Gestational Diabetes


Welcome to the 2008 Gestational Diabetes Evidence-Based Nutrition Practice Guideline site. The guideline information is divided into several sections:

- Executive Summary - major recommendations and ratings by Nutrition Care Process category.
- Introduction - Guideline Overview; Scope, Statement of Intent and Patient Preference, Guideline Methods, Implementation of the Guideline; Benefits and Harms of Implementing the Recommendations
- Major Recommendations - Guideline recommendations with conditional statements and strength rating
- Algorithms - Diagrams showing a flow of treatment for a disease or condition
- Background Information and References - additional information

Use the links on the left to access the guideline material.

Printing Guideline Materials
You can print each page of the guideline by clicking on the print icon in the upper right-hand corner. To print entire sections of a guideline in PDF format, please click below:

- GDM: Introductory Material (approx. 11 pages)
- GDM: Major Recommendations (approx. 28 pages)
- GDM: Algorithms (approx 6 pages)

The report will be generated in PDF format. We recommend Adobe Reader 7.0 or greater (available as a free download [www.adobe.com](http://www.adobe.com)).

General Information and Disclaimer
This nutrition practice guideline is meant to serve as a general framework for handling clients with particular health problems. The independent skill and judgment of the health care provider must always dictate treatment decisions.

To view the guideline development and review process, click here.

Application of the Guideline

This guideline will be accompanied by a set of companion documents (i.e., a toolkit) to assist the practitioner in applying the guideline. The toolkit will contain materials such as the Medical Nutrition Therapy protocol, documentation forms, outcomes management tools, client education resources and case studies. The toolkit is currently under development and will undergo pilot-testing through the ADA’s Dietetic Practice-Based Research Network prior to publication.

Revision

The literature search will be repeated for each guideline topic on an annual basis to identify new research that has been published since the previous search was completed. Based on the quantity and quality of new research, a determination will be made about whether the new information could change the published recommendation or rating.

If a revision is unwarranted, then the search is recorded, dated and saved until the next review and no further action is taken. If the determination is that there could be a change in the recommendation or rating, then the supporting evidence analysis question(s) will be re-analyzed following the standard ADA Evidence Analysis Process (see ADA Evidence Analysis Manual).

When the analysis is completed, the expert workgroup will approve and re-rate the conclusion statements and recommendations. The guideline will undergo a complete revision every three to five years.

Medical Nutrition Therapy and Gestational Diabetes Mellitus

Scientific evidence supports the effectiveness of medical nutrition therapy for gestational diabetes mellitus. Topics included in this guideline are:

- Medical nutrition therapy and dietitian intervention
- Reduction of blood glucose levels
- Reduction of risk factors for poor maternal and neonatal outcomes

The registered dietitian plays an integral role on the interdisciplinary healthcare team by making the optimal nutrition prescription and developing the nutrition intervention plan for patients undergoing gestational diabetes therapy. Based on the client’s treatment plan and comorbid conditions, other nutrition practice guidelines, such as diabetes, may be needed in order to provide optimal treatment.

Populations to Whom This Guideline May Apply

This guideline applies to pregnant women with gestational diabetes mellitus.

Other Guideline Overview Material

For more details on the guideline components, click an item below:

- Scope of Guideline
- Statement of Intent and Patient Preference
- Guideline Methods
- Implementation of the Guideline
- Benefits and Harms of Implementing the Recommendations.

Contraindications

Clinical judgment is crucial in the application of these guidelines. Careful consideration should be given to the application of these guidelines for individuals with significant medical co-morbidities.

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GDM: Scope of Guideline (2008)

Below, you will find a list of characteristics that describe the Scope of this Guideline.

