

# Nutrition Care Process and Model: ADA adopts road map to quality care and outcomes management

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The establishment and implementation of a standardized Nutrition Care Process (NCP) and Model were identified as priority actions for the profession for meeting goals of the ADA Strategic Plan to “Increase demand and utilization of services provided by members” and “Empower members to compete successfully in a rapidly changing environment” (1). Providing high-quality nutrition care means doing the right thing at the right time, in the right way, for the right person, and achieving the best possible results. Quality improvement literature shows that, when a standardized process is implemented, less variation and more predictability in terms of outcomes occur (2). When providers of care, no matter their location, use a process consistently, comparable outcomes data can be generated to demonstrate value. A standardized Nutrition Care Process effectively promotes the dietetics professional as the unique provider of nutrition care when it is consistently used as a systematic method to think critically and make decisions to provide safe and effective nutrition care (3).

This article describes the four steps of ADA’s Nutrition Care Process and the overarching framework of the Nutrition Care Model that illustrates the context within which the Nutrition Care Process occurs. In addition, this article provides the rationale for a standardized process by which nutrition care is provided, distinguishes between the Nutrition Care Process and Medical Nutrition Therapy (MNT), and discusses future implications for the profession.

## BACKGROUND

Prior to the adoption of this standardized Nutrition Care Process, a variety of nutrition care processes were utilized by practitioners and taught by dietetics educators. Other allied health

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professionals, including nursing, physical therapy, and occupational therapy, utilize defined care processes specific to their profession (4-6). When asked whether ADA should develop a standardized Nutrition Care Process, dietetics professionals were overwhelmingly in favor and strongly supportive of having a standardized Nutrition Care Process for use by registered dietitians (RD) and dietetics technicians, registered (DTR).

The Quality Management Committee of the House of Delegates (HOD) appointed a Nutrition Care Model Workgroup in May 2002 to develop a nutrition care process and model. The first draft was presented to the HOD for member input and review in September 2002. Further discussion occurred during the October 2002 HOD meeting, in Philadelphia. Revisions were made accordingly, and the HOD unanimously adopted the final version of the Nutrition Care Process and Model on March 31, 2003 “for implementation and dissemination to the dietetics profession and the Association for the enhancement of the practice of dietetics.”

## SETTING THE STAGE

### Definition of Quality/Rationale for a Standardized Process

The National Academy of Science’s (NAS) Institute of Medicine (IOM) has defined quality as “The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (7,8). The quality performance of providers can be assessed by measuring the following: (a) their patients’ outcomes (end-results) or (b) the degree to which providers adhere to an accepted care process (7,8). The Committee on Quality of Health Care in America further states that it is not acceptable to have a wide quality chasm, or a gap, between *actual* and *best possible* performance (9). In an effort to ensure that dietetics professionals can meet both requirements for quality performance noted above, the American Dietetic Association (ADA) supports a standardized Nutrition Care Process for the profession.

### Standardized Process versus Standardized Care

ADA’s Nutrition Care Process is a standardized process for dietetics professionals and not a means to provide standardized care. A standardized process refers to a consistent structure and framework used to provide nutrition care, whereas stan-

