Chapter 1

Evidence-Based Nutrition Practice and the Nutrition Care Process

HOW TO NAVIGATE THIS POCKET GUIDE

This pocket guide is organized to follow the steps in the Nutrition Care Process (NCP)—nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation (2,4). Integrated with the NCP are the Academy of Nutrition and Dietetics (formerly American Dietetic Association/ADA) evidence-based nutrition practice guidelines (EBNPG) for lipid disorders (5), hypertension (6), type 1 and type 2 diabetes (7,8), gestational diabetes (9), and weight management (10), which are published in the Academy of Nutrition and Dietetics Evidence Analysis Library (1) and the Journal of the Academy of Nutrition and Dietetics. Registered dietitians (RDs) can use this guide to find concise and essential information needed to plan, implement, monitor/evaluate, and document nutrition care provided in clinic, inpatient, and public health settings. In subsequent chapters, the relevant EBNPG are noted in the parentheses using this key:

- **LD** = lipid disorders
- **HTN** = hypertension
- **DB** = diabetes
- **WM** = weight management
This guide draws primarily from two sources: the EBNPG and the Academy’s *International Dietetics & Nutrition Terminology (IDNT) Reference Manual* for standardized language (2). The evidence analysis process used to develop the EBNPG is a rigorous and systematic process for searching, analyzing, and summarizing research on a specific nutrition topic. From the evidence summaries and conclusion statements, evidence-based nutrition recommendations and guidelines are developed.

In this pocket guide, recommendations from the EBNPG are organized by the section of the NCP to which they apply—nutrition assessment (Chapter 2), nutrition diagnosis (Chapter 3), nutrition intervention (Chapters 4 and 5), and nutrition monitoring and evaluation (Chapter 6).

This guide also aids in the essential integration of medical nutrition therapy (MNT) into the overall medical management of health problems. In addition to EBNPG conclusions, subsequent chapters include recommendations from the National Cholesterol Education Program (11); American Heart Association (12,13); Joint National Committee on Prevention, Detection, and Evaluation and Treatment of High Blood Pressure (14); American Diabetes Association (15); American Association of Clinical Endocrinologists (16); National Heart, Lung, and Blood Institute (17); US Department of Health and Human Services (18); and American College of Sports Medicine (19).

Chapter 2 integrates the EBNPG into the first step in the NCP, nutrition assessment (and reassessment for follow-up nutrition care), in which the RD obtains and collects timely and appropriate data, and analyzes and interprets the data with evidence-based standards. Chapter 3 reviews the second NCP step, nutrition diagnosis, which involves identifying and labeling nutrition-related problems, determining the problems’ cause and contributing
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risk factors, clustering signs and symptoms, and defining the problems’ characteristics. Examples of possible nutrition diagnoses and PES (problem, etiology, signs and symptoms) statements for conditions are given.

Chapters 4 and 5 cover step 3 in the NCP, nutrition intervention, which involves planning (formulating goals and determining plans of action) so that nutrition interventions are integrated into overall disease management and implementation (care delivered and action carried out). Chapter 4 summarizes the development of nutrition prescriptions for MNT as part of disease management. Chapter 5 summarizes EBNPG recommendations related to nutrition education and outlines nutrition counseling strategies used to implement the nutrition prescription and recommendations.

Chapter 6 summarizes the critical fourth NCP step, nutrition monitoring and evaluation, which involves monitoring progress, measuring outcome indicators, and evaluating outcomes. This requires that RDs know expected outcomes of nutrition interventions for the treatment and prevention of chronic diseases. Documentation is also reviewed in Chapter 6.