Guideline Category
Assessment of Therapeutic Effectiveness, Counseling, Evaluation, Management, Screening, Treatment

Clinical Specialty
Endocrinology, Family Practice, Nursing, Nutrition, Obstetrics and Gynecology

Intended Users
Registered Dietitians, Advanced Practice Nurses, Health Care Providers, Nurses, Nurse Midwives, Pharmacists, Physician Assistants, Physicians, Students

Guideline Objective(s)

Overall Objective
- To provide MNT guidelines for gestational diabetes mellitus that assist in the normalization and maintenance of glycemia, and reduce the risk of adverse maternal and neonatal outcomes.

Specific Objectives

To define evidence-based diabetes nutrition recommendations for registered dietitians (RDs) that are carried out in collaboration with other healthcare providers
To guide practice decisions that integrate medical, nutritional and behavioral strategies
To reduce variations in practice among RDs
To promote self-management strategies that empower the pregnant women with gestational diabetes mellitus to take responsibility for day-to-day management
To provide the RD with data to make recommendations to adjust MNT or recommend other therapies to achieve desired outcomes
To develop guidelines for interventions that have measurable clinical outcomes
To define the highest quality of care within cost constraints of the current healthcare environment.

Target Population
Adolescent (13 to 18 years), Adult (19 to 44 years), Middle Age (45 to 64 years), Female

Pregnant women with gestational diabetes mellitus.

Interventions and Practices Considered

This guideline is based on ADA’s Nutrition Care Process and Model, which involves the following steps:

- Nutrition Assessment
- Nutrition Diagnosis
- Nutrition Intervention
- Nutrition Monitoring and Evaluation.

This guideline addresses topics that correspond to the following areas of the Nutrition Care Process. Please refer to the Algorithms in this guideline for a more detailed view of the recommendations and their application within the Nutrition Care Process.

I. Referral to a Registered Dietitian
II. Medical Nutrition Therapy

A. Nutrition Assessment
   1. Food/nutrition-Related History
      - Food intake
      - Nutrition and health awareness
      - Physical activity and exercise
      - Food availability
      - Psychosocial and economic issues impacting nutrition therapy
      - Consideration of co-morbid conditions and need for additional modifications in nutrition care plan
   2. Anthropometric Measurements
      - Height, weight and prepregnancy BMI
      - Weight change rate
   3. Biochemical Date, Medical Tests and Procedures—relevant laboratory values
   4. Nutrition-focused Physical Findings
   5. Client History
      - Medical/health history
      - Medication and supplement history
      - Social history
      - Personal history
   6. Comparative Standards

B. Nutrition Diagnosis

- Inadequate energy intake
- Excessive energy intake
- Excessive alcohol intake
- Excessive fat intake
- Inappropriate intake of food fats
- Excessive protein intake
- Inadequate carbohydrate intake
- Excessive carbohydrate intake
- Inappropriate intake of types of carbohydrate
- Inconsistent carbohydrate intake
- Inadequate fiber intake
- Altered GI function
- Altered nutrition-related laboratory value (i.e. glucose)
- Food medication interaction
- Underweight
- Involuntary weight loss
- Overweight/obesity
- Involuntary weight gain
- Food- and nutrition-related knowledge deficit
- Not ready for diet/lifestyle change
- Disordered eating pattern
- Limited adherence to nutrition-related recommendations

Physical inactivity
• Inability or lack of desire to manage self-care
• Impaired ability to prepare foods/meals

C. Nutrition Intervention (Planning and Implementation)

Individualized prescription based on:
1. Food/Nutrition Intervention
2. Physical activity Interventions
3. Behavioral Interventions
4. Pharmacotherapy, when indicated


- General/healthful diet
- Modify distribution, type, or amount of food and nutrients within meals or at specified time
- Specific foods/beverages
- Initiate/change nutrition-related medication
- Initial/brief nutrition education
- Comprehensive nutrition education
- Nutrition counseling
- Strategies
- Coordination of nutrition care

D. Monitoring and Evaluation

The monitoring or progress, measuring of outcomes, and evaluating of outcomes against criteria to determine changes in specific indicators of MNT outcomes.

