Canadian Foundation for Dietetic Research

Showcase of Dietetic Research in Canada – June 4-5, 2009

Once again, the Dietitians of Canada (DC) national conference in Charlottetown provided an opportunity to showcase current research in dietetics and nutrition through the Canadian Dietetic Foundation for Dietetic Research (CFDR) Research Event. We had a large number of abstracts submitted this year, and included 24 oral presentations and 47 posters in the program. I was abstract editor 15 years ago when the DC conference was held in Charlottetown, and I was delighted to see the increased level of interest since then.

It is critical for dietitians to be involved in research because it forms the framework and foundation for dietetics. We need to be the generators of the knowledge base for our profession, whether we are students, interns, collaborators, or principal investigators, and whether that knowledge is generated through measuring the impact of our practice, conducting basic research, or exploring the experiences and attitudes of those in our own profession. One of the most exciting things about research in nutrition and dietetics is the diversity of methods and approaches used. In fact, the abstracts included in the DC Conference 2009 are as diverse as our profession. Research presented will enhance our understanding of advances in nutrition education, national guidance, underlying mechanisms of chronic disease, and food service management, to name just a few areas. Settings also vary from public health to long-term care to university laboratories.

Dietitians shared their "better practices" in such areas as nutrition screening and assessment, enhancing teaching and learning in undergraduate dietetic education and graduate studies, and health literacy and school nutrition. The "buzz" that these presentations and posters are sure to create will keep our profession vibrant and growing.

On behalf of the membership of Dietitians of Canada, I would like to thank Dr. Candice Rideout and Kimberley Hernandez who, along with myself, constituted the small but hard-working Abstracts Review Committee. They not only gave up their time, they provided their expertise in judging a large number of abstracts. I would also like to thank the Canadian Foundation for Dietetic Research for its ongoing support of practice-based research in Canada. I am particularly grateful to Diana Sheh and Isla Horvath for shepherding us through the review process and the scheduling of presentations.

Please join me in celebrating Canadian dietetic research represented in these abstracts of the poster sessions and oral abstract presentations from this year's CFDR Research Event.

Dr. Jennifer Taylor
Abstracts Review Committee Chair, 2009

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Canadian Foundation for Dietetic Research

Dietetic Research Event – June 4-5, 2009

These abstracts represent dietitians' research projects that were accepted through a peer review process for presentation.

*Indicates the presenter [R] = Research abstract [E] = Experience-sharing abstract

POSTER RESEARCH PRESENTATION ABSTRACTS
THURSDAY, JUNE 4 & FRIDAY, JUNE 5, 2009

Vulnerable Groups

Energy intake and sweetened beverage consumption among overweight and obese First Nations and non-First Nations pregnant women, based on 24-hour food intake recall

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Objective: We assessed energy and sweetened beverage intake of overweight and obese pregnant First Nations and non-First Nations women.

Methods: A total of 113 overweight and obese women (including 25 First Nations women) completed a 24-hour food intake recall between 16 and 20 weeks of gestation. Participants' average pre-pregnancy body mass index (BMI) was in the class 1 obesity category [BMI = 32.4 ± 6.6 kg/m^2].

Results: The average energy (8310 ± 2374 versus 10550 ± 2449 kJ/day) and carbohydrate (CHO) (259 ± 85 versus 345 ± 87 kJ/day) intake of non-First Nations women was lower than that of First Nations women ($p<0.002$ and $p=0.00001$, respectively). The majority of First Nations women (92%) and non-First Nations women (61%) consumed sweetened beverages. The energy intake for all sweetened beverage consumers (n=76) was on average 9321 ± 2696 kJ/day with 306 ± 94 g/day from CHO, which represented 55 ± 8% of their energy intake. In comparison, the energy intake of women not consuming sweetened beverages (n=37) was on average 7910 ± 1940 kJ/day with 225 ± 54 g/day of CHO, representing 48 ± 9% of energy intake. Average percent energy intake from CHO was lower in women not consuming sweetened beverages than in women consuming those beverages ($p<0.0002$). In addition, average protein intake of women not consuming sweetened beverages (98 ± 31 g/day) was higher than that of women consuming sweetened beverages (84 ± 31 g/day, $p<0.02$).

