- Gestational Diabetes
- Gestational Diabetes (GDM) Guideline (2016)

Gestational Diabetes

GDM: Executive Summary of Recommendations (2016)

Executive Summary of Recommendations

Below are the major recommendations and ratings for the Academy of Nutrition and Dietetics Gestational Diabetes Mellitus (GDM) Evidence-Based Nutrition Practice Guideline 2016. View the Guideline Overview from the Introduction section. More detail (including the evidence analysis supporting these recommendations) is available on this website to Academy members and EAL subscribers under the**Major Recommendations** section.

To see a description of the Academy Recommendation Rating Scheme (Strong, Fair, Weak, Consensus, Insufficient Evidence),**click here**.

The GDM 2016 Recommendations are listed below. [**Note:** If you mouse-over underlined acronyms and terms, a definition will pop up.]

- Screening and Referral

  GDM: Referral to an RDN

  Pregnant women who are diagnosed with gestational diabetes mellitus (GDM), should be referred to a registered dietitian nutritionist (RDN) for medical nutrition therapy (MNT). Individualized MNT is important in helping pregnant women with GDM achieve and maintain normal glycemic levels and appropriate weight gain, while meeting essential nutrients for pregnancy to promote positive maternal and fetal outcomes.

  Strong

  Imperative
- Nutrition Assessment

  GDM: Assessment of Food/Nutrition-related History of Women with GDM

  The registered dietitian nutritionist (RDN) should assess the food and nutrition-related history of women with gestational diabetes mellitus (GDM) including, but not limited to:
  - Food, beverage and nutrient intake including:
    - Calorie intake
    - Types and amount of carbohydrate (including fiber), fat, protein; with special attention to high calorie, low-nutrient dense foods such as desserts, candy, sugar-sweetened beverages
    - Serving sizes
    - Meal and snack patterns, including frequency and duration
      - Recent changes
      - Preferences, avoidance, intolerances, allergies including:
        - In relationship to gastrointestinal discomforts (e.g., nausea, vomiting, heartburn, constipation, ptyalism)
        - Reaction to or changes in food tastes/smells related to pregnancy
        - Cultural and religious considerations.
  - Appetite and changes in appetite
  - Eating environment and meals eaten away from home
  - Diet history and behavior: previous diets and diet adherence, disordered eating
  - Factors affecting access to food: Psychosocial/economic issues (e.g., social support) impacting nutrition therapy
  - Method of food preparation, food safety

- Pharmacologic therapy (including insulin or oral glucose-lowering agent)
- Substance use: Alcohol, tobacco, caffeine, recreational drugs
- Use of dietary supplements, prenatal vitamins, over-the-counter medications, complementary and/or herbal
- Knowledge, beliefs or attitudes: Motivation, readiness to change, self-efficacy; willingness and ability to make lifestyle changes
- Physical activity and function: Exercise patterns, functionality for activities of daily living, sleep patterns.

Assessment of these factors is needed to effectively determine nutrition diagnoses and formulate a nutrition care plan. Inability to achieve optimal nutrient intake may contribute to poor outcomes.

Consensus

Imperative

GDM: Assessment of Anthropometric Measurement of Women with GDM

The RDN should assess the following anthropometric measurements in women with GDM, including but not limited to:

- Height, current weight, pre-pregnancy weight and body mass index (BMI)
- Weight changes during pregnancy.

Assessment of these factors is needed to effectively determine nutrition diagnoses and formulate a nutrition care plan.

Consensus

Imperative

GDM: Assessment of Biochemical Data, Medical Tests, and Procedures of Women with GDM

The RDN should evaluate available data of women with GDM and recommend as indicated: Biochemical data, medical tests and procedures including, but not limited to:

- Glycemic tests: Glucose challenge test (GCT), oral glucose tolerance test (OGTT), glycosylated hemoglobin (A1C), fasting glucose, random glucose
- Use of self-monitoring blood glucose (SMBG) meters and urinary ketones, if recommended
- Maternal and fetal testing (e.g., ultrasounds, biophysical profile, non-stress testing)
- Nutritional anemia profile (e.g., hemoglobin, hematocrit, folate, B_{12}, iron)
- Vitamin D and other micronutrient levels, as appropriate
- Thyroid function
- Kidney function.