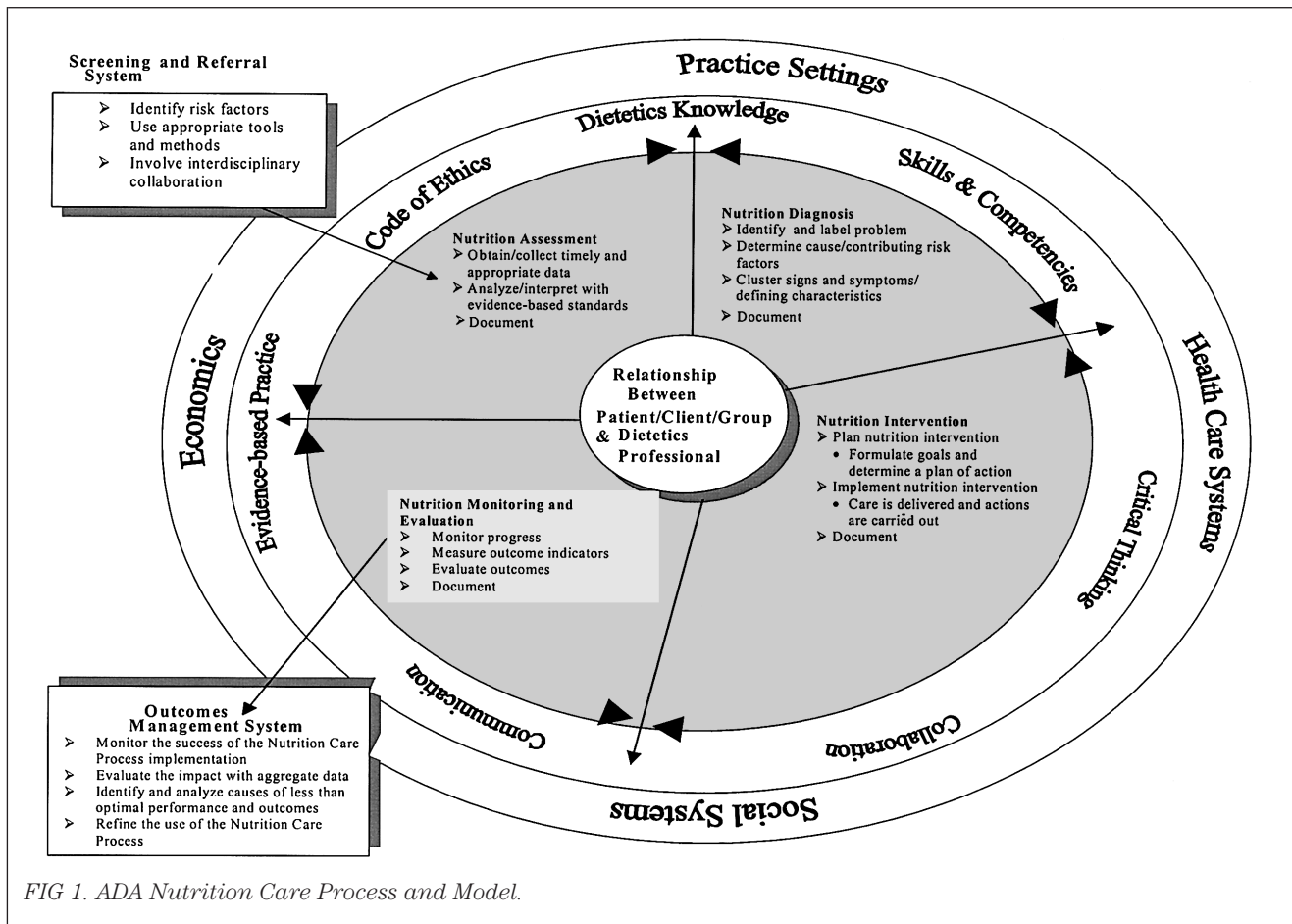


FIG 1. ADA Nutrition Care Process and Model.

standardized care infers that all patients/clients receive the same care. This process supports and promotes individualized care, not standardized care. As represented in the model (Figure 1), the relationship between the patient/client/group and dietetics professional is at the core of the nutrition care process. Therefore, nutrition care provided by qualified dietetics professionals should always reflect both the state of the science and the state of the art of dietetics practice to meet the individualized needs of each patient/client/group (10).

**Using the NCP**

Even though ADA’s Nutrition Care Process will primarily be used to provide nutrition care to individuals in health care settings (inpatient, ambulatory, and extended care), the process also has applicability in a wide variety of community settings. It will be used by dietetics professionals to provide nutrition care to both individuals and groups in community-based agencies and programs for the purpose of health promotion and disease prevention (11,12).

**Key Terms**

To lay the groundwork and facilitate a clear definition of ADA’s Nutrition Care Process, key terms were developed. These definitions provide a frame of reference for the specific components and their functions.

(a) Process is a series of connected steps or actions to

achieve an outcome and/or any activity or set of activities that transforms inputs to outputs.

(b) Process Approach is the systematic identification and management of activities and the interactions between activities. A process approach emphasizes the importance of the following:

- understanding and meeting requirements;
- determining if the process adds value;
- determining process performance and effectiveness; and
- using objective measurement for continual improvement of the process (13).

(c) Critical Thinking integrates facts, informed opinions, active listening and observations. It is also a reasoning process in which ideas are produced and evaluated. The Commission on Accreditation of Dietetics Education (CADE) defines critical thinking as “transcending the boundaries of formal education to explore a problem and form a hypothesis and a defensible conclusion” (14). The use of critical thinking provides a unique strength that dietetics professionals bring to the Nutrition Care Process. Further characteristics of critical thinking include the ability to do the following:

- conceptualize;
- think rationally;
- think creatively;
- be inquiring; and
- think autonomously.

(d) Decision Making is a critical process for choosing the best action to meet a desired goal.

(e) Problem Solving is the process of the following:

- problem identification;
- solution formation;
- implementation; and
- evaluation of the results.

(f) Collaboration is a process by which several individuals or groups with shared concerns are united to address an identified problem or need, leading to the accomplishment of what each could not do separately (15).

### DEFINITION OF ADA'S NCP

Using the terms and concepts described above, ADA's Nutrition Care Process is defined as "a systematic problem-solving method that dietetics professionals use to critically think and make decisions to address nutrition related problems and provide safe and effective quality nutrition care."

The Nutrition Care Process consists of four distinct, but interrelated and connected steps: (a) Nutrition Assessment, (b) Nutrition Diagnosis, (c) Nutrition Intervention, and (d) Nutrition Monitoring and Evaluation. These four steps were finalized based on extensive review and evaluation of previous works describing nutrition care (16-24). Even though each step builds on the previous one, the process is not linear. Critical thinking and problem solving will frequently require that dietetics professionals revisit previous steps to reassess, add, or revise nutrition diagnoses; modify intervention strategies; and/or evaluate additional outcomes. Figure 2 describes each of these four steps in a similar format consisting of the following:

- definition and purpose;
- key components or substeps with examples as appropriate;
- critical thinking characteristics;
- documentation elements; and
- considerations for continuation, discontinuation, or discharge of care.

Providing nutrition care using ADA's Nutrition Care Process begins when a patient/client/group has been identified at nutrition risk and needs further assistance to achieve or maintain nutrition and health goals. It is also important to recognize that patients/clients who enter the health care system are more likely to have nutrition problems and therefore benefit from receiving nutrition care in this manner. The Nutrition Care Process cycles through the steps of assessment, diagnosis, intervention, and monitoring and evaluation. Nutrition care can involve one or more cycles and ends, ideally, when nutrition goals have been achieved. However, the patient/client/group may choose to end care earlier based on personal or external factors. Using professional judgment, the dietetics professional may discharge the patient/client/group when it is determined that no further progress is likely.

### PURPOSE OF NCP

ADA's Nutrition Care Process, as described in Figure 2, gives dietetics professionals a consistent and systematic structure and method by which to think critically and make decisions. It also assists dietetics professionals to scientifically and holistically manage nutrition care, thus helping patients better meet their health and nutrition goals. As dietetics professionals consistently use the Nutrition Care Process, one should expect a higher probability of producing good outcomes. The Nutrition Care Process then begins to establish a link between quality

and professional autonomy. Professional autonomy results from being recognized for what we do *well*, not just for who we are. When quality can be demonstrated, as defined previously by the IOM (7,8), then dietetics professionals will stand out as the preferred providers of nutrition services. The Nutrition Care Process, when used consistently, also challenges dietetics professionals to move beyond experience-based practice to reach a higher level of evidence-based practice (9,10).

The Nutrition Care Process does not restrict practice but acknowledges the common dimensions of practice by the following:

- defining a common language that allows nutrition practice to be more measurable;
- creating a format that enables the process to generate quantitative and qualitative data that can then be analyzed and interpreted; and
- serving as the structure to validate nutrition care and showing how the nutrition care that was provided does what it intends to do.

