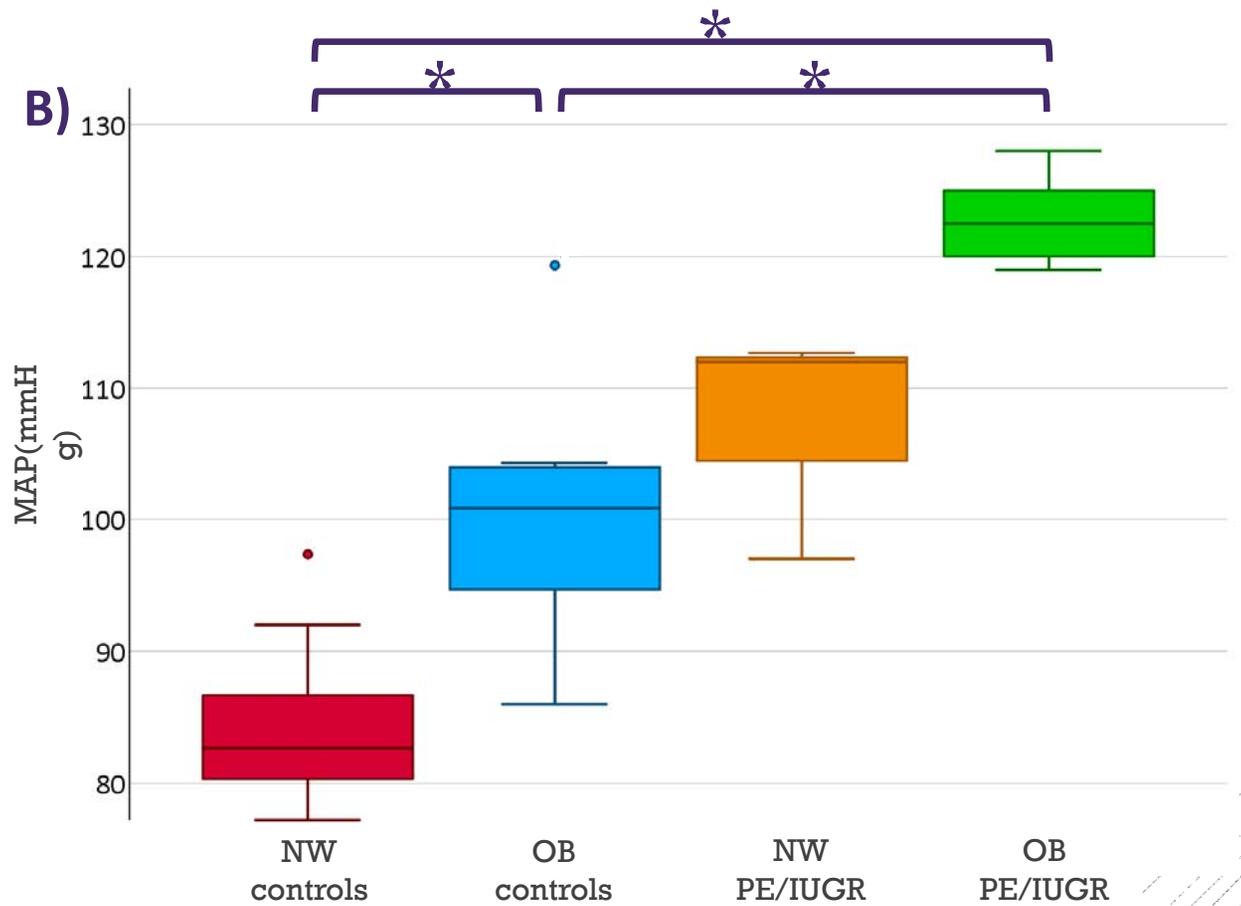


Pregnancies complicated by obesity and PE/IUGR have increased PWV



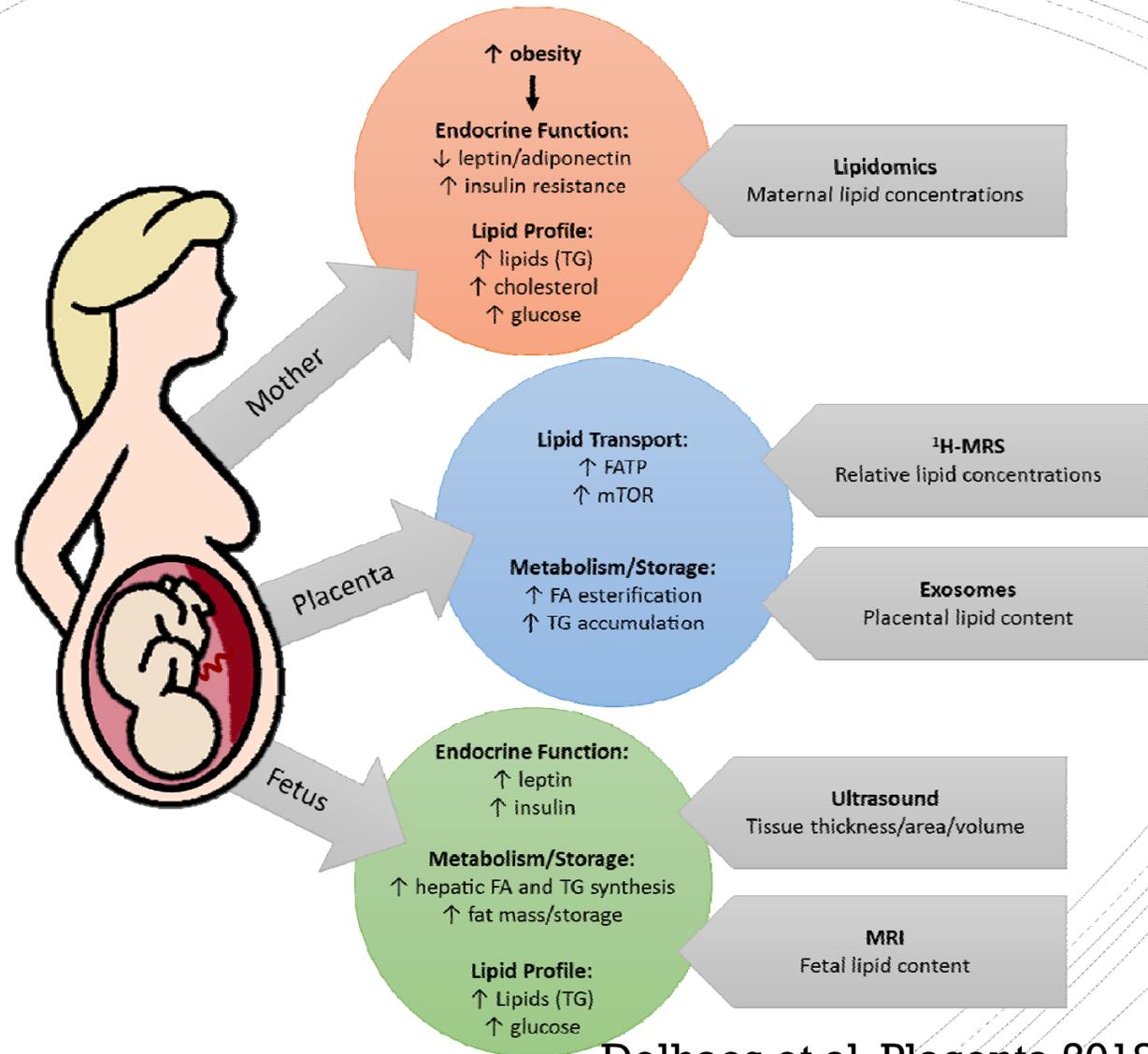
Murray *et al*, 2018

Increased MAP
in pregnancies
complicated by
obesity and PE/IUGR

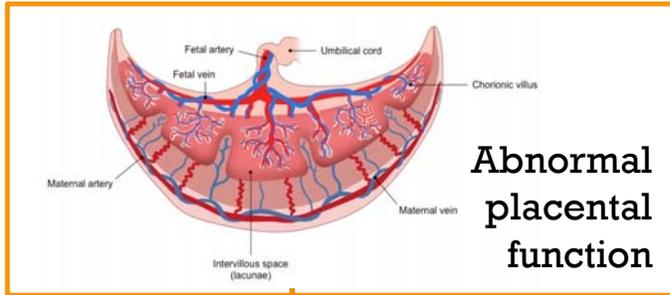


Murray *et al*, 2018

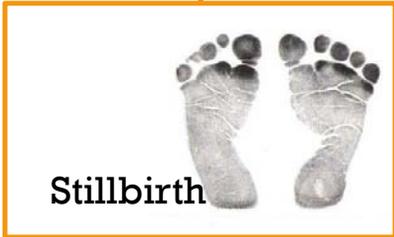
Changes in maternal lipid profiles have a long term effect on fetal endocrine and metabolic function and contribute to risk of future obesity, cardiovascular disease and insulin resistance



