CDAPP SWEET SUCCESS
MEDICAL NUTRITION THERAPY
UPDATES

Presented by: Lily Nichols, RD

October 2013
OBJECTIVE:

Participants will be able to:

Discuss basic components of Medical Nutrition Therapy and Exercise guidelines for gestational diabetes

Explain recent changes to Medical Nutrition Therapy guidelines for women with gestational diabetes
OVERVIEW

Review basic principles of Medical Nutrition Therapy for gestational diabetes

Discuss updates to Medical Nutrition Therapy guidelines

Review Exercise guidelines
MEDICAL NUTRITION THERAPY

Goals of Medical Nutrition Therapy
- Individualized, balanced meal plan
- Evidence-based recommendations
- Adequate maternal and fetal nutrition
- Vitamin/mineral supplementation as needed
- Appropriate weight gain
- Normoglycemia
- Promotion and support of breastfeeding
<table>
<thead>
<tr>
<th>Category</th>
<th>BMI</th>
<th>Recommended total wt gain ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Singleton</td>
</tr>
<tr>
<td>Underweight</td>
<td>&lt; 18.5</td>
<td>28-40 lbs</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5-24.9</td>
<td>25-35 lbs</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0-29.9</td>
<td>15-25 lbs</td>
</tr>
<tr>
<td>Obese</td>
<td>≥ 30</td>
<td>11-20 lbs</td>
</tr>
</tbody>
</table>
CALORIES

1st trimester (0-12wks) energy needs remain the same as during preconception.

2nd and 3rd trimester energy (kcal) requirements gradually increase from 13+ weeks.
Debatable, approximately 300-500 kcal extra.
MACRONUTRIENTS

Protein - 1.1g/kg from 13+
weeks

Carbohydrate –
130g/day preconception through 1st
trimester §§ 175g/day in 2nd and 3rd
trimester

Fat – emphasize monounsaturated fats,
limit trans fats

Trans fats may worsen insulin resistance
No consensus on determining energy needs for overweight and obese pregnant women
  Minimum 1800 kcal for adequate nutrition
  Careful monitoring to ensure adequate intake
  Track rate of weight gain

  Morbidly obese (BMI>40) may benefit from stricter weight gain goals
SWEET SUCCESS RECOMMENDATIONS

- 3 small meals and 3+ snacks eaten 2-3 hours apart
- Consistent schedule
- Avoid more than 10 hours between bedtime snack and breakfast
  - Synchronize meals + snacks with OHAs/insulin
  - Encourage pattern management + food records
CARBOHYDRATES

- Spread carbohydrate load over 3 small meals and 3 or more snacks.
  - Portion control
  - CHO not well tolerated at breakfast (as low as 15g)
  - No more than 15-30g CHO at snacks
  - Flexible CHO intake with the use of insulin
  - Individualized, realistic meal plan
CARBOHYDRATES

- Fruit: 2+ servings daily of fresh fruit, not at breakfast
  - No juice

- Milk/yogurt: 3-4 servings daily, not at breakfast
  - For soymilk or non-dairy milk: read labels, unsweetened

- Starch/Bread: 7 servings daily. Whole grain, high fiber, not “instant”
NUTRITION GUIDELINES FOR GDM CONTINUED

- Protein/Meat and Vegetarian
  - alternates: 7 or more ounces.
  - Spread throughout the day
- Vegetables: liberal amounts of non-starchy green vegetables.
- Fats: 6+ portions/day.
  Avoid trans fats
RECOMMENDATIONS:
FOODS TO LIMIT

Cold/instant hot cereals, instant rice, instant noodles, instant potatoes
   Elevated glycemic index = elevated postprandial BG = higher risk for macrosomia
Sweetened Beverages
   Sports drinks
   Energy Drinks