### DISTINCTION BETWEEN MNT AND THE NCP

Medical Nutrition Therapy (MNT) was first defined by ADA in the mid-1990s to promote the benefits of managing or treating a disease with nutrition. Its components included an assessment of nutritional status of patients and the provision of either diet modification, counseling, or specialized nutrition therapies. MNT soon became a widely used term to describe a wide variety of nutrition care services provided by dietetics professionals. Since MNT was first introduced, dietetics professionals have gained much credibility among legislators and other health care providers. More recently, MNT has been redefined as part of the 2001 Medicare MNT benefit legislation to be "nutritional diagnostic, therapy, and counseling services for the purpose of disease management, which are furnished by a registered dietitian or nutrition professional" (25).

The intent of the NCP is to describe accurately the spectrum of nutrition care that can be provided by dietetics professionals. Dietetics professionals are uniquely qualified by virtue of academic and supervised practice training and appropriate certification and/or licensure to provide a comprehensive array of professional services relating to the prevention or treatment of nutrition-related illness (14,26). MNT is but one specific type of nutrition care. The NCP articulates the consistent and specific steps a dietetics professional would use when delivering MNT, but it will also be used to guide nutrition education and other preventative nutrition care services. One of the key distinguishing characteristics between MNT and the other nutrition services using the NCP is that MNT always involves an in-depth, comprehensive assessment and individualized care. For example, one individual could receive MNT for diabetes and also nutrition education services or participate in a community-based weight loss program (27). Each service would use the Nutrition Care Process, but the process would be implemented differently; the components of each step of the process would be tailored to the type of service.

By articulating the steps of the Nutrition Care Process, the commonalities (the consistent, standardized, four-step process) of nutrition care are emphasized even though the process is implemented differently for different nutrition services. With a standardized Nutrition Care Process in place, MNT should not be used to describe all of the nutrition services that dietetics professionals provide. As noted above, MNT is the only application of the Nutrition Care Process (28-31). This change in

**STEP 1. NUTRITION ASSESSMENT**

<b>Basic Definition &amp; Purpose</b>	<p>“<b>Nutrition Assessment</b>” is the first step of the Nutrition Care Process. Its purpose is to obtain adequate information in order to identify nutrition-related problems. It is initiated by referral and/or screening of individuals or groups for nutritional risk factors. Nutrition assessment is a systematic process of obtaining, verifying, and interpreting data in order to make decisions about the nature and cause of nutrition-related problems. The specific types of data gathered in the assessment will vary depending on a) practice settings, b) individual/groups’ present health status, c) how data are related to outcomes to be measured, d) recommended practices such as ADA’s Evidence Based Guides for Practice and e) whether it is an initial assessment or a reassessment. Nutrition assessment requires making comparisons between the information obtained and reliable standards (ideal goals). Nutrition assessment is an on-going, dynamic process that involves not only initial data collection, but also continual reassessment and analysis of patient/client/group needs. Assessment provides the foundation for the nutrition diagnosis at the next step of the Nutrition Care Process.</p>
<b>Data Sources/Tools for Assessment</b>	<ul style="list-style-type: none"> <li>■ Referral information and/or interdisciplinary records</li> <li>■ Patient/client interview (across the lifespan)</li> <li>■ Community-based surveys and focus groups</li> <li>■ Statistical reports; administrative data</li> <li>■ Epidemiological studies</li> </ul>
<b>Types of Data Collected</b>	<ul style="list-style-type: none"> <li>■ Nutritional Adequacy (dietary history/detailed nutrient intake)</li> <li>■ Health Status (anthropometric and biochemical measurements, physical &amp; clinical conditions, physiological and disease status)</li> <li>■ Functional and Behavioral Status (social and cognitive function, psychological and emotional factors, quality-of-life measures, change readiness)</li> </ul>
<b>Nutrition Assessment Components</b>	<ul style="list-style-type: none"> <li>■ Review dietary intake for factors that affect health conditions and nutrition risk</li> <li>■ Evaluate health and disease condition for nutrition-related consequences</li> <li>■ Evaluate psychosocial, functional, and behavioral factors related to food access, selection, preparation, physical activity, and understanding of health condition</li> <li>■ Evaluate patient/client/group’s knowledge, readiness to learn, and potential for changing behaviors</li> <li>■ Identify standards by which data will be compared</li> <li>■ Identify possible problem areas for making nutrition diagnoses</li> </ul>
<b>Critical Thinking</b>	<p>The following types of critical thinking skills are especially needed in the assessment step:</p> <ul style="list-style-type: none"> <li>■ Observing for nonverbal and verbal cues that can guide and prompt effective interviewing methods;</li> <li>■ Determining appropriate data to collect;</li> <li>■ Selecting assessment tools and procedures (matching the assessment method to the situation);</li> <li>■ Applying assessment tools in valid and reliable ways;</li> <li>■ Distinguishing relevant from irrelevant data;</li> <li>■ Distinguishing important from unimportant data;</li> <li>■ Validating the data;</li> <li>■ Organizing &amp; categorizing the data in a meaningful framework that relates to nutrition problems; and</li> <li>■ Determining when a problem requires consultation with or referral to another provider.</li> </ul>
<b>Documentation of Assessment</b>	<p>Documentation is an on-going process that supports all of the steps in the Nutrition Care Process. Quality documentation of the assessment step should be relevant, accurate, and timely. Inclusion of the following information would further describe quality assessment documentation:</p> <ul style="list-style-type: none"> <li>■ Date and time of assessment;</li> <li>■ Pertinent data collected and comparison with standards;</li> <li>■ Patient/client/groups’ perceptions, values, and motivation related to presenting problems;</li> <li>■ Changes in patient/client/group’s level of understanding, food-related behaviors, and other clinical outcomes for appropriate follow-up; and</li> <li>■ Reason for discharge/discontinuation if appropriate.</li> </ul>
<b>Determination for Continuation of Care</b>	<p>If upon the 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.</p>

*FIG 2. ADA Nutrition Care Process.*

**STEP 2. NUTRITION DIAGNOSIS**

**Basic Definition & Purpose**

“**Nutrition Diagnosis**” is the second step of the Nutrition Care Process, and is the identification and labeling that describes an actual occurrence, risk of, or potential for developing a nutritional problem that dietetics professionals are responsible for treating independently. At the end of the assessment step, data are clustered, analyzed, and synthesized. This will reveal a nutrition diagnostic category from which to formulate a specific nutrition diagnostic statement. Nutrition diagnosis should not be confused with medical diagnosis, which can be defined as a disease or pathology of specific organs or body systems that can be treated or prevented. A nutrition diagnosis changes as the patient/client/group’s response changes. A medical diagnosis does not change as long as the disease or condition exists. A patient/client/group may have the medical diagnosis of “Type 2 diabetes mellitus”; however, after performing a nutrition assessment, dietetics professionals may diagnose, for example, “undesirable overweight status” or “excessive carbohydrate intake.” Analyzing assessment data and naming the nutrition diagnosis(es) provide a link to setting realistic and measurable expected outcomes, selecting appropriate interventions, and tracking progress in attaining those expected outcomes.

