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Diabetes Type 1 and 2

DM: Executive Summary of Recommendations (2015)

Executive Summary of Recommendations

Below are the major recommendations and ratings for the Academy of Nutrition and Dietetics Diabetes Type 1 and 2 (2015) Evidence-Based Nutrition Practice Guideline. 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 Diabetes 2015 Recommendations are listed below. [**Note:** If you mouse-over underlined acronyms and terms, a definition will pop up.]

- [Screening and Referral](#)

DM: Screening for Type 2 Diabetes

The registered dietitian nutritionist ([RDN](#)), in collaboration with other members of the health care team, should ensure that all overweight or obese adults at risk are screened for type 2 diabetes. Testing to assess risk for future diabetes in asymptomatic people should be considered in adults of any age who are overweight or obese ([BMI](#) 25 [kg/ m²](#) or more or 23kg/m² or more in Asian Americans) and who have one or more additional risk factors for diabetes.

Fair

Imperative

DM: Referral for Medical Nutrition Therapy

The registered dietitian nutritionist (RDN), in collaboration with other members of the health care team, should ensure that all adults with type 1 diabetes and type 2 diabetes are referred for medical nutrition therapy ([MNT](#)). Individuals who have diabetes should receive individualized MNT to achieve treatment goals, preferably provided by a registered dietitian nutritionist ([RDN](#)) familiar with the components of diabetes MNT.

Strong

Imperative

DM: Initial Series of Medical Nutrition Therapy Encounters

The registered dietitian nutritionist (RDN) should implement three to six medical nutrition therapy (MNT) encounters during the first six months, and determine if additional [MNT](#) encounters are needed. In studies reporting on the implementation of an initial series of [RDN](#) encounters (three to 11; total of two to 16 hours), MNT significantly lowered [HbA1c](#) by 0.3% to 2.0% in adults with type 2 diabetes and by 1.0% to 1.9% in adults with type 1 diabetes during the first six months, as well as optimization of medication therapy and improved quality of life.

Strong

Imperative

DM: Medical Nutrition Therapy Follow-Up Encounters

The registered dietitian nutritionist (RDN) should implement a minimum of one annual medical nutrition therapy (MNT) follow-up encounter. Studies longer than six months report that continued MNT encounters resulted in maintenance and continued reductions of A1C for up to two years in adults with type 2 diabetes, and for up to 6.5 years in adults with type 1 diabetes.

Strong

Imperative

- [Nutrition Assessment](#)

DM: Nutrition Assessment

The registered dietitian nutritionist ([RDN](#)) should assess the following in adults with type 1 diabetes and type 2 diabetes, to formulate the nutrition care plan:

- *Biochemical data, medical tests and medication usage:*
 - Type of diabetes
 - Glycemic control (target glucose and A1C levels are noted in the annual American Diabetes Association Standards of Medical Care in Diabetes)
 - Lipid profiles
 - [Blood pressure](#)
 - Stage of chronic kidney disease
 - Use of glucose-and lipid-lowering medications, anti-[hypertensive](#) medications, prescription and other over-the-counter medications, herbal supplements and complementary or alternative medications.
- *Nutrition-focused physical findings:*
 - Height, weight, [BMI](#) and [waist circumference](#)
 - Injection sites
 - Relative importance of weight management.
- *Client history:*
 - General health and demographic information
 - Social history
 - Cultural preferences
 - Health literacy and numeracy
 - Education and occupation

- Knowledge, beliefs, attitudes, motivation, readiness to change, self-efficacy and willingness and ability to make behavioral changes
- Physical activity
- Patient or family nutrition-related medical and health history
- Other medical or surgical treatments
- Previous nutrition care services and medical nutrition therapy (MNT) recommendations.
- *Food and nutrition-related history:*
 - Food, beverage and nutrient intake including energy intake, serving sizes, meal-snack patterns, carbohydrate, fiber, types and amounts of fat, protein, micronutrient intake and alcohol intake
 - Experience with food, previous and current food and nutrition history, eating environment, access to healthy foods and eating out.

Assessment of the patient's psychological and social situation should be included as an ongoing part of the medical management of diabetes, which may include, but are not limited to, attitudes about the illness, expectations for medical management and outcomes, affect and mood, general and diabetes-related quality of life, resources (financial, social and emotional), and psychiatric history, as well as addressing common co-morbid conditions that may complicate diabetes management.

Fair

Imperative

- Nutrition Intervention

DM: Individualize Nutrition Prescription

The registered dietitian nutritionist (RDN) should individualize the nutrition prescription and implement evidence-based guidelines in collaboration with the adult with diabetes. A variety of eating patterns (combinations of different foods or food groups) are acceptable for the management of diabetes. Personal preferences (e.g., tradition, culture, religion, health beliefs and goals, economics) and metabolic goals should be considered when recommending one eating pattern over another. Treatment decisions should be founded on evidence-based guidelines tailored to individual patient preferences, prognoses and co-morbidities.

