

CANADIAN PERSPECTIVES ON THE NUTRITION CARE PROCESS AND INTERNATIONAL DIETETICS AND NUTRITION TERMINOLOGY

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Introduction

In the Canadian health system, Registered Dietitians (RDs) are increasingly being recognized as essential practitioners in improving health outcomes of Canadians. However, to continue to advance the dietetic profession, dietitians must demonstrate their value by highlighting population, group and individual health outcomes that are most influenced by the RD. This leads to the following important questions: How do RDs ensure clients receive quality nutrition care and have improved health outcomes? How do RDs achieve a consistent approach to nutrition care? How can

communication and transfer of care between RDs be improved? Can RDs improve the ability to aggregate data, even nationally or internationally, to create evidence to support RD practice? Questions such as these have been an impetus for Canadian RDs to consider an initiative being promoted by the International Confederation of Dietetic Associations. The initiative suggests international adoption of the Nutrition Care Process (NCP) and International Dietetics and Nutrition Terminology (IDNT) as a framework for practice. The purpose of this paper is to outline potential benefits of implementation, facilitate discussion on how this model can be applied to the Canadian health care system, and determine future directions.

Background

The American Dietetic Association (ADA) developed the Nutrition Care Process (NCP) in 2002, building upon previous models described by Whitney, Brylinsky, Splett and Myers, and Kight.¹ Using a client-centred framework, the NCP clarifies the role of the RD, nutrition practice elements and skills, and the environment in which the RD practices.² The NCP uses an evaluation framework, including identification of specific goals and monitoring of clinical and behavioural outcomes, to improve quality and effectiveness of nutrition care. The process helps RDs to identify interventions that are more likely to improve nutrition outcomes by providing a systematic approach that encourages critical thinking and problem solving. The framework applies to all practice settings and supports individualized, targeted nutrition care.^{2,3,4}

In 2003, ADA formed a Standardized Language Task Force that initiated development of a standardized language for the four steps of the nutrition care process: assessment, nutrition diagnosis, intervention and monitoring/evaluation. The language is now available in the International Dietetics and Nutrition Terminology (IDNT) Reference Manual, fourth edition. The aim is to provide a standard set of core nutrition care terms and definitions to promote uniform documentation of nutrition care services, to enable differentiation of the type and amount of nutrition care provided, and to provide a basis for linking nutrition care activities with actual or predicted outcomes.²

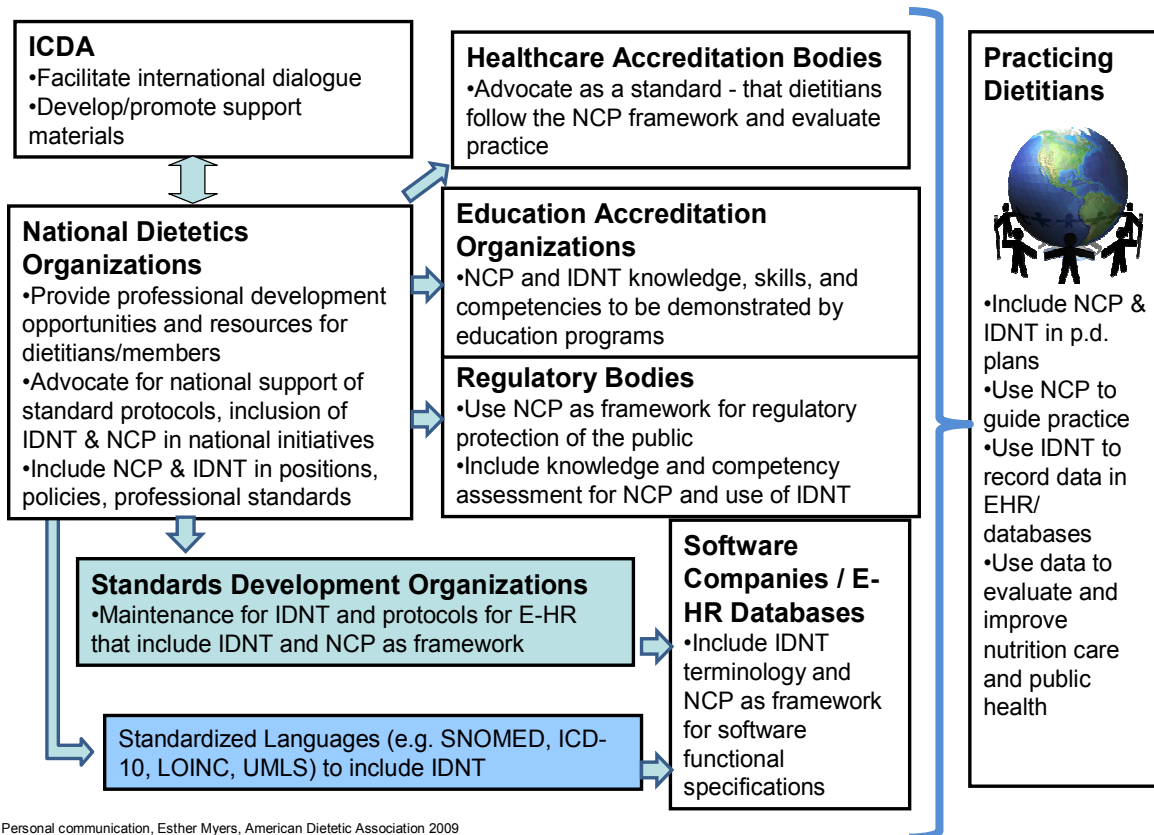
Prior to development of the language, ADA evaluated existing languages for applicability to nutrition practice. Several professions (e.g., medicine, nursing, physiotherapy, and occupational therapy) had developed standardized languages to describe their unique functions.⁵ In addition, the World Health Organization had developed the International Classification of Diseases (ICD), which is widely used for organizing information in health care systems. Nutrition terms are included in some of these languages but the breadth of nutrition care provided by RDs had not been captured. For example, ICD-10 is used in Canada but includes only a few terms relevant to nutrition (i.e. malnutrition, vitamin

