

Diseases & Conditions

Recommendations Summary

Diabetes Mellitus (DM): Medical Nutrition Therapy

[Click here](#) to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the [Supporting Evidence Section](#) below.

Recommendation(s)

DM: MNT and Number/Length of Initial Series of Encounters

Medical nutrition therapy (MNT) provided by a registered dietitian (RD) is recommended for individuals with type 1 and type 2 diabetes. An initial series of three to four encounters each lasting from 45 to 90 minutes is recommended. This series, beginning at diagnosis of diabetes or at first referral to an RD for MNT for diabetes, should be completed within three to six months. The RD should determine if additional MNT encounters are needed after the initial series based on the nutrition assessment of learning needs and progress towards desired outcomes. Studies based on a range in the number (1-5 individual sessions or a series of 6-12 group sessions) and length (45-90 minutes) report sustained positive outcomes at one year and longer. Studies implementing a variety of nutrition interventions report a reduction in A1C levels, and some studies also report improved lipid profiles, improved weight management, adjustments in medications, and reduction in the risk for onset and progression of comorbidities.

Rating: Strong
Imperative

DM: MNT Long-Term Follow-up Encounters

At least one follow-up encounter is recommended annually to reinforce lifestyle changes and to evaluate and monitor outcomes that impact the need for changes in MNT or medication. The RD should determine if additional MNT encounters are needed. Studies involving regular lifestyle intervention sessions (up to 1 per month) report sustained positive outcomes at one year and longer.

Rating: Strong
Imperative

Risks/Harms of Implementing This Recommendation

None.

Conditions of Application

None.

Potential Costs Associated with Application

- Although costs of MNT sessions and reimbursement vary, medical nutrition therapy sessions are essential for improved outcomes.

Recommendation Narrative

- MNT has its greatest impact at diagnosis of diabetes (Monk et al, 1995; Delahanty et al, 1998).
- Eight studies (Franz et al, 1995; DAFNE Study Group, 2002; Graber et al, 2002; Miller et al, 2002; Goldhaber-Fiebert et al, 2003; Wilson et al, 2003; Lemon et al, 2004; Gaetke et al, 2006), evaluating the effectiveness of diabetes MNT at three to six months, reported reductions in A1C, ranging from 0.25% to 2.9%, depending on the type and duration of diabetes. Individual sessions ranging from one to five or a series of 10 to 12 group sessions were employed.
- A variety of nutrition therapy interventions, such as a reduced energy and fat intake, carbohydrate counting, simplified meal plans, healthy food choices, individualized meal planning strategies, exchange lists, insulin-to-carbohydrate ratios and behavioral strategies were implemented.
- The number of initial and follow-up sessions varies in all the studies.
- Studies reporting on effectiveness of MNT from six to twelve months (Lemon et al, 2004; DAFNE Study Group, 2002; Franz et al, 1995; Wolf et al, 2004; Banister et al, 2004; Chima et al, 2005; Bray et al, 2005) report a variety in the number and type of MNT sessions that lead to improved outcomes. Therefore, the RD needs to determine what is appropriate for individual clients.
- Seven studies (DCCT, 1993; Laitinen et al, 1993; Maislos et al, 2002; Banister et al, 2004; Wolf et al, 2004; Bray et al, 2005; Chima et al, 2005) report sustained improvements in A1C at 12 months and longer. All involved regular sessions with an RD, ranging from monthly to three sessions per year.
- Seven studies (DCCT, 1993; Franz et al, 1995; Goldhaber-Fiebert et al, 2003; Banister et al, 2004; Lemon et al, 2004; Wolf et al, 2004; Gaetke et al, 2006) report improvements in other outcomes, such as improved lipid profiles, weight management, decreased need for medications and reduced risk for onset and progression of comorbidities.

Recommendation Strength Rationale

- Conclusion statement was Grade I

Minority Opinions

Consensus reached.

