



AMERICAN ACADEMY OF FAMILY PHYSICIANS

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Recommended Curriculum Guidelines for Family Medicine Residents

Nutrition

This document is endorsed by the American Academy of Family Physicians (AAFP).

Introduction

This Curriculum Guideline defines a recommended training strategy for family medicine residents. Attitudes, behaviors, knowledge, and skills that are critical to family medicine should be attained through longitudinal experience that promotes educational competencies defined by the Accreditation Council for Graduate Medical Education (ACGME), www.acgme.org. The family medicine curriculum must include structured experience in several specified areas. Much of the resident's knowledge will be gained by caring for ambulatory patients who visit the family medicine center, although additional experience gained in various other settings (e.g., an inpatient setting, a patient's home, a long-term care facility, the emergency department, the community) is critical for well-rounded residency training. The residents should be able to develop a skillset and apply their skills appropriately to all patient care settings.

Structured didactic lectures, conferences, journal clubs, and workshops must be included in the curriculum to supplement experiential learning with an emphasis on outcomes-oriented, evidence-based studies that delineate common diseases affecting patients of all ages. Patient-centered care, and targeted techniques of health promotion and disease prevention are hallmarks of family medicine and should be integrated in all settings. Appropriate referral patterns, transitions of care, and the provision of cost-effective care should also be part of the curriculum.

Program requirements specific to family medicine residencies may be found on the ACGME website. Current AAFP Curriculum Guidelines may be found online at www.aafp.org/cg. These guidelines are periodically updated and endorsed by the AAFP and, in many instances, other specialty societies, as indicated on each guideline.

Each residency program is responsible for its own curriculum. **This guideline provides a useful strategy to help residency programs form their curricula for educating family physicians.**

Preamble

Nutrition plays a major role in the treatment of existing diseases, as well as health promotion and disease prevention. There is increasing direct evidence that links health and disease to diet. Nutritional guidelines are important components of the treatment plans for medical, surgical, and psychiatric conditions. Several diseases that are leading causes of morbidity and mortality in the United States may be consider nutrition-related or affected by nutrition. These include obesity, coronary artery disease, stroke, hypertension, diabetes, and cancer. A healthy diet can contribute to the prevention of many diseases and can form an essential part of the treatment plan for many chronic conditions. Brief counseling sessions by physicians can improve patients' nutrition and affect behavioral change.

Despite the overwhelming burden of chronic disease and benefits of counseling on nutrition, few patients are counseled on nutrition by their primary care clinicians. As patients are increasingly bombarded with nutrition advice from multiple sources, they rely on their physicians to help them evaluate the quality of popular nutrition, diet, and supplement claims. Physicians should develop the skills necessary to assess nutritional status and provide longitudinal information on diet and nutrition.

Competencies

At the completion of residency training, a family medicine resident should be able to:

- Understand general principles of nutrition, including its role in the prevention and management of specific diseases, and translate these principles into a plan of care for the patient (Patient Care, Medical Knowledge)
- Perform a comprehensive nutritional assessment including medical, social, and diet histories; physical examination; anthropometrics (i.e., height, weight, body mass index [BMI], head circumference, and body fat distribution [waist circumference and waist-to-hip ratios]); and appropriate laboratory tests (Patient Care, Medical Knowledge)
- Use an evidence-based approach to assess the patient's nutritional status and determine the effectiveness of interventions (Practice-based Learning and Improvement)
- Counsel patients regarding nutritional recommendations in a culturally sensitive manner (Professionalism, Interpersonal and Communication Skills)
- Identify and address barriers to healthy eating (Patient Care)
- Identify patients who are at risk for food insecurity and refer them to resources that can aid in providing them adequate and healthy nutrition (Patient Care, Systems-Based Practice)
- Recognize patients who are at high risk for nutrition-related complications, and

when indicated, refer them to nutrition consultants, psychologists, or bariatric surgery practices that can provide comprehensive counseling and education (Patient Care, Medical Knowledge, Systems-based Practice)

- Recognize nutritional biases and make attempts to compensate for possible effects on patient care (Professionalism)
- Understand the pharmacotherapy of obesity and surgical treatment of obesity (Patient Care)
- Prescribe pharmacotherapy and refer to bariatric surgery when indicated (Patient Care)
- Understand the pre- and post-surgical care and monitoring of bariatric surgery

Attitudes and Behaviors

The resident should demonstrate attitudes and behaviors that encompass:

- Recognition that nutrition is an integral part of:
 - Health promotion and disease prevention: Nutrition counseling that targets dietary risk factors as a primary prevention strategy has the potential to significantly reduce mortality and morbidity throughout the life cycle.
 - Medical treatment of disease: Nutritional interventions have the potential to impact and cure certain disease processes. Additionally, proper nutrition can help patients respond positively to medical interventions.
- Recognition that dietary intake is influenced by a variety of patient factors, including:
 - Culture (e.g., family, community, ethnicity, religion)
 - Socioeconomic situation (e.g., ability to make independent food choices; ability to purchase, store, and prepare food)
 - Psychosocial and mental health (e.g., depression, anorexia, dementia, bulimia, binge eating)
 - Knowledge and bias (e.g., educational level, reading ability, preconceived ideas)
 - General health and lifestyle (e.g., comorbid conditions, diseases, habits)
 - Policy (e.g., access to and availability of safe and healthy food choices; regional variability in food cost; availability of low-income subsidy programs)
- Awareness that nutrition consultants should be utilized when appropriate to help provide counseling and education for at-risk patients. Nutritionists, registered dietitians, and licensed dietitians have specialized training in public health nutrition, wellness, disease prevention, medical nutrition therapy, nutrition education, and counseling for individuals.

Knowledge

In the appropriate setting, the resident should demonstrate the ability to apply knowledge

of:

1. General principles of nutrition, including:
 - a. The roles of macronutrients and micronutrients: carbohydrates, fats, proteins, vitamins, minerals, water, and fiber
 - b. Dietary reference intakes
 - c. Nutritional content of foods
 - d. Dietary recommendations (e.g., Dietary Guidelines for Americans, MyPlate Food Guide, Dietary Approaches to Stop Hypertension [DASH] diet, and Mediterranean Diet)
 - e. Vegetarian, flexitarian, and vegan diets (understanding the benefits and nutritional issues throughout the life cycle)
 - f. Rationale for including more whole foods and fewer processed foods in the daily diet
 - g. Rationale for decreasing added sugar and refined carbohydrates in the daily diet
2. Nutritional assessment
 - a. Use of nutritional assessment tools (i.e., 24-hour diet recall)
 - b. Medical and social history, physical examination
 - c. Anthropometrics (i.e., height, weight, BMI, head circumference, and body fat distribution [waist circumference and waist-to-hip ratios])
 - d. Ordering and evaluating laboratory tests (inpatient and outpatient)
3. Nutritional issues for specific populations, including:
 - a. Infants (e.g., breastfeeding, formula, addition of solids, allergy prevention, iron)
 - b. Children (e.g., picky eating, pica, snacks, calcium, vitamins, fiber, added sugars/refined carbohydrates, and food coloring)
 - c. Adolescents (e.g., recommended daily caloric intake, healthy choices, snacks, vitamins, fiber, and healthy fat)
 - d. Adults (e.g., portion size, habits, convenience foods, energy balance, calcium, vitamin D)
 - e. Pregnancy (e.g., weight gain, recommended daily caloric intake, vitamins, minerals, and hydration)
 - f. Lactation (e.g., nutritional needs, recommended daily caloric intake, vitamin D, hydration)
 - g. Elderly (e.g., psychosocial issues, swallowing disorders, malabsorption syndromes)
 - a. Athletes (e.g., eating disorders, overtraining, energy balance, macronutrients, and supplements)

4. The role of nutrition in the management of symptomatology associated with the following specific diseases:

(Note: For several of the diseases listed, there is epidemiological or associative evidence for a role of nutrition, although direct evidence for primary prevention and treatment has not yet been established.)

- a. Cancer
- b. Cardiovascular disorders
 - i. Coronary heart disease
 - ii. Dyslipidemias
 - iii. Hypertension
 - iv. Congestive heart disease
- c. Dental disease
- d. Endocrine disorders
 - i. Diabetes (type 1 and type 2)
 - ii. Hypothyroidism
 - iii. Hyperthyroidism
 - iv. Obesity
- e. Gastrointestinal disorders
 - i. Gastroesophageal reflux disease
 - ii. Gastritis and peptic ulcer disease
 - iii. Infantile colic
 - iv. Constipation
 - v. Diverticular disease
 - vi. Irritable bowel syndrome
 - vii. Inflammatory bowel disease
 - viii. Fatty liver disease
 - ix. Hepatitis and cirrhosis
 - x. Cholelithiasis
 - xi. Pancreatitis
 - xii. Chronic (noninfectious) diarrhea
 - xiii. Bile acid and other forms of malabsorption
 - xiv. Celiac disease
 - xv. Lactose intolerance
- f. Hematologic disorders
 - i. Iron deficiency anemia
 - ii. Megaloblastic anemia
 - iii. Pernicious anemia
 - iv. Sickle cell disease
- g. Renal disorders
 - i. Chronic kidney disease
 - ii. Nephrolithiasis
 - iii. Urinary tract infection
 - iv. Nephrotic syndrome
- h. Respiratory disorders