EXPECTED OUTCOMES FROM MEDICAL NUTRITION THERAPY

Lipid Disorders

Elevated LDL cholesterol (LDL-C), total cholesterol (TC), triglyceride (TG), and low HDL cholesterol (HDL-C) concentrations are risk factors for cardiovascular diseases (CVD) including coronary heart disease (CHD), coronary artery disease (CAD), hypertension and stroke. Scientific evidence strongly supports the effectiveness of MNT as a means to manage dyslipidemia and reduce
risk factors associated with CVD. Cardioprotective nutrition therapy can reduce TC by 7% to 21%, LDL-C by 7% to 22%, and triglycerides by 11% to 31% (5). Patients who attend multiple RD visits for MNT can reduce daily dietary fat intake by 5% to 8%, saturated fat intake by 2% to 4%, and energy intake by 235 to 700 kcal/day, which contributes to the positive outcomes cited (5,20). The combined intervention of a cardioprotective eating pattern, increased physical activity, and a 7% to 10% weight loss is also effective for preventing and treating metabolic syndrome, which is a clustering of risk factors for CVD that includes dyslipidemia (12).

**Hypertension**

Hypertension in adults is a major risk factor for CVD and stroke. Lifestyle modifications reduce blood pressure (BP) in both normotensive and hypertensive adults, improve the effectiveness of antihypertensive drugs, and reduce CVD risk (21). Some lifestyle modifications can reduce BP as well as single-drug therapy. Implementation of multiple lifestyle interventions can lead to substantial, clinically relevant reductions in blood pressure (13). When hypertensive individuals not on medication followed major lifestyle recommendations—weight loss, sodium reduction, increased physical activity, and the Dietary Approaches to Stop Hypertension (DASH) diet, which is rich in fruits, vegetables, and low-fat dairy products but low in saturated and total fat—their systolic blood pressure (SBP) was reduced by 14.2 mmHg and diastolic blood pressure (DBP) by 7.4 mmHg. The same intervention in nonhypertensive individuals decreased SBP and DBP by 9.2 mmHg and 5.8 mmHg, respectively (22). In general, studies implementing MNT provided by RDs for hypertension report an average reduction in blood pressure of approximately 5 mmHg for both SBP and DBP (23).
Diabetes

Type 1 diabetes is primarily a disease of insulin deficiency whereas type 2 diabetes is a progressive disease that results from defects in insulin action (insulin resistance) and insulin secretion (insulin deficiency). Diabetes is diagnosed when an individual’s endogenous insulin is insufficient to overcome the insulin resistance and he or she develops hyperglycemia. Diabetes MNT provided by RDs can effectively decrease hemoglobin A1c (A1C) by approximately 1% to 2% (range = –0.5% to –2.6%), depending on the type, duration of diabetes, and level of glycemic control (7,24). MNT has the greatest impact following the initial diagnosis and continues to be effective throughout the disease process. Outcomes of nutrition interventions are generally measurable in 6 weeks to 3 months, and evaluation by an A1C test should be done at this time. If a patient’s glycemic control has not clinically improved at 3 months, the RD should contact the referral source and recommend the need for a change in medication(s).

Lifestyle interventions can prevent or delay the development of type 2 diabetes in persons with pre-diabetes (25). In the first 2.8 years of the Diabetes Prevention Program (DPP), diabetes incidence in high-risk adults was reduced 58% by intensive lifestyle intervention (a reduced-energy diet, physical activity, and weight-reduction targets) and 31% by metformin only compared with placebo (26). In the 10-year follow-up to DPP, participants in the original lifestyle-intervention arm had maintained their low rate of diabetes onset (27). Similar results were reported in the 7-year follow-up of subjects in the Finnish Diabetes Prevention Study (28).

Overweight and Obesity

Overweight and obesity are complex, multifactorial chronic diseases that develop from an interaction between genetics...
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and the environment and are associated with increased morbidity and mortality (29). An overweight or obese individual’s health can improve with relatively modest weight losses of 5% to 10% of body weight. A mean weight loss of 5 to 8.5 kg (5% to 9%) can be expected during the first 6 months from interventions involving a reduced-energy diet and/or weight-loss medications, with weight plateaus at approximately 6 months (30). Although maintenance of weight loss is a greater challenge than weight loss, a mean weight loss of 3 to 6 kg (3% to 6%) can be maintained when individuals receive continued support (30,31).