Assessment of these factors is needed to effectively determine nutrition diagnoses and formulate a nutrition care plan.

Consensus

Imperative

GDM: Assessment of Nutrition-Focused Physical Findings and Client History of Women with GDM

The RDN should evaluate available data regarding the client history and nutrition-focused physical findings of women with GDM including, but not limited to:

Patient/Family/Client Medical/Health history

- Age
- Single or multiple fetuses
- Weeks of gestation; estimated date of delivery (EDD); method of delivery
- Previous obstetric history including GDM
- Risk factors for developing GDM or diabetes, including family history of diabetes
- General health; vital signs
- Pertinent medical and dental history including other diseases, conditions and illnesses
- Gastrointestinal discomforts: Nausea, vomiting, diarrhea, constipation, heartburn and ptyalism
- Health literacy and numeracy
- Education and occupation
- Social history: Psychological/socioeconomic factors (e.g., social support).

Assessment of these factors is needed to effectively determine nutrition diagnoses and formulate a nutrition care plan.

Consensus

Imperative

- Nutrition Intervention

GDM: Medical Nutrition Therapy (MNT)

The registered dietitian nutritionist (RDN) should provide medical nutrition therapy (MNT) that includes an individual nutrition prescription and nutrition counseling for all women diagnosed with gestational diabetes mellitus (GDM). Research indicates that MNT provided by an RDN (or international equivalent) as part of a comprehensive nutrition intervention that includes individualization of MNT is effective in improving blood glucose control and neonatal and maternal outcomes in women with GDM. Improved outcomes included lower birth weight and a reduction in the following: Incidence of macrosomia (LGA), need for insulin therapy, hypertensive disorders of pregnancy and maternal hospitalizations, neonatal intensive care unit (NICU) admissions and neonatal deaths, premature births and rate of shoulder dystocia, bone fracture and nerve palsy.

Strong

Imperative

GDM: Frequency and Duration of MNT

The RDN should provide regular and frequent MNT visits to women with GDM to optimize outcomes. Visits should include an initial 60 to 90 minute MNT visit, followed by a second MNT visit (30 to 45 minutes) within one week, and a third MNT visit (15 to 45 minutes) within two to three weeks. Additional MNT visits should be scheduled every two to three weeks or as needed for the duration of the pregnancy. MNT assists the woman with GDM in meeting her blood glucose and weight gain targets, contribute to a well-balanced food intake and promote fetal and maternal well-being.

Consensus

Imperative

GDM: Calorie Prescription

For women with gestational diabetes mellitus (GDM), the registered dietitian nutritionist (RDN) should individualize the calorie prescription based on a thorough nutrition assessment with guidance from relevant references [Dietary Reference Intakes (DRI), Institute of Medicine (IOM)] and encourage adequate caloric intake to promote fetal/neonatal and maternal health, achieve glycemic goals, and promote appropriate gestational weight gain (GWG). No definitive research suggests there is a specific optimal calorie intake for women with GDM or if calorie needs are different than pregnant women without GDM. Limited research in women with GDM whose pre-pregnancy weights ranged from normal to obese showed no significant differences in most fetal/neonatal and maternal outcomes with various reported calorie intakes. In a study of obese women only, GWG slowed after women with GDM reportedly consumed 30% below their caloric requirements, without adverse effects.

Fair

Imperative

GDM: Macronutrient Requirements

In women with gestational diabetes mellitus (GDM), the registered dietitian nutritionist (RDN) should provide adequate amounts of macronutrients to support pregnancy, based on nutrition assessment, with guidance from the Dietary Reference Intakes (DRI). The DRI for all pregnant women, including those with GDM, recommends a minimum of 175g carbohydrate (CHO), a minimum of 71g protein (or 1.1g per kg per day protein) and 28g fiber.