and mineral deficiencies, toxicity and obesity). Other health professional languages have very limited terms for nutrition assessment, diagnosis and monitoring, provide only general descriptions of nutrition interventions (e.g., “visit” and number of minutes), and provide limited options for looking at outcome data.

An initial presentation at the International Congress of Dietetics in 2004 sparked interest in work being done by the ADA on the NCP and standardized nutrition language. In 2005, the ADA invited seven countries, including Canada, and key leaders in the development and management of standardized languages, including the World Health Organization’s International Classification of Diseases (ICD) and Systematized Nomenclature of Medicine (SNOMED), to meet and learn about the standardized nutrition language initiative. During the meeting, agreement emerged in support of a single standardized nutrition language and that the International Confederation of Dietetic Associations (ICDA) was well suited to promote awareness and adoption by national dietetic associations. ICDA developed a draft framework for roles in the adoption of the NCP and IDNT (see Figure 1).

Several countries have adopted NCP and IDNT, which provides evidence that it has international applicability. The Netherlands, who had its own standardized terminology for documentation and communication of nutrition care, underscored the ICDA agreement by adopting the NCP and IDNT. Shortly thereafter, Australia began to provide professional development on the NCP and IDNT and also initiated an international IDNT validation study. The British Dietetic Association reviewed and adopted the NCP and expressed interest in adopting the IDNT for use in electronic health record initiatives throughout the United Kingdom. A 2008 information session for official representatives of national dietetic association members of ICDA was followed by requests for further information and permission to translate NCP and IDNT from Japan, Korea, Hungary, Israel, Sweden and Turkey. Closer to home, Dietitians of Canada began providing professional development on the standardized nutrition language in 2006 and today many Canadian health provider organizations have begun to implement the NCP and IDNT.

Figure 1: International Confederation of Dietetic Associations Draft Framework for Roles in Nutrition Care Process and International Dietetics and Nutrition Terminology



Nutrition Care Process and International Dietetics and Nutrition Terminology^{2,6}

Details of NCP and IDNT are well described by Lacey² and the American Dietetic Association.^{7,8} The International Dietetics & Nutrition Terminology (IDNT) Reference Manual, 2nd Edition, should be referred to for a detailed description of the standardized language for the Nutrition Care Process. The 4th edition of the manual will be released in the summer of 2012. The NCP conceptual model is illustrated in Figure 2.^{2,6} The core of the model is the relationship between the patient/

client/group and the RD. Emphasizing this relationship at the core illustrates a client-centred approach. Client-centred includes the client, their family members and caregivers, groups, and targeted populations.

When the RD works collaboratively with the client, or plans public health programs, there are four distinct but interrelated and connected steps in the NCP. These steps include nutrition assessment or reassessment, nutrition diagnosis, nutrition intervention, and nutrition monitoring and evaluation. The following provides a description of how the model is applied to provide individualized nutrition care for a client. This model can also be applied in a group setting or for nutrition programming targeted for a defined population. In these cases, the process is at the group or population level; the characteristics of the targeted population should be

defined. The relationship of the RD to the defined group may vary from presenter/educator to program planner to public health policy advocate.