Supporting Evidence

The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

[How effective is MNT provided by Registered Dietitians in the management of persons with type 1 and type 2 diabetes?](#)

References

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Guideline List

Evidence Based Guidelines > Guideline List > Chronic Obstructive Pulmonary Disease Guideline > Introduction

Guideline Overview

Guideline Title

Chronic Obstructive Pulmonary Disease Evidence-Based Nutrition Practice Guideline

Guideline Narrative Overview

The focus of this guideline is on medical nutrition therapy (MNT) for people with chronic obstructive pulmonary disease (COPD).

For the purposes of this guideline, the American Thoracic Society/European Respiratory Society Task Force definition (2005) of COPD is utilized:

Diagnosis of COPD should be considered in any patient who has the following:

- symptoms of cough
- sputum production or
- dyspnea or
- history of exposure to risk factors for the disease.

The diagnosis requires spirometry; post-bronchodilator FEV1/FVC < 0.7 confirms the presence of airflow limitation that is not fully reversible.

The primary goals of MNT for people with COPD are to achieve and maintain weight and improve quality of life.

Guideline Development

This guideline is intended for use by Registered Dietitians (RDs) involved in providing MNT to people with COPD. The guideline must be individualized, but it will assist the Registered Dietitian to successfully integrate MNT into the overall medical management of people with COPD. The recommendations in the guideline were based on a systematic review of the literature. Topics include:

- The provision of MNT for people with COPD
- Energy needs
- Quality of life
- Medical food supplements
- Bone density
- Use of supplemental oxygen

The recommendations are based on the work performed by the American Dietetic Association COPD expert working group. The number of supporting documents for these topics is below:

- *Recommendations*: Twenty-two (22)
- *Conclusion Statements*: Ten (10)
- *Evidence Summaries*: Ten (10)
- *Article Worksheets*: Seventy-nine (79) .

To view the guideline development and review process, [click here](#).

Contributors

[Click here](#) to see the list of expert workgroup members, analysts and contributors for this project.

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-grade the conclusion statements and recommendations. The guideline will undergo a complete revision every three to five years.

Medical Nutrition Therapy and Chronic Obstructive Pulmonary Disease

Scientific evidence supports the effectiveness of medical nutrition therapy to increase effectiveness of therapy for chronic obstructive pulmonary disease. Topics included in this guideline are:

- Medical nutrition therapy and dietitian intervention
- Energy needs
- Quality of life
- Medical food supplements

- Bone density
- Use of supplemental oxygen

The Registered Dietitian plays an integral role on the interdisciplinary care team by determining the optimal nutrition prescription and developing the nutrition care plan for patients undergoing therapy for chronic obstructive pulmonary disease. Based on the patient's treatment plan and comorbid conditions, other nutrition practice guidelines, such as critical care guidelines, may be needed in order to provide optimal treatment.

Populations to Whom This Guideline May Apply

This guideline applies to people with chronic obstructive pulmonary disease.

Other Guideline Overview Material

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

- [Scope of Guideline](#)
- [Statement of Intent](#)
- [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 patients with significant medical co-morbidities.

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Guidelines




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Guideline List

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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

1. Slawson DC, Shaughnessy AF. Becoming an information master: using POEMs to change practice with confidence. Patient-Oriented Evidence that Matters. *J Fam Pract.* 2000 Jan; 49 (1): 63-67. Erratum in: *J Fam Pract.* 2000 Mar; 49 (3): 276.
2. Slawson DC, Shaughnessy AF, Ebell MH, Barry HC. Mastering medical information and the role of POEMs--Patient-Oriented Evidence that Matters. *J Fam Pract.* 1997 Sep; 45 (3): 195-196.
3. Shaughnessy AF, Slawson DC. POEMs: patient-oriented evidence that matters. *Ann Intern Med.* 1997 Apr 15; 126 (8): 667.

[Go to Guideline Methods](#) 

Guideline List

Evidence Based Guidelines > Guideline List > Chronic Obstructive Pulmonary Disease Guideline > Executive Summary of Recommendations

Executive Summary of Recommendations

Below are the major recommendations and ratings for the American Dietetic Association Chronic Obstructive Pulmonary Disease (COPD) Evidence-Based Nutrition Practice Guideline. [Click here](#) to view the Guideline Overview. More detail (including the evidence analysis supporting these recommendations) is available on this website to ADA members and EAL subscribers under [Major Recommendations](#).