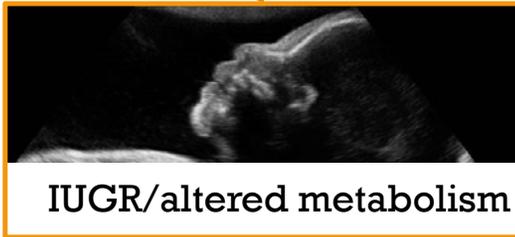
Delhaes et al, Placenta 2018



**Abnormal
placental
function**



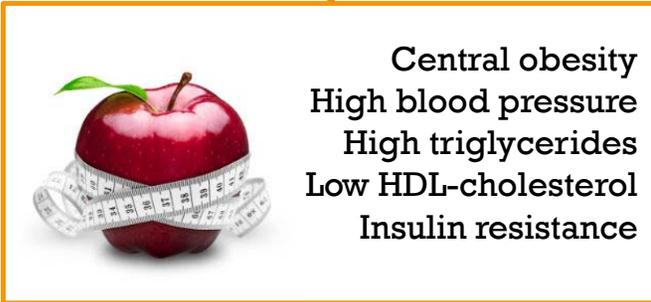
Stillbirth



IUGR/altered metabolism



Altered body composition



**Central obesity
High blood pressure
High triglycerides
Low HDL-cholesterol
Insulin resistance**

*Altered fetal/placental metabolism
Inflammation
Oxidative stress*

SOGC CLINICAL PRACTICE GUIDELINE

Obesity in Pregnancy #239, Feb 2010

Recommendations

1. Periodic health examinations and other appointments for gynaecologic care prior to pregnancy offer ideal opportunities to raise the issue of weight loss before conception. Women should be encouraged to enter pregnancy with a BMI $< 30 \text{ kg/m}^2$, and ideally $< 25 \text{ kg/m}^2$. (III-B)
2. BMI should be calculated from pre-pregnancy height and weight. Those with a pre-pregnancy BMI $> 30 \text{ kg/m}^2$ are considered obese. This information can be helpful in counselling women about pregnancy risks associated with obesity. (II-2B)
3. Obese pregnant women should receive counselling about weight gain, nutrition, and food choices. (II-2B)

SOGC CLINICAL PRACTICE GUIDELINE

Obesity in Pregnancy #239, Feb 2010

4. Obese women should be advised that they are at risk for medical complications such as cardiac disease, pulmonary disease, gestational hypertension, gestational diabetes, and obstructive sleep apnea. Regular exercise during pregnancy may help to reduce some of these risks. (II-2B)
5. Obese women should be advised that their fetus is at an increased risk of congenital abnormalities, and appropriate screening should be done. (II-2B)
6. Obstetric care providers should take BMI into consideration when arranging for fetal anatomic assessment in the second trimester. Anatomic assessment at 20 to 22 weeks may be a better choice for the obese pregnant patient. (II-2B)
7. Obese pregnant women have an increased risk of Caesarean section, and the success of vaginal birth after Caesarean section is decreased. (II-2B)
8. Antenatal consultation with an anaesthesiologist should be considered to review analgesic options and to ensure a plan is in place should a regional anaesthetic be chosen. (III-B)
9. The risk of venous thromboembolism for each obese woman should be evaluated. In some clinical situations, consideration for thromboprophylaxis should be individualized. (III-B)

- **Discuss weight, assess barriers and motivate**

Practical tips
from the MY
clinic

Let's talk about
weight

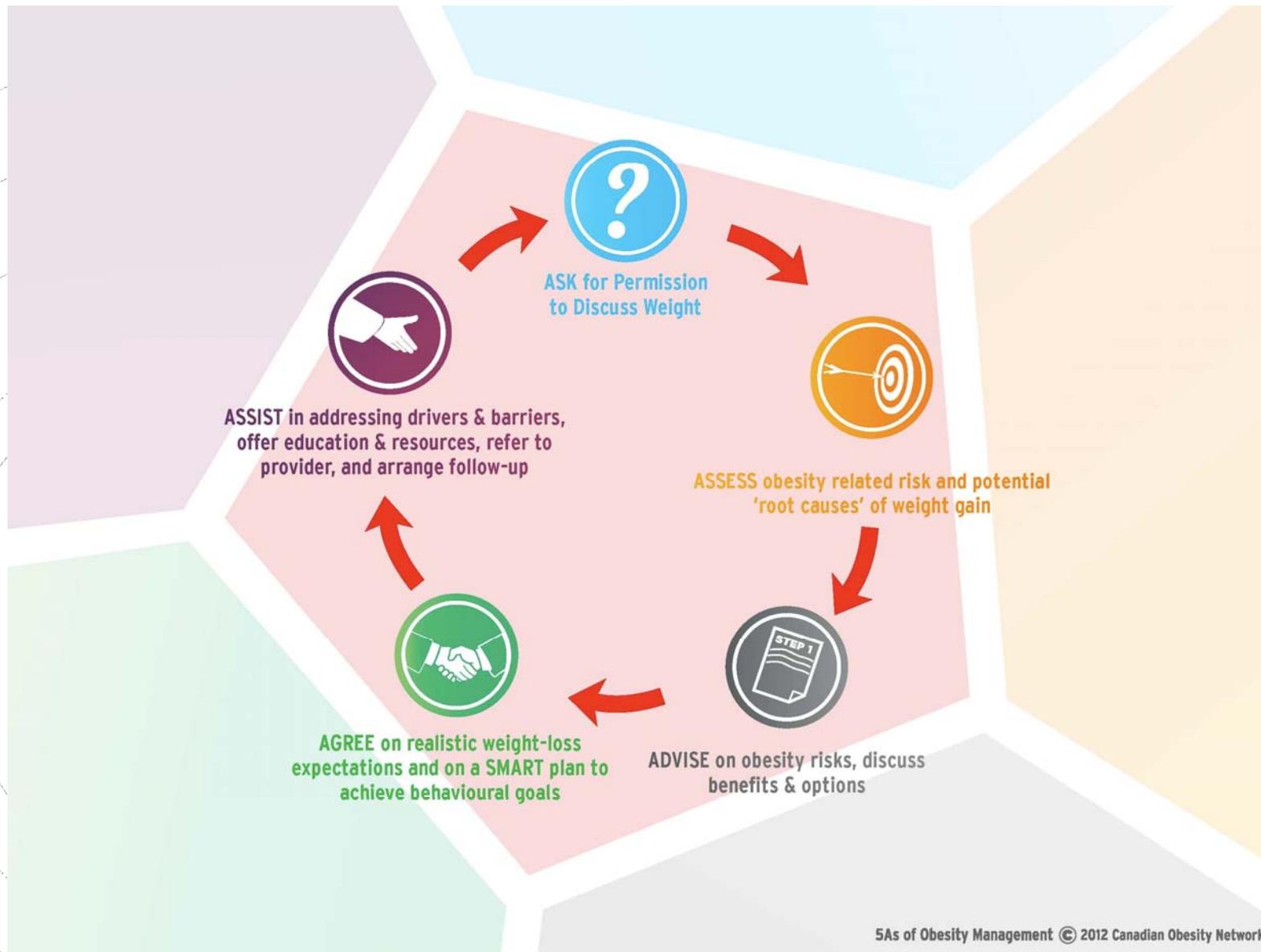
Glad to hear your weight
gain was due to pregnancy
and not depression.