NUTRITION ASSESSMENT AND REASSESSMENT

Nutrition assessment is defined as “a systematic method for obtaining, verifying, and interpreting data needed to identify nutrition related problems, their causes, and significance”.⁶ There are often initial assessment and reassessment processes, which enable comparison of the client’s status to previous visits or specified criteria. In a public health setting, this step may involve data collection methods such as needs assessments, surveys, focus groups, environmental scans and analysis of population health data to identify nutrition problems in a defined population.

NUTRITION DIAGNOSIS

From the nutrition assessment data, the RD is able to determine if there is a nutrition problem and label it as a nutrition diagnosis.⁶ A nutrition diagnosis identifies and describes a specific nutrition problem that can be resolved or improved through nutrition intervention by an RD.^{2,6} It is communicated as a PES statement (P = problem; E = etiology; S = signs and symptoms). As one investigates the most likely nutrition-related cause (etiology) of the problem, nutrition interventions that are more likely to achieve positive nutrition outcomes are identified. The signs and symptoms are gathered during assessment and provide the evidence that the nutrition diagnosis exists. The nutrition diagnosis may be addressed independently by the RD or in collaboration with the multidisciplinary team. It is important to note that a nutrition diagnosis is different from a medical diagnosis. Whereas a medical diagnosis does not change as long as the disease exists, a nutrition diagnosis changes as the client responds to nutrition interventions.²

The nutrition diagnosis (PES statement) is a concept that is new to most RDs. RDs have identified clients’ nutritional problems in the past, but may not have been explicit in identifying the problems that were being targeted and the likely causes of the problem. The use of nutrition diagnoses allows the RD to critically think about the causes of the problem(s)

and what is most important or possible to resolve. It enables the practitioner to diagnose and prioritize nutrition problems.

Standardized nutrition language has been developed for nutrition diagnoses to describe problems related to issues in three domains: (1) intake of nutrients; (2) medical or physical conditions; and (3) knowledge, attitudes/beliefs, physical environment, access to food, or food safety. An example of a nutrition diagnosis for an individual experiencing weight loss could be *“Inadequate protein-energy intake related to poor appetite and inability to prepare meals as evidenced by involuntary weight loss of 5 kg in 1 month and protein-energy intake that provides 65% of estimated requirements.”* In a public health setting dealing with food security issues, an example of a nutrition diagnosis could be *“Limited access to food related to limited transportation to affordable grocery stores as evidenced by environmental scan.”*

