

Nutrition Care Process and Model Part I: The 2008 Update

The Nutrition Care Process and Model (NCPM) is a systematic problem-solving method that food and nutrition professionals use to think critically and make decisions that address practice-related problems (1). The NCPM provides a consistent structure and framework for food and nutrition professionals to use when delivering nutrition care and is designed for use with patients, clients, groups, and communities of all ages and conditions of health or disease (herein referred to as “patients/clients”). The original model was developed following a review of the literature and was intended to replace other nutrition care processes used in practice and education (1).

This update is the result of a planned, regularly scheduled review of the NCPM to ensure that it reflects current practice. It incorporates the results of a survey of American Dietetic Association groups experienced with the NCPM and incorporates decisions made by the Nutrition Care Process/Standardized Language Committee. Part II of this article, which will appear in an upcoming issue of the *Journal*, describes the official international dietetics and nutrition terminology as outlined in the *International Dietetics and Nutrition Terminology (INDT) Reference Manual* (2), which elaborates on and supports the NCPM. The information in Parts I and II of this article

replaces previous information describing the NCPM.

BACKGROUND

The NCPM contains four distinct but interrelated and connected steps: nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation (described in Figure 1). In theory, each step informs the subsequent step. However, as new information is obtained, a registered dietitian (RD) may revisit previous steps of the process to reassess, add, or revise nutrition diagnoses, modify interventions, or adjust goals and monitoring parameters. The NCPM is designed to incorporate a scientific base that moves food and nutrition professionals beyond experience-based practice to evidence-based practice. If the NCPM is used consistently by all food and nutrition professionals, improved health outcomes should enhance recognition of RDs and dietetic technicians, registered (DTRs), as the preferred providers of nutrition services.

THE NCPM

Figure 2 is a graphic representation of the NCPM. The outer ring of the Model influences how patients/clients receive nutrition information. The practice setting reflects rules and regulations governing practice, the age and health conditions of particular patients/clients, and how a food and nutrition professional's time is allocated. The health care system mandates the amount of time available to food and nutrition professionals, the type of services provided, and who provides the services. The social system reflects patients'/clients' health-related knowledge, values, and the time devoted to improving nutritional health. The economic aspect incorporates resources allocated to nutrition

care, including the value of a food and nutrition professional's time in the form of salary and reimbursement.

The middle ring of the Model distinguishes the unique professional attributes of food and nutrition professionals from those in other professions. The inner ring illustrates the four steps of the NCPM, which are described in Figure 2. The central core of the model depicts the essential and collaborative partnership with a patient/client. The model is intended to reflect the dynamic nature of relationships throughout the NCPM.

AREAS OUTSIDE THE NCPM

Screening and Referral System

Screening has been defined as “a test or standardized examination procedure used to identify patients requiring special intervention” (3). Nutrition screening is a critical antecedent step of the NCPM that is not typically completed by food and nutrition professionals. Thus, it is not a part of the NCPM. RDs are capable of screening patients and are accountable for developing a screening process that is cost-effective and accurately identifies patients/clients who might have a nutrition problem.

Referral is the act of sending a patient/client to another health professional for care beyond one's own expertise. The term “referral” may also apply to the actual document that authorizes a visit to another health professional and is also a legal requirement for billing purposes. In addition to correctly identifying clients who would benefit from nutrition care, a referral process ensures that patients/clients have identifiable methods of being linked to the RD who is ultimately responsible for the nutrition intervention. Referral mechanisms may be established based on specific medical diagnoses or other agreed upon criteria.

This article was written by the Writing Group of the Nutrition Care Process/Standardized Language Committee.