Consensus

Imperative

GDM: Carbohydrate Prescription

The RDN should individualize both the amount and type of CHO for women with GDM based on nutrition assessment, treatment goals, blood glucose response and patient needs. Limited evidence does not confirm an ideal amount (grams or percent of total calories) of CHO for all women with GDM, but suggests an interaction between the amount and type of CHO. Several studies showed positive effects on glycemic control and neonatal/fetal and maternal outcomes in women with GDM, when evaluating varying amounts and types of CHO:

- Low glycemic index (GI) (less than 55) or medium GI (55 to 69) diets, containing a range of 36.7% to more than 60% CHO
- Dietary Approaches to Stop Hypertension (DASH) diets (greater than 65% CHO).

However, when two studies evaluated the amount of CHO alone (without specifying the type of CHO) mixed results were found:

- A CHO prescription of 202g CHO per day was more effective at reducing post-prandial blood glucose (PPBG), compared to >270g CHO per day.
- A 23% incidence of large-for-gestational-age (LGA) infants was found with CHO intake of less than 211g per day day, but no LGA when greater than 211g per day.

Fair

Imperative

GDM: Carbohydrate and Post Prandial Breakfast Glycemia

The RDN should individualize both the amount and type of CHO at breakfast based on nutrition assessment, treatment goals, blood glucose response and patient needs. If the woman with GDM continues to experience elevated PPBG after breakfast, the RDN may further modify the amount or the type of CHO at breakfast to achieve blood glucose targets. Limited evidence examining the impact of CHO on PPBG after breakfast does not confirm an ideal amount (grams or percentage of total calories) or type of CHO for all women with GDM to achieve PPBG targets after breakfast, but suggests an interaction between the two.

- In women with GDM who followed low or medium glycemic index (GI) diets containing 42-60% total CHO (GI for breakfast meal <55; CHO range 15g to 60g or more) met PPBG targets after breakfast.
- One study evaluating a 45% CHO diet overall (without specifying the type of CHO), found improved PPBG after breakfast, compared to one that contained 60% CHO
- No studies evaluated the effect of only restricting individual foods (e.g., fruit or milk) at breakfast, although one study showed improved PPBG when fruit bread and milk were eaten in a low GI breakfast vs. a high GI breakfast with CHOs from other sources.

Fair

Imperative

GDM: Meal and Snack Distribution

In women with gestational diabetes mellitus (GDM), the registered dietitian nutritionist (RDN) should distribute the total calories and carbohydrate (CHO) into smaller meals and multiple snacks per day. The distribution should be individualized, based on blood glucose levels, physical activity and medication, if any (e.g., insulin) and adjusted as needed. Three meals and two or more snacks helps to distribute CHO intake and reduce post-prandial blood glucose fluctuations.

Consensus

Imperative

GDM: Dietary Vitamin and Mineral Intake

The registered dietitian nutritionist (RDN) should encourage women with gestational diabetes melliltus (GDM) to make healthy food choices and consume a variety of foods to meet the micronutrient needs of pregnancy. The micronutrient needs of women with GDM are the same as for pregnant women without diabetes (emphasis on dietary intake of iron, folate, calcium, vitamin D, choline and iodine). The consumption of more food to meet caloric needs and the increased absorption and efficiency of nutrient utilization that occurs in pregnancy, are generally adequate to meet the needs for most nutrients, when good food choices are consistently made.

Consensus

Imperative

GDM: Vitamin and Mineral Supplementation

The RDN should consider recommending dietary supplementation within the Dietary Reference Intakes (DRI) for pregnancy with a prenatal multivitamin/mineral or specific vitamin or mineral supplement(s) to address inadequate dietary vitamin and mineral intake (e.g., iron, folate, calcium, vitamin D, choline and iodine) or documented micronutrient deficiency. Dietary supplements may be indicated in pregnant women at high risk for inadequate micronutrient intake, such as food insecurity; alcohol, tobacco or other substance dependency; anemia; strict vegetarian (vegan) diet; or poor eating habits.