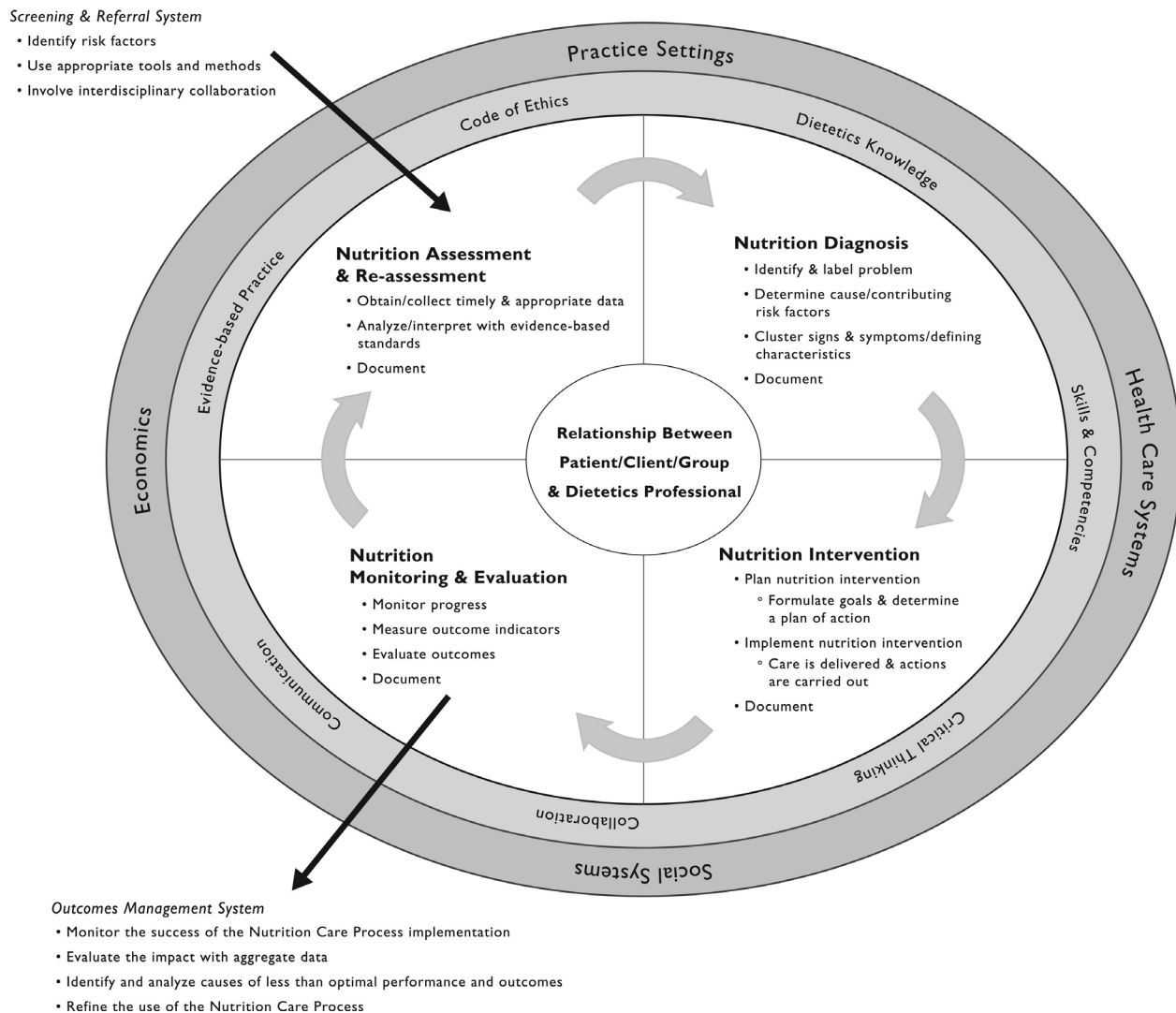
NUTRITION INTERVENTION

Nutrition intervention is defined as “a purposefully planned action(s) designed with the intent of changing nutrition-related behaviour, risk factor, environmental condition, or aspect of health status”. The nutrition intervention is typically directed toward resolving the nutrition diagnosis but may also be targeted to reducing the signs or symptoms of the nutrition diagnosis.⁶ The nutrition intervention includes defining a nutrition prescription and/or goals of care. Standardized nutrition language has been developed for intervention strategies associated with food/nutrient delivery, nutrition education, nutrition counselling and coordination of nutrition care.

NUTRITION MONITORING AND EVALUATION

Nutrition monitoring and evaluation involves identifying the amount of progress made and whether goals/expected outcomes are being met. Nutrition monitoring and evaluation identifies nutrition care outcomes relevant to the nutrition diagnosis, intervention plans and goals.⁶ Expected outcomes are defined at initial visits with a client or when developing a public health program plan or logic model. Progress in achieving nutrition care outcomes is reviewed in

Figure 2: The Nutrition Care Process and Model⁶



INTERNATIONAL DIETETICS AND NUTRITION TERMINOLOGY (IDNT)

- Nutrition Assessment/Monitoring & Evaluation
 - Food/Nutrition Related History, Anthropometric, Biochemical data, medical tests, & procedures, Nutrition-focused physical findings, Client history, Comparative standards
- Nutrition Diagnosis
 - Intake, Clinical, Behavioral & Environment
- Nutrition Intervention
 - Food & Nutrient Delivery, Nutrition Education, Nutrition Counseling, Coordination of Care
- Nutrition Monitoring and Evaluating
 - Food/Nutrition Related History, Anthropometric, Biochemical data, medical tests, & procedures, Nutrition-focused physical findings

Refer to International Dietetics & Nutrition Terminology (IDNT) Reference Manual, Fourth Edition⁷ for further details.

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follow-up visits or through an evaluation process. This step is critical in evaluating care of clients/groups and determining if interventions need to be modified. The monitoring and evaluation phase overlaps with the reassessment phase, hence the standardized language for Nutrition Monitoring and Evaluation is a subset of the standardized language for Assessment.

The first outer ring of the NCP model describes what the dietetic profession brings to the interaction with the client. The RD practices within the context of the professional code of ethics and utilizes his/her dietetic knowledge, skills and competencies. The practice involves critical thinking and evidence-based practice, clear communication skills and collaboration with clients and other health care professionals. This element can help describe the capabilities of the RD and benefits to a program or project being planned.

The second outer ring of the NCP model describes the environment in which the RD practices. This environment includes practice settings (e.g., primary care/ambulatory, acute care, long term care, rehabilitation, mental health, home care, community, and public health), the Canadian health care system, social systems and the current economic situation. These environmental factors influence the process of nutrition care and provide an essential context in public health planning. In practice settings that use an interprofessional collaborative model of care, it is essential to work with all team members, clients and family across the continuum of care. NCP and IDNT can include the contributions of all members of these teams to clearly identify the nutrition diagnosis, intervention, monitoring and nutrition care outcomes that will contribute to the overall health outcomes of the client.