Although gestational diabetes MNT has the greatest impact at initial diagnosis, it continues to be effective at any time during the disease process.


1. Food/nutrition-Related History
2. Anthropometric Measurements
3. Biochemical Date, Medical Tests and Procedures
4. Nutrition-focused Physical Findings
5. Comparative Standards


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**GDM: Statement of Intent (2008)**

**Statement of Intent**

Evidence-based nutrition practice guidelines are developed to help dietetic practitioners, patients and consumers make shared decisions about health care choices in specific clinical circumstances. If properly developed, communicated and implemented, guidelines can improve care.

While they represent a statement of best practice based on the latest available evidence at the time of publishing, they are not intended to overrule professional judgment. Rather, they may be viewed as a relative constraint on individual clinician discretion in a particular clinical circumstance. The independent skill and judgment of the health care provider must always dictate treatment decisions. These nutrition practice guidelines are provided with the express understanding that they do not establish or specify particular standards of care, whether legal, medical or other.

**The Role of Patient Preference**

This guideline recognizes the role of patient preferences for possible outcomes of care, when the appropriateness of a clinical intervention involves a substantial element of personal choice or values. With regard to types of evidence that are associated with particular outcomes, Shaughnessy and Slawson (1-3) describe two major classes. Patient-oriented evidence that matters (POEM) deals with outcomes of importance to patients, such as changes in morbidity, mortality or quality of life. Disease-oriented evidence (DOE) deals with surrogate end-points, such as changes in laboratory values or other measures of response. Although the results of DOE sometimes parallel the results of POEM, they do not always correspond.

When possible, ADA recommends using POEM-type evidence rather than DOE. When DOE is the only guidance available, the guideline indicates that key clinical recommendations lack the support of outcomes evidence.

**References**


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GDM: Guideline Methods (2008)

General and Specific Methods for GDM Guideline

Below are links to both the general methods that ADA has put in place for evidence analysis and creating the guidelines, as well as the specific search methods and criteria for each question.

General Methods
Click here to view a description of the ADA's process of evidence analysis and guideline creation.

Methods for Specific Topics
Click on Specific Methods from Introduction to view descriptions of search criteria and findings for each topic covered in this guideline.

History of the Development of this Guideline
This guideline is a revision of the 2001 ADA Medical Nutrition Therapy Evidence-Based Guides for Practice, Nutrition Practice Guidelines for Gestational Diabetes Mellitus.
GDM: Physical Activity
Search Plan and Results

GDM: Blood Glucose Monitoring
Search Plan and Results

GDM: Use of Non-Nutritive Sweeteners
Search Plan and Results

GDM: Promotion of Breastfeeding
Search Plan and Results

GDM: Alcohol Consumption
(No Search Plan and Results; Consensus rating)

GDM: Pharmacologic Therapy
Search Plan and Results

GDM: Ketone Testing
Search Plan and Results

Monitoring and Evaluation

GDM: Monitor and Evaluate MNT Effectiveness
Search Plan and Results

Outcomes Management

GDM: Prevention of Recurrence, Type 2 Diabetes
Search Plan and Results


Implementation of the Gestational Diabetes Guideline

The publication of this guideline is an integral part of the plans for getting the ADA MNT evidence-based recommendations on gestational diabetes to all dietetics practitioners engaged in, teaching about or researching gestational diabetes, as quickly as possible. National implementation workshops at various sites around the country and during the ADA Food Nutrition Conference Expo (FNCE) are planned. Additionally, there are recommended dissemination and adoption strategies for local use of the ADA Gestational Diabetes Evidence-Based Nutrition Practice Guideline.

The guideline development team recommended multi-faceted strategies to disseminate the guideline and encourage its implementation. Management support and learning through social influence are likely to be effective in implementing guidelines in dietetic practice. However, additional interventions may be needed to achieve real change in practice routines.