Implications and Conclusions: Our preliminary results suggest that overweight and obese women, including First Nations women, may benefit from education about healthy beverages early in pregnancy. (Funded by the Canadian Institutes of Health Research–Institute of Aboriginal Peoples' Health)

Dietary acculturation in Sudanese families settling in Calgary

C. Mannion, C. Henshaw, and S. Raffin-Bouchal, University of Calgary, Calgary, AB [R]*

Objectives: In this study, we evaluated a pictorial nutrition resource, *The Market Guide: Good Food for You and Your Family*, designed to assist new Canadians from Sudan to make food choices in the unfamiliar Canadian marketplace.

Methods: Using grounded theory methodology, we conducted focus groups, accompanied participants on grocery store visits, and interviewed key informants working with newly arrived Sudanese women. Using the constant comparison method of Glaser and Strauss, we analyzed transcripts from seven women discussing the use of *The Market Guide*. ATLAS.ti was used for open coding.

Results: The focus group evaluating *The Market Guide* gave the women a forum in which to discuss the difficulty of dietary and, broadly, cultural acculturation. An emergent theme was that the traditional role of the Sudanese mother was fractured as they were unable to identify foods that were "safe" and "good" because of the unfamiliarity of foods and the inability to recognize packaged and processed foods. Language barriers and lack of a social infrastructure that presented a trusting relationship meant that the challenges of feeding their family appeared insurmountable and fraught with confusion. Tensions within the women emerged, for example, the tension of wanting to learn about Canadian foods but needing to trust those around them before engaging in the learning.

Implications for Practice: The usefulness of a written resource, albeit pictorial, was limited within this relationship-based culture that is dependent upon sharing, mutuality, and respect. Working closely with settled new Canadians grouped with those recently arrived is recommended. Understanding the barriers faced by refugees will allow health care providers to plan effective and culturally sensitive approaches to ease this transition. Dietary acculturation, part of cultural acculturation, is important to Sudanese refugee women who attempt to fulfill a traditional role in a new culture.

Grocery cart contents of new Canadians

C. Mannion and C. Henshaw, University of Calgary, Calgary, AB [R]*

Objectives: The nutritional status of new Canadians from Sudan is not thoroughly assessed upon their arrival in Canada, but iron deficiency anemia and parasitic infections are common. Anecdotal reports indicate that Sudanese infants born in Canada have been admitted to hospital with rickets. Sudanese mothers traditionally shop

and prepare food for their families but are faced with a strange marketplace and unfamiliar foods. Because of the unfamiliarity of Canadian food purchase choices and the lack of availability of known foods, we hypothesized that food purchased by non-English literate Sudanese women would not ameliorate or prevent nutrient deficiencies. In this study, we examined the nutrient mix of supermarket foods purchased by Sudanese mothers in Calgary.
Methods: We monitored four Sudanese women's grocery store visits, recording all items purchased and assessing them for nutritional quality and contribution to a balanced diet, as outlined by *Canada's Food Guide to Healthy Eating* (*CFGHE*, 1997).
Results: The nutritional value of the supermarket food purchases of Sudanese mothers varied widely by quality and quantity. Often the children accompanying their mothers influenced them to make purchases of dubious quality. Sudanese shoppers' lack of familiarity with Canadian food store items and the lack of trust shown in food freshness and quality were evident. The minimum recommended number of servings recommended by *CFGHE* was not met for the family members reported.
Implications for Practice: Dietitians advising new Canadians should be aware of traditional food items and orient the new shopper to the marketplace products that would be suitable to traditionally prepared dishes, and advise on appropriate substitutes with high-density nutritional value in mind.