Fruit Juice, even 100% juice
MODERN NATIVE AMERICAN FOODS

Challenge of modern diet displacing traditional foods
- Refined white flour products
- Sweetened beverages
- Fried starchy foods
- Low intake of fresh produce
FOOD PYRAMID HAS BEEN REPLACED
My Plate for Gestational Diabetes
VISUALIZE A HEALTHIER PLATE
California MyPlate for Gestational Diabetes

When you are pregnant and have diabetes, you have special nutrition needs. Use MyPlate for Gestational Diabetes to help you manage your blood sugar. This will help keep you and your baby healthy. Every day, eat the number of servings/choices of food shown below. Talk to a registered dietitian (RD) to develop a meal and exercise plan that will meet your needs. Limit Your Carbohydrates. When you have gestational diabetes, the type and amount of carbohydrates matter. Vegetables, Grains, Fruits, and Dairy contain carbohydrates. Some have more and some have less. Eating too many or the wrong type of carbohydrate may raise your blood sugar. Avoid foods with added sugar or white flour, such as cookies, candy and soda.

**Vegetables**
Eat non-starchy vegetables. Use fresh, frozen or low-sodium canned vegetables. For diabetes, starchy vegetables like potatoes, sweet potatoes, yams, peas, corn & winter squash count as a Grain, not a Vegetable. Daily Amount: 6 or more of these choices:
- 2 cups raw leafy vegetables
- 1 cup raw vegetables
- 1/2 cup cooked vegetables
5 grams (g) carbohydrate per serving

**Protein**
Choose lean protein. Avoid bacon, hot dogs & bologna. Daily Amount 6 or more of these choices:
- 1 ounce fish, poultry, lean meat, or cheese
- 1/4 cup cottage cheese
- 1 egg
- 1 ounce nuts
- 1/2 cup tofu
- 2 Tablespoons nut butter
0 g carbohydrate per serving

**Grains**
For diabetes, beans & starchy vegetables count as Grains. Eat 100% whole grains. Avoid cold breakfast cereals.
Avoid instant rice, noodles & potatoes. Daily Amount of these choices:
- 1 slice whole wheat bread
- 1/2 cup potato or yam
- 1 small whole grain tortilla
- 1/2 cup cooked dried beans, non-instant cereal, corn or peas
- 1/3 cup cooked pasta, rice
15 g carbohydrate per serving

**Fruits**
Eat unsweetened fruits of all colors. Do not drink fruit juice. Avoid fruit at breakfast. Limit dried fruit to 1/4 cup a day.
Daily Amount of these choices:
- 1 small apple
- 17 small grapes
- 1 cup papaya
- 1/2 banana
15 g carbohydrate per serving

**Dairy**
Choose only pasteurized plain milk or yogurt. For diabetes, cheese is in the Protein group. Do not eat yogurt or drink milk at breakfast.
Daily Amount of these choices for women or of these choices for teens:
- 1 cup 1% or fat free milk
- 1 cup soy milk with calcium
- 3/4 cup of plain yogurt
15 g carbohydrate per serving

**Fats & Oils**:
- Limit oils to 6 teaspoons each day.
My Nutrition Plan for Gestational Diabetes

This is my plan until I meet with a registered dietitian (RD) for my personal meal and exercise plan.
Include protein and carbohydrates at each meal and snack.

Eat at least 175 grams (g) of carbohydrates a day. For the amount of carbohydrates in one serving of food, see below:
- Non-starchy Vegetables = 5g
- Protein = 0g
- Grains, Beans and Starchy Vegetables = 15g
- Fruit = 15g
- Dairy = 15g

As a sample, meals may look like this:

**Breakfast**
Eat 15g carbohydrates from
the Grains group
Include: 1-2 servings Protein, unlimited servings of non-starchy Vegetables
Do not eat Fruit, yogurt or drink milk.
Example of a breakfast: One egg omelet with cheese & vegetables and one slice toast