**Data Sources/Tools for Diagnosis**

- Organized and clustered assessment data
- List(s) of nutrition diagnostic categories and nutrition diagnostic labels
- Currently the profession does not have a standardized list of nutrition diagnoses. However ADA has appointed a Standardized Language Work Group to begin development of standardized language for nutrition diagnoses and intervention. (June 2003)

**Nutrition Diagnosis Components (3 distinct parts)**

- 1. Problem (Diagnostic Label)**  
The nutrition diagnostic statement describes alterations in the patient/client/group’s nutritional status. A diagnostic label (qualifier) is an adjective that describes/qualifies the human response such as:
  - Altered, impaired, ineffective, increased/decreased, risk of, acute or chronic.
- 2. Etiology (Cause/Contributing Risk Factors)**  
The related factors (etiologies) are those factors contributing to the existence of, or maintenance of pathophysiological, psychosocial, situational, developmental, cultural, and/or environmental problems.
  - Linked to the problem diagnostic label by words “related to” (RT)
  - It is important not only to state the problem, but to also identify the cause of the problem.
  - This helps determine whether or not nutritional intervention will improve the condition or correct the problem.
  - It will also identify who is responsible for addressing the problem. Nutrition problems are either caused directly by inadequate intake (primary) or as a result of other medical, genetic, or environmental factors (secondary).
  - It is also possible that a nutrition problem can be the cause of another problem. For example, excessive caloric intake may result in unintended weight gain. Understanding the cascade of events helps to determine how to prioritize the interventions.
  - It is desirable to target interventions at correcting the cause of the problem whenever possible; however, in some cases treating the signs and symptoms (consequences) of the problem may also be justified.
  - The ranking of nutrition diagnoses permits dietetics professionals to arrange the problems in order of their importance and urgency for the patient/client/group.
- 3. Signs/Symptoms (Defining Characteristics)**  
The defining characteristics are a cluster of subjective and objective signs and symptoms established for each nutrition diagnostic category. The defining characteristics, gathered during the assessment phase, provide evidence that a nutrition related problem exists and that the problem identified belongs in the selected diagnostic category. They also quantify the problem and describe its severity:
  - Linked to etiology by words “as evidenced by” (AEB);
  - The symptoms (subjective data) are changes that the patient/client/group feels and expresses verbally to dietetics professionals; and
  - The signs (objective data) are observable changes in the patient/client/group’s health status.

**Nutrition Diagnostic Statement (PES)**

Whenever possible, a nutrition diagnostic statement is written in a PES format that states the Problem (P), the Etiology (E), and the Signs & Symptoms (S). However, if the problem is either a risk (potential) or wellness problem, the nutrition diagnostic statement may have only two elements, Problem (P), and the Etiology (E), since Signs & Symptoms (S) will not yet be exhibited in the patient. A well-written Nutrition Diagnostic Statement should be:

1. Clear and concise
2. Specific: patient/client/group-centered
3. Related to one client problem
4. Accurate: relate to one etiology
5. Based on reliable and accurate assessment data

**Examples of Nutrition Diagnosis Statements (PES or PE)**

- Excessive caloric intake (problem) “related to” frequent consumption of large portions of high fat meals (etiology) “as evidenced by” average daily intake of calories exceeding recommended amount by 500 kcal and 12-pound weight gain during the past 18 months (signs)

