## Management of Obesity in Pregnancy R. Phillips Heine, MD

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## **Learning Objectives**



- 1. Understand the increased risks of varying medical and obstetrical conditions in the obese population
- 2. Develop a management plan for obese patients both before and during pregnancy
- 3. Understand the risks of prior bariatric surgery on pregnant patients



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- Obesity is the most common health issue among women of childbearing age, affecting 1/3 of all women
   7.5% of women have a BMI>40
- The Pregnancy Medical Home Care Pathway on Management of Obesity in Pregnancy describes best practice management of three groups:
  - Women with BMI 30-40
  - Women with BMI >40
  - Women with a history of bariatric surgery

## Obesity Rates 1990-2014





# Obesity Rates 2015











## **Preconception Care**



- Two priorities prior to conception:
  - Identification and management of comorbid conditions
    - Screen for metabolic syndrome/other conditions
      - Hypertension screening
      - HgbA1c for diabetes
      - Metabolic panel
      - . TSH
      - Urine protein/creatinine ratio
      - Consider EKG in patients with BMI >40 and in those with BMI >30 with other comorbidities

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## **Preconception Care**



- Two priorities prior to conception:
  - Aggressive weight loss management
    - Nutritional consultation
    - Exercise
    - Referral for bariatric surgery
      - BMI > 35 with 2 or more comorbid conditions
      - . BMI > 40
  - Folic acid supplementation:
    - 1mg daily
    - Consider 4mg daily if other factors are present

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## **Prenatal Care – 1<sup>st</sup> Trimester**



Screen for comorbidities:

- Hypertension screening
- HgbA1c and early GTT for diabetes
- Metabolic panel
- TSH
- Urine protein/creatinine ratio
- Consider EKG in patients with BMI >40 and in those with BMI >30 with other comorbidities
- Nutritional consultation
  - IOM weight gain recommendation: 11-20 pounds
  - Folic acid supplementation



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#### Recommended Weight Gain IOM



Prepregnancy Weight Category	Body Mass Index*	Recommended Range of Total Weight Gain (lb)	Recommended Rates of Weight Gain <sup>†</sup> in the Second and Third Trimesters (lb) (Mean Range [lb/wk])
Underweight	Less than 18.5	28–40	1 (1–1.3)
Normal weight	18.5-24.9	25-35	1 (0.8–1)
Overweight	25-29.9	15–25	0.6 (0.5–0.7)
Obese (includes all classes)	30 and greater	11–20	0.5 (0.4–0.6)

## **Prenatal Care – 1<sup>st</sup> Trimester**



Discuss perinatal risks:

- Fetal anomalies (higher risk, less likelihood of detection)
- Gestational diabetes
- Preeclampsia
- Macrosomia
- Cesarean delivery/wound complications
- Stillbirth
- Ultrasound for accurate dating

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## **Prenatal Care – 1<sup>st</sup> Trimester**



#### Suspected sleep apnea

- Snoring, excessive daytime sleepiness, witnessed apneas, or unexplained hypoxia
  - Increased risk of preeclampsia, cardiomyopathy, pulmonary embolism and mortality
- Refer to sleep specialist
- Low dose aspirin
  - 81mg daily for BMI >40 or BMI >30 with additional risk factor
  - Initiate at 12-16 weeks
  - Can initiate up to 28 wks

Consider referral to high-risk OB or maternal-fetal medicine for continued care for BMI > 50 or per institutional protocol

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## **Prenatal Care – 2<sup>nd</sup> Trimester**



- Monitor weight gain
  - 50% with weight gain greater than recommendation
- Detailed anatomy ultrasound address limitations with patient
  - 20-30% reduction in anomaly detection
- Consider OB anesthesia consult for BMI > 50 or per institutional protocol

## **Congenital Anomalies**



Congenital Anomaly	Increased Risk		
Neural tube defects	OR, 1.87; 95% Cl, 1.62–2.15		
Spina bifida	OR, 2.24; 95% Cl, 1.86–2.69		
Cardiovascular anomalies	OR, 1.30; 95% Cl, 1.12–1.51		
Septal anomalies	OR, 1.20; 95% Cl, 1.09–1.31		
Cleft palate	OR, 1.23; 95% Cl, 1.03–1.47		
Cleft lip and palate	OR, 1.20; 95% Cl, 1.03–1.40		
Anorectal atresia	OR, 1.48; 95% Cl, 1.12–1.97		
Hydrocephaly	OR, 1.68; 95% Cl, 1.19–2.36		
Limb reduction anomalies	OR, 1.34; 95% Cl, 1.03–1.73		

## **Prenatal Care – 3<sup>rd</sup> Trimester**



- Repeat gestational diabetes screening
- Consider serial growth ultrasound if pannus precludes accurate fundal height assessment
- Consider weekly NST/AFI after 36 weeks
- Consider referral to high-risk OB or maternal-fetal medicine for delivery planning for BMI > 50 or per institutional protocol