Address correspondence to: Esther Myers, PhD, RD, FADA, Director, Research and Scientific Affairs, American Dietetic Association, 120 South Riverside Plaza, Suite 2000, Chicago, IL 60606-6995. E-mail: emyers@eatright.org doi: 10.1016/j.jada.2008.04.027

TOPICS OF PROFESSIONAL INTEREST

Step 1: Nutrition Assessment	
Definition and purpose	Nutrition assessment is a systematic approach to collect, record, and interpret relevant data from patients, clients, family members, caregivers, and other individuals and groups. Nutrition assessment is an ongoing, dynamic process that involves initial data collection as well as continual reassessment and analysis of the patient's/client's status compared to specified criteria.
Data sources/tools for assessment	<ul style="list-style-type: none"> ● Screening or referral form. ● Patient/client interview. ● Medical or health records. ● Consultation with other caregivers, including family members. ● Community-based surveys and focus groups. ● Statistical reports, administrative data, and epidemiologic studies.
Types of data collected	<ul style="list-style-type: none"> ● Food- and nutrition-related history. ● Anthropometric measurements. ● Biochemical data, medical tests, and procedures. ● Nutrition-focused physical examination findings. ● Client history.
Nutrition assessment components	<ul style="list-style-type: none"> ● Review data collected for factors that affect nutrition and health status. ● Cluster individual data elements to identify a nutrition diagnosis as described in diagnosis reference sheets. ● Identify standards by which data will be compared.
Critical thinking	<ul style="list-style-type: none"> ● Determining appropriate data to collect. ● Determine the need for additional information. ● Selecting assessment tools and procedures that match the situation. ● Applying assessment tools in valid and reliable ways. ● Distinguishing relevant from irrelevant data. ● Distinguishing important from unimportant data. ● Validating the data.
Determination for continuation of care	If upon completion of an initial or reassessment it is determined that the problem cannot be modified by further nutrition care, discharge or discontinuation from this episode of nutrition care may be appropriate.
Step 2. Nutrition Diagnosis	
Definition and purpose	Nutrition diagnosis is a food and nutrition professional's identification and labeling of an existing nutrition problem that the food and nutrition professional is responsible for treating independently.
Data sources/tools for diagnosis	Organized assessment data that is clustered for comparison with defining characteristics of suspected diagnoses as listed in diagnosis reference sheets.
Nutrition diagnosis components	<p>The nutrition diagnosis is expressed using nutrition diagnostic terms and the etiologies, signs, and symptoms that have been identified in the reference sheets describing each diagnosis. There are three distinct parts to a nutrition diagnostic statement:</p> <ol style="list-style-type: none"> 1. The nutrition diagnosis describes alterations in a patient's/client's status. A diagnostic label may be accompanied by a descriptor such as "altered," "excessive," or "inadequate." 2. Etiology is a factor gathered during the nutrition assessment that contributes to the existence or the maintenance of pathophysiological, psychosocial, situational, developmental, cultural, and/or environmental problems. <ul style="list-style-type: none"> ○ The etiology is preceded by the words "related to." ○ Identifying the etiology will lead to the selection of a nutrition intervention aimed at resolving the underlying cause of the nutrition problem whenever possible. ○ Major and minor etiologies may result from medical, genetic, or environmental factors. 3. Signs/symptoms (defining characteristics) <p>The defining characteristics are a typical cluster of signs and symptoms that provide evidence that a nutrition diagnosis exists.</p> <ul style="list-style-type: none"> ● The signs and symptoms are preceded by the words "as evidenced by." ● Signs are the observations of a trained clinician. ● Symptoms are changes reported by the patient/client.
Nutrition diagnostic statement	<p>A well-written nutrition diagnostic statement should be:</p> <ul style="list-style-type: none"> ● Clear and concise; ● Specific to a patient/client; ● Limited to a single client problem; ● Accurately related to one etiology; and ● Based on signs and symptoms from the assessment data.
Critical thinking	<ul style="list-style-type: none"> ● Finding patterns and relationships among the data and possible causes. ● Making inferences. ● Stating the problem clearly and singularly. ● Suspending judgment. ● Making interdisciplinary connections. ● Ruling in/ruling out specific diagnoses.
Determination for continuation of care	Because the nutrition diagnosis step involves naming and describing the problem, the determination for continuation of care follows the nutrition diagnosis step. If a food and nutrition professional does not find a nutrition diagnosis, a patient/client may be referred back to the primary provider. If the potential exists for a nutrition diagnosis to develop, a food and nutrition professional may establish an appropriate method and interval for follow-up.