The screening and referral system is external to the rings of the NCP model since it may be conducted by individuals or groups outside of the dietetics profession. The purpose of screening is to identify those individuals, groups or populations at risk for nutrition problems and who are appropriate for programs or services.^{2,6} A systematic approach to screening should be established with RD involvement so that valid screening parameters, tailored to the population and nutrition care services to be provided, are used.²

Referral involves sending a client to another health care professional.⁶ The process of referral involves defining the purpose of a service and what clients are appropriate (i.e., specific criteria). Systems need to be established in order to refer clients within and across the nutrition continuum of care. Referral criteria and access to services need to be communicated in order to help clients navigate complex health care systems.

The outcomes management system involves collecting and analyzing data at the group level.⁶ Data may be compared with desired outcomes, standards or benchmarks. The results are used to adjust practice and improve performance. An outcomes management system is essential to demonstrate effectiveness of nutrition interventions and determine appropriate improvements to achieve goals for interventions.

Benefits of Adopting the Nutrition Care Process

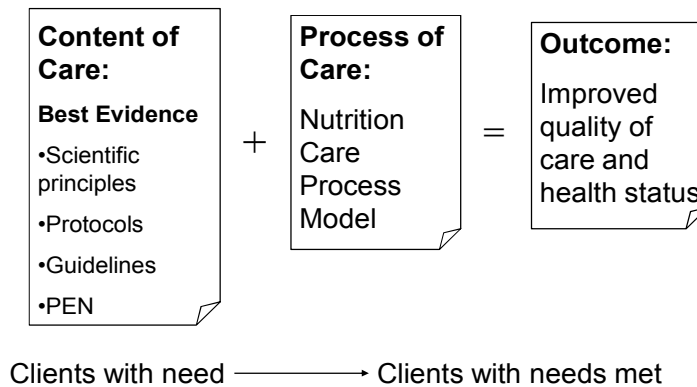
QUALITY OF NUTRITION CARE

The NCP supports continuous quality improvement through the outcomes management system and emphasis on evidence-based practice. It helps RDs to use a consistent approach to nutrition care, enhance critical thinking skills, highlight their expertise, and demonstrate how their care can improve client outcomes.^{4,9} Both practicing RDs and administrators will have an increased ability to measure the quality of nutrition care provided when the NCP is used (Figure 3).⁴

The framework aims to improve client outcomes by clearly identifying nutrition problems (nutrition diagnosis) and choosing specific interventions to resolve each problem. By identifying the expected outcomes of nutrition intervention, required changes to the intervention plan can be made more quickly to ensure goals are achieved. The monitoring and evaluation plan makes it easier to measure outcomes and demonstrate the success of intervention.^{3,4}

Figure 3: Demonstrating Quality Nutrition Care

How Demonstrating Quality Integrates Content of Care and Process of Providing Care



COMMUNICATION AND DOCUMENTATION

The IDNT provides a consistent approach to documenting essential nutrition information on medical records. The uniform language can assist in identifying the type and complexity of nutrition care provided by RDs so that their contribution to client outcomes is recognized.¹⁰ Many RDs work in multidisciplinary settings where it is challenging to demonstrate outcomes that are solely due to RD intervention. Nutrition Diagnoses make it possible to highlight outcomes that are most affected by the RD, rather than using medical or nursing care outcomes to monitor the client's progress.^{9,11}

Much of the communication between health professionals occurs through documentation on medical records. The NCP improves accuracy and clarity in communication between health care providers through use of the IDNT.¹² In a survey of clinical RDs in the Bay Pines Veterans Affairs Health Care System (BPVAHCS) in West Central Florida, Harrington and collaborators noted that the transition of care between RDs improved after they implemented the NCP and IDNT.⁴ RDs commented that it was easier to provide follow-up care on clients seen by another RD because the NCP notes were easier to interpret than previous charting methods.⁴ The NCP provides better understanding of the critical thinking process used to

assess the data, formulate the nutrition diagnosis, focus the nutrition intervention plan and evaluate the outcomes.¹³

The NCP also has a positive impact on communication between RDs and other health care providers. Corado and Pascual¹⁴ found that implementation of the NCP and IDNT in their organization made documentation of nutrition care by RDs easier to read by other health professionals and led to more team discussion. As a result, primary care providers more frequently acknowledged recommendations made by the RDs.

