Obesity in Pregnancy

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Disclosures

- None

Objectives

- List current definitions of obesity
- Identify effects of obesity on pregnancy
- Implement interventions to decrease associated pregnancy risks
- Manage delivery and postpartum needs of obese gravidas

Background

- Body mass index (BMI)= weight in kg/m2
- Prevalence of obesity among females ages 20 to 39 years: 39.6 %

World Health Organization BMI Categories

Category	BMI*
Underweight	Less than 18.5
Normal weight	18.5–24.9
Overweight	25.0–29.9
Obesity class I	30.0–34.9
Obesity class II	35.0–39.9
Obesity class III	40 or greater

BMI, body mass index.

*Weight in kilograms divided by height in meters squared (kg/m^2)

Obesity: preventing and managing the global epidemic. Report of a WHO consultation. World Health Organ Tech Rep Ser 2000;894:i-xii, 1–253.

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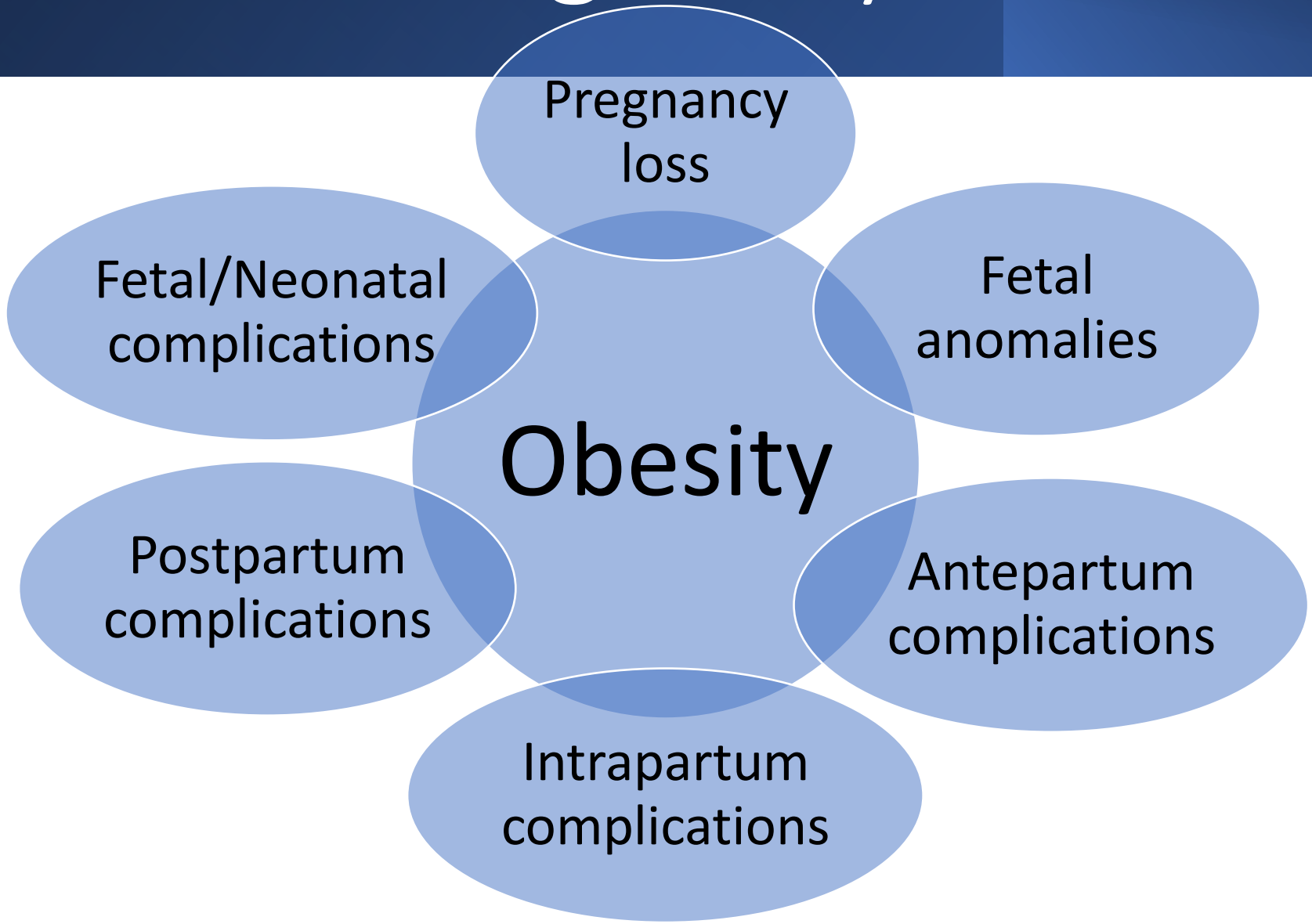
Effect on Pregnancy