(continued)

Figure 1. The four steps of the Nutrition Care Process and Model.

Step 3. Nutrition Intervention	
Definition and purpose	A nutrition intervention is a purposefully planned action(s) designed with the intent of changing a nutrition-related behavior, risk factor, environmental condition, or aspect of health status. Nutrition intervention consists of two interrelated components: planning and intervention. The nutrition intervention is typically directed toward resolving the nutrition diagnosis or the nutrition etiology. Less often, it is directed at relieving signs and symptoms.
Data sources/tools for interventions	<ul style="list-style-type: none"> ● The American Dietetic Association's Evidence-Based Nutrition Practice Guides or other guidelines from professional organizations. ● The American Dietetic Association's Evidence Analysis Library and other secondary evidence such as the Cochrane Library. ● Current research literature. ● Results of outcome management studies or quality improvement projects.
Nutrition intervention components	<p>Planning</p> <ul style="list-style-type: none"> ● Prioritize diagnoses based on urgency, impact, and available resources. ● Write a nutrition prescription based on a patient's/client's individualized recommended dietary intake of energy and/or selected foods or nutrients based on current reference standards and dietary guidelines and a patient's/client's health condition and nutrition diagnosis. ● Collaborate with the patient/client to identify goals of the intervention for each diagnosis. ● Select specific intervention strategies that are focused on the etiology of the problem and that are known to be effective based on best current knowledge and evidence. ● Define time and frequency of care, including intensity, duration, and follow-up. <p>Implementation</p> <ul style="list-style-type: none"> ● Collaborate with a patient/client and other caregivers to carry out the plan of care. ● Communicate the plan of nutrition care. ● Modify the plan of care as needed. ● Follow-up and verify that the plan is being implemented. ● Revise strategies based on changes in condition or response to intervention.
Critical thinking	<ul style="list-style-type: none"> ● Setting goals and prioritizing. ● Defining the nutrition prescription or basic plan. ● Making interdisciplinary connections. ● Matching intervention strategies with patient/client needs, nutrition diagnoses, and values. ● Choosing from among alternatives to determine a course of action. ● Specifying the time and frequency of care.
Determination for continuation of care	If a patient/client has met intervention goals or is not at this time able/ready to make needed changes, the food and nutrition professional may discharge the client from this episode of care as part of the planned intervention.
Step 4. Nutrition Monitoring and Evaluation	
Definition and purpose	Nutrition monitoring and evaluation identifies the amount of progress made and whether goals/expected outcomes are being met. Nutrition monitoring and evaluation identifies outcomes relevant to the nutrition diagnosis and intervention plans and goals.
Data sources/tools for monitoring and evaluation	<ul style="list-style-type: none"> ● Self-monitoring data or data from other records including forms, spreadsheets, and computer programs. ● Anthropometric measurements, biochemical data, medical tests, and procedures. ● Patient/client surveys, pretests, posttests, and/or questionnaires. ● Mail or telephone follow-up.
Types of outcomes measured	<ul style="list-style-type: none"> ● Nutrition-related history. ● Anthropometric measurements. ● Biochemical data, medical tests, and procedures. ● Nutrition-focused physical findings.
Nutrition monitoring and evaluation components	<p>This step includes three distinct and interrelated processes:</p> <ol style="list-style-type: none"> 1. Monitor progress: <ul style="list-style-type: none"> ○ check patient/client understanding and compliance with plan; ○ determine whether the intervention is being implemented as prescribed; ○ provide evidence that the plan/intervention strategy is or is not changing patient/client behavior or status; ○ identify other positive or negative outcomes; ○ gather information indicating reasons for lack of progress; and ○ support conclusions with evidence. 2. Measure outcomes: <ul style="list-style-type: none"> ○ Select outcome indicators that are relevant to the nutrition diagnosis or signs or symptoms, nutrition goals, medical diagnosis, and outcomes and quality management goals. 3. Evaluate outcomes <ul style="list-style-type: none"> ○ Compare current findings with previous status, intervention goals, and/or reference standards.
Critical thinking	<ul style="list-style-type: none"> ● Selecting appropriate indicators/measures. ● Using appropriate reference standard for comparison. ● Defining where patient/client is in terms of expected outcomes. ● Explaining variance from expected outcomes. ● Determining factors that help or hinder progress.
Determination for continuation of care	Based on the findings, the food and nutrition professional may actively continue care or if nutrition care is complete or no further change is expected, discharge the patient/client. If nutrition care is to be continued, reassessment may result in refinements to the diagnosis and intervention. If care does not continue, a patient/client may still be monitored for a change in status and reentry to nutrition care at a later date.