someecards

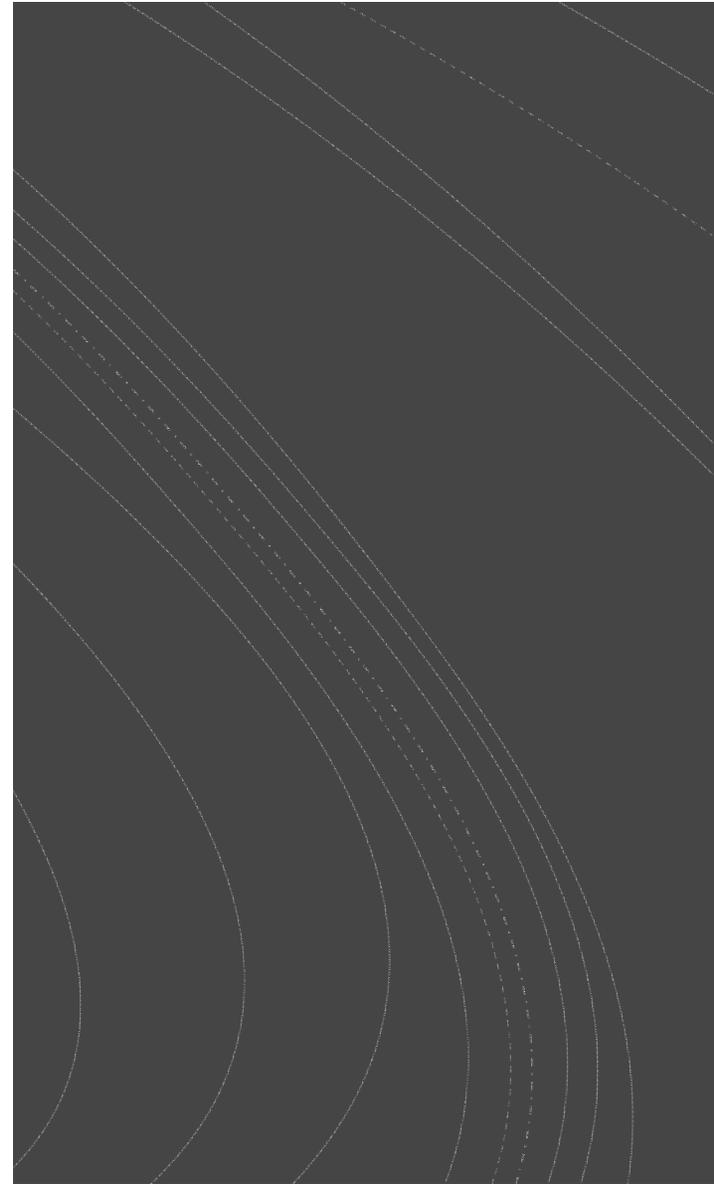


Canadian Obesity Network





Recognize the role of
trauma-informed
practice with obesity



Obesity and Trauma

- **Significant literature**
 - Association between mood disorders and obesity
 - Which comes first?
 - Association of Childhood Adverse Events with obesity
 - Increasing risk with increasing events
 - PTSD scores and obesity
 - Increasing scores are correlated with increases in BMI
 - Childhood, current, trajectory

What does this mean for care providers?

- Recognize the person instead of the problem
- Women with obesity still are women
- A significant number of women with obesity may have trust issues with authority figures
- A significant percentage will be victims of sexual assault
- Recommending diet or nutritional counselling with exercise may not result in sustained weight loss
 - Counselling and support groups may be critical to sustained health

Ask 'What...?' and 'How...?'



- 'I'm really scared to have another baby because I am already in so much pain, but I don't want to disappoint my husband'
- 'I wake up in the middle of the night with flashbacks of what happened the day I lost my baby'
- 'My doctor never diagnosed that my thyroid was not working well, and that is the reason I am so overweight'

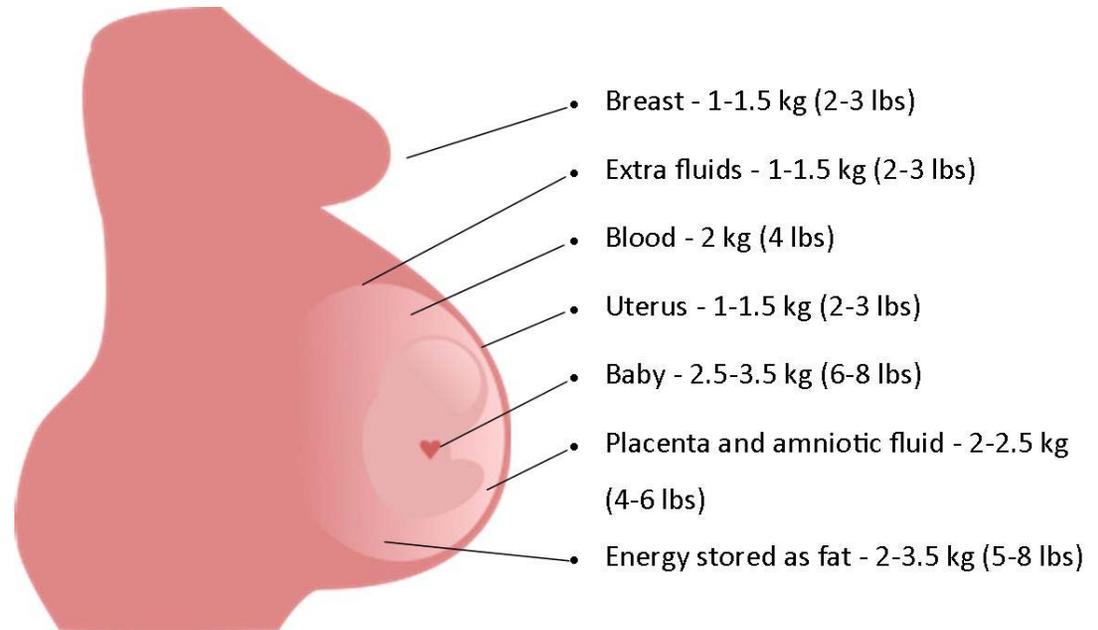
HEALTH PREMATUREITY
BREASTFEEDING
EQUIPMENT GESTATIONAL
WOUND INFECTION
INFERTILITY
MACROSOMIA
MISCARRIAGE
POVERTY
SOCIAL
SCARED
TRAINING
SKIN
EDEMA
DISABILITY
DEPRESSION
CLEAN OBESITY
WEIGHT GAIN
STILLBIRTH
CSECTION
ANESTHESIA
SHOWING
GUILT
PARTNER
PTSD
ABUSE
ANXIETY
BIRTH
LOSS
JUDGEMENT
TRAUMA
PAIN
WORK
ODOR
DOHAD
IUGR
UNDERSTANDING
WEIGHING CHILDREN
PREECLAMPSIA
MENTAL HEALTH
SWELLING
BLEEDING
EXERCISE
MOBILITY
DIABETES
FETAL ORIGINS
HYPERTENSION
DIE
SEX
FAT
SOCIAL
SCARED
TRAINING
SKIN
EDEMA
DISABILITY
DEPRESSION
CLEAN OBESITY
WEIGHT GAIN
STILLBIRTH
CSECTION
ANESTHESIA
SHOWING
GUILT
PARTNER
PTSD
ABUSE
ANXIETY
BIRTH
LOSS
JUDGEMENT
TRAUMA
PAIN
WORK
ODOR
DOHAD
IUGR
UNDERSTANDING
WEIGHING CHILDREN
PREECLAMPSIA
MENTAL HEALTH

- Discuss weight, assess barriers and motivate
- Discuss weight gain in pregnancy, focus on health

Practical tips
from the MY
clinic

IOM guideline

IOM guideline, weight gain in pregnancy



Institute of Medicine Weight Gain Recommendations for Pregnancy (2009)

Pregnancy Weight Category	Body Mass Index	Recommended range of Total Weight in kg (lb)	Rates of Weight Gain in Second and Third Trimesters	
			kg/wk	lb/wk (mean range)
Underweight	Less than 18.5	12.5-18 kg (28-40)	0.5	1 (1-1.3)
Normal Weight	18.5-24.9	11.5-16 kg (25-35)	0.4	1 (0.8-1)
Overweight	25-29.9	7-11.5 kg (15-25)	0.3	0.6 (0.5-0.7)
Obese (includes all classes)	30 and greater	5-9 kg (11-20)	0.2	0.5 (0.4-0.6)

†Calculations assume a 0.5 to 2 kg (1.1-4.4 lb) weight gain in the first trimester.