Pregnancy loss and Congenital Anomalies

- Spontaneous abortion OR 1.2
- Recurrent miscarriage OR 3.5
- Congenital anomalies
- Decreased risk of gastroschisis

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

Abbreviations: CI, confidence interval; OR, odds ratio.

Data from Stothard KJ, Tennant PW, Bell R, Rankin J. Maternal overweight and obesity and the risk of congenital anomalies: a systematic review and meta-analysis. JAMA 2009;301:636–50.

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Antepartum Complications

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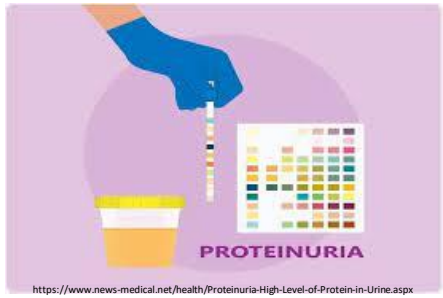
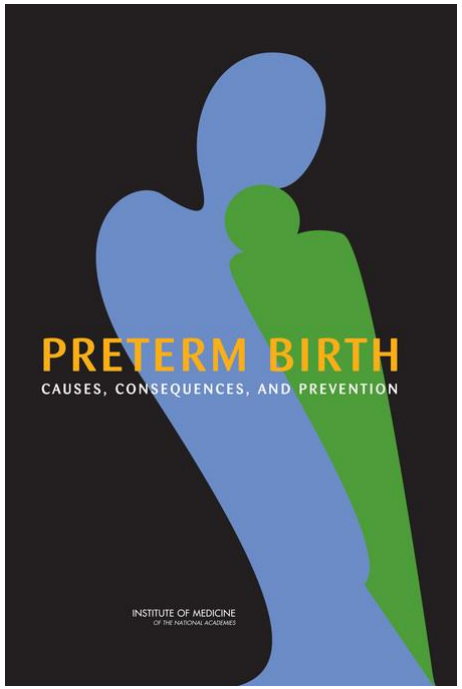
https://parklandhealthplan.com/living-well/blog/articles/what-is-preeclampsia/

https://asthmapregnancytoolkit.org.au/treatable-traits/extrapulmonary/obstructive-sleep-apnoea-osa/

https://www.kahnlongevitycenter.com/blog/congestive-heart-failure-a-natural-integrative-approach

