

Implications of Obesity and Other Chronic Medical Conditions on Reproductive Health Care

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Disclosures

- Shering Plough trainer for Implanon™

Objectives

- Overview of Obesity Burden
- Obesity: Effects on Pregnancy
- Obesity: Contraceptive Choices, Safety, and Efficacy
- Present guidelines for increasing contraceptive use in women with medical conditions
- Review common clinical situations

Obesity Summary

- Obese women have lower fertility than do other women, but it is not zero
- Unplanned pregnancies occur and are more dangerous than for other women
- Contraception has added importance for obese women
- Obesity is increasing rapidly □ Hence, obese women are an increasing concern for you

Lake JK. *Int J Obes Relat Metab Disord* 1997;21:432-8

Obesity Is an Epidemic: Obesity Trends Among Adults in the United States

- Behavioral Risk Factor Surveillance System (BRFSS) Telephone surveys, self-reports

CDC: www.cdc.gov

Definitions

- Obesity: having a very high amount of body fat in relation to lean body mass, or Body Mass Index (BMI) of 30 or higher.
- Body Mass Index (BMI): a measure of an adult's weight in relation to his or her height, specifically the adult's weight in kilograms divided by the square of his or her height in meters.
- $BMI = 703 \times Wt \text{ (pounds)} / Ht \text{ (inches)}^2$

Degrees of Obesity

- Underweight: BMI < 18.5
- Healthy weight: BMI between 18.5 and 24.9
- Overweight: BMI between 25 and 29.9
- Obese: BMI > 30
- Morbidly or extremely obese: BMI > 40

Examples of BMI = 30 (Obese)

HT	5'	5'2"	5'4"	5'6"	5'8"
WT	153	164	174	186	197

Obesity Among Women Ages 20-60 Data from 2003-2004 NHANES

	Ages 20-39	Ages 40-59
White, non-Hispanic	24%	38%
Black, non-Hispanic	50%	58%
Mexican-American	36%	48%

Ogden CL. JAMA 2006;295:1549-54

Consequences of Obesity

Obesity and Fecundity

- Increasing BMI increases infertility among women and men
- Results similar for older and younger men, y g suggesting that erectile dysfunction in older men does not explain the association
- Significant negative relationship between BMI and the total number of normal-motile sperm

Lake JK. *Int J Obes Relat Metab Disord*1997;21:432-8

Why Does Obesity Cause Infertility?

- Obesity -
- Disorders of sex hormone secretion & metabolism -
- Hyperandrogenism in women
hypotestosteronemia in men

Pasquali R. *Maturitas*2006;54:363-71

Health Consequences of Obesity

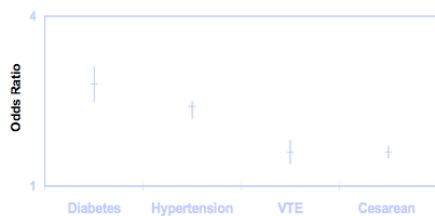
- Increases risk of major causes of death, including cardiovascular disease, numerous cancers, and diabetes,
- Markedly reduces life expectancy
- Increases osteoarthritis, gall bladder disease, sleep apnea, respiratory impairment, social stigmatization; decreases mobility

McTigue KM. *Ann Intern Med* 2003;139:933-49

Obesity and Pregnancy Complications

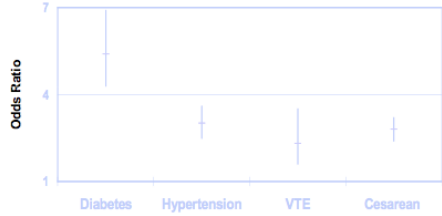
- Increased risk for:
 - Gestational diabetes
 - Pre-eclampsia
 - Macrosomia
 - Labor induction
 - Cesarean section
 - Fetal anomalies
 - Stillbirth

Obstetrical Complications of Obesity (Moderate Obesity: 90-120 kg)



Robinson HE. *Obstet Gynecol* 2005;106:1357-64

Obstetrical Complications of Obesity (Severe Obesity: >120 kg)



Robinson HE. *Obstet Gynecol* 2005;106:1357-64

Management Strategies

- Pre-conception counseling!
 - BMI determination
 - Pre-pregnancy weight loss for obese women
 - 10% body weight decrease over 6 months - 1-2 pounds per week
 - Exercise!
 - Look for common comorbidities
 - Optimize medical management BEFORE conception!