Other benefits of using NCP and IDNT for documentation of nutrition care include increased efficiency of charting and more concise notes.⁴ Corado and Pascual found that, after NCP was implemented, the time required to document decreased as chart notes became shorter and problem-specific. As well, they saw a 30 percent improvement in the productivity of their RDs.¹⁴

Many organizations in Canada are moving to documentation of client care in electronic medical records. The NCP and IDNT are well-suited for this transition as they provide the structure necessary to facilitate incorporation of nutrition notes into electronic medical records (EMRs).¹²

OUTCOMES MANAGEMENT AND RESEARCH

Adopting the NCP and IDNT in Canada will impact the profession by supporting evidence-based practice and generating knowledge about the efficacy of the nutrition therapy RDs provide.¹⁰ Through outcomes management systems, more can be learned about the outcomes of nutrition therapy.¹² The NCP and IDNT facilitate large scale outcome data collection by offering consistent definitions of terms regardless of practitioner or geographical setting.^{5,12,15} When IDNT is used in EMRs, database queries and data compilation become significantly more practical than with paper documentation.⁵ NCP can be used in public health settings to evaluate population-based interventions; more research is required to compare NCP with other evaluation frameworks used in public health settings.

NCP provides the infrastructure required for research on the impact and cost-effectiveness of nutrition care.⁵ The adoption of the NCP and IDNT nationally and internationally will make it possible to compare results from different research studies. In addition, the potential to do meta-analyses on the efficacy of nutrition interventions will increase.⁵

SUPPORTS TRAINING AND EDUCATION OF RDs

The NCP supports a systematic approach to orientation of RDs to organizations by providing clear definition of expectations for nutrition care within various practice settings. These expectations can be used during performance evaluations to identify RD competency to perform position requirements and/or meet regulatory standards.

Implementation Considerations for Broad-based Action and Change

Implementation of NCP and IDNT means a significant change in practice for both RDs and dietetic interns. It challenges our thinking, involves learning new content (IDNT) and skills (diagnosing and labelling nutrition problems), and increases accountability to clients to provide effective nutrition care.¹⁶ Although, with practice, individual RDs can effectively implement parts of NCP and IDNT, broad-based action is required to implement NCP and IDNT nationally.

Broad-based implementation needs to include educating nutrition students in university and internship. Dietetic educators are major stakeholders in the implementation of NCP, as they lead the way for new RDs to embrace the model and language and shape the future of the profession.¹¹ Canadian universities and dietetic internships need to include NCP and IDNT in course curriculums and learning activities. Suen reports on the challenges in implementation of NCP in two California acute care hospitals.¹⁷ Her study showed that newly graduated RDs who had been introduced only to the concept of NCP in internship required much longer to become proficient in NCP than did experienced RDs. Dietetic interns should participate in the application of NCP during placements in order to become comfortable using NCP and to build problem solving and critical thinking skills.^{11,18} Therefore, RDs need to demonstrate how to use NCP when facilitating interns.¹⁹ In this way, new graduates will meet the expectations for entry-level practitioners.²

Implementation of NCP needs to go beyond educating nutrition students. If practicing RDs do not use NCP in their practice, there is decreased incentive for new graduates to use it in their own. Therefore, a comprehensive plan is needed

by health care organizations to support use of the NCP and IDNT and change practice across the country. Implementation strategies for organizations require time but are rewarding if organizational change management principles are applied.¹⁶ Kotter developed an eight-stage process for change management that has been used by various organizations to implement the NCP.²⁰ A critical step in the process is to establish a sense of urgency by clearly communicating the rationale for the implementation and the benefits of using NCP to dietitians, health professionals and other key stakeholders. It is necessary to align the organization and institutionalize the change by incorporating NCP and IDNT into all forms of documentation (e.g., paper and/or electronic nutrition assessment forms, progress notes), standards of care, policies, procedures, job descriptions and orientation manuals. Resources such as the IDNT Reference Manual and Pocket Guide assist RDs to become familiar with the process and standardized language. Most importantly, a strategy for RD education is required to support the change and help RDs to develop their skills and comfort using NCP.² Opportunities for learning in various formats need to be available (e.g., on-line resources, self-learning modules, presentations, workshops). Group discussion and peer support, especially by early adopters, have been shown to facilitate learning and add momentum to the implementation.¹⁶ NCP is being incorporated into ADA evidence-based guidelines and protocols. In the Canadian context, the NCP model would support Practice-based Evidence in Nutrition (PEN) and the development of Canadian practice guidelines and care maps.

Although the IDNT has been adopted in several countries and validation studies on the standardized language for nutrition diagnoses have been completed, it remains important to evaluate its applicability to Canadian practice settings. It is essential to use IDNT terms in a standard way across the country. Provincial legislation regarding terms such as “nutrition prescription” will need to be reviewed to ensure appropriate use.