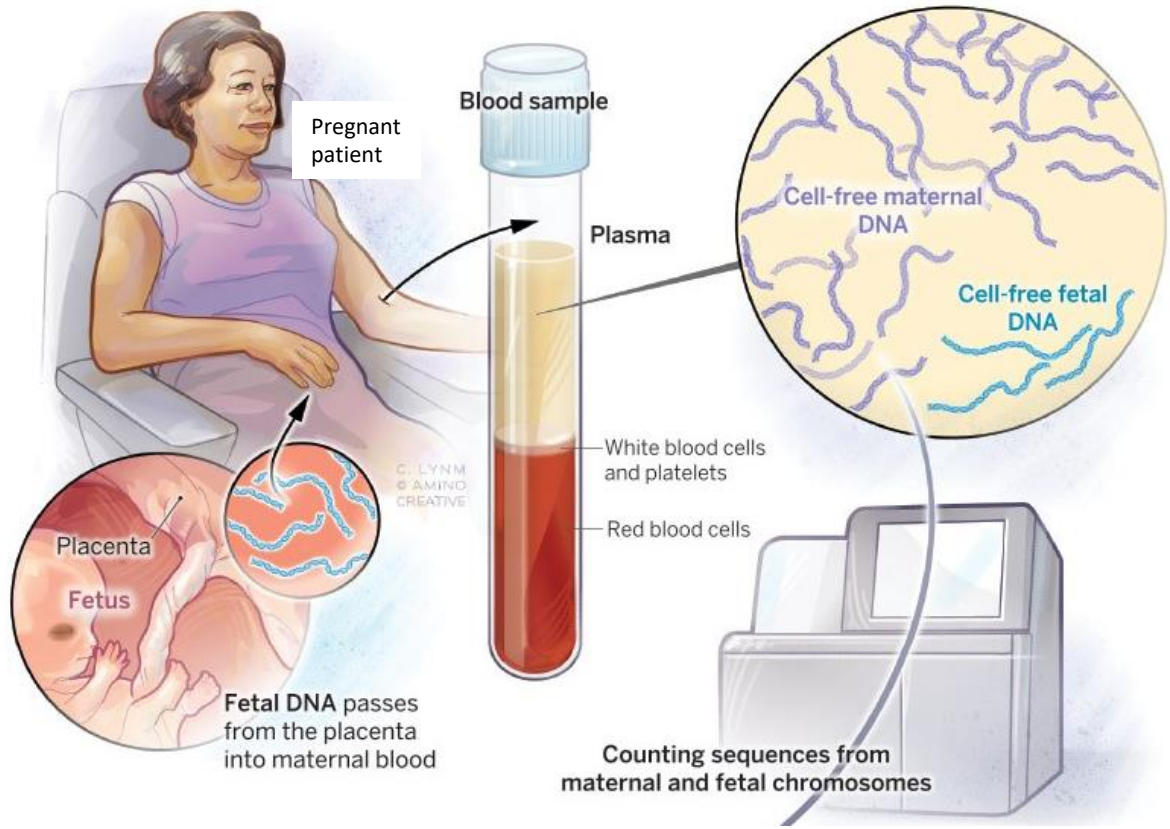


https://www.news-medical.net/health/Proteinuria-High-Level-of-Protein-in-Urine.aspx



Preterm birth. Causes, consequences, and prevention. 2007

Antepartum Complications



https://laskerfoundation.org/winners/noninvasive-prenatal-testing-using-fetal-dna/

Antepartum Complications

Table 5. Detection of Fetal Anomalies

Body Mass Index	Standard Ultrasonography	Targeted Ultrasonography
Normal (less than 25)	66%	97%
Overweight (25-29.9)	49%	91%
Class I obesity (30-34.9)	48%	75%
Class II obesity (35-39.9)	45%	88%
Class III obesity (40 or more)	22%	75%

Data from Dashe JS, McIntire DD, Twickler DM. Effect of maternal obesity on the ultrasound detection of anomalous fetuses. Obstet Gynecol 2009;113:1001–7.

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Absolute Risks Per 10,000 Pregnancies by BMI

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

Abbreviations: BMI, body mass index; CI, confidence interval.

Data from Aune D, Saugstad OD, Henriksen T, Tonstad S. Maternal body mass index and the risk of fetal death, stillbirth, and infant death: a systematic review and meta-analysis. JAMA 2014;311:1536–46.

