

Nutrition Practice Guideline Care Improves Diabetes Outcomes

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Medical nutrition therapy (MNT) for diabetes is not “one size fits all.” Each person with diabetes is an individual, and finding the optimal approach to his or her nutrition care is often a challenge. Nutrition Practice Guidelines (NPGs) for diabetes have been developed to guide nutrition professionals in providing MNT that individualizes and improves diabetes outcomes.

Clinical Goals for MNT in Diabetes
MNT is an essential part of attaining the clinical goals of diabetes management outlined in Table 1.^{1,2} The approach to MNT should be individualized, with certain populations, such as pregnant women, requiring special considerations.

NPGs

NPGs are systematically developed statements designed to guide practitioners' and patients' decisions about appropriate health care for specific clinical circumstances.³ They are based on the best available research and professional judgment. NPGs are comprehensive, specific, and manageable. They are thoroughly researched and validated through field-testing by a pool of practitioners. NPGs outline the process nutrition professionals should follow in providing MNT to individuals with type 1, type 2, or gestational diabetes.^{4,5}

Specific recommendations are made regarding data to collect before, during, and after office visits to assist in tracking outcomes, as well as standards for determining the level of care to provide and suggestions for frequency of visits for each disease. NPGs are not a “cookbook

approach” but do offer a step-by-step roadmap to MNT. Following a predetermined process helps registered dietitians (RDs) proceed through each step without omitting important aspects of care. Although NPGs are intended primarily for use by nutrition professionals, others, such as health care providers, institutions, and policy makers, may also find them useful.

NPGs: Research Validation

Practice guidelines work! Results of NPG field-testing showed that blood glucose control improved when individuals with diabetes received practice guidelines care. Specifically, in individuals with type 1 diabetes, hemoglobin A_{1c} (A1C) results at 3 months

improved in 88% of patients receiving practice-guideline care compared with 53% of patients receiving usual care.⁶ Among individuals who had type 2 diabetes for more than 6 months, those who received practice-guideline care had significantly lower A1C results at the 3-month follow-up than those who received basic nutrition care.⁷ Cost-effectiveness of diabetes treatment was also enhanced when dietitians were involved in active decision making about interventions based on patients' needs.⁸ For women with gestational diabetes, field-testing of GDM-specific NPGs showed that women who received practice-guideline care had a lower frequency of insulin use and a lower frequency of abnormal A1C at follow-up.⁹

Table 1. Clinical Goals for MNT in Diabetes

For Nonpregnant Adults¹	
Glycemic Control	
A1C	< 7.0%*
Preprandial plasma glucose	90–130 mg/dl
Postprandial plasma glucose**	< 180 mg/dl
Blood Pressure	< 130/80 mmHg
Lipids	
Total cholesterol	< 200 mg/dl
LDL cholesterol	< 100 mg/dl
Triglycerides	< 150 mg/dl
HDL cholesterol	> 40 mg/dl (men); > 50 mg/dl (women)
For Those With Gestational Diabetes²	
Fasting plasma glucose	≤ 105 mg/dl
<i>or</i>	
1-hour postprandial plasma glucose	≤ 155 mg/dl
<i>or</i>	
2-hour postprandial plasma glucose	≤ 130 mg/dl
* More stringent glycemic goals (i.e., A1C < 6%) may further reduce complications at the cost of increased risk of hypoglycemia.	
** Postprandial glucose measurements should be made 1–2 hours after the beginning of meals, which is generally when levels peak in patients with diabetes.	

NPGs: The Process

An RD who uses NPGs follows a systematic process that has its roots in the four-step model of diabetes MNT: assessment, goal setting, intervention, and evaluation.¹⁰ As shown in Table 2, NPGs have further refined these steps by adding the establishment of the nutrition care plan to the goal setting step and including an additional step for documentation and communication before evaluation and reassessment.

Step 1. Nutrition-focused assessment

A comprehensive assessment is the crucial step in providing individualized diabetes MNT. Assessments are based on referral data, including medical history, medications, and laboratory data as well as information provided by individuals with diabetes, their family members, and other team members. A complete nutrition assessment includes all past nutrition education, if any, as well as individuals' perceptions of those experiences. It establishes rapport, which is particularly helpful later in the goal-setting stage.

Professionals use the assessment to determine the best way in which particular individuals with diabetes learn. Health beliefs, attitudes, and behaviors should be considered. It is key to inquire about specific food habits that may be unique to an individual. Family support may not be obvious unless an in-depth assessment is undertaken. Literacy level, visual status, disabilities, and socioeconomic status are all important factors in the assessment. Considering the special role that food plays in the culture of individual clients with diabetes will allow professionals to offer them effective and appropriate nutrition counseling.

Careful assessment allows nutrition professionals to tailor interventions and MNT to each individual. Nutrition-focused assessment provides

the basis for establishing goals, as well as determining the care plan and intervention strategy.