Management Strategies: First Trimester

- Accurate ultrasound dating
- Assessing comorbidities:
 - Glucose tolerance test
 - Consider 24 hour urine protein collection
- Counseling regarding risks
- Review weight gain recommendation

Management Strategies: Second Trimester

- Repeat glucose tolerance test
- Screen for fetal anomalies

Management Strategies: Third Trimester

- Monitor for development of pre-eclampsia
- Fetal growth assessment
- Anesthesia consultation

What about bariatric surgery?

- Advise delaying pregnancy
- Encourage contraception!
- Evaluate for nutritional deficiencies
- Coordinate care with bariatric team
- Avoid GTT drink!
- Monitor fetal growth

Abortion Complications of Obesity

- 2nd-trimester surgical abortion
 - Increased procedure difficulty among obese women
 - Obesity may necessitate special instruments and techniques □
- Medication abortion may be preferable to surgical abortion among obese women

Dark AC. *J Reprod Med*2002;47:226-30

Obesity and Contraception

OC Failure in Recent Clinical Trials

- Since 1999, 5 multicenter trials evaluated the efficacy of 4 different OCs
- 15.5% of 6465 women weighed >90kg
- 4.4% had a BMI >40
- Crude perfect-use pregnancy rate
 - 0.7% among women weighing >90kg
 - 1.0% among women weighing <90kg

Westhoff C. *Contraception*2008;78:167

Summary: Weight/BMI and OC Failure

- No convincing evidence that very heavy or obese women have a higher risk of OC failure during perfect use, even on the lowest dose formulations
- Possible that OCs are less forgiving of imperfect use among very heavy or obese women
- Even if real the absolute risk of failure is still likely to be modest: a 60% increase in risk implies an increase from 7% to 11% in the first year of typical use of OCs in the United States

Summary: OCs and Weight/BMI

- Obesity is a risk factor for venous thromboembolism; among those <40
 - RR=5.2(5.1, 5.3) for pulmonary
 - RR = 5.2 (5.1, 5.3) for deep venous thrombosis
- OCs further increase the effect of obesity on deep venous thrombosis; synergistic effect of OC use and BMI>25

Stein PD. *Am J Med*2005;118:978-80
Pomp ER. *Br J Haematol* 2007;139:289-96
Sidney S. *Contraception*2004;70:3-10.
Abdollahi M. *Thromb Haemost* 2003;89:493-8

BMI and Failure of Implanon and DMPA

- No pregnancies in clinical trials of Implanon or DMPA-SC, even among obese users
- In DMPA-SQ trial 11% of women were obese
- In Implanon trials, women could be no heavier than 130% of ideal body weight

Croxatto HB. *Contraception*. 1998;58:915-75
Croxatto HB. *Hum Reprod*1999;14:976-81
Funk S. *Contraception*2005;71:319-26

BMI and Failure of NuvaRing

- Only mean BMI reported in published papers
- BMIs of women experiencing failures not reported
- Analysis of efficacy trials showed higher weight does not reduce efficacy; no pregnancies in 74 women weighing 189-272 lbs

Reumen F.M.E. *Hum Reprod*2001;16:469-76
Dabben TOM. *Obstet Gynecol* 2002;100:585-93
Oddsom K. *Contraception*2005;71:176-82
Ahrens H.J. *Contraception*2006;74:451-7
Westhoff C. *Obstet Gynecol* 2005;106:595

Tubal Sterilization

- Collaborative Review of Sterilization
- 9,475 women underwent interval laparoscopic tubal sterilization.
- Complication rate 16 per 1,000 procedures
- Higher complication rate among obese women □ Obesity OR = 1.7 (1.2, 2.6)

Jamieson DJ. *Obstet Gynecol* 2000;96:997-1002

IUD: Great Choice for Obese Women

- Copper (and plastic) IUDs decrease risk of endometrial cancer
- LNG-IUS reduces menstrual blood loss (decreases anemia), reduces menorrhagia, reduces dysfunctional uterine bleeding

Hubacher D. *Obstet Gynecol Survey*2002;57:120-8
Jensen JT. *Obstet Gynecol Survey*2005;60:604-12
Blumenthal P. *Contraception*2006;74:249-58

Best Choice for Obese Women? Vasectomy!