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Intrapartum Complications

- Prolonged labor
- Failed trial of labor
- Cesarean section
- Complications of TOLAC (2 fold increase maternal morbidity)

Postpartum Complications

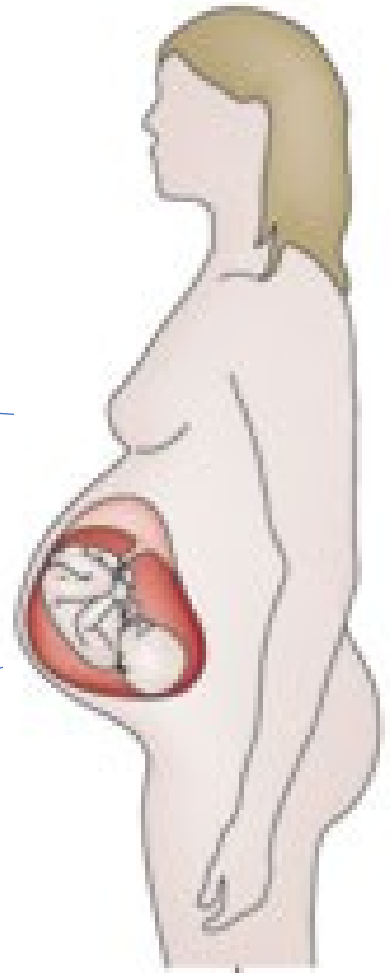
- Endometritis
- Wound complications
- VTE
- Future metabolic dysfunction
- Postpartum weight retention
- Early termination of breastfeeding
- Postpartum anemia
- Postpartum depression

Fetal/Neonatal Complications

ADHD

Autism Spectrum

Childhood Asthma



Maternal Obesity

Macrosomia

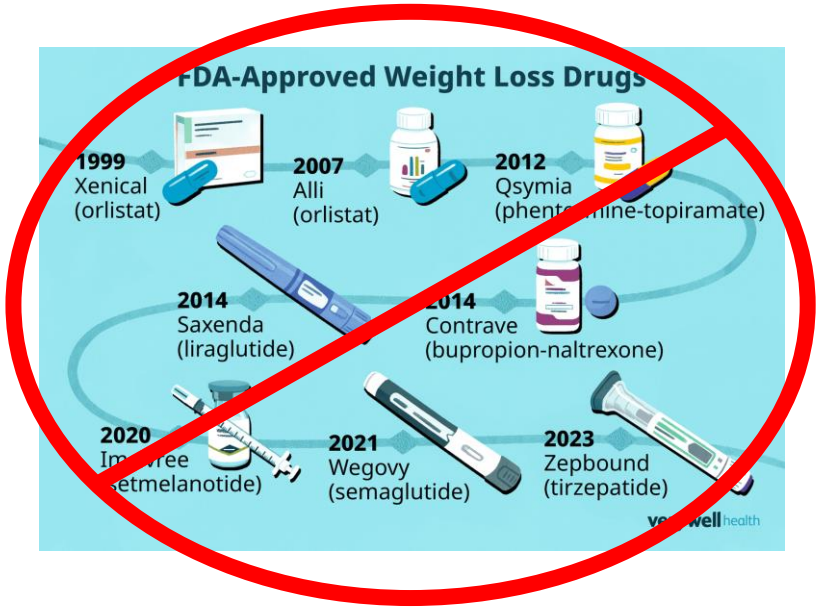
Metabolic Syndrome

Childhood Obesity

Management

Prepregnancy

- Weight loss prior to pregnancy: 5-7% improves metabolic health
  - Surgical
  - Non surgical
- Motivational interviewing
- USPSTF recommends multicomponent behavioral interventions for weight loss and maintenance for BMI > 30



Pregnancy Weight Gain

Prepregnancy Weight Category	Body Mass Index*	Recommended Range of Total Weight Gain (lb)	Recommended Rates of Weight Gain† 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)

*Body mass index is calculated as weight in kilograms divided by height in meters squared or as weight in pounds multiplied by 703 divided by height in inches

†Calculations assumed a 1.1-4.4 lb weight gain in the first trimester

Modified from Institute of Medicine (US). Weight gain during pregnancy: reexamining the guidelines. Washington DC. National Academies Press; 2009. Copyright 2009 National Academy of Sciences.