Implementation of the gestational diabetes guideline will be achieved by announcement at professional events, presentations and training. Some strategies include:

- National and local events: State dietetic association meetings and media coverage will help launch the guideline
- Local feedback adaptation: Presentation by members of the work group at peer review meetings and opportunities for CEUs for courses completed
- Education initiatives: The guideline and supplementary resources will be freely available for use in the education and training of dietetic interns and students in approved Commission on Accreditation of Dietetics Education (CADE) programs
- Champions: Local champions will be identified and expert members of the guideline team will prepare articles for publications. Resources will be provided that include PowerPoint presentations, full guidelines and pre-prepared case studies.
- Practical Tools: Some of the tools that will be developed to help implement the guideline include specially-designed resources, such as clinical algorithms, slide presentations, training and toolkits.

Specific distribution strategies include:

Publication in full: The guideline is available electronically at the Academy Evidence Analysis Library website (www.andevideallibrary.com) and announced to all Academy Dietetic Practice Groups. The Evidence Analysis Library will also provide downloadable supporting information and links to relevant position papers.

GDM: Benefits and Risks/Harms of Implementation (2008)
Benefits and Risks/Harms of Implementing the Recommendations

Safety issues must be reviewed carefully for each individual. General benefits and risks associated with implementation of the guideline are addressed for each recommendation.

Potential Benefits

- A primary goal of implementing these recommendations includes improving an pregnant woman’s ability to achieve optimal nutrition through healthful food choices and a physically active lifestyle during her pregnancy.
- MNT employing either a series of individual or group sessions and employing a variety of nutrition interventions also report improvements in glycemia as well as improved maternal and neonatal outcomes.
- Although costs of MNT sessions and reimbursement vary, medical nutrition therapy sessions are essential for improved outcomes. MNT education can be considered cost effective when considering the benefits of nutrition interventions on the onset and progression of comorbidities versus the cost of the intervention.

Risk or Harm Considerations

When using these recommendations:

- Review the individual's age, socioeconomic status, cultural issues and other health conditions.
- Consider a referral to a behavioral specialist if psychosocial issues are a concern.
- Consider a referral to social services to assist individuals with financial arrangements if economic issues are a concern.
- Use clinical judgment when evaluating pregnant women with gestational diabetes mellitus.

In addition to the above, a variety of barriers may hinder the application of these recommendations.

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**GDM: Executive Summary of Recommendations (2008)**

**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. View the Guideline Overview from the Introduction tab. More detail (including the evidence analysis supporting these recommendations) is available on this website to Academy members and EAL subscribers under Major Recommendations.

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

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

**Executive Summary of Recommendations**

- **Screening and Referral**
  - **GDM: Risk Assessment and Screening for Gestational Diabetes Mellitus**
    All pregnant women should be assessed for risk of gestational diabetes mellitus (GDM) at the first prenatal visit. Depending on level of risk, timing of screening for gestational diabetes mellitus (GDM) and/or impaired glucose tolerance (IGT) will differ. Most women are screened between 24 - 28 weeks of gestation. Research indicates the similarities between gestational diabetes mellitus (GDM) and impaired glucose tolerance (IGT), and both are associated with increased risks of poor maternal/neonatal outcomes if left untreated.
    - **Strong Imperative**
  - **GDM: Pregnant Women At Risk for GDM**
    For pregnant women at average or high risk for gestational diabetes mellitus (GDM), the RD should monitor weight gain, nutritional intake and physical activity. Research indicates that obesity, excessive weight gain prior to pregnancy and increased saturated fat intake are associated with the development of glucose abnormalities in pregnancy and increased risk of gestational diabetes. In addition, regular physical activity during pregnancy reduces the risk of gestational diabetes mellitus (GDM).
    - **Weak Conditional**
  - **GDM: MNT for Women with GDM**
    The Registered Dietitian (RD) should initiate Medical Nutrition Therapy (MNT) within one week after diagnosis of gestational diabetes mellitus (GDM), and include a minimum of three nutrition visits. Research indicates that MNT results in improved maternal and neonatal outcomes, especially when diagnosed and treated early.
    - **Strong Imperative**
  - **GDM: MNT for Pregnant Women with IGT**
    For women with impaired glucose tolerance (IGT) during pregnancy, the Registered Dietitian (RD) should initiate the same recommendations of Medical Nutrition Therapy (MNT) as those for gestational diabetes mellitus (GDM). Research indicates that impaired glucose tolerance (IGT) and gestational diabetes mellitus (GDM) carry similar risks of adverse outcomes.
    - **Strong Imperative**