What about other medical conditions and contraception?

Women with Medical Conditions

- May have increased risks when using certain contraceptive methods
- May have even more increased risks with an unintended pregnancy
- May have difficulty in using certain methods

Medical Evaluation

- Careful history taking, at initial and annual visits, is key
- Measurement of blood pressure before using most hormonal contraceptives
- Utilize screening tests for patients with risk factors or per preventative guidelines

Guidelines for Contraceptive Use

The World Health Organization

- Provides *guidelines* for contraceptive use
- Utilizes a thorough search of the medical literature and/or expert opinion
- Updates the guidelines regularly
- Provides free resources for providers

Medical Eligibility Criteria for Contraceptive Use (MEC)

- Covers use of all available contraceptive methods
 - Patch and ring included in "Combined methods"
 - Implanon included in "Implants"
- Provides categories for use with various medical conditions

Using the MEC in Practice

- Communicate risks of methods as well as risks of pregnancy to the patient
- Document counseling and decision making in the chart
- Include other providers in the decision making

Categories for Use

1. No restriction on use.
2. Advantages generally outweigh theoretical or proven risks. More than usual follow-up may be needed.

Green light!

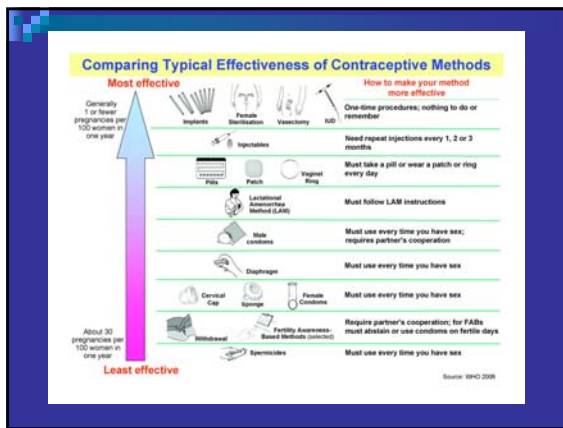
Categories for Use

3. Should not use unless clinical judgment says that the patient can use it. Risks usually outweigh the advantages.
4. Condition represents an unacceptable health risk if method used.

Yellow or Red light!

Green Light Conditions

- Gestational hypertension
- Gestational diabetes
- Thyroid disorders
- Mitral valve prolapse
- Varicose veins
- Cervical dysplasia
- Ectopic pregnancy
- Past history of PID
- Non-migraine headaches
- Cholecystectomy
- HIV
- Sickle cell disease
- Benign breast cysts
- Family history of cancer
- Obesity
- Depression
- Adolescence
- Perimenopause



Top Tier Methods

Using the most effective reversible methods for our high-risk patients

- As effective as tubal sterilization without risks of surgery and anesthesia
- Cost-effective at 2 years of use
- Long-term
- Easiest to use

Top Tier Methods

- Copper T IUD (Paragard)
- Progestin-only IUD (Mirena)
- Progestin-only implant (Implanon)

Common Themes in the MEC

- Estrogen can increase complications in women with cardiovascular risk factors
- Progestin-only and non-hormonal methods are generally safe alternatives
- Safe IUD use starts with avoiding complications at time of placement

Who Can Safely Use IUDs?

- Adolescents
- Nulligravid and nulliparous women
- Women not in a mutually monogamous relationship
- Women with a history of STI's or PID, but no current risk
- Women with history of ectopic pregnancy

Precautions for IUD Placement

- Pregnancy
- Known or high risk for current cervical or uterine infection
- Known or high risk for cervical or uterine cancer
- Fibroids that distort uterine cavity

Who Can Safely Use Progestins?

- Women with cardiovascular risk factors
- Women who are breastfeeding
- Women with estrogen-related side effects

Women using anticoagulants, at high risk for bleeding, or with anemia may benefit from progestin use.