Step 2. Goal setting and establishing the nutrition care plan

When attempting to establish goals, RDs must distinguish between short-term and long-term goals and also must distinguish between the goals of the clients and those of the providers. It is crucial that these goals reflect what clients want and will be able to accomplish. Goals for both parties should be reasonable, attainable, and measurable. If professionals have established a good rapport with their clients, it will be easier to negotiate attainable goals.

Goals evolve and need to be evaluated and frequently re-negotiated as circumstances change. RDs can help clients frame their personal goals to promote success. If clients and their RD are able to meet together on several occasions, the clients can be encouraged to take small steps toward improved health and to set new goals at each visit to reflect gradual change.

Once goals are set, the nutrition care plan can be established. An analysis of the assessment data can help RDs determine clients' attitudes and beliefs about diabetes. It also gives professionals some insight into individuals' abilities and motivations to make the lifestyle changes necessary to manage their disease.

Prochaska's transtheoretical behavioral change model¹¹ outlines the stages of change (pre-contemplation, contemplation, preparation, action, and maintenance) and can help RDs understand and help individuals at each of these stages. Appreciating these stages and the fact that individuals do not always move through them in a systematic fashion helps to frame realistic expectations. If individuals with diabetes have never been introduced to the concept of self-manage-

ment and believe that health professionals should make all health care decisions, it is naive to think that they will be willing to take charge of their own health.

Step 3. Intervention

According to Holler and Pastors,¹⁰ intervention refers to activities of diabetes educators that facilitate or support patients' diabetes nutrition self-management plans. Information from the assessment and goals for diabetes management enables RDs to calculate nutrition prescriptions.

Once a nutrition prescription has been established, meal-planning skills can be taught. The meal-planning approach should be selected with the understanding that this method may change as individuals' understanding of the disease and motivation to self-manage evolve. Individuals with newly diagnosed type 2 diabetes may begin with the method outlined in the American Diabetes Association/American Dietetic Association pamphlet "The First Step to Diabetes Meal Planning" and within weeks progress to the more complex approach described in the "Carbohydrate Counting" pamphlet from the same organizations.¹²

Education, which consists of providing accurate and timely information to individuals with diabetes, is the main focus at this step. However, the role of educators goes beyond merely supplying facts. Educators serve as counselor and coach, helping individuals understand the disease and cope with its implications. Educators are partners to individuals with diabetes in disease management, helping them discover how they may be motivated to change their behavior to improve their health.

Step 4. Documentation and communication

The fourth step in the NPG process is to document efforts in the medical record and communicate to other members of the health care team. Clear documentation of both clinical and behavioral goals, including nutrition prescriptions, meal-planning approaches, and educational topics covered, should be accomplished after each client's first visit. The NPG materials include progress notes

Table 2. Refinement of the Four-Step MNT Model Into a Five-Step NPG Process

Four-Step Model of MNT	Five-Step NPG Process
Assessment	Nutrition-focused assessment
Goal setting	Goal setting and establishing the nutrition care plan
Intervention	Intervention
Evaluation	Documentation and communication
	Evaluation and reassessment

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specifically designed to be used for documentation.^{4,5} At each subsequent visit, it is important to document and communicate clients' acceptance and understanding, behavioral changes made, and plans for on-going care to their primary care providers (usually the referral source) and other team members. Written documentation can be shared with individuals with diabetes to demonstrate their progress and encourage their further efforts.

Step 5. Evaluation and reassessment

The final step in NPG care is ongoing evaluation and reassessment. The measurable goals established earlier will make evaluation straightforward. If evaluation reveals that changes are needed, it is helpful to put these changes into perspective as merely course corrections without sounding threatening to the individuals with diabetes. If initial goals have not been met, those goals may need to be modified or re-negotiated. If the goals have been met, new reasonable, attainable, and measurable goals may be developed.

Case Study: Using the NPGs to Manage Gestational Diabetes

Working through the following case study¹³ will help illustrate the application of NPG care for M.B., a woman with gestational diabetes. Using NPGs simplifies practice, individualizes care plans to ensure success for patients, and produces improved diabetes care and outcomes that can be clearly documented.

Presentation

M.B. is a 31-year-old white woman in the 25th week of her second pregnancy. She is married, has a 3-year-old son, and works full time. She does not smoke cigarettes or drink alcohol.

Her only medication is a prenatal vitamin prescribed by her obstetrician. She has no regular program of physical activity.

Her diet recall reveals a daily intake of approximately 3,500 calories, with 425 g of carbohydrate. M.B. is eating frequently to prevent nausea. Her breakfasts typically include sweetened cereal, skim milk, fruit juice, and a sweet roll. Her lunches are often a fast food "value meal"

with a regular soft drink. She snacks on chips or popcorn from her office vending machines. Her supper is usually late in the evening and often consists of a casserole with a salad, bread, and dessert. Every evening, M.B. has a large bowl of ice cream for a bedtime snack.