Fair

Imperative

DM: Encourage Healthful Eating Plan for Appropriate-Weight Adults with Diabetes

For appropriate-weight adults with diabetes, the registered dietitian nutritionist (RDN) should encourage consumption of a healthful eating plan, with a goal of weight maintenance and prevention of weight gain. A variety of eating patterns (combinations of different foods or food groups) are acceptable for the management of diabetes.

Consensus

Conditional

DM: Encourage Reduced Energy Healthful Eating Plan for Overweight or Obese Adults with Diabetes

For overweight or obese adults with diabetes, the RDN should encourage a reduced energy, healthful eating plan, with a goal of weight loss, weight loss maintenance and prevention of weight gain. Studies based on reduced energy interventions reported significant reductions in HbA1c of 0.3% to 2.0% in adults with type 2 diabetes and of 1.0% to 1.9% in adults with type 1 diabetes, as well as optimization of medication therapy and improved quality of life.

Strong

Conditional

DM: Individualize Macronutrient Composition

The registered dietitian nutritionist (RDN), in collaboration with the adult with diabetes, should individualize the macronutrient composition of the healthful eating plan within the appropriate energy intake. Limited research regarding differing amounts of carbohydrate (39% to 57% of energy) and fat (27% to 40% of energy), reported no significant effects on A1C or insulin levels in adults with diabetes, independent of weight loss. Limited research reports mixed results regarding the effects of the amount of protein (ranging from 0.8 g to 2.0g per kg per day) on fasting glucose levels and A1C.

Fair

Imperative

Diabetes (DM) Type 1 and 2: Carbohydrate Management Strategies

The registered dietitian nutritionist (RDN) should educate adults with type 1 diabetes or type 2 diabetes on multiple daily injections (MDI) of insulin or insulin pump therapy on carbohydrate counting using insulin-to-carbohydrate ratios based on his or her abilities, preferences and management goals. Research reports that carbohydrate counting using insulin-to-carbohydrate ratios resulted in significant decreases in A1C of 0.4% to 1.6% and significant increases in quality of life, as well as continued maintenance of these improvements for up to 44 months. The majority of research reported no significant change in weight as a result of this carbohydrate management strategy.

Strong

Conditional

DM: Educate Adults with Type 1 or Type 2 Diabetes on Fixed Insulin Doses or Adults with Type 2 Diabetes on Insulin Secretagogues

The registered dietitian nutritionist (RDN) should educate adults with type 1 diabetes or type 2 diabetes on fixed insulin doses or adults with type 2 diabetes on insulin secretagogues, based on his or her abilities, preferences and management goals, on carbohydrate consistency (timing and amount) using one of the following carbohydrate management strategies:

- Carbohydrate counting alone
- Plate method, portion control and simplified meal plan
- Food lists (such as *Choose Your Foods. Food Lists for Diabetes*) and carbohydrate choices.

For individuals using fixed insulin doses (or insulin secretagogues), consistent carbohydrate intake with respect to time and amount can result in improved glycemic control and reduce risk for hypoglycemia. Monitoring carbohydrate intake, whether by carbohydrate counting or experience-based estimation remains a key strategy in achieving glycemic control. A simple diabetes healthful eating plan approach such as portion control or healthful food choices may be better suited to individuals with type 2 diabetes who have low health literacy or numeracy concerns.

Fair

Conditional

DM: Educate Adults with Type 2 Diabetes on MNT Alone or Non-Insulin Secretagogues

The registered dietitian nutritionist (RDN) should educate adults with type 2 diabetes on medical nutrition therapy (MNT) alone or on diabetes medications other than insulin secretagogues, based on his or her abilities, preferences and management goals, on one of the following carbohydrate management strategies:

- Carbohydrate counting alone
- Plate method, portion control and simplified meal plan

- Food lists (such as *Choose Your Foods. Food Lists for Diabetes*) and carbohydrate choices.

Monitoring carbohydrate intake, whether by carbohydrate counting or experience-based estimation remains a key strategy in achieving glycemic control. A simple diabetes healthful eating plan approach such as portion control or healthful food choices may be better suited to individuals with type 2 diabetes who have low health literacy or numeracy concerns.

Fair

Conditional

DM: Encourage Fiber Intake

The registered dietitian nutritionist (RDN) should encourage adults with diabetes to consume dietary fiber from foods such as fruits, vegetables, whole grains and legumes, at the levels recommended by the Dietary Reference Intakes (DRI) (21g to 25g per day for adult women and 30g to 38g per day for adult men, depending on age) or U.S. Department of Agriculture (14g fiber per 1,000 kcal) due to the overall health benefits of dietary fiber. Limited research regarding differing amounts of fiber intake from foods, independent of weight loss, reported mixed results on A1C and no significant effects on exogenous insulin levels.