Precautions for Progestin Use

- Current breast cancer

Progestins are not associated with increases in blood pressure, or risk of thromboembolism or myocardial infarction.

Precautions for Estrogen Use

Women at higher risk of a blood clot, stroke, or MI:

- Complicated hypertension or diabetes
- Long immobilization or immediately postpartum
- Heavy smoker over 35 years old
- Known or high risk for coronary artery disease
- Personal history of thromboembolism, stroke or MI
- Migraines with aura or at an older age
- Known thrombogenic mutations
- Complicated valvular heart disease

Precautions for Estrogen Use

- Early breastfeeding
- Active liver disease or mass
- Current breast cancer

Hypertension

- What's her blood pressure today?
- What medications is she taking?
- Does she have other vascular disease?

Hypertension

- Women with severe hypertension (>160/100) or vascular disease should not use combined methods (4), and may use Depo-Provera with close follow-up (3)
- If mild or controlled hypertension, may use combined methods with close follow-up (3)
- All other methods may be used*

*Also applies to other conditions unless stated

Diabetes Mellitus

- How good is her glucose control?
- How long has she been diabetic?
- Does she need medications?
- Does she have other vascular disease?

Diabetes Mellitus

- Women with diabetes for more than 20 years or with vascular disease* should not continue combined methods (4), and may use Depo-Provera with close follow-up (3)
- Combined methods may be initiated with close follow-up (3)

* nephropathy, retinopathy, neuropathy

Headaches

- Are her headaches migraines?
- If migraines, does she have aura?
- How did she respond to prior hormone use or pregnancies?

Migraine Headaches and Aura

- Symptoms that characterize migraine headaches: nausea, vomiting, photophobia, phonophobia, watery eyes, taste or smell sensations
- "Aura" are fully reversible visual, sensory, or speech symptoms that either accompany a migraine or precede it by less than an hour

Migraine Headaches

- Women with migraines with aura at any age should not use combined methods (4), and may continue progestin-only methods with close follow-up (3)
- If over 35 years old without aura, may use combined methods with close follow-up (3)
- If simple migraines, may start combined methods (2) and continue them with close follow-up (3)

HIV

- What is her CD4 count?
- Does she have AIDS and/or other infections?
- What medications is she taking?
- Is she having any side effects?

HIV/AIDS

- Women with HIV or at high risk should not use spermicides as a primary contraceptive method (4) but may use any hormonal method (1)
- Women with AIDS may have an intrauterine contraceptive placed with screening and close follow-up (3)
- If on antiretrovirals, consider barrier methods as a back-up

Medication Interactions

- Medications that increase cytochrome P450 metabolism in the liver decrease the plasma levels of low-dose hormonal methods
 - Oral contraceptives, patch, ring, implanon
- Women using these medications should use a back-up contraceptive method to improve efficacy
- DMPA and IUDs are not affected

Medication Interactions

- Medications that increase liver metabolism
 - Many anti-epileptics
 - Phenytoin, carbamazepine, oxycarbazepine, topiramate, barbituates, primadone, lamictal?
 - Rifampin
 - St. John's Wort
 - Some antiretrovirals

What if it is not in the MEC?

- If there is little or no evidence about contraceptive use with a certain medical condition
 - Review the possible complications of the condition
 - Review the possible complications of the methods
 - Consult with another experienced clinician

Summary

- Patients with medical complications present unique challenges to contraceptive use
- There are several safe and effective methods to use
- Careful history-taking and close follow-up can help avoid risks

References

- [Medical Eligibility Criteria for Contraceptive Use](#), 3rd edition, World Health Organization, Geneva, 2004.
- [Quick Reference Chart for the WHO Medical Eligibility Criteria and Checklist for Screening Clients Who Want to Initiate \[Method\]](#). Family Health International, 2007.
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- Curtis KM, Chrisman CE, Peterson HB. Contraception for women in selected circumstances. *Obstet Gynecol*, Jun 2002; 99(6): 1110-12.
- Hatcher et al., [Contraceptive Technology](#), 18th revised edition, Ardent Media, New York, NY, 2004.