	<ul style="list-style-type: none"> <li>■ Inappropriate infant feeding practice RT lack of knowledge AEB infant receiving bedtime juice in a bottle</li> <li>■ Unintended weight loss RT inadequate provision of energy by enteral products AEB 6-pound weight loss over past month</li> <li>■ Risk of weight gain RT a recent decrease in daily physical activity following sports injury</li> </ul>
<b>Critical Thinking</b>	<p>The following types of critical thinking skills are especially needed in the diagnosis step:</p> <ul style="list-style-type: none"> <li>■ Finding patterns and relationships among the data and possible causes;</li> <li>■ Making inferences (“if this continues to occur, then this is likely to happen”);</li> <li>■ Stating the problem clearly and singularly;</li> <li>■ Suspending judgment (be objective and factual);</li> <li>■ Making interdisciplinary connections;</li> <li>■ Ruling in/ruling out specific diagnoses; and</li> <li>■ Prioritizing the relative importance of problems for patient/client/group safety.</li> </ul>
<b>Documentation of Diagnosis</b>	<p>Documentation is an on-going process that supports all of the steps in the Nutrition Care Process. Quality documentation of the diagnosis step should be relevant, accurate, and timely. A nutrition diagnosis is the impression of dietetics professionals at a given point in time. Therefore, as more assessment data become available, the documentation of the diagnosis may need to be revised and updated.</p> <p>Inclusion of the following information would further describe quality documentation of this step:</p> <ul style="list-style-type: none"> <li>■ Date and time; and</li> <li>■ Written statement of nutrition diagnosis.</li> </ul>
<b>Determination for Continuation of Care</b>	<p>Since the diagnosis step primarily involves naming and describing the problem, the determination for continuation of care seldom occurs at this step. Determination of the continuation of care is more appropriately made at an earlier or later point in the Nutrition Care Process.</p>
<b>STEP 3. NUTRITION INTERVENTION</b>	
<b>Basic Definition &amp; Purpose</b>	<p>“<b>Nutrition Intervention</b>” is the third step of the Nutrition Care Process. An intervention is a specific set of activities and associated materials used to address the problem. Nutrition interventions are purposefully planned actions designed with the intent of changing a nutrition-related behavior, risk factor, environmental condition, or aspect of health status for an individual, target group, or the community at large. This step involves a) selecting, b) planning, and c) implementing appropriate actions to meet patient/client/groups’ nutrition needs. The selection of nutrition interventions is driven by the nutrition diagnosis and provides the basis upon which outcomes are measured and evaluated. Dietetics professionals may actually do the interventions, or may include delegating or coordinating the nutrition care that others provide. All interventions must be based on scientific principles and rationale and, when available, grounded in a high level of quality research (evidence-based interventions).</p> <p>Dietetics professionals work collaboratively with the patient/client/group, family, or caregiver to create a realistic plan that has a good probability of positively influencing the diagnosis/problem. This client-driven process is a key element in the success of this step, distinguishing it from previous planning steps that may or may not have involved the patient/client/group to this degree of participation.</p>
<b>Data Sources/Tools for Interventions</b>	<ul style="list-style-type: none"> <li>■ Evidence-based nutrition guides for practice and protocols</li> <li>■ Current research literature</li> <li>■ Current consensus guidelines and recommendations from other professional organizations</li> <li>■ Results of outcome management studies or Continuous Quality Index projects.</li> <li>■ Current patient education materials at appropriate reading level and language</li> <li>■ Behavior change theories (self-management training, motivational interviewing, behavior modification, modeling)</li> </ul>
<b>Nutrition Intervention Components</b>	<p>This step includes two distinct interrelated processes:</p> <ol style="list-style-type: none"> <li><b>1. Plan the nutrition intervention</b> (formulate &amp; determine a plan of action)             <ul style="list-style-type: none"> <li>■ Prioritize the nutrition diagnoses based on severity of problem; safety; patient/client/group’s need; likelihood that nutrition intervention will impact problem and patient/client/groups’ perception of importance.</li> <li>■ Consult ADA’s <i>MNT Evidence-Based Guides for Practice</i> and other practice guides. These resources can assist dietetics professionals in identifying science-based ideal goals and selecting appropriate interventions for MNT. They list appropriate value(s) for control or improvement of the disease or conditions as defined and supported in the literature.</li> <li>■ Determine patient-focused expected outcomes for each nutrition diagnosis. The expected outcomes are the desired change(s) to be achieved over time as a result of nutrition intervention. They are based on nutrition diagnosis; for example, increasing or decreasing laboratory values, decreasing blood pressure, decreasing weight, increasing use of stanols/sterols, or increasing fiber. Expected outcomes should be written in observable and measurable terms that are clear and concise. They should be patient/client/group-centered and need to be tailored to what is reasonable to the patient’s circumstances and appropriate expectations for treatments and outcomes.</li> </ul> </li> </ol>
<i>FIG 2 cont’d.</i>	

- Confer with patient/client/group, other caregivers or policies and program standards throughout planning step.
  - Define intervention plan (for example write a nutrition prescription, provide an education plan or community program, create policies that influence nutrition programs and standards).
  - 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.
  - Identify resources and/or referrals needed.
- 2. Implement the nutrition intervention** (care is delivered and actions are carried out)
- Implementation is the action phase of the nutrition care process. During implementation, dietetics professionals:
    - Communicate the plan of nutrition care;
    - Carry out the plan of nutrition care; and
    - Continue data collection and modify the plan of care as needed.
  - Other characteristics that define quality implementation include:
    - Individualize the interventions to the setting and client;
    - Collaborate with other colleagues and health care professionals;
    - Follow up and verify that implementation is occurring and needs are being met; and
    - Revise strategies as changes in condition/response occurs.

**Critical Thinking**

Critical thinking is required to determine which intervention strategies are implemented based on analysis of the assessment data and nutrition diagnosis. The following types of critical thinking skills are especially needed in the intervention step:

- Setting goals and prioritizing;
- Transferring knowledge from one situation to another;
- Defining the nutrition prescription or basic plan;
- Making interdisciplinary connections;
- Initiating behavioral and other interventions;
- Matching intervention strategies with client needs, diagnoses, and values;
- Choosing from among alternatives to determine a course of action; and
- Specifying the time and frequency of care.

**Documentation of Nutrition Interventions**

Documentation is an on-going process that supports all of the steps in the Nutrition Care Process. Quality documentation of nutrition interventions should be relevant, accurate, and timely. It should also support further intervention or discharge from care. Changes in patient/client/group's level of understanding and food-related behaviors must be documented along with changes in clinical or functional outcomes to assure appropriate care/case management in the future. Inclusion of the following information would further describe quality documentation of this step:

- Date and time;
- Specific treatment goals and expected outcomes;
- Recommended interventions, individualized for patient;
- Any adjustments of plan and justifications;
- Patient receptivity;
- Referrals made and resources used;
- Any other information relevant to providing care and monitoring progress over time;
- Plans for follow-up and frequency of care; and
- Rationale for discharge if appropriate.

**Determination for Continuation of Care**

If the patient/client/group has met intervention goals or is not at this time able/ready to make needed changes, the dietetics professional may include discharging the client from this episode of care as part of the planned intervention.

**STEP 4. NUTRITION MONITORING AND EVALUATION**

**Basic Definition & Purpose**

“**Nutrition Monitoring and Evaluation**” is the fourth step of the Nutrition Care Process. *Monitoring* specifically refers to the review and measurement of the patient/client/group's status at a scheduled (preplanned) follow-up point with regard to the nutrition diagnosis, intervention plans/goals, and outcomes, whereas *Evaluation* is the systematic comparison of current findings with previous status, intervention goals, or a reference standard. Monitoring and evaluation use selected outcome indicators (markers) that are relevant to the patient/client/group's defined needs, nutrition diagnosis, nutrition goals, and disease state. Recommended times for follow-up, along with relevant outcomes to be monitored, can be found in ADA's Evidence Based Guides for Practice and other evidence-based sources.