Fair

Imperative

DM: Advise on Glycemic Index and Glycemic Load

If glycemic index or glycemic load is proposed as a glycemia-lowering strategy, the registered dietitian nutritionist (RDN) can advise adults with diabetes that lowering glycemic index or glycemic load may or may not have a significant effect on glycemic control. Studies longer than 12 weeks report no significant impact of glycemic index or glycemic load, independent of weight loss, on A1C. However, mixed results were reported regarding fasting glucose levels and endogenous insulin levels.

Fair

Conditional

DM: Educate on Substitution of Nutritive Sweeteners for Other Carbohydrates

The registered dietitian nutritionist (RDN) should educate adults with diabetes that intake of nutritive sweeteners, when substituted isocalorically for other carbohydrates, will not have a significant effect on A1C or insulin levels. Research reported no significant impact of consuming nutritive sweeteners (such as isomaltulose and sucrose), independent of weight loss, on A1C or insulin levels. However, mixed results were reported regarding fasting blood glucose.

Fair

Imperative

DM: Advise Against Excessive Intake of Nutritive Sweeteners

The registered dietitian nutritionist (RDN) should advise adults with diabetes against excessive intake of nutritive sweeteners to avoid displacing nutrient-dense foods and to avoid excessive caloric and carbohydrate intake. Higher intake of added sugars may contribute to higher energy intake.

Fair

Imperative

DM: Educate on Intake of FDA-approved Non-nutritive Sweeteners

The registered dietitian nutritionist (RDN) should educate adults with diabetes that intake of FDA-approved non-nutritive sweeteners (such as aspartame, sucralose and stevia) within the recommended daily intake levels established by FDA will not have a significant effect on glycemic control. Research reports no significant impact of consuming FDA-approved non-nutritive sweeteners [such as aspartame, stevia (steviol glycosides) and sucralose], independent of weight loss, on A1C, fasting glucose levels or insulin levels.

Weak

Imperative

DM: Educate About Substitution of FDA-Approved Non-Nutritive Sweeteners

The registered dietitian nutritionist (RDN) should educate adults with diabetes that substituting foods and beverages containing FDA-approved non-nutritive sweeteners within the recommended daily intake levels established by FDA can reduce overall calorie and carbohydrate intake. However, other sources of calories and carbohydrates in these foods and beverages need to be considered. Use of non-nutritive sweeteners has the potential to reduce overall calorie and carbohydrate intake if substituted for caloric sweeteners without compensation by intake of additional calories from other food sources.

Fair

Imperative

DM: Educate on Protein Intake and Hypoglycemia in Adults with Diabetes

The registered dietitian nutritionist (RDN) should educate adults with diabetes that adding protein to meals and snacks does not prevent or assist in the treatment of hypoglycemia. Ingested protein appears to increase insulin response without increasing plasma glucose concentrations; therefore, carbohydrate sources high in protein should not be used to treat or prevent hypoglycemia.

Fair

Imperative

DM: No Protein Restriction for Diabetic Kidney Disease (DKD)

For adults with diabetes and diabetic kidney disease (DKD), the registered dietitian nutritionist (RDN) does not need to prescribe a protein restriction. While research reports mixed results regarding the effects of the amount of protein on fasting glucose levels and A1C, independent of weight loss, in adults with type 1 diabetes and type 2 diabetes and DKD, there was no significant impact of protein intake (ranging from 0.7 g to 2.0g per kg per day) on GFR.

Strong

Conditional

DM: Type of Protein and Diabetic Kidney Disease (DKD)

The registered dietitian nutritionist (RDN) should advise adults with type 2 diabetes and diabetic kidney disease (DKD) that the type of protein (vegetable-based vs. animal-based) will not have a significant effect on GFR. However, there may be an effect on fasting glucose levels and proteinuria. While one study reports a positive impact of soy protein compared to animal protein on proteinuria and fasting glucose levels, independent of weight loss, in adults with type 2 diabetes and DKD, there was no significant impact of soy protein consumption on GFR.

Weak

Conditional

DM: Encourage Cardioprotective Eating Pattern

The registered dietitian nutritionist (RDN) should encourage consumption of a cardioprotective dietary pattern, within the recommended energy intake. While research reports no significant effect of differing amounts of saturated fat, unsaturated fat and omega-3 fatty acids on glycemia or insulin levels, independent of weight loss, modifications to decrease saturated fat intake and increase unsaturated fat intake reduced total cholesterol and LDL-cholesterol in three of six studies.

Strong

Imperative

DM: Encourage Individualized Reduction in Sodium Intake

The registered dietitian nutritionist (RDN) should encourage an individualized reduction in sodium intake. The recommendation for the general population to reduce sodium to less than 2,300 mg per day is also appropriate for adults with diabetes; for adults with both diabetes and hypertension, further reduction in sodium intake should be individualized.