Future Directions

QUALITY, SAFETY AND ELECTRONIC SYSTEMS

Canadian health system emphasizes continuous quality improvement and client safety. To position RDs for the future, a systematic framework needs to be built in order to measure nutrition outcomes and demonstrate effectiveness. Evidence is needed to provide support for RDs as essential members of health care teams, particularly in times of fiscal constraint.

To achieve targets for chronic disease prevention and management, and improve quality of care, client safety and coordination of care, Canadian health systems are moving towards increased computerization. Electronic medical records (EMRs) and electronic health records (EHRs) are terms often used interchangeably. However, EMRs are often defined as records used to document client care in hospitals and ambulatory environments, and EHRs pull information from EMRs and enable sharing of medical information among health care professionals across multiple care settings engaged by an individual.²¹ A 2007 study reported that only 23 percent of Canadian physicians use EMRs, compared with greater than 90 percent in the Netherlands, New Zealand and the United Kingdom.²² Even fewer RDs regularly document in EMRs.

With the upcoming evolution of EMRs, the window of opportunity exists to position ourselves as a discipline and create a foundation that facilitates the capacity and capability of data collection, aggregation of data, analysis and interpretation of results in order to measure outcomes and create evidence to support our practices. Through EMRs, trends in client care and outcomes associated with nutrition diagnosis/goals and nutrition interventions will be obtained to guide practice.

EMRs provide opportunity for evaluating client outcomes from discrete data entered during client encounters. However, to aggregate data, common data fields are required. Similar to all health disciplines, RDs use different terms to mean the same thing. Information infrastructure requires languages such as Systematized Nomenclature of Medicine – Clinical Terms (SNOMED-CT) and international disease classification

(ICD) to structure terminology in EMRs. IDNT provides the first comprehensive nutrition based language for communicating the NCP and supports the transition to EMRs. NCP can also support knowledge-based and decision support systems included in EMRs. However, to fully implement the use of the IDNT in Canada, the language will need to be translated into French.

COMPETENCY OF DIETITIANS

Dietetic competency and knowledge statements used by provincial dietetic colleges, the national accreditation program, and dietetic education and training exist in Canada. Currently, a process for creating a national, up-to-date integrated set of competency and knowledge statements is underway. Existing competencies are flexible enough to include NCP concepts but in the future, specific concepts related to NCP could be considered if the NCP model is adopted by Canadian RDs. The NCP model supports dietetic competence by providing more definition around standards of care and clarity around expectations. This can support dietetic education and training programs and excellence in practice.

VISION FOR DIETETIC PRACTICE

In 2007, Dietitians of Canada, in consultation with its membership, developed Vision 2020 which defined the preferred future for the dietetic profession.

The NCP model supports RDs in taking a leadership role in improving the nutritional health of Canadians and will help RDs achieve Vision 2020. Implementation of the NCP promotes improved visibility and perceived value of the RD in the health care team. Currently the RD may not be clearly documenting nutrition problems, interventions and outcomes. Gaps in documentation can lead to incorrect assumptions by other team members. Through more clear documentation, other health professionals will have greater understanding of the contribution made by the RD to the client's care and the plan. Practice-based outcome research studies will demonstrate the benefit of RDs and will assist in improving marketability of RDs in various practice settings.

VISION 2020 Preferred Future for the Dietetic Profession

- RDs are leaders in promoting health.
- RDs have diverse, rewarding and novel roles.
- Dietetics profession is self-directing and self-renewing.
- Dietetics education is accessible, flexible, inclusive and innovative.

The NCP model supports RDs in taking a leadership role in improving the nutritional health of Canadians and will help RDs achieve Vision 2020. Implementation of the NCP promotes improved visibility and perceived value of the RD in the health care team. Currently the RD may not be clearly documenting nutrition problems, interventions and outcomes. Gaps in documentation can lead to incorrect assumptions by other team members. Through more clear documentation, other health professionals will have greater understanding of the contribution made by the RD to the client's care and the plan. Practice-based outcome research studies will demonstrate the benefit of RDs and will assist in improving marketability of RDs in various practice settings.

Future Research

Ongoing research on the NCP model is needed to evaluate the degree of impact on quality of care and outcomes. Further validation of the IDNT is needed in Canadian settings, particularly in paediatric, critical care and public health settings. In addition, research needs to examine the perception of Canadian RDs on using NCP and barriers to successful implementation. A potential barrier is time required to implement the NCP/IDNT but, once implemented, productivity may be improved. Research is needed to understand the impact on RD efficiency of nutrition care in different settings.