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

The COPD Recommendations are listed below. (Note: If you mouseover underlined acronyms and terms, a definition will pop-up.)

Screening and Referral

COPD: Medical Nutrition Therapy

Registered dietitians should provide Medical Nutrition Therapy (MNT) for individuals with chronic obstructive pulmonary disease (COPD). MNT should focus on prevention and treatment of weight loss and other comorbidities.

[Consensus](#)
[Imperative](#)

Nutrition Assessment

COPD: Assessment of Quality of Life

Registered dietitians should assess the quality of life of individuals with COPD, especially as it relates to their ability to obtain, prepare and consume food to meet nutritional needs. Research indicates that individuals with COPD may have more impairment with activities of daily living and those who are malnourished (as defined by BMI) may also have lower lung function measurements, more dyspnea and lower nutritional intakes.

[Fair](#)
[Imperative](#)

COPD: Assessment of Weight Status

Registered dietitians should use BMI and weight change to assess weight status in individuals with COPD. Studies report that in individuals with COPD, the prevalence of lower BMI (under 20kg/m²) may be as high as 30% and the risk of COPD-related death doubles with weight loss.

[Fair](#)
[Imperative](#)

COPD: Measurement of Body Composition

In individuals with stable COPD, registered dietitians should evaluate body composition. Studies report that even for those with BMI greater than 20kg/m², body composition differs from healthy controls in that fat-free mass index and bone mineral density are lower in individuals with COPD.

[Fair](#)
[Conditional](#)

COPD: Determination of Energy Needs

Registered dietitians should assess energy needs of individuals with COPD, based on indirect calorimetry measurements, since resting energy expenditure (REE) based on measurement is more accurate than estimation using predictive equations. Studies report that the total daily energy needs of individuals with COPD are highly variable.

[Weak](#)
[Imperative](#)

COPD: Energy Needs in Stable COPD

When using predictive equations to assess energy needs of individuals with stable COPD, registered dietitians should account for the presence of inflammation and level of physical activity. Studies report that the presence of inflammation increases resting energy expenditure and that the level of physical activity has varying effects on total daily energy needs.

[Weak](#)
[Conditional](#)

COPD: Energy Needs During Exacerbation

When using predictive equations to assess energy needs of individuals with COPD during an exacerbation, registered dietitians should account for the presence of inflammation. Studies report that the presence of inflammation increases resting energy expenditure.

[Weak](#)
[Conditional](#)

COPD: Bone Density Screening

Registered dietitians should recommend bone density screening for individuals with COPD. Research indicates that individuals with COPD are at increased risk for osteoporosis and vertebral fractures.

Fair
Imperative

Nutrition Intervention

COPD: Macronutrient Composition of Medical Food Supplements

Registered dietitians should advise that the selection of medical food supplements for individuals with COPD should be influenced more by patient preference than the percentage of fat or carbohydrate. There is limited evidence to support consumption of a particular macronutrient composition of medical food supplementation.

Fair
Conditional

COPD: Frequent Small Amounts of Medical Food Supplements

Registered dietitians should recommend frequent small amounts of medical food supplements for individuals with COPD. Studies report that frequent small amounts of medical food supplements are preferred to avoid post-prandial dyspnea and satiety and to improve compliance.

Fair
Conditional

COPD: Medical Food Supplements for Inpatients

For inpatients with COPD who have low BMI (under 20kg/m²), unintentional weight loss, reduced oral intake or who are at nutritional risk, registered dietitians should initiate provision of medical food supplements. Studies report that medical food supplementation for seven to 12 days results in increased energy intake in the inpatient setting.

Fair
Conditional

COPD: Medical Food Supplements for Outpatients

For outpatients with COPD who have low BMI (less than 20kg/m²), unintentional weight loss, reduced oral intake or who are at nutritional risk, registered dietitians should recommend consumption of medical food supplements. In the outpatient setting, studies report that medical food supplementation results in increased energy intake, with weight gain more likely when combined with exercise.