IOM guideline

IOM guideline, weight gain in
pregnancy

Is it OK to talk about your weight?

Can you tell me a little about your weight history?

At what age were you first overweight?

How has your weight fluctuated over time

What have you tried to do to lose weight?

What has contributed most to your weight fluctuations?

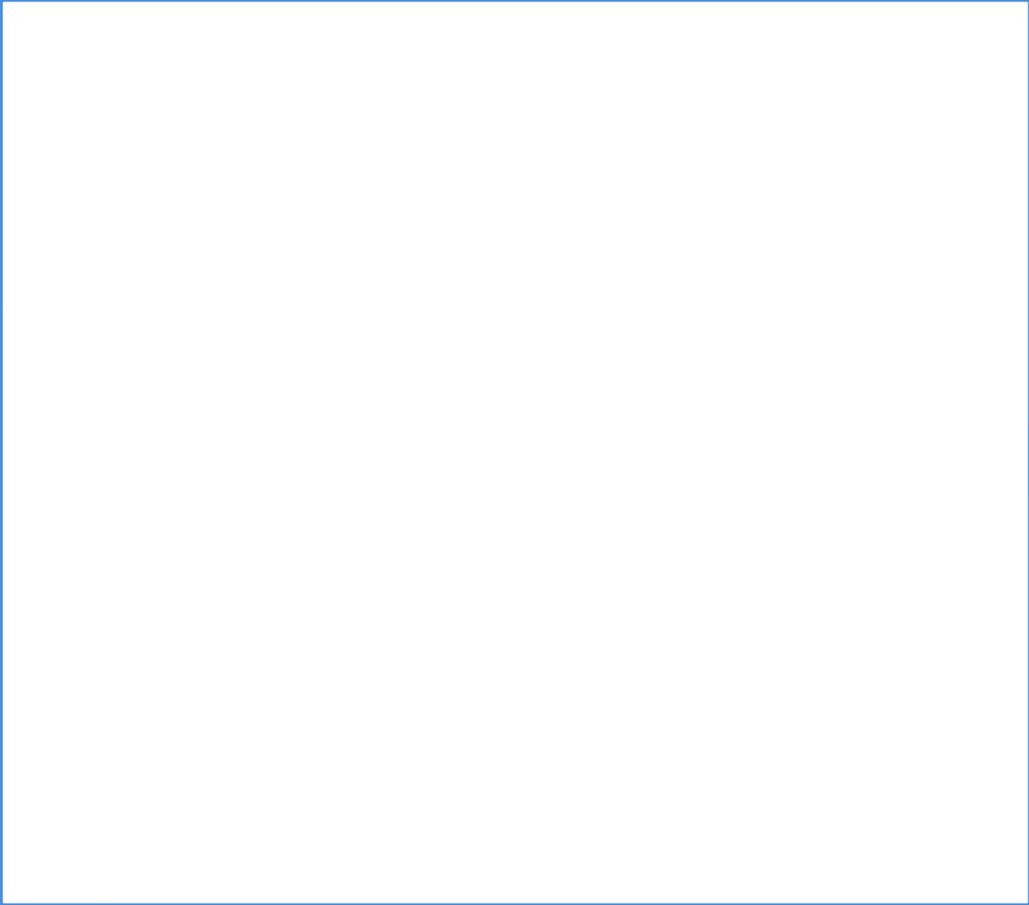
What do you do when you are happy or sad?

What do you eat for breakfast?

When do you eat most, during the day or in the evening?

How do you feel after a meal?

What can I do to help you stay within the weight gain
guidelines?



Gestational Weight Loss may be the consequence of your counselling

Higher odds of SGA <10th percentile
AOR 1.76; CI 1.45-2.14

Higher odds of SGA <3rd percentile
AOR 1.62; CI 1.19-2.20

Lower odds of LGA >90th percentile
AOR 0.57; CI 0.52—0.62

Maternal risks or preterm birth risk not assessed

- Discuss weight, assess barriers and motivate
- Discuss weight gain in pregnancy, focus on health
- **Screen for comorbidities and mitigate risk**

Practical tips
from the MY
clinic

Early diagnosis of GDM or preexistent DM2

- **Insufficient evidence to support HbA1c should be offered as a screening tool for undiagnosed diabetes in the first trimester**
 - Beynon et al, Lancet 2017
- **Fasting glucose of >5.1 are not a good predictor for GDM in the 2nd trimester (sensitivity 46%, specificity 89%) but correlates with newborn weight**
 - Lopez Del Val et al, Endocrinol Diabetes 2018
- **Lower Papp-A, lower bHCG in women who subsequently develop GDM, no change in inflammatory markers**
 - Donovan, Plos 1 2018, Syngelaki, Metabolims, 2016



Fig. 1 The large arm circumference and conical shape of this patient's arm precluded cuff placement on the arm. Antenatal and postoperative blood pressure measurement was obtained using a large cuff on the forearm. During her caesarean section an arterial line was utilised

- Importance of correctly fitting upper arm cuff well established in non-pregnant population; if upper arm cuff can not be applied, use wrist cuff
 - Sens 0.8-0.9 correctly fitting upper arm vs.sens 0.7-0.8 for incorrectly fitting upper arm, sens 0.9 wrist compared to upper arm ref. Irving; BMJ Open 2016; syst review.
- Measurements are inaccurate in 1.5% of women due to shape and size of arms.
- 'Undercuffing' leads to potential overestimation of blood pressure and diagnosis of gHTN
- Few alternatives available; such as measuring on forearm or leg or unvalidated techniques
- Potentials: conical cuff, software modifications, photoplethysmography using the finger clamp method
 - Eley et al IJOA 2018

Aspirin

BMI	Adjusted [†] odds ratio (95% CI)
BMI 18.5-24.9	-
BMI ≥ 30	2.94 (2.87-3.01)
BMI 30-34.9	2.59 (2.52-2.66)
BMI 35-39.9	3.20 (3.09-3.32)
BMI 40-49.9	3.75 (3.59-3.92)
BMI ≥ 50	4.71 (4.20-5.28)

[†]Adjusted for age, race, education level, parity, tobacco use, marital status, adequacy of prenatal care and presence of selected comorbidities (including anaemia, cardiac disease, insulin-dependent diabetes and other forms of diabetes, placenta previa and placental abruption and renal disease).

SOGC**NICE**

Recommendation: "Low-dose aspirin (75 – 100 mg/day) (III-B) should be administered at bedtime (I-B), starting pre-pregnancy from diagnosis of pregnancy but before 16 weeks' gestation (III-B), and continuing until delivery.(I-A)"

"...take 75 mg of aspirin daily from 12 weeks until the birth of the baby. "

Applies to: "Women at increased risk"

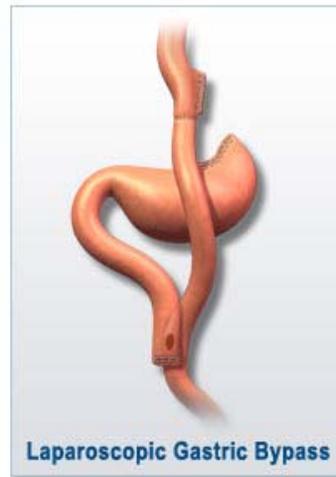
"Individuals at high risk" or
"individuals with more than one factor indicating moderate risk"