The purpose of monitoring and evaluation is to determine the degree to which progress is being made and goals or desired outcomes of nutrition care are being met. It is more than just “watching” what is happening, it requires an active commitment to measuring and recording the appropriate outcome indicators (markers) relevant to the nutrition diagnosis and intervention strategies. Data from this step are used to create an outcomes management system. Refer to Outcomes Management System in text.

FIG 2 cont'd.

	<p>Progress should be monitored, measured, and evaluated on a planned schedule until discharge. Short inpatient stays and lack of return for ambulatory visits do not preclude monitoring, measuring, and evaluation. Innovative methods can be used to contact patients/clients to monitor progress and outcomes. Patient confidential self-report via mailings and telephone follow-up are some possibilities. Patients being followed in disease management programs can also be monitored for changes in nutritional status. Alterations in outcome indicators such as hemoglobin A1C or weight are examples that trigger reactivation of the nutrition care process.</p>
<p><b>Data Sources/Tools for Monitoring and Evaluation</b></p>	<ul style="list-style-type: none"> <li>■ Patient/client/group records</li> <li>■ Anthropometric measurements, laboratory tests, questionnaires, surveys</li> <li>■ Patient/client/group (or guardian) interviews/surveys, pretests, and posttests</li> <li>■ Mail or telephone follow-up</li> <li>■ ADA's <i>Evidence Based Guides for Practice</i> and other evidence-based sources</li> <li>■ Data collection forms, spreadsheets, and computer programs</li> </ul>
<p><b>Types of Outcomes Collected</b></p>	<p>The outcome(s) to be measured should be directly related to the nutrition diagnosis and the goals established in the intervention plan. Examples include, but are not limited to:</p> <ul style="list-style-type: none"> <li>■ Direct nutrition outcomes (knowledge gained, behavior change, food or nutrient intake changes, improved nutritional status);</li> <li>■ Clinical and health status outcomes (laboratory values, weight, blood pressure, risk factor profile changes, signs and symptoms, clinical status, infections, complications);</li> <li>■ Patient/client-centered outcomes (quality of life, satisfaction, self-efficacy, self-management, functional ability); and</li> <li>■ Health care utilization and cost outcomes (medication changes, special procedures, planned/unplanned clinic visits, preventable hospitalizations, length of hospitalization, prevent or delay nursing home admission).</li> </ul>
<p><b>Nutrition Monitoring and Evaluation Components</b></p>	<p>This step includes three distinct and interrelated processes:</p> <ol style="list-style-type: none"> <li><b>1. Monitor progress</b> <ul style="list-style-type: none"> <li>■ Check patient/client/group understanding and compliance with plan;</li> <li>■ Determine if the intervention is being implemented as prescribed;</li> <li>■ Provide evidence that the plan/intervention strategy is or is not changing patient/client/group behavior or status;</li> <li>■ Identify other positive or negative outcomes;</li> <li>■ Gather information indicating reasons for lack of progress; and</li> <li>■ Support conclusions with evidence.</li> </ul> </li> <li><b>2. Measure outcomes</b> <ul style="list-style-type: none"> <li>■ Select outcome indicators that are relevant to the nutrition diagnosis or signs or symptoms, nutrition goals, medical diagnosis, and outcomes and quality management goals.</li> <li>■ Use standardized indicators to:                             <ul style="list-style-type: none"> <li>□ Increase the validity and reliability of measurements of change; and</li> <li>□ Facilitate electronic charting, coding, and outcomes measurement.</li> </ul> </li> </ul> </li> <li><b>3. Evaluate outcomes</b> <ul style="list-style-type: none"> <li>■ Compare current findings with previous status, intervention goals, and/or reference standards.</li> </ul> </li> </ol>
<p><b>Critical Thinking</b></p>	<p>The following types of critical thinking skills are especially needed in the monitoring and evaluation step:</p> <ul style="list-style-type: none"> <li>■ Selecting appropriate indicators/measures;</li> <li>■ Using appropriate reference standard for comparison;</li> <li>■ Defining where patient/client/group is now in terms of expected outcomes;</li> <li>■ Explaining variance from expected outcomes;</li> <li>■ Determining factors that help or hinder progress; and</li> <li>■ Deciding between discharge or continuation of nutrition care.</li> </ul>
<p><b>Documentation of Monitoring and Evaluation</b></p>	<p>Documentation is an on-going process that supports all of the steps in the Nutrition Care Process and is an integral part of monitoring and evaluation activities. Quality documentation of the monitoring and evaluation step should be relevant, accurate, and timely. It includes a statement of where the patient is now in terms of expected outcomes. Standardized documentation enables pooling of data for outcomes measurement and quality improvement purposes. Quality documentation should also include:</p> <ul style="list-style-type: none"> <li>■ Date and time;</li> <li>■ Specific indicators measured and results;</li> <li>■ Progress toward goals (Incremental small change can be significant therefore use of a Likert type scale may be more descriptive than a "met" or "not met" goal evaluation tool);</li> <li>■ Factors facilitating or hampering progress;</li> <li>■ Other positive or negative outcomes; and</li> <li>■ Future plans for nutrition care, monitoring, and follow up or discharge.</li> </ul>
<p><b>Determination for Continuation of Care</b></p>	<p>Based on the findings, the dietetics professional makes a decision to actively continue care or discharge the patient/client/group from nutrition care (when necessary and appropriate nutrition care is completed or no further change is expected at this time). If nutrition care is to be continued, the nutrition care process cycles back as necessary to assessment, diagnosis, and/or intervention for additional assessment, refinement of the diagnosis and adjustment and/or reinforcement of the plan. If care does not continue, the patient may still be monitored for a change in status and reentry to nutrition care at a later date.</p>

FIG 2 cont'd.

describing what dietetics professionals do is truly a paradigm shift. This new paradigm is more complete, takes in more possibilities, and explains observations better. Finally, it allows dietetics professionals to act in ways that are more likely to achieve the results that are desired and expected.