Figure 1. The four steps of the Nutrition Care Process and Model (continued).

The Nutrition Care Process

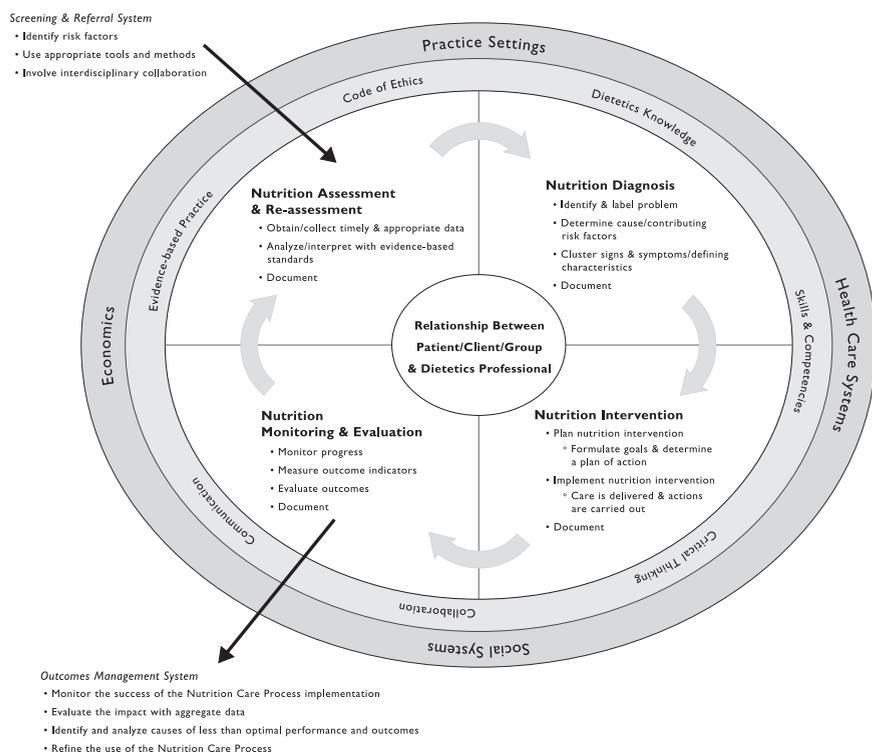


Figure 2. The four distinct but interrelated and connected steps of the Nutrition Care Process and Model.

Outcomes Management System

Outcomes management is based on accumulated data that are collected, analyzed, compared with standards or benchmarks, and the results used to adjust and improve performance. Outcomes management requires an infrastructure to aggregate and manage data documented throughout the NCPM. Results from a large series of patients/clients can be used to determine the effectiveness of intervention strategies and the influence of nutrition care in improving the overall health of individuals and groups. Because an outcomes management system involves data from multiple patients/clients and possibly multiple food and nutrition professionals or sites, it is outside the NCPM.

DISTINCTION BETWEEN MEDICAL NUTRITION THERAPY (MNT) AND THE NCPM

MNT is a term widely used in dietetics. It was defined in the 2001 Medicare benefit legislation as “nutritional

diagnostic, therapy, and counseling services for the purpose of disease management, which are furnished by a registered dietitian or nutrition professional” (4). MNT is not synonymous with the NCPM, but is one specific type of nutrition care. The NCPM is used to provide MNT, but also in other forms of nutrition care such as obtaining feeding assistance or referring to another practitioner.