NICE:
At least 75mg
from 12 weeks till
35-37 weeks

Any 1 factor: Treat as high risk	2 or more factors: Treat as high risk
Previous preeclampsia OR 7.19 (5.85-8.83)	Multiple pregnancy OR 2.93 (2.04-4.21)
Autoimmune disease (APLA, SLE) OR 9.72(4.34-21.75)	Maternal age \geq 40 OR 1.68 (1.23-2.29)
Pre-existent diabetes OR 3.56 (2.54-4.99)	\geq 10 years since last delivery Increased*
Pre-existent hypertension OR 3.56 (2.54-4.99)	BMI \geq 35 kg/m ² Increased*
Chronic Kidney Disease Increased*	Family history of preeclampsia OR 2.90 (1.70-4.93)
	Primiparity OR 2.91 (1.28-6.61)

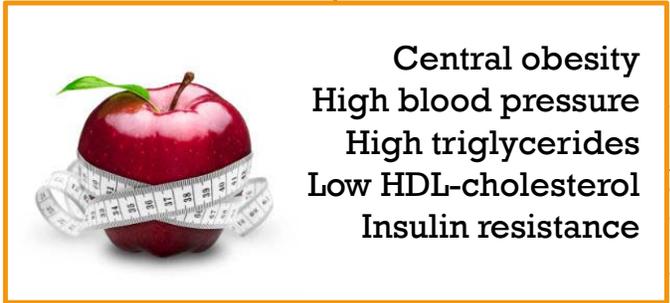
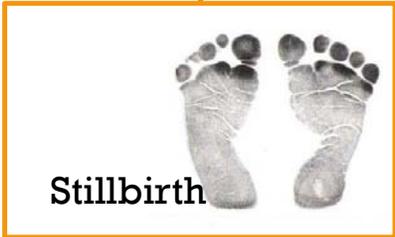
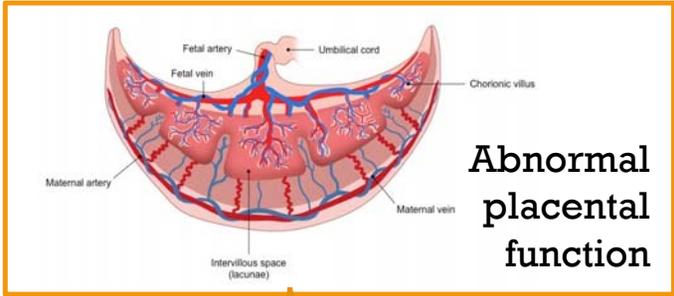
*unable to determine exact risk

Pregnancy post bariatric surgery

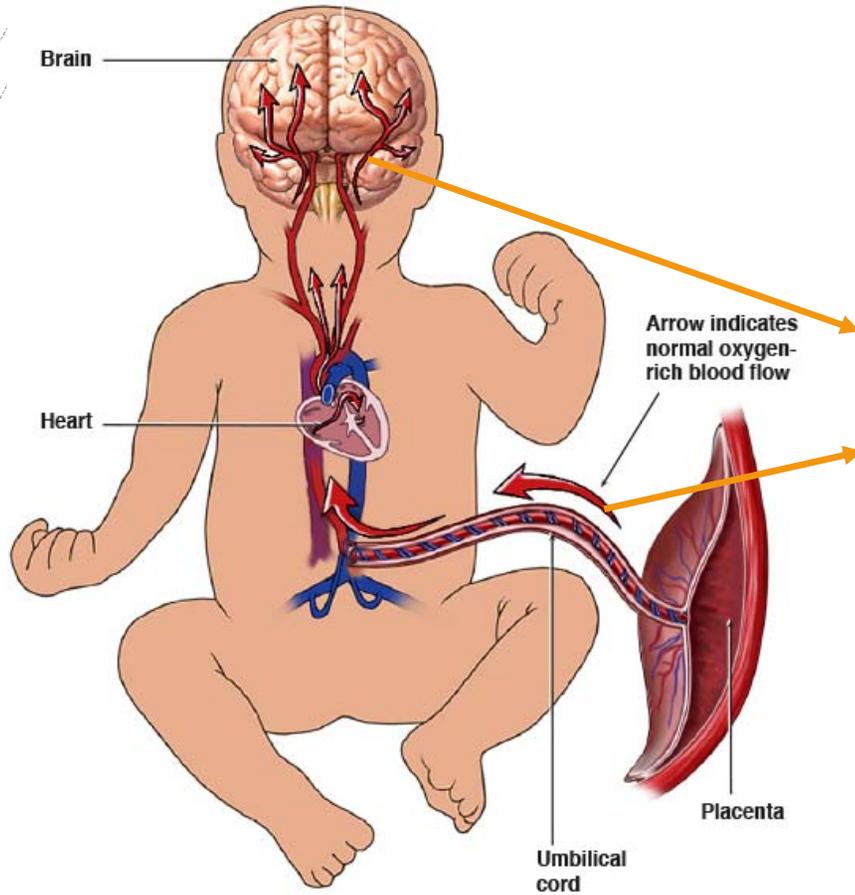


- Dumping – alternative for oGCT
- Malabsorptive: check for nutritional deficiencies
- Surgery for morbid obesity is considered an intervention of last resort for people who have previously tried first-line forms of medical management (i.e., diet, increased physical activity, behavioural modification, and drugs)

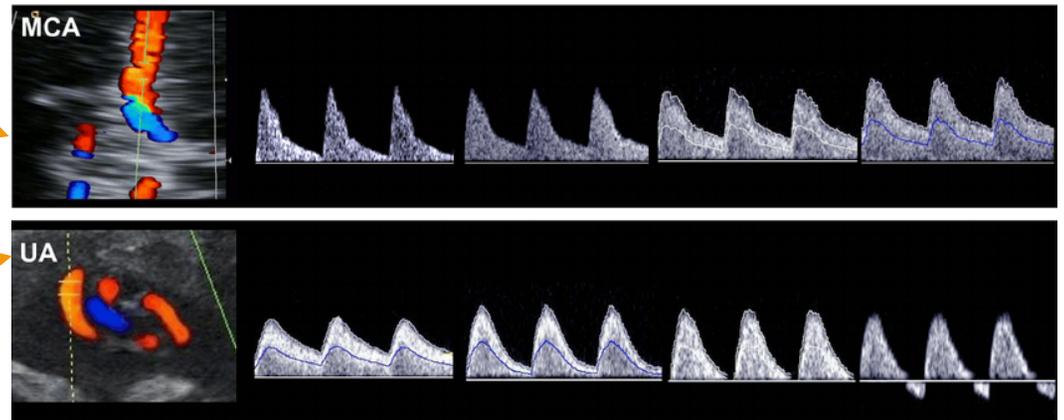
Placental function and fetal monitoring



Early onset, 'placental' preeclampsia/IUGR



PATIENT 1

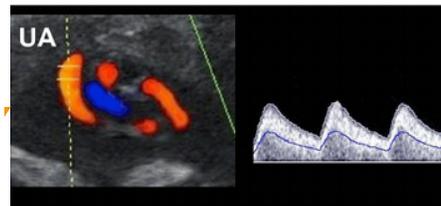
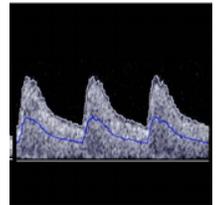
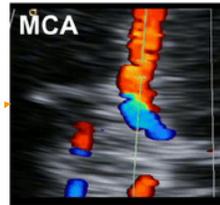