### NUTRITION CARE MODEL

The Nutrition Care Model is a visual representation that reflects key concepts of each step of the Nutrition Care Process and illustrates the greater context within which the Nutrition Care Process is conducted. The model also identifies other factors that influence and impact on the quality of nutrition care provided. Refer to Figure 1 for an illustration of the model as described below:

- Central Core: Relationship between patient/client/group and dietetics professional;
- Nutrition Care Process: Four steps of the nutrition care process (Figure 2);
- Outer rings:
  - Middle ring: Strengths and abilities that dietetics professionals bring to the process (dietetics knowledge, skills, and competencies; critical thinking, collaboration, and communication; evidence-based practice, and Code of Ethics) (32);
  - Outer ring: Environmental factors that influence the process (practice settings, health care systems, social systems, and economics);
- Supporting Systems:
  - Screening and Referral System as access to Nutrition Care; and
  - Outcomes Management System as a means to provide continuous quality improvement to the process.

The model is intended to depict the relationship with which all of these components overlap, interact, and move in a dynamic manner to provide the best quality nutrition care possible.

Central to providing nutrition care is the relationship between the patient/client/group and the dietetics professional. The patient/client/groups' previous educational experiences and readiness to change influence this relationship. The education and training that dietetics professionals receive have very strong components devoted to interpersonal knowledge and skill building such as listening, empathy, coaching, and positive reinforcing.

The middle ring identifies abilities of dietetics professionals that are especially applicable to the Nutrition Care Process. These include the unique dietetics knowledge, skill, and competencies that dietetics professionals bring to the process, in addition to a well-developed capability for critical thinking, collaboration, and communication. Also in this ring is evidence-based practice that emphasizes that nutrition care must incorporate currently available scientific evidence, linking what is done (content) and how it is done (process of care). The Code of Ethics defines the ethical principles by which dietetics professionals should practice (33). Dietetics knowledge and evidence-based practice establish the Nutrition Care Process as unique to dietetics professionals; no other health care professional is qualified to provide nutrition care in this manner. However, the Nutrition Care Process is highly dependent on collaboration and integration within the health care team. As stated above, communication and participation within the health care team are critical for identification of individuals who are appropriate for nutrition care.

The outer ring identifies some of the environmental factors

such as practice settings, health care systems, social systems, and economics. These factors impact the ability of the patient/client/group to receive and benefit from the interventions of nutrition care. It is essential that dietetics professionals assess these factors and be able to evaluate the degree to which they may be either a positive or negative influence on the outcomes of care.

### Screening and Referral System

Because screening may or may not be accomplished by dietetics professionals, nutrition screening is a supportive system and *not* a step within the Nutrition Care Process. Screening is extremely important; it is an identification step that is outside the actual "care" and provides access to the Nutrition Care Process.

The Nutrition Care Process depends on an effective screening and/or referral process that identifies clients who would benefit from nutrition care or MNT. Screening is defined by the US Preventive Services Task Force as "those preventive services in which a test or standardized examination procedure is used to identify patients requiring special intervention" (34). The major requirements for a screening test to be considered effective are the following:

- Accuracy as defined by the following three components:
  - Specificity: Can it identify patients with a condition?
  - Sensitivity: Can it identify those who do not have the condition?
  - Positive and negative predictive; and
- Effectiveness as related to likelihood of positive health outcomes if intervention is provided.

Screening parameters need to be tailored to the population and to the nutrition care services to be provided. For example, the screening parameters identified for a large tertiary acute care institution specializing in oncology would be vastly different than the screening parameters defined for an ambulatory obstetrics clinic. Depending on the setting and institutional policies, the dietetics professional may or may not be directly involved in the screening process. Regardless of whether dietetics professionals are actively involved in conducting the screening process, they are accountable for providing input into the development of appropriate screening parameters to ensure that the screening process asks the right questions. They should also evaluate how effective the screening process is in terms of correctly identifying clients who require nutrition care.

In addition to correctly identifying clients who would benefit from nutrition care, a referral process may be necessary to ensure that the client has an identifiable method of being linked to dietetics professionals who will ultimately provide the nutrition care or medical nutrition therapy. While the nutrition screening and referral is not part of the Nutrition Care Process, it is a critical antecedent step in the overall system (35).

### Outcomes Management System

An outcomes management system evaluates the effectiveness and efficiency of the entire process (assessment, diagnosis, interventions, cost, and others), whereas the fourth step of the process "nutrition monitoring and evaluations" refers to the evaluation of the patient/client/group's progress in achieving outcomes.

Because outcomes management is a system's commitment to effective and efficient care, it is depicted outside of the NCP. Outcomes management links care processes and resource uti-

lization with outcomes. Through outcomes management, relevant data are collected and analyzed in a timely manner so that performance can be adjusted and improved. Findings are compared with such things as past levels of performance; organizational, regional, or national norms; and standards or benchmarks of optimal performance. Generally, this information is reported to providers, administrators, and payors/funders and may be part of administrative databases or required reporting systems.

It requires an infrastructure in which outcomes for the population served are routinely assessed, summarized, and reported. Health care organizations use complex information management systems to manage resources and track performance. Selected information documented throughout the nutrition care process is entered into these central information management systems and structured databases. Examples of centralized data systems in which nutrition care data should be included are the following:

- basic encounter documentation for billing and cost accounting;
- tracking of standard indicators for quality assurance and accreditation;
- pooling data from a large series of patients/clients/groups to determine outcomes; and
- specially designed studies that link process and outcomes to determine effectiveness and cost effectiveness of diagnostic and intervention approaches.

The major goal of outcomes management is to utilize collected data to improve the quality of care rendered in the future. Monitoring and evaluation data from individuals are pooled/aggregated for the purposes of professional accountability, outcomes management, and systems/processes improvement. Results from a large series of patients/clients can be used to determine the effectiveness of intervention strategies and the impact of nutrition care in improving the overall health of individuals and groups. The effects of well-monitored quality improvement initiatives should be reflected in measurable improvements in outcomes.

Outcomes management comprehensively evaluates the two parts of IOM's definition of quality: outcomes and process. Measuring the relationship between the process and the outcome is essential for quality improvement. To ensure that the quality of patient care is not compromised, the focus of quality improvement efforts should always be directed at the outcome of care (36-43).