## Adverse Outcomes Rates per 10,000 births



	Maternal BMI				
	20	25	30		
Fetal death	76	82 (95% Cl, 76–88)	102 (95% Cl, 93–112)		
Stillbirth	40	48 (95% Cl, 46–51)	59 (95% Cl, 55–63)		
Perinatal death	66	73 (95% Cl, 67–81)	86 (95% Cl, 76–98)		
Neonatal death	20	21 (95% Cl, 19–23)	24 (95% Cl, 22–27)		
Infant death	33	37 (95% Cl, 34–39)	43 (95% Cl, 40-47)		

#### Stillbirth by Gestational Age Stratified by BMI









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#### Induction/Delivery per institutional protocol

- Increased labor time, oxytocin dose and cesarean
- Fetal monitoring
- Early OB Anesthesia consult
- Patient transportation
- OR preparation
- Shoulder dystocia/PPH
- Consider SCDs for patients with induction and prolonged bed rest







Primary cesarean - in patients with BMI > 60, there are instances where inability to perform emergent cesarean may preclude attempt at vaginal delivery

- Cesarean delivery:
  - 3g cefazolin with delivery
- Hibiclens shower/wipe prior to cesarean
- Operative prep per local protocol
- SCDs for all cesarean patients
- Consider negative pressure wound dressing in high-risk patients (BMI > 40, chorioamnionitis in labor, prolonged labor)



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## Morbid Obesity Impact Cefazolin tissue levels





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## NPWT for C-Sections



Prospective study of C-section patients with risk factors for wound complications compared to historical controls
n=319 (110 NPWT, n=209 control)

Outcomes	Control (n=209)	NPWT (n=110)	P-value	Odds ratio (95% CI)
Overall Complication Rate	44 (21.0%)	7 (6.4%)	0.0007	0.255 (0.111, 0.587)
Wound Infection	24 (11.5%)	3 (2.7%)	0.008	0.216 (0.064, 0.964)
Endometritis	14 (6.7%)	1 (0.9%)	0.023	0.128 (0.003, 0.865)
Wound separation	8 (3.8%)	3 (2.7%)	0.754	0.704 (0.118, 3.016)
All wound complications (separation/infection combined)	32 (15.3%)	6 (5.4%)	0.0098	0.319 (0.129, 0.789)



#### **Total Analgesic Use For Hospital Stay**



## **Post Delivery**



#### Cesarean delivery:

- OT/PT consult post-delivery if difficulties with wound care or ADLs are anticipated
- Lactation consult
- Consider low molecular weight heparin in highest-risk patients (BMI> 50, chorioamnionitis in labor, prolonged labor, preeclampsia)
- Initiate at 12-24 hours post-delivery
- BMI 40-60 40mg twice daily
- BMI > 60 60mg twice daily

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- Provide comprehensive postpartum care as per guidance in the PMH Care Pathway on Postpartum Care and the Transition to Well Woman Care
- Incisional check at 5-7 days
  - Remove external wound vacuum, if utilized
- Review contraceptive options
  - IUD or implant are preferred methods
- Nutritional counseling
- Encourage breastfeeding





- Ensure transition to primary care provider
- Consider bariatric surgery referral:
  - BMI > 40
  - BMI > 35 with 2 or more comorbid conditions

## **Prior bariatric surgery**



- Most patients remain obese following bariatric surgery

   follow guidelines for management of obesity in
   pregnancy
- Three primary bariatric approaches:
  - Gastric lap band (restrictive)
  - Vertical sleeve gastrectomy (restrictive)
  - Roux-en Y (restrictive and malabsorptive)
- Review risks/benefits of pregnancy after bariatric surgery
  - •No difference in pregnancy outcomes with restrictive vs. malabsorptive
  - Recommend delaying pregnancy 18-24 months after surgery

## Prior bariatric surgery – 1<sup>st</sup> trimester



- Maternal-fetal medicine or high-risk OB consult; consider transfer of care
- Consider proton pump inhibitor
- Consider low-dose aspirin
- Review nutritional considerations

 Labs – CBC, ferritin, iron, vitamin B12, RBC folate (not serum folate), vitamin D, calcium, drug levels if therapeutic drug level is critical (absorption of oral meds may be decreased)

## Prior bariatric surgery – 2<sup>nd</sup> trimester



Diabetes screening – 50% cannot tolerate oral glucose tolerance test due to dumping syndrome
If able to drink a 12-ounce soda, likely able to tolerate GTT
Consider GTT alternatives

 Labs – CBC, iron, ferritin, calcium, vitamin D, drug levels as needed, diabetes screen at 24 – 28 weeks

## Prior bariatric surgery – 3<sup>rd</sup> trimester



 Many women may require labor induction/ augmentation and have longer labor as most postbariatric patients remain obese

- Prior bariatric surgery is not an indication for cesarean delivery
- Consider pre-labor consultation with bariatric surgeon if extensive abdominal surgery

# Prior bariatric surgery – postpartum



- Use caution with NSAIDs to avoid gastric ulceration
- Contraceptive counseling
- Recommend lactation consultation if breastfeeding
- If breastfeeding encourage
  - calcium citrate supplementation 1500 mg
  - vitamin D 400-800 IU
  - vitamin B12 500-1500mg daily





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