- Caesarean section at 29 ½ weeks for signs of fetal distress

Late onset, 'maternal' preeclampsia/IUGR

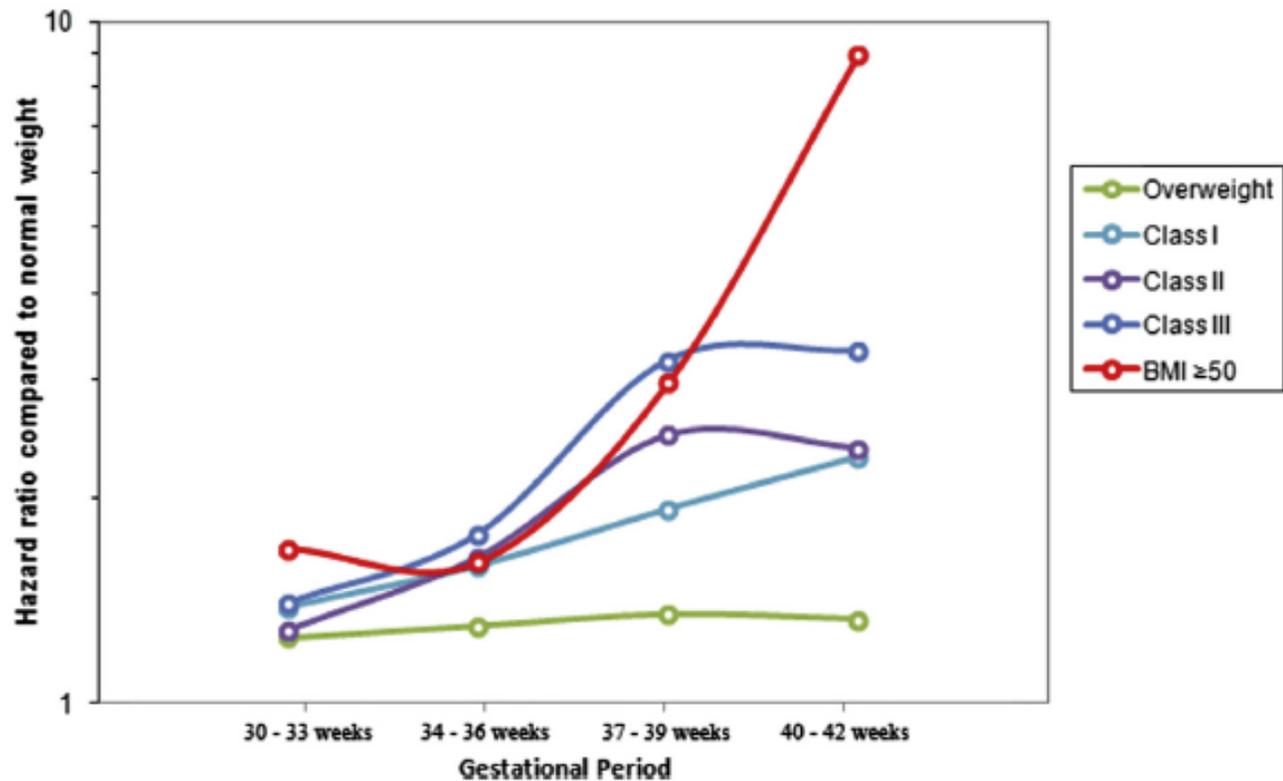
PATIENT 2

- 36-year old, 33 weeks pregnant with her third baby
- pre-pregnancy BMI 44 and type II diabetes
- Intra-Uterine Growth Restriction
- Borderline hypertension
- Admitted for fetal monitoring



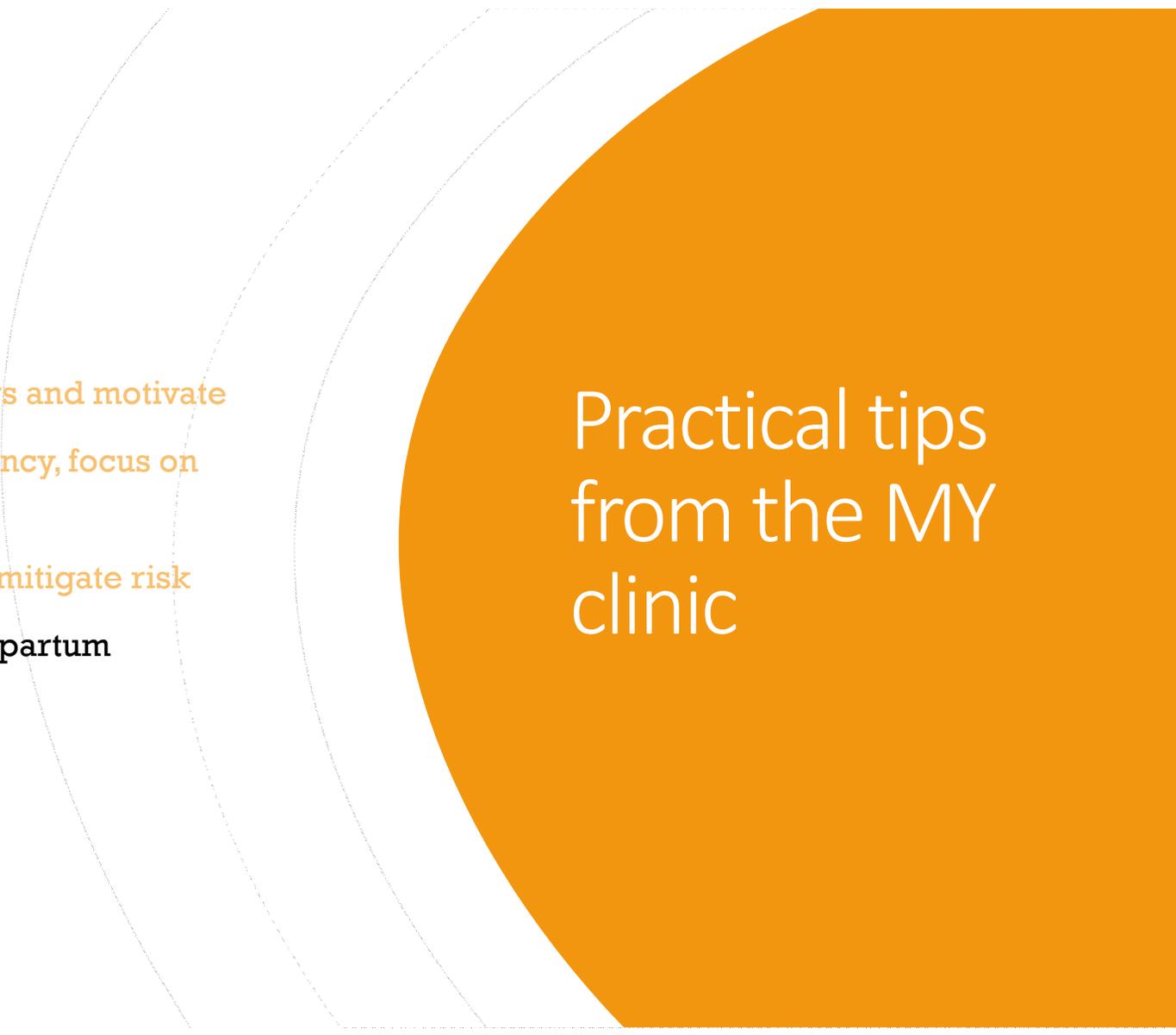
3-fold risk of stillbirth
High percentage of missed IUGR
Higher neonatal morbidity
Developmental Origins of Health and Disease

Plan for induction



The change in hazard ratio trend for each body mass index (BMI) class defined as the gestational period increases.

Yao. *Obesity and the risk of stillbirth. Am J Obstet Gynecol* 2014.



Practical tips from the MY clinic

- Discuss weight, assess barriers and motivate
- Discuss weight gain in pregnancy, focus on health
- Screen for comorbidities and mitigate risk
- **Prepare for delivery and post partum**

Invest in her first birth

- **Decreased success of TOLAC in obese but not overweight women (65 vs 54%, BMI>30), and in women with excessive gestational weight gain.**
 - Dumwald et al, AJOG 2004, n=510
- **TOLAC success decreases from 81% (<200 lbs) to 57% (200-300 lbs) to 13% (>300 lbs), with a significant increase in infectious morbidity (5, 11 and 39% respectively)**
 - Carroll et al, AJOG 2002,, n=70 in each group)
- **Women weighing >300 lbs have a VBAC success rate of 15% with a >50% risk of infectious morbidity**
 - Chauhan, AJOG 2001; n=69 (30 TOLAC)

Prepare for
birth, vaginal
and abdominal

- **A special labour room**
 - Floor mounted toilet
 - At LHSC this is currently present, but furthest from operating room
- **Birthing beds accommodate 500 lbs**
 - Stirrups 150 lbs each
 - Challenges with stirrup usage
 - Girth of leg (indentations)
- **OR beds**
 - All ORs except OR #7 capable of 600 lbs and have side extensions to accommodate patient girth
- **Lifts**
 - Air Pal
 - Single use air mattress (\$100) that slides patient to bariatric stretcher

Involve the anesthesiologist



- **Positioning**
 - Intubation, LUD, and surgical positioning
- **Airway**
 - Extra hands / RT
 - Difficult airway equipment
 - Troop pillow - left in place! (not ideal for pfannenstiel)
- **IV Access**
 - Peripheral access may be difficult
 - All MO patients (incl laboring) should have a well running IV
 - Options: central line, PICC
- **Regional Analgesia & Anesthesia...**

Technical Difficulties



- **Regional Analgesia & Anesthesia**
 - May be very difficult... sometimes unattainable!
 - Poor landmarks / excess tissue
 - ↑ depth
 - Exaggerated lumbar lordosis
 - U/S not always helpful (poor pictures in MO)
 - Multiple attempts – start early!
 - ↑ risk of accidental dural puncture
 - ↑ risk of failed epidural
 - ↑ risk dislodgement of epidural catheter
 - Neutralize position before taping
 - Monitor closely

Is she having a
big baby?