**Lunch and Dinner**
2 servings Grains, beans or starchy vegetables 0-1 serving milk or yogurt
EVERY day, I will:
Eat 3 meals and 3 snacks, 2 to 3 hours apart.
Eat my bedtime snack so that no more than 10 hours pass before I eat breakfast the next day.
Drink plenty of fluids. I will choose caffeine-free, sugar-free beverages. I will limit coffee to 2 cups daily & not drink alcohol.
Eat 45g carbohydrates, not including non-starchy vegetables
Choose only one serving fruit, milk or yogurt at lunch and at dinner
0-1 serving Fruit unlimited servings non-starchy Vegetables
0-1 servings Protein

2-3 servings Protein

Limit artificial sweeteners to 1 - 2 servings a day.
Try to walk for 10 - 15 minutes after each meal, especially breakfast.

**Snacks**
Eat 15g-30g carbohydrates from Fruit, Grains, or Dairy group
Include: At least 1 serving Protein with every snack
unlimited servings non-starchy Vegetables

Examples of snacks:
- 1 small tortilla + 1 ounce cheese
- 2 rice cakes + celery + 2 tablespoons nut butter
- 1/2 banana + 24 almonds

Use MyPlate for Gestational Diabetes for serving sizes and the total number of servings from each group you need every day.
UPDATES – Resources in Appendix

• Useful resource for:
  - Prenatal Weight Gain Grids
  - Dietary Sources of Fatty Acids (omega-3)
  - Meal Plan Carbohydrate Distribution
  - Glycemic Index of Select Foods
  - Sample Snacks
UPDATES: VITAMIN D

Institute of Medicine (IOM) updated Dietary Reference Intake for Vitamin D for pregnant and lactating women in 2010
   RDA increased to: 600 IU/day
   Upper Level Intake increased to: 4,000 IU/day

CDAPP Guidelines for Care follow the new IOM values
Optimal blood levels of 25(OH)D controversial

IOM: ≥20 ng/ml sufficient for good bone health
Ginde et al, 2010 (NHANES data)

At least 33% of pregnant women deficient in vitamin D
(using ≥20 ng/ml as target)

- Rate of deficiency varies by residence (latitude), ethnicity, time of year, sun exposure, etc.
Stevia-Derived Sweeteners are SAFE
• GRAS status from FDA granted in 2008: rebaudioside A (Reb A) and other stevia glycosides
• Sold as a grocery item
  • Powder or liquid extract
  • Also mixed into foods and beverages
• Sweet, non-bitter taste (200-250x sweeter than sugar)
• Reb A is the sweetest stevia glycoside
  • Examples: Truvia (Reb A), PureVia (Reb A)
Whole Herb Stevia is NOT SAFE
• Sold as supplement in health food stores
• Not sold in regular grocery stores
• Green leaves or green power
• Sweet with bitter aftertaste

• Natural Medicines Comprehensive Database:
  • “insufficient evidence for its safety in pregnancy”
## Acceptable Daily Intake of Non-Nutritive Sweeteners

<table>
<thead>
<tr>
<th>Sweetener</th>
<th>ADI mg/kg</th>
<th>Amount in 12oz can of soda</th>
<th>Cans of soda = ADI for 60kg person</th>
<th>Amount in packet of sweetener</th>
<th>Packets = ADI for 60kg person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acesulfame-K</td>
<td>15</td>
<td>40mg</td>
<td>25</td>
<td>50mg</td>
<td>18</td>
</tr>
<tr>
<td>Aspartame</td>
<td>50</td>
<td>200mg</td>
<td>15</td>
<td>35mg</td>
<td>86</td>
</tr>
<tr>
<td>Saccharin</td>
<td>5</td>
<td>140mg</td>
<td>2</td>
<td>40mg</td>
<td>7.5</td>
</tr>
<tr>
<td>Sucralose</td>
<td>5</td>
<td>70mg</td>
<td>4.5</td>
<td>5mg</td>
<td>60</td>
</tr>
<tr>
<td>Reb A (stevia)</td>
<td>12</td>
<td>n/a</td>
<td>n/a</td>
<td>27mg</td>
<td>26</td>
</tr>
</tbody>
</table>
SUMMARY

- Medical Nutrition Therapy is first line therapy for the management of Gestational Diabetes

- Balanced diet can reduce prenatal complications

- Necessary to individualize meal plan and weight gain goals to each patient
QUESTIONS?