*Inadequate weight gain or weight loss during pregnancy not recommended due to increased risk of SGA

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Antenatal Care

- Early dating US
- Screening for obstructive sleep apnea and glucose intolerance at first prenatal visit (or preconception)
- Low dose Aspirin
- Targeted fetal US for anomalies
  - Consider alternate timing or approach
- Serial US fetal growth assessments
- Antenatal surveillance
  - BMI 35.0-39.9- weekly at 37 0/7 weeks
  - BMI 40 and up- weekly at 34 0/7 weeks

Intrapartum Care & Delivery Planning

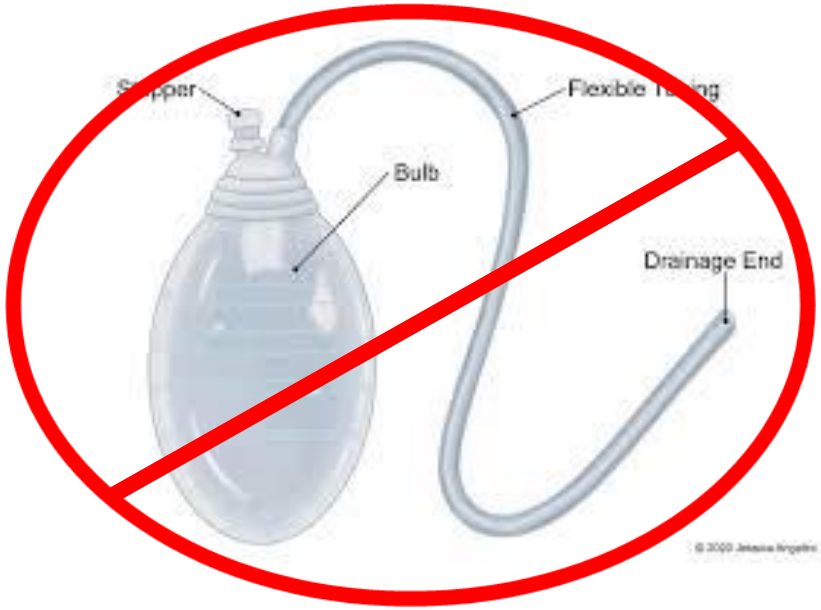
- Anesthesia consultation
- Hospital equipment
  - Labor beds
  - OR beds
  - Postpartum beds
- Fetal monitoring equipment
- Maternal medical equipment
  - SCDs vs foot pumps
  - BP cuffs
  - Speculum/surgical instruments
- IV access

Labor Management

- Risk of cesarean section increases with BMI
- Longer 1st stage of labor in gravidas with class II and III obesity
- ACOG recommends considering a longer 1st stage prior to CD for failed labor
- Increased risks with both TOLAC and Repeat cesarean section
- Increased risk of PPH after vaginal delivery with class III obesity

Operative Considerations

- Anesthesia
- Antibiotic dosing (>120 kg = 3g Ancef)
- Skin prep
- Incision placement
- Subcutaneous tissue closure (>2cm)
- Multimodal pain control
  - Duramorph
  - TAP or rectus sheath block
  - Long acting local



Incision Placement for Class II and III Obesity

- Shared decision making
- With patient lying as flat as planned for OR:
  - Assess abdominal structure and skin integrity
  - Ultrasound pregnancy location in relation to bony landmarks and pannus
  - Place gloved hand underneath pannus and palpate abdominally to establish inferior margin
  - If considering taping up pannus, assess patient's ability to ventilate adequately with pannus lifted

Postpartum Care

- VTE prophylaxis post cesarean
  - Mechanical
  - Pharmacologic
- Lactation consultation/support
- Contraceptive counseling
- Referral for weight loss interventions

Conclusions

- Prepregnancy weight loss should be encouraged for obese patients
- BMI should be calculated at the first OB visit to guide counseling
- Behavioral interventions should focus on both diet and exercise
- Obesity can have negative effects on antepartum, intrapartum, and postpartum cares
- Careful planning with the OB team and OB anesthesia team is necessary on the labor floor due to increased risk of delivery complications for obese patients

Questions?

References

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