Fair
Conditional

COPD: Treatment of Osteopenia and Osteoporosis

For individuals with COPD who have osteopenia or osteoporosis, registered dietitians should encourage consumption of adequate amounts of calcium and vitamin D, as well as avoidance of tobacco smoking and excessive alcohol intake, as determined by national treatment guidelines for osteoporosis. Osteopenia and osteoporosis guidelines specific to individuals with COPD have not yet been determined.

Consensus
Conditional

COPD: Antioxidant Vitamins

Registered dietitians should encourage individuals with COPD to consume a diet that meets the Recommended Dietary Allowances (RDA) for vitamin A, vitamin C and vitamin E. Several studies report reduced serum or tissue levels of vitamin A, vitamin C and vitamin E in individuals with COPD, however adequately powered studies have not been conducted to evaluate the effects of intake above the RDA.

Weak
Imperative

COPD: Omega-3 Fatty Acids

Registered Dietitians should encourage individuals with COPD to consume a diet that meets the Adequate Intake (AI) for omega-3 fatty acids. Adequately powered studies have not been conducted to evaluate the effects of intake above the AI.

Weak
Imperative

COPD: Milk Consumption and Mucus Production

Registered dietitians should advise individuals with COPD that the consumption of milk and milk products is unrelated to mucus production. Studies report no significant effect of milk and milk product consumption on mucus production or various lung function parameters, despite individual sensory perception.

Weak
Imperative

COPD: Integrated Care

Registered dietitians should implement Medical Nutrition Therapy (MNT) and coordinate nutrition care with a team of clinical professionals. An interdisciplinary team approach is optimal to integrate MNT, for individuals with COPD, into overall disease management and involves redesigning standard medical care to integrate rehabilitative elements into a system of patient self-management and regular exercise.

Consensus
Imperative

COPD: Oxygen Therapy

Registered dietitians should reinforce the use of supplemental oxygen for individuals with COPD in whom it is prescribed, especially as it relates to their ability to obtain, prepare and consume food to meet nutritional needs. Studies report that supplemental oxygen improves the ability of individuals with COPD to perform activities of daily living and exercise.

Weak
Conditional

COPD: Collaboration on Pharmacotherapy

Registered dietitians should collaborate with other members of the health-care team regarding the use of pharmacotherapy for individuals with COPD, including drug effectiveness and potential nutrition-related side effects. The change in lung function after treatment with any drug does not help in predicting other clinically-related outcomes.

Consensus
Imperative

Nutrition Monitoring and Evaluation

COPD: Monitor and Evaluate Quality of Life

Registered dietitians should monitor and evaluate the quality of life of individuals with COPD, especially as it relates to their ability to obtain, prepare and consume food to meet nutritional needs. Research indicates that individuals with COPD may have more impairment of activities with daily living and those with lower BMI may also have lower lung function measurements, more dyspnea and lower nutritional intakes.

Fair
Imperative

COPD: Monitor and Evaluate Weight Status

Registered Dietitians should use BMI and weight change to monitor and evaluate weight status in individuals with COPD. Studies report that in individuals with COPD, the prevalence of lower BMI (< 20 kg/m²) may be as high as 30% , and the risk of COPD-related death doubles with weight loss.

Fair
Imperative

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In individuals with stable COPD, Registered Dietitians should monitor and evaluate body composition. Studies report that even for those with BMI greater than 20 kg/m², body composition differs from healthy controls in that fat free mass index and bone mineral density are lower in individuals with COPD.

Fair
Conditional

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Guideline List

Evidence Based Guidelines > Guideline List > Chronic Obstructive Pulmonary Disease Guideline > Executive Summary of Recommendations

Executive Summary of Recommendations

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[Consensus](#)
[Imperative](#)

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[Fair](#)
[Imperative](#)

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[Fair](#)
[Conditional](#)

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[Weak](#)
[Imperative](#)

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[Weak](#)
[Conditional](#)

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[Weak](#)
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Fair
Imperative

Nutrition Intervention

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Fair
Conditional

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Fair
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Fair
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Consensus
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Imperative

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Consensus
Imperative

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Consensus
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Fair
Conditional

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Diseases & Conditions

Evidence Analysis Library > Diseases & Conditions > Gestational Diabetes > Weight Management

What is the relationship between caloric restriction, weight management and ketonuria for the obese woman with gestational diabetes mellitus?