Conclusion

The NCP and IDNT are applicable to Canadian dietetic practice in various settings. Canadian RDs should consider the benefits of applying the NCP model in their practice. In the evolving health care environment, proving the value of RDs will be essential. This model will assist in steering practice to have the greatest impact on client health outcomes. Future guidance will be required to support application of the model to public health settings. In addition, multiple types of education opportunities and tools will need to be available, including ones targeted for specialized areas of client care. Adoption of the model, including standardized language, provides an opportunity to bring practice to a new level that supports quality nutrition care, evidence-based practice and research.

References

1. Lacey K, Cross N. A problem-based nutrition care model that is diagnostic driven and allows for monitoring and managing outcomes. *J Am Diet Assoc* 2002;102(4): 578-89.
2. Lacey K, Pritchett E. Nutrition care process and model: ADA adopts a road map to quality care and outcomes management. *J Am Diet Assoc* 2003;103(8):1061-72.
3. Trombley LE, Driscoll E, Rodrigues LM. Effectiveness of nutrition intervention in meeting outcome goals in clients with HIV/AIDS. *J Am Diet Assoc* 2008;108(9): A-9.
4. Harrington B, Bowling E, DiChello S. Clinical dietitian perception of the nutrition care process. *Future Dimensions in Clinical Nutrition Management* 2009;28(1).
5. American Dietetic Association. Nutrition care process part II: using the international dietetics and nutrition terminology to document the nutrition care process. *J Am Diet Assoc* 2008;108(8):1287-93.
6. American Dietetic Association. Nutrition care process and model part I: the 2008 update. *J Am Diet Assoc* 2008;108(7):1113-7.
7. American Dietetic Association. International dietetics & nutrition terminology (IDNT) reference manual: standardized language for the nutrition care process. 4th ed. Chicago, IL: American Dietetic Association; 2009.
8. American Dietetic Association. Pocket guide for international dietetic & nutrition terminology (IDNT) reference manual: standardized language for the nutrition care process. 2nd ed. Chicago, IL: American Dietetic Association; 2009.
9. Trombley L. Measuring clinical outcomes – how to start. *Future Dimensions* 2008;28(3):6-8.
10. Hake-Smith N, Lewis N, Eskridge KM. Orientation to nutrition care process standards improves nutrition care documentation by nutrition practices. *J Am Diet Assoc* 2005;105(10):1582-9.
11. Lacey K. Teaching ADA's nutrition care process and nutrition diagnoses: one educator's story of a work in progress. *Topics in Clinical Nutrition* 2006;21(3): 169-75.
12. Charney P. The nutrition care process and standardized language of dietetics: implications for the nutrition support dietitian. *Support Line* 2006;28(2):16-9.
13. Hake-Smith N, Lewis NM. A standardized nutrition care process and language are essential components of a conceptual model to guide and document nutrition care and patient outcomes. *J Am Diet Assoc* 2004;104(12):1878-84.
14. Corado L, Pascual R. Successes in implementing the nutrition care process and standardized language in clinical practice. *J Am Diet Assoc* 2008;108(9):A-42.
15. Emery EA. Nutrition diagnosis and intervention: a case report. *J Am Diet Assoc* 2007;107(8):A-22.
16. Gardner-Cardani J, Yonkoski D, Kerestes J. Nutrition care process implementation: a change management perspective. *J Am Diet Assoc* 2007;107(8):1429-33.
17. Suen LF. Challenges in implementing the nutrition diagnosis statement in acute care hospitals. *J Am Diet Assoc* 2008;108(9):A-20.
18. Woscyna GR. Integrating nutrition diagnosis into the dietetic internship program curricula at the University of Nebraska Medical Center. *J Am Diet Assoc* 2007;107(8):A-66.
19. Connell C, Molaison EF. Internship preceptors perceptions and use of the nutrition care process. *J Am Diet Assoc* 2008;108(9):A-20.
20. Kotter John P. The eight-stage process of creating major change. In: *Leading Change*. USA: Harvard Business School Press;1996.
21. Garets D, Davis M. Electronic medical records vs. electronic health records: yes, there is a difference. A HIMSS Analytics™ White Paper. Updated January 26, 2006. Available online at http://www.himssanalytics.org/docs/WP_EMR_EHR.pdf. Accessed June 16, 2009.
22. Davis K, Doty MM, Shea K, Stremikis K. Health information technology and physician perceptions of quality of care and satisfaction. *Health Policy*. Published online Nov. 25, 2008. Available online at <http://www.commonwealthfund.org/Content/Publications/In-the-Literature/2009/Jan/Health-Information-Technology-and-Physician-Perceptions-of-Quality-of-Care-and-Satisfaction.aspx>. Accessed June 16, 2009.