NUTRITION AND EXERCISE IN WOMEN’S HEALTH

FLAME LECTURE: 18
LOVELL/BURNS 11.28.15
Learning Objectives

- Counsel patients regarding diet and nutrition
- Describe the nutritional needs of pregnant women

Prerequisites:
- None

See also:
- FLAME LECTURE 19: Exercise Counseling in Women’s Health
Body Mass Index

To Calculate:
- Weight in kilograms / (Height in meters)$^2$
- [Website](http://www.nhlbi.nih.gov/health/educational/lose_wt/BMI/bmicalc.htm)

<table>
<thead>
<tr>
<th>BMI</th>
<th>CLASSIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 18.5</td>
<td>Underweight</td>
</tr>
<tr>
<td>18.5 – 24.9</td>
<td>Normal Weight</td>
</tr>
<tr>
<td>25.0 – 29.9</td>
<td>Overweight</td>
</tr>
<tr>
<td>&gt; 30.0</td>
<td>Obesity</td>
</tr>
<tr>
<td>30.0 – 34.9</td>
<td>Obesity Class I</td>
</tr>
<tr>
<td>35.0 – 39.9</td>
<td>Obesity Class II</td>
</tr>
<tr>
<td>≥ 40.0</td>
<td>Obesity Class III</td>
</tr>
<tr>
<td></td>
<td>- Surgical classification: severe</td>
</tr>
<tr>
<td>40.0 – 44.9</td>
<td>- Surgical classification: morbid obese</td>
</tr>
<tr>
<td>≥ 45</td>
<td>- Surgical classification: super obese</td>
</tr>
</tbody>
</table>
Fitness

Goals include:
- Maintaining an appropriate weight
- Consuming a healthy diet
- Participating in regular physical activities

Fitness goals for pregnancy:
- Underweight prior to pregnancy: gain ~28-40lbs
- Normal starting weight: gain ~25-35lbs
- Overweight women: gain ~15-25lbs
- Obese women: gain ~11-20lbs

Exercise should be maintained during pregnancy but limited to non-contact, low risk sports:
- Aerobic exercise good (swimming, walking, running, non-hot yoga)
- Unsafe activities: contact sports, high fall risk (ex. skiing, snowboarding), scuba diving, hot yoga

Contraindications to exercise during pregnancy:
- Amniotic fluid leak
- Cervical incompetence
- Placenta abruption/previa
- Premature labor
- Preeclampsia/gHTN
- Severe heart/lung disease
- Multiple gestation
Nutrition

Estimated Daily Caloric Needs for NON-PREGNANT Women by Level of Physical Activity

<table>
<thead>
<tr>
<th>Age</th>
<th>Sedentary Activity</th>
<th>Moderate Activity</th>
<th>Active</th>
</tr>
</thead>
<tbody>
<tr>
<td>14-18</td>
<td>1800</td>
<td>2000</td>
<td>2400*</td>
</tr>
<tr>
<td>19-30</td>
<td>1800-2000</td>
<td>2000-2200</td>
<td>2400*</td>
</tr>
<tr>
<td>31-50</td>
<td>1800</td>
<td>2000</td>
<td>2200*</td>
</tr>
<tr>
<td>51+</td>
<td>1600</td>
<td>1800</td>
<td>2000-2200</td>
</tr>
</tbody>
</table>

*Add +300 calories/day during 2\textsuperscript{nd}/3\textsuperscript{rd} trimesters of pregnancy
## Dietary Recommendations in Non-pregnant vs. Pregnant Women

<table>
<thead>
<tr>
<th></th>
<th>Non-pregnant</th>
<th>Pregnant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Protein</strong></td>
<td>0.8 g/kg/day</td>
<td>1.1 g/kg/day</td>
</tr>
<tr>
<td><strong>Carbohydrates</strong></td>
<td>130 g/day</td>
<td>175 g/day</td>
</tr>
<tr>
<td><strong>Iron</strong></td>
<td>18 mg/day</td>
<td>27 mg/day</td>
</tr>
<tr>
<td><strong>Calcium</strong></td>
<td>1000-1300mg/day</td>
<td>1000-1300 mg/day</td>
</tr>
<tr>
<td><strong>Vitamin D</strong></td>
<td>600 IU/day</td>
<td>600 IU/day</td>
</tr>
<tr>
<td><strong>Folate</strong></td>
<td>0.4-0.8mg/day</td>
<td>0.4-0.8mg/day</td>
</tr>
</tbody>
</table>

### How much is too much?
- **Vitamin A**: >5000 IU is teratogenic. Animal liver is high in vitamin A.
- **Iodine**: Excessive iodine can lead to fetal goiter. Seaweed is high in iodine.
- **Vitamin D**: >4000 IU daily may be unsafe.
Dietary Fiber

- The non-digestible form of carbohydrates and lignin
- Naturally occurs in plants
- Important in promoting bowel regularity
- Foods that contain fiber are digested slowly
  - Help provide greater feeling of fullness
  - Help maintain a healthy weight
  - Control blood glucose levels
- The IOM recommends 14g of fiber per 1,000 calories consumed
- Sources of fiber:
  - Navy beans, split peas, lentils, pinto beans, and black beans
  - Additional sources of dietary fiber: vegetables, fruits, whole grains, and nuts
Calcium and Vitamin D