Consensus

Imperative

GDM: Use of High-Intensity Sweeteners

In pregnant women with gestational diabetes mellitus (GDM), who choose to consume high-intensity sweeteners, the registered dietitian nutritionist (RDN) should educate the woman to select only those approved or generally recognized as safe (GRAS) by the US Food and Drug Administration (FDA) and to limit her intake to the acceptable daily intake (ADI), established by the FDA. The FDA has concluded the safety of six high-intensity sweeteners [saccharin, aspartame, acesulfame potassium (Ace-K), sucralose, neotame and advantame] when consumed within the ADI by the general population, including pregnant women. Steviol glycosides and Luo Han Guo (monk fruit) extracts are also GRAS when consumed within the ADI.

Consensus

Conditional

GDM: Alcohol Intake

The registered dietitian nutritionist (RDN) should reinforce abstinence from alcohol during pregnancy for women with gestational diabetes mellitus (GDM). The safest choice for all pregnant women is to abstain from alcohol to eliminate the risk for alcohol-related birth defects such as behavioral or neurological defects, growth deficiencies, facial abnormalities and impaired intellectual development.

Consensus

Imperative

GDM: Physical Activity

Unless contraindicated, the registered dietitian nutritionist (RDN) should encourage women with gestational diabetes mellitus (GDM) to engage in a goal to achieve daily moderate exercise of 30 minutes or more per day. In addition to a healthy diet, exercise can help improve blood glucose control and achieve weight gain recommendations. Both aerobic exercise and non–weight-bearing exercise (e.g., stretching, swimming, yoga, etc.) have been shown to lower blood glucose levels in women with GDM. Lifestyle therapy for GDM results in lower birth weight and a lower incidence of large-for-gestational-age births and pre-eclampsia.

Strong

Conditional

- Nutrition Monitoring and Evaluation

GDM: Nutrition Monitoring and Evaluation

Following the nutrition intervention of women with gestational diabetes mellitus (GDM), to check progress, the registered dietitian nutritionist (RDN) should monitor and evaluate the following components at each visit and compare to desired individual outcomes relevant to the nutrition diagnosis and nutrition intervention. This may include, but is not limited to:

Food/Nutrition-Related History Outcomes

- Daily food intake in relation to post-meal glucose readings
- Food, beverage and nutrient intake including
    - Calorie intake; types and amount of carbohydrate (including fiber) fat, protein; with special attention to high calorie, low-nutrient dense foods such as desserts, candy, sugar-sweetened beverages
    - Serving sizes
    - Meal and snack patterns, including frequency and duration
    - Recent changes to food choices and/or eating pattern
    - Preferences, avoidance, intolerances, allergies including
        - In relationship to gastrointestinal discomforts (e.g., nausea, vomiting, heartburn, constipation, ptyalism)
        - Reaction to or changes in food tastes/smells related to pregnancy
        - Cultural and religious considerations.
    - Appetite and changes in appetite
    - Frequency and intake of meals and snacks; meals eaten away from home
    - Methods of food preparation; food safety
    - Recommendation to add pharmacologic therapy (oral and/or insulin therapy) to maintain nutrient intake and achieve glycemic targets
        - Pharmacologic therapy – dose of diabetes medications: Oral glucose-lowering agent and insulin.

- Changes in substance use: alcohol, tobacco, caffeine, recreational drugs
- Knowledge, beliefs or attitudes: Motivation, readiness to change, self-efficacy; willingness and ability to make lifestyle changes; understanding of the treatment plan for GDM
- Physical activity and function: Exercise patterns, functionality for activities of daily living, sleep patterns.

Anthropometric Measurement Outcomes

- Weight changes compared to previous obstetric visit or medical nutrition therapy (MNT) visit.

Biochemical Data, Medical Tests, and Procedure Outcomes:

- Self-monitoring blood glucose (SMBG) records, including meter downloads
- Ketone testing records (if previously recommended because of weight loss or inadequate calorie intake)
- Updated fetal and maternal testing or lab values.

Nutrition monitoring and evaluation of these factors is needed to correctly/effectively diagnose nutrition problems that should be the focus of further nutrition interventions. Inability to achieve optimal nutrient intake may contribute to poor outcomes or initiation of or changes in pharmacologic therapy.

Consensus

Imperative