Conclusion

Two clinical trials report that obese women who develop GDM have a higher risk of adverse perinatal outcomes than normal weight women with GDM. In addition, caloric restriction (~ 70% DRI for pregnant women) can result in a considerable slowing of maternal weight gain in obese women with GDM, without causing maternal or fetal compromise and/or ketonuria. Four studies report that both prepregnancy underweight (BMI < 19) and obesity (BMI > 30) are associated with an increased risk of preterm delivery. However, low or inadequate weight gain during pregnancy, not excessive weight gain, is associated with an increased risk of preterm delivery, regardless of prepregnancy BMI levels.


Grade II

Overall strength of the available supporting evidence: Grade I - good; Grade II - fair; Grade III - limited; Grade IV - expert opinion; Grade V: not assignable
For additional information regarding how to interpret grades, [click here](#).

Date of Literature Review for the Evidence Analysis: March 2006

Evidence Summaries

What is the evidence that supports this conclusion? For more information, click on the Evidence Summary link below.

 [What is the relationship between caloric restriction, weight management and ketonuria for the obese woman with gestational diabetes mellitus?](#)

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Guideline List

Evidence Based Guidelines > Guideline List > Gestational Diabetes Guideline > Executive Summary of Recommendations

Executive Summary of Recommendations

Below are the major recommendations and ratings for the American Dietetic Association Gestational Diabetes Mellitus (GDM) Evidence-Based Nutrition Practice Guideline. [Click here](#) to view the Guideline Overview. More detail (including the evidence analysis supporting these recommendations) is available on this website to ADA members and EAL subscribers under [Major Recommendations](#).

To see a description of the ADA 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 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 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.

Strong
Conditional

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Library

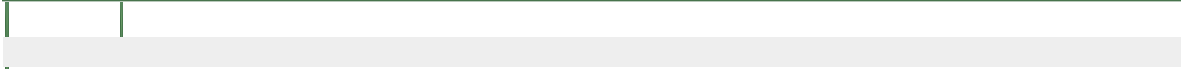
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Diseases & Conditions



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Diseases & Conditions

Evidence Analysis Library > Diseases & Conditions > Pediatric Overweight > Factors Associated with Pediatric Overweight > Eating Behaviors of Children

Breakfast Skipping and Childhood Overweight

- A total of 15 observational studies were reviewed: Two longitudinal cohort studies, two nationally representative cross-sectional studies and 11 other cross-sectional studies (two of which reported on slightly different cross-sectional analyses of the same population and two of which reported, in one case, a longitudinal comparison and, in the other, a baseline cross-sectional comparison)
- Study sample sizes ranged from 200 (Ortega, 1998) to over 24,000 (Siega-Riz, 1998) and combined children from a wide range of ages. All but four of the studies were conducted in the U.S.

Longitudinal Studies: Association for Girls

Both longitudinal studies, Sugimori H, Yoshida K et al, 2004 and Berkey, Rockett et al, 2003 (breakfast skipping) (both received a neutral rating), found that for girls, breakfast skipping was related to *weight gain* among those who were normal weight at baseline, but was related to *weight loss* among those who were overweight at baseline. For boys, no relationship was found with breakfast skipping, except for weight loss among those who were overweight at baseline in one of the two studies.

Nationally Representative Studies: Association for Adolescents But Not Younger Children

The two nationally representative studies, Lin BH, Huang CL et al, 2004 and Siega-Riz AM, Carson T et al, 1998 (both of which received a neutral quality rating), did not find an association between breakfast skipping and reported BMI in younger children, but the one that included adolescents did find a positive association.