- Very wide range of sensitivities and specificities in the detection of macrosomia among **general obstetric** populations.
 - sensitivity 12 to 75 percent, specificity 68 to 99 percent,
- PPV estimated fetal weight of 4000g to identify a macrosomic newborn varied from 15% to 79%
- Predictive values (NPV and PPV) are affected by prevalence
 - **So PPV increases when test used in GDM, Obese, Postdates.**

Timing of ultrasound and repeated measurements

- In general Obstetric population, growth US at **34-37 weeks** was equally effective at predicting weight than scan prior to delivery
- Using multiple examinations for fetal interval growth recognizes the individual variations in growth rates
 - Can develop individual growth curves within pregnancy
- The accuracy of birth weight percentile predictions was similar whether one or multiple examinations were performed in the third trimester
- US at 37 weeks was best at predicting macrosomia when repeated scans were performed at 17, 25, 33 and 37 weeks of gestation.

Pressman 2000, Hedriana, 1994, Zhang 2012

EFW can
negatively impact
management

- Prospective study, 3844 women eligible, 555 (14.4%) had a clinical estimation of weight >3700g, 315 had US weight 3 days from delivery
- A false negative EFW (undetected macrosomia >4kg) was protective against C-section (halved risk), with no increase in shoulder dystocia and other obstetrical complications

Management of macrosomia

1. Expectant management
2. Induction of labor
 - SOGC guidelines states “inductions should not be performed solely for suspected fetal macrosomia” (III-D)
 - RCOG “Induction of labor at term can reduce shoulder dystocia in women with GDM” (level B)
3. Elective C-section
 - ACOG: “Planned cesarean delivery to prevent shoulder dystocia may be considered for suspected fetal macrosomia with estimated fetal weights exceeding 5,000 g in women without diabetes and 4,500 g in women with diabetes” (level C)



Acknowledge the
differences in labour
in women with
obesity

The Friedman curve was
established in 1955

Contemporary labor patterns: the impact of maternal body mass index



Michelle A. Kominiarek, MD; Jun Zhang, MD, PhD; Paul VanVeldhuisen, PhD;
James Troendle, PhD; Julie Beaver, MS; Judith U. Hibbard, MD

- 118,978 gravidas with singleton term cephalic gestations
- Stratified by parity and BMI at labour admission

FIGURE 2
Labor curves in nulliparas by body mass index category

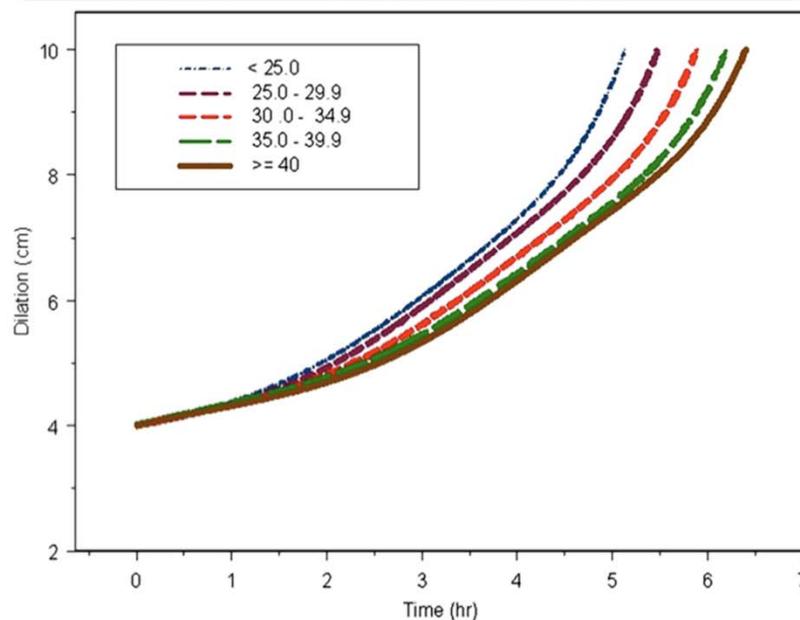
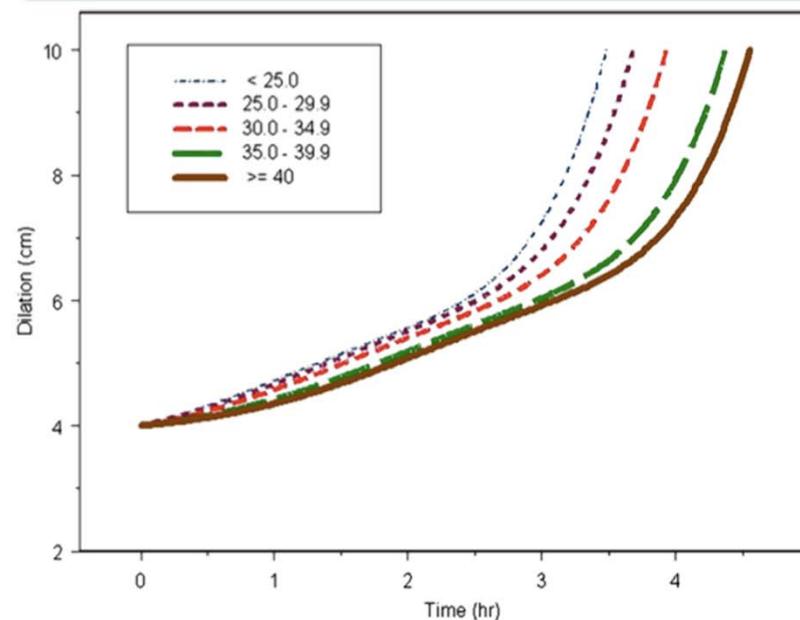
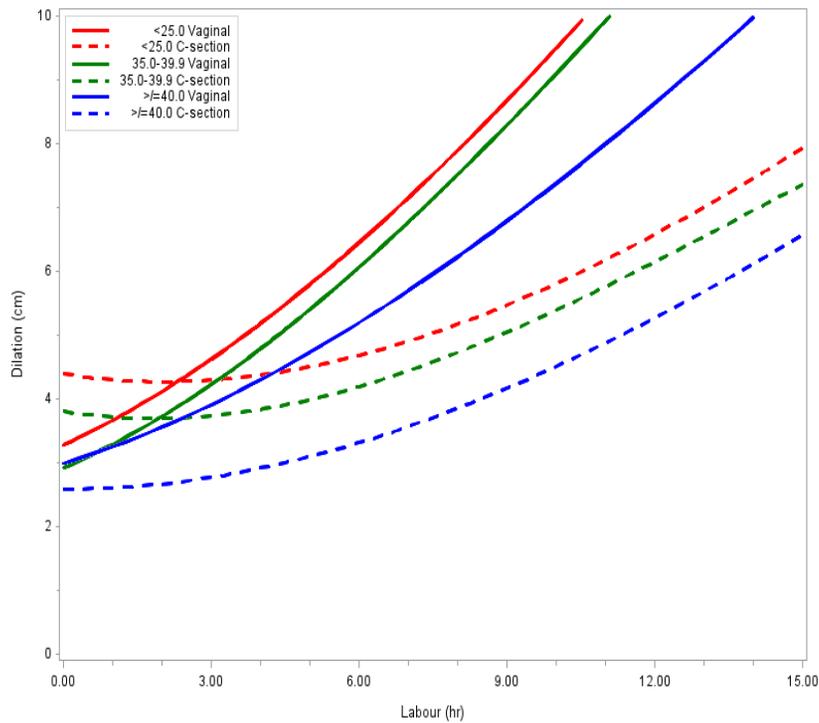


FIGURE 3
Labor curves in multiparas by body mass index category





Labour curves of primiparas who completed the first stage of labour compared to those who underwent first stage Caesarean section for failure to progress.