**Nutrition Assessment**

**GDM: Assess Food Intake, Physical Activity and Medications**
The Registered Dietitian (RD) should assess food intake, physical activity and medications of pregnant women, including those with gestational diabetes mellitus (GDM). Evaluation of a pregnant woman's dietary pattern, augmented by questions about medications, special concerns, conditions, and/or food preferences that might affect her nutritional adequacy or needs, provides the basis for Medical Nutrition Therapy (MNT).

**Consensus**

**Imperative**

**GDM: Assessment of BMI and Weight Gain**
The Registered Dietitian (RD) should assess body mass index (based on actual or estimated prepregnancy weight) as a baseline to determine recommended weight gain in pregnant women, including those with gestational diabetes mellitus (GDM). Body mass index (BMI) is a better indicator of maternal nutritional status than is weight alone.

**Consensus**

**Imperative**

**Nutrition Intervention**

**GDM: Caloric Intake for Normal and Underweight Women**
The Registered Dietitian (RD) should encourage normal and underweight pregnant women, including those with gestational diabetes mellitus (GDM), to consumne adequate calories to promote appropriate weight gain, with guidance from the Dietary Reference Intakes (DRI) for pregnant women. Research indicates that low or inadequate weight gain during pregnancy is associated with an increased risk of preterm delivery, regardless of prepregnancy BMI levels.

**Fair**

**Conditional**

**GDM: Caloric Intake for Overweight/Obese Women with GDM**
Since weight loss in pregnancy is not recommended, the Registered Dietitian (RD) should encourage a modest energy restriction to slow weight gain in women with gestational diabetes mellitus (GDM) who are also overweight/obese. Caloric restriction (~70% of the Dietary Reference Intakes [DRI] for pregnant women) results in considerable slowing of maternal weight gain in obese women with gestational diabetes mellitus (GDM), without causing maternal or fetal compromise and/or ketonuria.

**Fair**

**Conditional**

**GDM: Carbohydrate Intake**
The Registered Dietitian (RD) should encourage pregnant women, including those with gestational diabetes mellitus (GDM), to consume a minimum of 175 grams of carbohydrate per day based on the Dietary Reference Intake (DRI) for pregnant women for provision of glucose to the fetal brain and to prevent ketosis. Total carbohydrate intake should be less than 45% of energy to prevent hyperglycemia in women with GDM. Carbohydrate intake affects postprandial blood glucose levels; increased postprandial blood glucose levels are associated with increased incidence of large-for-gestational age infants and increased rate of Cesarean sections. Research is limited regarding fiber intake and glycemic index in women with gestational diabetes mellitus (GDM).

**Fair**

**Imperative**

**GDM: Protein and Fat Intake**
The Registered Dietitian (RD) should encourage pregnant women, including those with gestational diabetes mellitus (GDM), to consume adequate protein and fat based on the Dietary Reference Intakes (DRI) for pregnant women. Research is limited regarding protein and fat intake in women with gestational diabetes mellitus (GDM).

**Fair**

**Imperative**

**GDM: Vitamin and Mineral Supplementation**
If usual dietary intake does not meet the Dietary Reference Intakes (DRI) for pregnant women, including those with gestational diabetes mellitus (GDM), the Registered Dietitian (RD) should encourage vitamin and mineral supplementation to prevent nutritional deficiencies.