Other Study Designs: Some Association for Adolescents

- Of the remaining 11 studies:
 - Five (one which received a positive quality rating and four which received a neutral quality rating) found a positive association between breakfast skipping and a measure of adiposity (although only among black girls in one study). Breakfast skippers were also more likely to be above normal weight.
 - Four (three of which received a positive quality rating, the other a neutral quality rating) found no relationship between breakfast skipping and a measure of adiposity
 - Two studies (one positive and one neutral quality rating) reported a negative relationship between breakfast skipping and a measure of adiposity (that is, breakfast skipping was associated with a lower adiposity measure).
- Studies of adolescents were more likely to find a positive association than studies of younger children.

Bottom Line

The preponderance of evidence seems to suggest that breakfast skipping may be a risk factor for increased adiposity, particularly among older children or adolescents. However, the strength of the evidence is limited by the fact that what constitutes a breakfast has not been consistently defined.

Overview Table


[Note: Groups with different outcomes from the same study are presented in separate rows in the table.]

 [View table in new window](#)

Quality Rating Summary

For a summary of the Quality Rating results, [click here](#).

Worksheets

 Berkey CS, Rockett HR, Gillman MW, Field AE, Colditz GA. Longitudinal study of skipping breakfast and weight change in adolescents. *Int J Obes Relat Metab Disord*. 2003 Oct; 27(10):1258-66

-  Boutelle K, Neumark-Sztainer D, Story M, Resnick M. Weight control behaviors among obese, overweight, and nonoverweight adolescents. *J Pediatr Psychol* 2002; 27: 531-40.
-  Dwyer JT, Evans M, Stone EJ, Feldman HA, Lytel L, Hoelscher D, Johnson C, Zive M, Yang M. CATCH Cooperative Research Group. Adolescents' eating patterns influence their nutrient intakes. *J Am Diet Assoc* 2001; 101: 798-802.
-  Lin BH, Huang CL, French SA. Factors associated with women's and children's body mass indices by income status. *Int J Obes Relat Metab Disord*. 2004 Apr; 28(4): 536-42.
-  Nicklas TA, Morales M, Linares A, Yang SJ, Baranowski T, De Moor C, Berenson G. Children's meal patterns have changed over a 21-year period: the Bogalusa Heart Study. *J Am Diet Assoc*. 2004; 104(5): 753-61
-  Nicklas TA, Yang SJ, Baranowski T, Zakeri I, Berenson G. Eating patterns and obesity in children. The Bogalusa Heart Study. *Am J Prev Med*. 2003 Jul; 25(1): 9-16.
-  O'Dea JA, Caputi P. Association between socioeconomic status, weight, age and gender, and the body image and weight control practices of 6- to 19-year-old children and adolescents. *Health Educ Res* 2001; 16: 521-32.
-  Ortega RM, Requejo AM, López-Sobaler AM, Quintas ME, Andrés P, Redondo MR, Navia B, López-Bonilla MD, Rivas T. Difference in the breakfast habits of overweight/obese and normal weight schoolchildren. *Int J Vitam Nutr Res* 1998; 68: 125-32.
-  Pastore DR, Fisher M, Friedman SB. Abnormalities in weight status, eating attitudes, and eating behaviors among urban high school students: correlations with self-esteem and anxiety. *J Adolesc Health* 1996; 18: 312-9.
-  Sampson AE, Dixit S, Meyers AF, Houser R Jr. The nutritional impact of breakfast consumption on the diets of inner-city African-American elementary school children. *J Natl Med Assoc* 1995; 87: 195-202.
-  Sekine M, Yamagami T, Hamanishi S, Handa K, Saito T, Nanri S, Kawaminami K, Tokui N, Yoshida K, Kagamimori S. Parental obesity, lifestyle factors and obesity in preschool children: results of the Toyama Birth Cohort study. *J Epidemiol* 2002; 12: 33-9.
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-  Summerbell CD, Moody RC, Shanks J, Stock MJ, Geissler C. Relationship between feeding pattern and body mass index in 220 free-living people in four age groups. *Europ J Clin Nutr* 1996; 50: 513-519.
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Diseases & Conditions

Recommendations Summary

Pediatric Weight Management (PWM) Assessing Child and Family Diet Behaviors in Pediatric Obesity

Click [here](#) to see the explanation of recommendation ratings (Strong, Fair, Weak, Consensus, Insufficient Evidence) and labels (Imperative or Conditional). To see more detail on the evidence from which the following recommendations were drawn, use the hyperlinks in the [Supporting Evidence Section](#) below.