- i. Asthma
 - ii. Chronic obstructive pulmonary disease (COPD)
 - iii. Cystic fibrosis
 - i. Bone and rheumatic disorders
 - i. Osteoporosis
 - ii. Gout
 - j. Neurologic disorders
 - i. Migraine headache
 - ii. Stroke
 - iii. Alzheimer's disease
 - iv. Dementia
 - v. Seizure disorders
 - k. Skin conditions
 - i. Acne vulgaris
 - ii. Psoriasis
 - iii. Atopic dermatitis
 - l. Gynecologic disorders
 - i. Dysmenorrhea
 - ii. Polycystic ovarian disease
 - iii. Menopausal symptoms
 - m. Psychiatric conditions
 - i. Attention deficit hyperactivity disorder (ADHD)
 - ii. Depression
5. Secondary malnutrition caused by systemic diseases, including:
- a. Alcoholism
 - b. Cancer
 - c. HIV/AIDS
 - d. Malabsorption (i.e., inflammatory bowel disease [IBD], celiac disease, pernicious anemia)
 - e. Pulmonary disease
 - f. Food allergies
 - g. Mood and psychiatric disorders
 - h. Critical illness (i.e., patients with burns or patients who have been intubated)
6. Weight loss strategies and counseling:
- a. Behavior modification and goal setting-
 - b. Use of technology and apps for weight loss
 - c. Pharmacotherapy (e.g., prescription, herbal, over-the-counter)
 - d. Popular diets and supplements
 - e. Surgical approaches, including care and recommended monitoring of the patient

prior to and after weight loss surgery

7. Eating disorders
 - a. Anorexia nervosa
 - b. Binge eating
 - c. Bulimia nervosa
8. Use of dietary supplements, including:
 - a. Vitamin and mineral deficiency, toxicity, and recommended intakes, including supplement interactions (e.g., calcium, iron)
 - b. Guidelines for herbal, alternative, and other supplements, including drug interactions, safety, and efficacy
 - c. Evidence-based nutrition resources and unproven nutritional supplement claims
9. Prevention, recognition, and treatment of food-borne illness
10. Allergies and food intolerances, including celiac disease, nonceliac gluten sensitivity, and at least minimal familiarity with the FODMAPs (**F**ermentable **O**ligosaccharides, **D**isaccharides, **M**onosaccharides, **A**nd **P**olyols) approach to assessment and management of irritable bowel syndrome
11. Physical activity and sports
 - a. Recommendations for health and weight gain or loss
 - b. Nutritional needs for various levels of activity (e.g., elite athletes) and for different age groups
 - c. Hydration
 - i. Overhydration and hyponatremia
 - ii. Dehydration and electrolyte disorders/replacement
12. Enteral and parenteral nutrition
 - a. Considerations for pediatric patients
 - b. Considerations for critical care patients
 - c. Considerations for hospice and palliative care patients
13. Community nutrition resources (e.g., food bank/pantry community kitchens/hot meals, Meals on Wheels, Special Supplemental Nutrition Program for Women, Infants, and Children (WIC); school lunch programs and community gardens)
14. Awareness of the issues surrounding the food industry, as these issues impact patients' ability to determine the nutritional content and availability of healthy foods
15. Basic understanding of the composition of a typical "Western diet" and how this deviates from an optimal dietary pattern
16. Understanding of the impact of the built environment on patients' physical activity and access to nutritious foods (e.g., grocery stores and farmers' markets versus

“food deserts;” sidewalks, parks, and safe recreational areas)

Skills

In the appropriate setting, the resident should demonstrate the ability to independently perform or appropriately refer the following:

1. Integrating nutrition assessment and intervention into the medical history, review of systems, physical examination, laboratory evaluation, and plan of care
2. Assessing nutritional status and providing dietary recommendations for outpatients
3. Assessing nutritional status and writing diet prescriptions for inpatients (e.g., in hospitals, nursing homes, other supervised living situations)
4. Ordering and interpreting appropriate laboratory and metabolic studies related to nutritional assessment and depletion
5. Evaluating results of lab data to determine patients' progress on nutrition goals
6. Ordering and managing oral supplements and tube feeding, and understanding when and how to order and monitor total parenteral nutrition
7. Counseling patients and family members about specific nutritional needs related to stages of the life cycle, lifestyle, habits, disease prevention, and/or treatment of disease
8. Counseling patients on safe lifestyle approaches to weight management and how to balance caloric intake and physical activity
9. Assessing patients' readiness to change behavior and motivating them to reach the next step
10. Monitoring patients' progress with nutritional behavioral interventions, providing appropriate feedback, and guiding patients toward solutions to overcome obstacles
11. Personalizing nutrition recommendations based on cultural norms (e.g., Ramadan) and health status
12. Advising patients about the appropriate use of vitamin, mineral, probiotic, and other dietary and botanical supplements, and prescribing these supplements, when needed
13. Identifying diets and their associated nutritional risks and benefits (e.g., South Beach Diet, Atkins Diet, Paleo Diet, intermittent fasting, Mediterranean Diet, dietary approaches to stop hypertension [DASH] diet, plant-based diets)
14. Developing strategies to teach patients how to identify and avoid overly processed foods and how to choose whole foods over processed ones
15. Answering patients' questions about nutrition and its role in disease prevention in a

culturally competent way that takes patients' health literacy into account

16. Collaborating with nutritionists, registered dietitians, and licensed dietitians
17. Referring patients to reliable community nutrition resources, including websites
18. Prescribing pharmacotherapy for the treatment of obesity to complement nutrition and lifestyle recommendations when appropriate
19. Referring to bariatric surgery practices, when appropriate

Implementation

This curriculum should be taught during focused and longitudinal experiences. It should be integrated into patient care, didactic conferences, and experiential learning activities. Nutritional status of the patient should be an integral part of case presentation, staffing, rounds, and other clinical activities in the inpatient and outpatient settings. Qualified nutrition professionals should teach nutrition, mentor residents, and be part of interdisciplinary team-based activities such as group patient education. Family medicine faculty should model and teach nutrition, as well as demonstrate practical and relevant ways to integrate nutritional information into patient care.

Resources

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Website Resources

Academy of Nutrition and Dietetics

- Eat Right. www.eatright.org
- Eat Right. Nutrition Care Manual® Products (paid subscription required). www.nutritioncaremanual.org/

American College of Lifestyle Medicine

- The Lifestyle Medicine Residency Curriculum (LMRC) (includes implementation of culinary medicine and nutrition into residency education). www.lifestylemedicine.org/ACLM/Education/Residency_Curriculum/ACLM/Education/LMRC/Residency_Curriculum.aspx

American Family Physician (AFP)

- AFP by Topic: Nutrition. www.aafp.org/afp/topicModules/viewTopicModule.htm?topicModuleId=86

American Heart Association

- Life's Simple 7. <https://www.heart.org/en/professional/workplace-health/lifes-simple-7>

Health meets Food: the Culinary Medicine Curriculum

- Health meets Food Professional Student Classes. <https://culinarymedicine.org/moodle/course/index.php?categoryid=2>
- The Certified Culinary Medicine Specialist Program. <https://culinarymedicine.org/certified-culinary-medicine-specialist-program/>

National Institutes of Health

- National Center for Complementary and Integrative Health. www.nccih.nih.gov
- National Heart, Lung, and Blood Institute. Nutrition Education for Health Professionals. www.nhlbi.nih.gov/events/2012/nutrition-education-health-professionals
- Office of Dietary Supplements. Dietary Supplement Fact Sheets. <https://ods.od.nih.gov/factsheets/list-all/>

Nutrition in Medicine

- Online Nutrition Modules. www.nutritioninmedicine.org/

Obesity Medicine Association (OMA)

- OMA Academy. <https://academy.obesitymedicine.org>

Physicians Committee for Responsible Medicine. www.pcrm.org/

U.S. Department of Agriculture

- Center for Nutrition Policy and Promotion (CNPP). www.fns.usda.gov/cnpp
- MyPlate. www.myplate.gov/

U.S. Department of Health and Human Services

- Office of Disease Prevention and Health Promotion (ODPHP). <https://health.gov/>
- ODPHP. Current Dietary Guidelines. <https://health.gov/our-work/food-nutrition/current-dietary-guidelines>
- ODPHP. Healthy People 2030. <https://health.gov/healthypeople>
- Your Guide to Lowering Your Cholesterol with TLC. www.nhlbi.nih.gov/files/docs/public/heart/chol_tlc.pdf

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