**PLANNING NUTRITION ENCOUNTERS**

Multiple encounters between the RD and a client/patient are required to implement nutrition interventions that will facilitate the goals of nutrition therapy and achieve desirable outcomes. The EBNPG for lipid disorders, hypertension, diabetes, and weight management provide encounter guidelines, which are described in the sections that follow. The rating of each recommendation is listed parenthetically after the recommendation (see page xv for rating definitions). Note that for clients/patients who present with multiple health issues, the RD must decide whether nutrition care can be provided by following the guidelines for the primary disease process or if additional encounters will be needed.

**Lipid Disorders (5)**

- Multiple RD visits for MNT lasting an average of 45 minutes (30 to 60 minutes per session) over 6 to 12 weeks are recommended for individuals with an abnormal lipid profile (see Table 2.1 in Chapter 2) or for individuals with CHD. (Strong)
• More than 2 visits for MNT (3 to 6 visits) are recommended. (Fair)
• If a patient is taking lipid-lowering medications, three or more visits for MNT averaging 45 minutes per session over a 6- to 8-week period are recommended. (Fair)

**Hypertension (6)**

• A comprehensive program including lifestyle modification (weight reduction, MNT, and physical activity) and pharmacologic therapy is recommended for the management of elevated BP. (Consensus)

**Diabetes (7,8)**

• An initial series of three or four encounters (45–90 minutes each) with an RD for MNT is recommended. This series, beginning at the diagnosis of diabetes or at first referral to an RD for MNT for diabetes, should be completed within 3 to 6 months. The RD should determine whether additional MNT encounters are needed after the initial series. (Strong)
• At least one follow-up encounter is recommended annually to reinforce lifestyle changes and evaluate and monitor outcomes that indicate the need for changes in MNT or medication. The RD should determine whether additional MNT encounters are needed. (Strong)
• The RD should implement and coordinate care with an interdisciplinary team. (Consensus)

**Weight Management (10)**

• Weight loss and weight maintenance therapy based on a comprehensive weight management program
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that includes diet, physical activity, and behavior therapy is recommended. (Strong)

• MNT for weight loss should last at least 6 months or until weight loss goals are achieved, with implementation of a weight maintenance program after that time. (Strong)

PRIORITIZING AND COMBINING MEDICAL NUTRITION THERAPY

For persons with lipid disorders, initial MNT recommendations are for 25% to 35% of energy intake from total fat, less than 7% of energy intake from saturated fatty acids and trans fatty acids, and less than 200 mg of food cholesterol per day (5). If hypertension is a concurrent problem, a sodium intake limited to no more than 2,300 mg per day and a DASH eating pattern are recommended (6).

For people with type 1, type 2, or gestational diabetes, MNT begins with interventions shown to improve glycemic outcomes (7–9). Glucose control improves soon after MNT is implemented, and these improvements encourage individuals to continue lifestyle interventions. A variety of interventions (reduced energy and fat intake, carbohydrate counting, simplified meal plans, healthy food choices, individualized meal-planning strategies, exchange lists, insulin-to-carbohydrate ratios, low-fat vegan diets, physical activity, and behavioral strategies) have been shown to be effective (7). People with diabetes frequently also have lipid disorders and hypertension. MNT interventions for these problems should also be implemented in the initial series of encounters.

Successful weight loss and weight management therapies can help prevent or delay type 2 diabetes (25–28), hypertension (13), metabolic syndrome, and elevated tri-
glycerides (12,32). Therefore, an energy-controlled food pattern and regular physical activity are important components of MNT for these conditions.

CONCLUSION

When clients have only one medical diagnosis, disease-specific recommendations are available in the Academy’s Evidence Analysis Library (EAL) (1). A major goal of this pocket guide, however, is to help RDs integrate the EBNPG for lipid disorders, hypertension, diabetes, and adult weight management as well as MNT for prediabetes and metabolic syndrome into individualized nutrition care for clients/patients who have multiple medical diagnoses. Along with information from the referral source, laboratory data, the individual’s food/nutrition history, and client/patient preferences, the RD can use this pocket guide to prioritize nutrition therapy interventions that will be most effective in reducing risk of disease complications.