Assessment

- Height: 66 inches
- Weight: Currently 185 lb; pre-pregnancy weight 175 lb
- BMI 28 kg/m²
- Family history of type 2 diabetes
- Results of 50-g glucose challenge test: blood glucose 155 mg/dl 1 hour after glucose load
- Results of 100-g oral glucose tolerance test:
 - Fasting: 90 mg/dl
 - 1 hour: 230 mg/dl
 - 2 hour: 168 mg/dl
 - 3 hour: 136 mg/dl
- Additional laboratory values are within normal range for pregnancy

Goal setting, establishing a nutrition care plan, and carrying out the intervention

Following are three goals that would be reasonable for this client:

- "I will limit the carbohydrate I eat to 30 g at breakfast, 60 g at lunch, 60 g at dinner, and 15 g at snacks."
- "I will check my blood glucose four times a day, when fasting and 1 hour after each meal. I will record the results and bring the records to my next clinic appointment."
- "I will check my urine for ketones each morning before I eat breakfast. I will record the results and bring the records to my next clinic appointment."

M.B.'s nutrition care plan should include several components, including:

- the importance of managing blood glucose
- ketone monitoring
- effect of food intake and physical activity on glucose
- target levels for blood glucose and ketones
- a carbohydrate-controlled consistent meal pattern that promotes adequate nutrition for pregnancy, appropriate weight gain, and normoglycemia.

To aid in the intervention with M.B., the RD could begin with the information in the pamphlet "Basic Carbohydrate Counting,"¹² supplemented with quick-and-easy diabetes cookbooks and restaurant dining information.

Documentation and evaluation

The RD could document the encounter with M.B. using the "Nutrition Progress Notes" found in the NPGs for gestational diabetes. Important points to note would include assessment information, client goals, resources provided, and time spent with the client.

A 1-week follow-up should be scheduled, at which the RD could evaluate M.B.'s blood glucose monitoring records, ketone monitoring records, weight gain, and knowledge of the effect of carbohydrate on blood glucose.

References

- ¹American Diabetes Association: Standards of medical care in diabetes. *Diabetes Care* 27 (Suppl. 1):S15–S35, 2004
- ²American Diabetes Association: Gestational diabetes mellitus. *Diabetes Care* 27 (Suppl. 1): S88–S90, 2004
- ³Powers MA: What are nutrition practice guidelines? *On the Cutting Edge* 21:5–6, 2000
- ⁴American Dietetic Association. *Nutrition Practice Guidelines for Type 1 and Type 2 Diabetes*. Chicago, American Dietetic Association, 2001
- ⁵American Dietetic Association: *Nutrition Practice Guidelines for Gestational Diabetes*. Chicago, Ill., American Dietetic Association, 2001
- ⁶Kulkarni K, Castle G, Gregory R, Holmes A, Leontos C, Powers M, Snetselaar L, Splett P, Wylie-Rosett J for the Diabetes Care and Education Dietetic Practice Group: Nutrition practice guidelines for type 1 diabetes mellitus positively affect dietitian practices and patient outcomes. *J Am Diet Assoc* 98:62–70, 1998
- ⁷Franz MJ, Monk A, Barry B, McClain K, Weaver T, Cooper N, Upham P, Bergenstal R, Mazze R: Effectiveness of medical nutrition therapy provided by dietitians in the management of non-insulin-dependent diabetes mellitus: a randomized, controlled clinical trial. *J Am Diet Assoc* 95:1009–1017, 1995
- ⁸Franz MJ, Splett PL, Monk A, Barry B, McClain K, Weaver T, Upham P, Bergenstal R, Mazze R: Cost-effectiveness of medical nutrition therapy provided by dietitians for persons with non-insulin-dependent diabetes mellitus. *J Am Diet Assoc* 95:1018–1024, 1995
- ⁹Reader D, Sipe M: Key components of care for

women with gestational diabetes. *Diabetes Spectrum* 14:188–191, 2001

¹⁰Holler H, Pastors J: *Diabetes Medical Nutrition Therapy*. Chicago, Ill., American Dietetic Association, and Alexandria, Va., American Diabetes Association, 1997

¹¹Ruggiero L, Prochaska JO (Eds.): Application of the transtheoretical model to diabetes. *Diabetes Spectrum* 6:21–60, 1993

¹²Daly A, Franz M, Holzmeister LA, Kulkarni K, O'Connell B, Wheeler M: New diabetes nutrition

resources. *J Am Diet Assoc* 103: 832–834, 2003

¹³Leontos C, Geil P: *Individualized Approaches to Diabetes Nutrition Therapy: Case Studies*. Alexandria, Va., American Diabetes Association, 2002

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