Shenouda et al, in progress

Characteristic	BMI Categories (kg/m ²) at initial visit (pre-pregnancy BMI)			p-value
	Normal Weight < 25.0	Obese Class II 35.0 – 39.9	Obese Class III > 40	
Total	140	95	47	
Maternal age, y, mean (SD)	30.76 (4.78)	29.99 (4.77)	29.40 (4.48)	0.181
Maternal height, m, mean (SD)	1.67 (0.07)	1.66 (0.07)	1.62 (0.10)	0.006**
Maternal pre-pregnancy weight, kg, mean (SD)	61.45 (6.91)	103.49 (10.52)	117.01 (17.57)	<0.001**
Weight gain during pregnancy, kg, mean (SD)	15.54 (5.70)	9.48 (6.67)	9.71 (8.37)	<0.001**
Gestational age at delivery, wk, mean (SD)	40.23 (1.09)	39.86 (1.19)	39.98 (1.30)	0.052
Diabetes, n (%)	7 (5.0)	9 (9.7)	6 (12.8)	0.167
Dilation at admission, cm, mean (SD)	3.26 (1.81)	3.06 (1.49)	2.79 (1.52)	0.219
Number of cervical examinations, mean (SD)	6.06 (2.65)	6.40 (2.46)	7.51 (3.16)	0.006**
Labour Induction, n (%)	127 (48.3)	67 (40.1)	53 (55.8)	0.050
Oxytocin use, n (%)	89 (63.6)	65 (68.4)	40 (85.1)	0.022*
Epidural analgesia, n (%)	119 (85.0)	81 (85.3)	40 (85.1)	0.998
Caesarean delivery, n (%)	16 (11.4)	16 (16.8)	11 (23.4)	0.123
Infant birth weight, kg, mean (SD)	3.49 (0.47)	3.60 (0.48)	3.62 (0.51)	0.023*

Third stage of labour

Table 3. Delivery measures

Delivery measures	Group 1 BMI \geq 40 (N = 147)	Group2 BMI <30 (N = 157)	Δ (95% CI)	P value
Length of second stage labor	20 (9,52)	23 (13,57)	-3 (-8.0,1.0)	0.17 ^a
Length of third stage labour	5 (3,8)	4 (3,6)	1 (0,1.0)	0.03^a
Estimated blood loss	356 (153,500)	250 (100,500)	33 (0,100)	0.0081^a
Change in hematocrit	3.6 (2.0,5.2)	4.1 (2.4,5.8)	-0.5 (-1.1,0.1)	0.08 ^a
Retained placenta	1 (0.7%)	2 (1.3%)	-0.6% (-2.8%, 1.6%)	1.0 ^b
Postpartum transfusion	3 (2.0%)	1 (0.6%)	1.4% (-1.2%, 4%)	0.36 ^b
Postpartum hemorrhage	16 (10.89%)	5 (3.2%)	7.7% (2%, 13.4%)	0.01^b
Operative delivery	5 (3.4%)	5 (3.2%)	0.2% (-3.8%, 4.2%)	1.0 ^b
Uterotonics	24 (16.3%)	13 (8.3%)	8.1% (6.8%, 15.4%)	0.04^b
Chorioamnionitis	5 (3.4%)	10 (6.4%)	-3% (-7.8%, 1.9%)	0.29 ^b

^aStatistical analysis based on Wilcoxon rank sum test.

^bStatistical analysis based on Fisher's exact; continuous measures are reported with median, 25th, 75th percentile, and categorical measures are reported with N (%). For binary measures, Δ represents the difference in group proportions with 95% CI. For continuous measure, Δ represents the Hodges-Lehmann estimation in location shift with 95% CI.

SOGC Guideline Venous Thromboembolism and Antithrombotic Therapy in Pregnancy (2014)

Postpartum thromboprophylaxis should be considered in the presence of multiple clinical or pregnancy-related risk factors when the overall absolute risk is estimated to be greater than 1% drawn from the following groupings:

- a. any 2 of the following risk factors (each with an absolute risk of venous thromboembolism < 1% in isolation):
 - i. body mass index ≥ 30 kg/m² at first antepartum visit; (II-2B)
 - ii. smoking > 10 cigarettes/day antepartum; (II-2B)
 - iii. preeclampsia; (II-2B)
 - iv. intrauterine growth restriction; (II-2B)
 - v. placenta previa; (II-2B)
 - vi. emergency Caesarean section; (II-2B)
 - vii. peripartum or postpartum blood loss of > 1 litre or blood product replacement; (II-2B)
 - viii. any low risk thrombophilia: PC or PS deficiency, heterozygous factor V Leiden, or prothrombin gene mutation 20210A; (III-B)
 - ix. maternal cardiac disease, SLE, sickle cell disease, inflammatory bowel disease, varicose veins, gestational diabetes; (III-B)
 - x. preterm delivery; (III-B)
 - xi. stillbirth. (III-B)

SOGC CLINICAL PRACTICE GUIDELINE

Obesity in Pregnancy #239, Feb 2010

Recommendations

1. Periodic health examinations and other appointments for gynaecologic care prior to pregnancy offer ideal opportunities to raise the issue of weight loss before conception. Women should be encouraged to enter pregnancy with a BMI $< 30 \text{ kg/m}^2$, and ideally $< 25 \text{ kg/m}^2$. (III-B)
2. BMI should be calculated from pre-pregnancy height and weight. Those with a pre-pregnancy BMI $> 30 \text{ kg/m}^2$ are considered obese. This information can be helpful in counselling women about pregnancy risks associated with obesity. (II-2B)
3. Obese pregnant women should receive counselling about weight gain, nutrition, and food choices. (II-2B)

SOGC CLINICAL PRACTICE GUIDELINE

Obesity in Pregnancy #239, Feb 2010

4. Obese women should be advised that they are at risk for medical complications such as cardiac disease, pulmonary disease, gestational hypertension, gestational diabetes, and obstructive sleep apnea. Regular exercise during pregnancy may help to reduce some of these risks. (II-2B)
5. Obese women should be advised that their fetus is at an increased risk of congenital abnormalities, and appropriate screening should be done. (II-2B)
6. Obstetric care providers should take BMI into consideration when arranging for fetal anatomic assessment in the second trimester. Anatomic assessment at 20 to 22 weeks may be a better choice for the obese pregnant patient. (II-2B)
7. Obese pregnant women have an increased risk of Caesarean section, and the success of vaginal birth after Caesarean section is decreased. (II-2B)
8. Antenatal consultation with an anaesthesiologist should be considered to review analgesic options and to ensure a plan is in place should a regional anaesthetic be chosen. (III-B)
9. The risk of venous thromboembolism for each obese woman should be evaluated. In some clinical situations, consideration for thromboprophylaxis should be individualized. (III-B)

- Discuss weight, assess barriers and motivate
- Discuss weight gain in pregnancy, focus on health
- Screen for comorbidities and mitigate risk
- Prepare for delivery and post partum
- Discuss ongoing focus on health postpartum, provide contraception

Trauma-informed practice, 5A's
Assess readiness for change, educate

Recognize limitations of current techniques

Consider induction of labour for stillbirth risk

Prepare your patient for a long labour

Consult anesthesiologist and prepare for potential epidural restarts

Consider IUS for endometrial protection

Practical tips from the MY clinic



PRG Pregnancy
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The Big Picture

LAWSON
HEALTH RESEARCH INSTITUTE



London Health Sciences Centre

Western



Schulich
MEDICINE & DENTISTRY