• NEXT: Exercise Chapter
American Congress of Obstetricians and Gynecologists
Recommendations Reaffirmed 2009:

• “Pregnant women should engage in 30 minutes or more of moderate exercise on most if not all days of the week.”
EXERCISE DURING PREGNANCY

- All women without contraindications should be encouraged to participate in **aerobic** and **strength** conditioning exercises during their pregnancy. (SCOG 2003)

- Pregnancy is a unique time for positive behavior change
ROLE OF PROVIDER

- Explain benefits of exercise for mother & child
- Review impact on blood sugar; emphasize consistency

- Set expectations for patient
- Encourage record keeping
- Reassess goals regularly
GLYCEMIC BENEFITS

• Improves Glucose Control
  • Improved FBG after 6 wks

• Increases Insulin Sensitivity
  • Increases muscle insulin sensitivity
  • Less exogenous insulin needed

(ACSM, 2006; Carnethon, 2007; Dempsey, 2004; Gavard, 2008)
GLYCEMIC BENEFITS, CONTINUED

- Increases Glucose Utilization
  - Raises insulin-independent glucose uptake at the cell level

- Improves Carbohydrate Utilization
  - Raises muscle glucose uptake

(ACSM, 2006; Carnethon, 2007; Dempsey, 2004; Gavard, 2008)
Maternal Benefits of Exercise

- Increases Ability to meet the musculoskeletal demands of pregnancy including:
  - Increased girth
  - Increased lordosis
  - Altered center of gravity

- Strengthens pelvic floor muscles
  - Physical fitness may impact pushing during labor (but does not shorten labor)

(Martens 2006)
Fetal Benefits of Exercise

- Helps prevent excess maternal weight gain and macrosomia, which reduces the risk of:
  - childhood overweight (Moschonis, 2008)
  - childhood type 2 diabetes
  - childhood metabolic syndrome (Dempsey, 2004; Oken et al, 2007)
Safe Aerobic Exercise

- Walking
- Swimming
- Stationary bike
- Elliptical
- Step aerobics

- Use “talk test” to assess effort/limits
Safe Strength Exercise

- Light weights (5# or less)
- Resistance bands
- Prenatal Pilates
  - Prenatal yoga – review risk of overstretching
- Good body mechanics/form prevents injury
Any exercise that could result in abdominal trauma, such as:
- Scuba diving
- Ice hockey
- Gymnastics
- Horseback riding
- Downhill skiing
- Kickboxing
- Soccer

(ACOG, 2002)
Exercise Resources

ACOG website:
• For providers: “Exercise During Pregnancy and the Postpartum Period”

• For patients: Downloadable pdf file “Exercise During Pregnancy”

• www.acog.org
EXERCISE SUMMARY

Summary:

• Ideally, pregnant women should engage in 30 minutes of total exercise every day in the absence of medical or obstetric complications.
• Include Aerobic and Strength exercise.
• Exercise has many benefits for both mother and child beyond simply achieving prenatal glycemic control.
QUESTIONS?

- Additional resources available at CDAPP Sweet Success Resource Center website:
  - www.cdappswestsucces.com
  - CDAPP Sweet Success Guidelines for Care (FREE)
  - Algorithm for diagnosis of GDM (FREE)
  - My Plate for Gestational Diabetes in Eng/Sp (FREE)
  - My Meal Plan (FREE)
  - View archived webinars (FREE)
  - Printed educational materials (For purchase)