## FUTURE IMPLICATIONS

### Impact on Coverage for Services

Quality-related issues are gaining in importance worldwide. Even though our knowledge base is increasing, the scientific evidence for most clinical practices in all of medicine is modest. So much of what is done in health care does *not* maximize quality or minimize cost (44). A standardized Nutrition Care Process is a necessary foundation tool for gathering valid and reliable data on how quality nutrition care provided by qualified dietetics professionals improves the overall quality of health care provided. Implementing ADA's Nutrition Care Process provides a framework for demonstrating that nutrition care improves outcomes by the following: (a) enhancing the health of individuals, groups, institutions, or health systems; (b) potentially reducing health care costs by decreasing the need for medications, clinic and hospital visits, and preventing or delay-

ing nursing home admissions; and (c) serving as the basis for research, documenting the impact of nutrition care provided by dietetics professionals (45-47).

### Developing Scopes and Practice Standards

The work group reviewed the questions raised by delegates regarding the role of the RD and DTR in the Nutrition Care Process. As a result of careful consideration of this important issue, it was concluded that describing the various types of tasks and responsibilities appropriate to each of these credentialed dietetics professionals was yet another professional issue beyond the intent and purpose of developing a standardized Nutrition Care Process.

A scope of practice of a profession is the range of services that the profession is authorized to provide. Scopes of practice, depending on the particular setting in which they are used, can have different applications. They can serve as a legal document for state certification/licensure laws or they might be incorporated into institutional policy and procedure guidelines or job descriptions. Professional scopes of practice should be based on the education, training, skills, and competencies of each profession (48).

As previously noted, a dietetics professional is a person who, by virtue of academic and clinical training and appropriate certification and/or licensure, is uniquely qualified to provide a comprehensive array of professional services relating to prevention and treatment of nutrition-related conditions. A Scope of Practice articulates the roles of the RD, DTR, and advanced-practice RD. Issues to be addressed for the future include the following: (a) the need for a common scope with specialized guidelines and (b) recognition of the rich diversity of practice vs exclusive domains of practice regulation.

Professional standards are "authoritative statements that describe performance common to the profession." As such, standards should encompass the following:

- articulate the expectations the public can have of a dietetics professional in any practice setting, domain, and/or role;
- expect and achieve levels of practice against which actual performance can be measured; and
- serve as a legal reference to describe "reasonable and prudent" dietetics practice.

The Nutrition Care Process effectively reflects the dietetics professional as the unique provider of nutrition care when it is consistently used as a systematic method to think critically and make decisions to provide safe and effective care. ADA's Nutrition Care Process will serve as a guide to develop scopes of practice and standards of practice (49,50). Therefore, the work group recommended that further work be done to use the Nutrition Care Process to describe roles and functions that can be included in scopes of practice. In May 2003, the Board of Directors of ADA established a Practice Definitions Task Force that will identify and differentiate the terms within the profession that need clarification for members, affiliates, and DPGs related to licensure, certification, practice acts, and advanced practice. This task force is also charged to clarify the scope of practice services, clinical privileges, and accountabilities provided by RDs/DTRs based on education, training, and experience.

### Education of Dietetics Students

It will be important to review the current CADE Educational Standards to ensure that the language and level of expected competencies are consistent with the entry-level practice of

the Nutrition Care Process. Further work by the Commission on Dietetic Registration (CDR) may need to be done to make revisions on the RD and DTR exams to evaluate entry-level competencies needed to practice nutrition care in this way. Revision of texts and other educational materials will also need to incorporate the key principles and steps of this new process (51).

### Education and Credentialing of Members

Even though dietetics professionals currently provide nutrition care, this standardized Nutrition Care Process includes some new principles, concepts, and guidelines in each of its steps. This is especially true of steps 2 and 4 (Nutrition Diagnosis and Nutrition Monitoring and Evaluation). Therefore, the implications for education of dietetics professionals and their practice are great. Because a large number of dietetics professionals still are employed in health care systems, a comprehensive educational plan will be essential. A model to be considered when planning education is the one used to educate dietetics professionals on the Professional Development Portfolio (PDP) Process (52). Materials that could be used to provide members with the necessary knowledge and skills in this process could include but not be limited to the following:

- articles in the *Journal of the American Dietetic Association*;
- continuing professional education lectures and presentations at affiliate and national meetings;
- self-study materials; case studies, CD-ROM workbooks, and others;
- hands-on workshops and training programs;
- Web-based materials; and
- inclusion in the learning needs assessment and codes of the Professional Development Portfolio.

Through the development of this educational strategic plan, the benefits to dietetics professionals and other stakeholders will need to be a central theme to promote the change in practice that comes with using this process to provide nutrition care.

### Evidence-Based Practice

The pressure to do more with less is dramatically affecting all of health care, including dietetics professionals. This pressure is forcing the health care industry to restructure to be more efficient and cost-effective in delivering care. It will require the use of evidenced-based practice to determine what practices are critical to support outcomes (53,54). The Nutrition Care Process will be invaluable as research is completed to evaluate the services provided by dietetics professionals (55). The Nutrition Care Process will provide the structure for developing the methodology and data collection in individual settings, and the practice-based research networks ADA is in the process of initiating.

### Standardized Language

As noted in Step 2 (Nutrition Diagnosis), having a standard taxonomy for nutrition diagnosis would be beneficial. Work in the area of articulating the types of interventions used by dietetics professionals has already begun by the Definitions Work Group under the direction of ADA's Research Committee. Further work to define terms that are part of the Nutrition Care Process will need to continue. Even though the work group provided a list of terms relating to the definition and key concepts of the process, there are opportunities to articulate fur-

ther terms that are consistently used in this process. The Board of Directors of ADA in May 2003 approved continuation and expansion of a task force to address a comprehensive system that includes a process for developing and validating standardized language for nutrition diagnosis, intervention, and outcomes.

### SUMMARY

Just as maps are reissued when new roads are built and rivers change course, this Nutrition Care Process and Model reflects recent changes in the nutrition and health care environment. It provides dietetics professionals with the updated "road map" to follow the best path for high-quality patient/client/group-centered nutrition care.

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