Fair

Imperative

DM: Advise on Vitamin, Mineral and Herbal Supplementation

If vitamin, mineral and herbal supplementation is proposed as a diabetes management strategy, the registered dietitian nutritionist (RDN) can advise adults with diabetes that there is no clear evidence of benefit from supplementation in people who do not have underlying deficiencies. Routine supplementation with antioxidants (such as vitamins E and C and carotene) and other micronutrients (such as chromium, magnesium and vitamin D) and herbal supplements (such as cinnamon) are not advised due to lack of evidence of efficacy and concern related to long-term safety.

Fair

Conditional

DM: Advise and Educate on Alcohol Consumption

The registered dietitian nutritionist (RDN) should advise and educate adults with diabetes that if they choose to drink alcohol, they should do so in moderation (one drink per day or less for adult women and two drinks per day or less for adult men). Alcohol consumption may place adults with diabetes at increased risk for delayed hypoglycemia, especially if using insulin or insulin secretagogues.

Weak

Conditional

DM: Encourage Individualized Physical Activity Plan

The registered dietitian nutritionist (RDN) should encourage an individualized physical activity plan for adults with diabetes, unless medically contraindicated, to gradually achieve the following:

- Accumulating 150 minutes or more of physical activity per week
- Moderate-intensity aerobic exercise (50% to 70% of maximum heart rate) spread over at least three days per week with no more than two consecutive days without exercise
- Resistance training at least twice per week
- Reduce sedentary time by breaking up extended amounts of time (more than 90 minutes) spent sitting.

Adults with diabetes should be advised to perform at least 150 minutes per week of moderate-intensity aerobic physical activity (50% to 70% of maximum heart rate), spread over at least three days per week with no more than two consecutive days without exercise.

Strong

Imperative

DM: Educate on Prevention and Treatment of Exercise-Related Hypoglycemia

The registered dietitian nutritionist (RDN) should educate adults with diabetes taking insulin or insulin secretagogues that physical activity may cause hypoglycemia if medication doses or carbohydrate consumption is not altered. Individual glycemic response patterns can differ markedly with exercise; therefore, persons with diabetes taking insulin or insulin secretagogues must use glucose monitoring and recognition of glucose patterns to make decisions to exercise safely.

Consensus

Conditional

DM: Education on Glucose Monitoring

The registered dietitian nutritionist (RDN) should ensure that adults with type 1 diabetes and type 2 diabetes are educated about glucose monitoring and using data to adjust therapy. When prescribed as part of a broader educational context, results may help guide treatment decisions and self-management.

Fair

Imperative

DM: Coordination of Care

The registered dietitian nutritionist (RDN) should implement medical nutrition therapy (MNT) and coordinate care with an interdisciplinary health care team, the adult with diabetes and important others (e.g., family, friends and colleagues). Care systems should support team-based care and community involvement to meet patient needs, ensuring productive interactions

between a prepared, proactive practice team and an informed, activated patient.

**Strong
Imperative**

• **Nutrition Monitoring and Evaluation**

DM: Monitor and Evaluate Effectiveness of Medical Nutrition Therapy

The registered dietitian nutritionist (RDN) should monitor and evaluate the following in adults with type 1 diabetes and type 2 diabetes, to determine the effectiveness of medical nutrition therapy (MNT):

- *Biochemical data, medical tests and medication usage:*
 - Glycemic control (target glucose and A1C levels are noted in the annual American Diabetes Association Standards of Medical Care in Diabetes)
 - Results of glucose monitoring
 - Lipid profiles
 - Blood pressure
 - Stage of chronic kidney disease
 - Use of glucose-and lipid-lowering medications, anti-hypertensive medications, prescription and other over-the-counter medications, herbal supplements and complementary or alternative medications.
- *Nutrition-focused physical findings:*
 - Height, weight, BMI and waist circumference
 - Injection sites
 - Relative importance of weight management.
- *Client history:*
 - Knowledge, beliefs, attitudes, motivation, readiness to change, self-efficacy and willingness and ability to make behavioral changes
 - Physical activity
 - Other medical or surgical treatments.
- *Food and nutrition-related history:*
 - Food, beverage and nutrient intake including energy intake, serving sizes, meal-snack patterns, carbohydrate, fiber, types and amounts of fat, protein, micronutrient intake and alcohol intake
 - Eating environment, access to healthy foods and eating out.

Monitoring and evaluation of the patient's psychological and social situation should be included as an ongoing part of the medical management of diabetes, which may include but are not limited to attitudes about the illness, expectations for medical management and outcomes, affect or mood, general and diabetes-related quality of life, resources (financial, social and emotional) and psychiatric history, as well as addressing common co-morbid conditions that may complicate diabetes management.

**Fair
Imperative**