**Consensus**

**Conditional**

**GDM: Physical Activity**
Unless contraindicated, the Registered Dietitian (RD) should encourage pregnant women, including those with gestational diabetes mellitus (GDM), to participate in physical activity for 30 minutes per day for a minimum of three times per week. Research indicates that regular physical activity during pregnancy reduces the common discomforts of pregnancy without a negative effect on maternal or neonatal outcomes, and improves glycemic control in those with gestational diabetes mellitus (GDM).

**Fair**

**Conditional**

**GDM: Blood Glucose Monitoring**
The Registered Dietitian (RD) should advise women with gestational diabetes mellitus (GDM) to monitor their blood glucose, including fasting and postprandial levels. Several studies report a correlation between elevated fasting and postprandial blood glucose values with poor maternal and neonatal outcomes.

**Fair**

**Imperative**

**GDM: Use of Non-Nutritive Sweeteners**
If pregnant women, including those with gestational diabetes mellitus (GDM), choose to consume products containing non-nutritive sweeteners, the Registered Dietitian (RD) should inform them that only FDA-approved non-nutritive sweeteners should be consumed and that moderation is encouraged. Research in this area is extremely limited.

**Consensus**

**Conditional**

**GDM: Promotion of Breastfeeding**
Unless contraindicated, the Registered Dietitian (RD) should encourage breastfeeding in pregnant women, including those with gestational diabetes mellitus (GDM). Research indicates that even short duration of breastfeeding results in long-term improvements in glucose metabolism and may also reduce the risk of type 2 diabetes in children.

**Fair**

**Conditional**

**GDM: Alcohol Consumption**
The Registered Dietitian (RD) should advise pregnant women, including those with gestational diabetes mellitus (GDM), to avoid the consumption of alcohol, including alcohol used in cooking. No amount of alcohol consumption can be considered safe during pregnancy. Alcohol use during pregnancy increases the risk of alcohol-related birth defects, including growth deficiencies, facial abnormalities, central nervous system impairment, behavioral disorders, and
impaired intellectual development.

**Consensus**

**Imperative**

**GDM: Pharmacological Therapy for Treatment of GDM**

When optimal blood glucose levels have not been maintained with medical nutrition therapy (MNT) and/or the rate of fetal growth is excessive, the Registered Dietitian (RD) should recommend the initiation of pharmacological therapy for treatment of women with gestational diabetes mellitus (GDM). Research indicates that pharmacological therapy, such as the use of insulin, insulin analogs and glyburide, improves glycemic control and reduces the incidence of poor maternal and neonatal outcomes.

**Strong**

**Conditional**

**GDM: Ketone Testing**

The Registered Dietitian (RD) should recommend ketone testing for women with gestational diabetes mellitus (GDM) who have insufficient calorie and/or carbohydrate intake and/or weight loss. Two of three studies regarding ketonemia and ketonuria with poor metabolic control during a diabetic pregnancy report a positive association with lower IQ in offspring.

**Fair**

**Conditional**

**Nutrition Monitoring and Evaluation**

**GDM: Monitor and Evaluate MNT Effectiveness**

The Registered Dietitian (RD) should monitor and evaluate blood glucose levels, weight change, food intake, physical activity and pharmacological therapy (if indicated) in women with gestational diabetes mellitus (GDM) at each visit. Research indicates that Medical Nutrition Therapy (MNT) results in improved maternal and neonatal outcomes.

**Strong**

**Imperative**

**Outcomes Management**

**GDM: Weight Loss After Delivery**

For women with gestational diabetes mellitus (GDM) who are overweight/obese or with above recommended weight gain during pregnancy, the Registered Dietitian (RD) should advise weight loss after delivery which includes a combination of diet modification and physical activity. Research indicates that the risks of recurrent gestational diabetes (GDM) or development of type 2 diabetes can be reduced with weight loss.