CLARIFICATION FOR PRACTITIONERS

This revised description of the NCPM in Figure 1 makes the following points for practitioners.

- Nutrition assessment has been redefined and the nutrition assessment section has been reformatted to aid in clustering signs and symptoms according to the nutrition diagnoses reference sheets.
- Early examples of nutrition diagnoses included the terminology “potential for” and “risk of” as modifiers of the diagnoses. However, in the absence of data documenting a

cause-and-effect relationship between nutritional risk and nutrition diagnoses, these modifiers are no longer recommended and should not be used.

- The original article on this topic recognized that patients/clients may have more than one nutrition diagnosis. The NCPM continues to accommodate more than one nutrition diagnosis. A nutrition intervention and nutrition monitoring strategy should accompany each nutrition diagnosis.

FUTURE IMPLICATIONS

The NCPM has already begun to influence practice, education, and credentialing of RDs and DTRs, as well as research in the United States and abroad. For example, the American Dietetic Association has developed standards of practice and standards of professional performance that incorporate the NCPM (5). Several groups within the profession have developed practice-specific standards that incorporate the NCPM. The 2008 revised standards of practice in nutrition care for DTRs (6) will more clearly define the role of DTRs relative to the NCPM.

The NCPM is a prominent component of the Commission on Accreditation of Dietetics Education standards released in March 2008 (7,8). It remains to be seen whether educators will reorganize course content to align with the NCPM, but beginning in March 2009, all types of dietetics education programs are required to incorporate NCPM content. Graduates of the Commission on Accreditation for Dietetics Education-accredited programs should be prepared to assume an appropriate role in nutritional assessment but also in nutrition diagnosis and nutrition intervention, monitoring, and evaluation.

RDs entering the profession since 2006 have taken a revised and updated Registration Examination for Dietitians. The nutrition assessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation steps of the NCPM comprise 40% of the examination (9). NCPM education for practicing food and nutrition professionals has been made available at affiliate meetings in almost all states. A number of educational materials are available to American Dietetic

Association members at no charge from the American Dietetic Association Web site (www.eatright.org). In addition, the Commission on Dietetic Registration has developed a continuing education module available to all food and nutrition professionals.

EVIDENCE-BASED PRACTICE AND THE NCPM

Evidence-based practice involves using the highest quality of available information to make practice decisions. It combines the experience of clinicians with a critical evaluation of primary and secondary knowledge sources to support the decision-making process. The American Dietetic Association's electronic Evidence Analysis Library (www.adaevidencelibrary.com) contains thousands of documents that support the steps of the NCPM. These documents have been rigorously evaluated by trained evidence analysts, ranked for quality, and compiled into Evidence-Based Guidelines and Toolkits. The Guidelines and Toolkits elaborate the NCPM as it applies in adult and pediatric weight management, critical illness, disorders of lipid metabolism, and other topics are in preparation. The Dietetics Practice-Based Research Network has been involved in validating nutrition diagnosis terms and will no doubt participate in further studies incorporating and elaborating the NCPM.

CONCLUSIONS

Since it was accepted by the House of Delegates, the NCPM has been elaborated, refined, and updated to reflect current practice. The NCPM is being incorporated into education, credentialing, and materials supporting evidence-based practice. As these initiatives continue, the NCPM will be more widely understood and adopted within the profession.

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The writing group was composed of: Jennifer Bueche, PhD, RD; Pam Charney, PhD, RD; Jessie Pavlinac, MS, RD, CSR; Annalynn Skipper, PhD, RD, FADA; Elizabeth Thompson, MPH, RD; and Esther Myers, PhD, RD, FADA.

Additional members of the Nutrition Care Process/Standardized Language Committee were: Nancy Lewis, PhD, RD—Chair; Elise Smith, MA, RD—Vice-Chair; Donna Israel, PhD, RD, FADA; Judy Beto, PhD, RD, FADA; Claudia A. Conkin, MS, RD; Melinda Zook-Weaver, MS, RD; and Constance J. Geiger, PhD, RD.