- IOM daily recommendations for amount of Calcium to achieve peak bone mass, maintain bone health, and reduce fracture risk:
  - 1,000 mg/d for women aged 19–50 years
  - 1,200 mg/d for women 51 years and older
- IOM daily recommendations for levels of Vitamin D to assist in calcium absorption, muscle performance, and balance
  - 600 international units/day for most of life
  - 800 international units/day for adults >70 years old
Folic Acid

- Daily intake of 0.4 mg/d of folic acid recommended for all women capable of becoming pregnant
  - Preconception ingestion of folic acid reduces the risk of neural tube defects
  - Daily supplementation with a multivitamin is recommended for all women capable of becoming pregnant:
    - Most are unable to attain this level of folic acid through dietary sources alone
    - Approximately 50% of pregnancies are unplanned
    - Folic acid most effective for neural protection if taken before pregnancy because by first prenatal visit, patient often already deficient
- Higher intake of 4 mg/d recommended for women:
  - Who take anticonvulsant medication
  - Have a history of neural tube defects
  - Have already given birth to a child affected by a neural tube defect
**Review of Important Nutrients**

**For Women Capable of Becoming Pregnant**

**IRON**
- 18 mg/d for women
- Best source: Iron from animal meat
- Absorption of non-heme iron (i.e., from plant sources) can be enhanced by combining intake with vitamin C-rich foods

**FOLATE**
- Consume 0.4 mg of folate per day
- From synthetic folic acid (from fortified foods, supplements, or both)
- Folate rich foods: lentils, spinach, asparagus, other dark leafy greens

**For Women Pregnant or Breastfeeding**

**SEAFOOD (IODINE, DHA)**
- Consume 8-12 oz of seafood per week from a variety of seafood types
- Due to methyl mercury content:
  - Limit white (albacore) tuna to 6 oz per week
  - Do not eat tilefish, shark, swordfish, and king mackerel

**IRON**
- If pregnant, take an iron supplement
- Continue to eat animal meat PRN

**For Women aged 50+**

**VITAMIN B12**
- Consume foods fortified with Vitamin B12: fortified cereals, dietary supplements

**VITAMIN D & CALCIUM**
- 1200 mg/dL per day of Calcium
- 600 IU/dL per day of Vit. D (800 IU/dL per day if > 70 yo)
Foods to DECREASE

Non-pregnant Woman

- Sodium:
  - Less than 2,300 mg, if:
    - <50, no risk factors
  - Less than 1,500 mg, if:
    - 51 years and older
    - ANY age who are:
      - African American
      - Hypertension
      - Diabetes
      - Chronic kidney disease

- Saturated Fat: < 10% of calories should come from saturated fats
  - Replace with monounsaturated and polyunsaturated fatty acids

- Cholesterol: < 300mg per day

Pregnant Woman

- Processed/deli meats, soft cheeses, paté (can cause Listeria infection)

- Seafood:
  - To avoid mercury toxicity:
    - Avoid eating any shark, swordfish, king mackerel, or tilefish
    - Eat only 12oz of fish/week and eat a variety (<6 oz of albacore tuna/wk)
  - To avoid infection: freezing fish eliminates infection from raw fish ("sushi-grade" fish ok)

- Limit caffeine < 200-300 mg/day
Foods to keep to a MINIMUM

### Non-pregnant Woman
- Trans-fatty acid consumption – as low as possible
  - Limit foods with synthetic sources of trans-fats and other solid fats
- Reduce intake of calories from solid fats and added sugars
- Limit the consumption of refined grains
  - Especially refined grain foods that contain solid fats, added sugars, and sodium
- Alcohol: if consumed, in moderation
  - Up to one drink per day for women
  - Only by adults of legal drinking age

### Pregnant Woman
- Raw meat/eggs
- Unpasteurized dairy products, fruit/vegetable juices
- Raw sprouts (alfalfa, radishes, mung bean)
- Alcohol
  - Previously believed that a half glass in the 3rd trimester was safe but most recent recommendations from American Academy of Pediatrics say to avoid all alcohol during pregnancy
Special Diets

Vegetarian
- Excludes meat (or fowl), seafood, products containing these foods

Vegan
- Excludes eggs, dairy, and other animal products

Gluten Free
- Has existed for decades as the treatment for celiac disease
- Gained recent popularity - suggested that the avoidance can lead to better sleep, increased energy, weight loss, and feelings of health and well-being

Lactose Intolerance
- Many feel a dairy-free diet is the only option for symptom management
- However, most people with lactose intolerance can tolerate small volumes of milk and lactose from cheese and yogurt
- Milk products are a significant source of calcium and other important nutrients, therefore complete dietary avoidance is not recommended. Especially for women who may be at risk of osteoporosis
- Strategies include choosing dairy products with added lactase, and using lactase enzyme supplements when eating foods containing lactose
Special Diets – in Pregnancy

**Vegetarian/Vegan**
- Not harmful as long as still receiving adequate essential amino acids and not consuming excessive soy products (can lead to hypospadias in male babies)

**Gluten Free**
- Should be maintained if woman has celiac disease
- However gluten-free diet does not reduce risk of baby getting celiac disease
- Not eating certain foods (peanuts, milk, eggs) to avoid atopic disease in baby has not been found effective and is not recommended

**Lactose Intolerance**
- Some women may experience better tolerance of lactose during late pregnancy
- As long as they are still getting adequate supply of calcium via diet or supplement, lactose-free diet is safe during pregnancy
IMPORTANT LINKS & REFERENCES

- http://www.acog.org/Resources-And-Publications/Guidelines-for-Womens-Health-Care
- http://www.acog.org/Patients/FAQs/Nutrition-During-Pregnancy
- UpToDate.com