Recommendation(s)

PWM: Family Diet Behaviors - Increased Risk of Obesity

Child and family diet behavior factors that may be associated with an increase in the risk of pediatric obesity and should be included in Nutrition Assessment are: Parental restriction of highly-palatable foods, consumption of food away from home, increased portion size of meals and breakfast-skipping. ADA Evidence Analysis has shown that these factors are positively associated with childhood overweight or obesity.

Rating: Fair
Imperative

PWM: Family Diet Behaviors - Relationship Unclear

Dietitians should be aware of the research on the following child and family diet behavior factors when carrying out their Nutrition Assessment: Parental encouragement or pressure to eat, parental control over child's dietary intake, meal frequency, snacking frequency or snack food intake and using food as a reward. ADA Evidence Analysis has found that these factors may not be related to pediatric overweight or obesity or that the research is still unclear on the relationship.

Rating: Fair
Imperative

Risks/Harms of Implementing This Recommendation

None.

Conditions of Application

The above topics were selected for evidence analysis. However:

- The practitioner should not limit their assessment to these factors
- Modification of these factors should be considered when developing the nutrition prescription
- Evidence analysis on other factors is currently underway and will be added to the guideline as they are finished.

Potential Costs Associated with Application

None.

Recommendation Narrative

- Evidence analysis was carried out on several child and family diet behaviors associated with pediatric obesity
- All factors are based only on observational (association) research and do not include research on interventions
- The following child and family diet behaviors were associated with an increased risk of pediatric obesity:
 - [Parental restriction of highly palatable foods](#) (Grade II)
 - [Consumption of food away from home](#) (Grade III)
 - [Increased portion size of meals](#) (Grade III)
 - [Breakfast-skipping](#) (Grade III).
- The following child and family diet behaviors may not be related to pediatric obesity. A relationship may or may not, in fact, exist, but research has not been able to determine this definitively.
 - [Parental encouragement or pressure to eat](#) (Grade II)
 - [Parental control over child's dietary intake](#) (Grade II)
 - [Meal frequency](#) (Grade III)
 - [Snacking frequency or snack food intake](#) (Grade III)
 - [Using food as a reward](#) (Grade III).

Recommendation Strength Rationale

No direct research was analyzed regarding the benefits of knowledge-based assessment and intervention practices. However, the work group felt strongly that knowledge of relevant scientific research is indispensable for responsible dietetic practice.

The majority of grades for the associations between child and family diet behaviors and pediatric obesity were a Grade III. However, while there is no risk to the patient or client, with respect to the practitioner's knowledge of these factors, the dietitian's ignorance of this research could result in substantial risk to the patient or client.

Minority Opinions

None.

Supporting Evidence

The recommendations were created from the evidence analysis on the following questions. To see detail of the evidence analysis, click the blue hyperlinks below (recommendations rated consensus will not have supporting evidence linked).

- [Is eating out related to adiposity in children?](#)
- [Is portion size related to adiposity in children?](#)
- [Is breakfast skipping related to adiposity in children?](#)
- [Is eating frequency related to adiposity in children?](#)
- [Is snacking related to adiposity in children?](#)
- [Is parental encouragement/pressure to eat associated with higher risk or prevalence of overweight among children?](#)
- [Is parental restriction of highly palatable foods associated with higher risk or prevalence of overweight among children?](#)
- [Is parental control over child dietary intake associated with higher risk or prevalence of overweight among children?](#)
- [Is using food as a reward \(Instrumental feeding\) & emotional feeding associated with higher risk or prevalence of overweight among children?](#)

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None.

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