Predictors of diet quality among food-insecure Canadians

N. T. Glanville[*1], *H. Hughes*[1], *and L. McIntyre*[2]. [1]*Mount Saint Vincent University, Halifax, NS;* [2]*University of Calgary, Calgary, AB [R]*
Objectives: Our goals were to assess predictors of diet quality in food-insecure Canadians, and to evaluate the relationship to body weight status.
Methods: The Healthy Eating Index (HEI), modified to reflect Canadian dietary guidance, was applied to the day 1 24-hour dietary recall collected as part of the Canadian Community Healthy Survey, Cycle 2.2. Output yields an HEI score (0 to 100); a category score corresponds to poor (HEI ≤50), "needs improvement" (HEI 51 to 80), or good (HEI ≥81) diet quality. Statistical analysis involved mean, chi2, multivariate regression using BOOTVAR, v. 3.1 ($p < 0.05$, mean [standard error]).
Results: Diet quality was significantly poorer among participants with severe food insecurity (SFI) (HEI 60.8 [1.9], 23% poor diet) than in food-secure (FS) participants (HEI 66.4 [0.3], 13% poor diet). Participants with SFI were more likely to be female (59%), to be current smokers (57%), to have a low income (77%), to be under age 40 (61%), to be unmarried (43%), to be inactive (66%), and to have less than a grade 12 education (33%). They were also more likely to perceive their health as poor (13% compared with 1.2% in FS participants). In SFI subjects, the key social determinants of diet quality were smoking status, income, and marital status. In contrast, the key social determinants in FS subjects were smoking status, gender, education, activity, region, and ethnicity. Diet quality of overweight/obese participants experiencing SFI did not differ from those with a normal body weight.
Implications and Conclusions: Poor diet quality among those experiencing SFI could predispose them to negative health outcomes. The social variables predicting diet quality are in part related to their capacity to purchase food.

Out of reach: The affordability of a basic nutritious diet in Nova Scotia in 2008

M. Florence[*1], *P. Williams*[2], *and C. Johnson*[3], *on behalf of the Food Costing Working Group.* [1]*Mount Saint Vincent University/Nova Scotia Food Security Network and* [2]*Mount Saint Vincent University, Halifax, NS;* [3]*St. Francis Xavier University, Antigonish, NS [R]*
Objectives: The Nova Scotia Participatory Food Costing Project tracks the cost and affordability of a basic nutritious diet over time to inform food security-related policy. This presentation provides an overview of the methods and results of food costing conducted in 2008.
Methods: In June 2008, 40 trained food costers from family resource centres/projects visited 46 randomly selected grocery stores throughout Nova Scotia to survey the cost of the National Nutritious Food Basket (NNFB). Average cost was calculated for 23 age and gender groups. Affordability scenarios were constructed for varying household types, including lone- and two-parent families, a lone pregnant female, and seniors. Cost of a basic nutritious food basket and secondary data on the cost of basic living expenses were applied to scenarios to determine if Nova Scotians have sufficient economic resources to purchase a basic nutritious diet.
Results: Two-parent and lone-parent families with children relying on minimum wage or income assistance lacked adequate income to purchase a basic nutritious diet. Lone pregnant females relying on income assistance and senior females not accessing the Guaranteed Income Supplement were unable to purchase a basic nutritious diet.
Implications and Conclusions: These findings provide evidence that a significant number of Nova Scotian families may be unable to afford a basic nutritious diet and are consequently at risk of food insecurity. These results demonstrate the need for continued review of, and changes to, policies surrounding minimum wage and income assistance in Nova Scotia.

Dietetic Practice and Education Training

Where are dietitians on the issue of food security? Findings from a national survey

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Objectives: We sought to understand how Canadian dietitians define food security and the strategies they support to address food insecurity.

Methods: A bilingual, online questionnaire was administered to members of dietetic regulatory bodies and Dietitians of Canada (DC).
Results: A response rate of approximately 9.5% (n=817) of the estimated total number of dietitians was achieved. When asked to select the three most important components of a definition of food security, about 60% of respondents selected both access to an adequate "quality" and "quantity" of food to maintain health, while just fewer than 30% selected food as a basic human right. Dietitians felt the three most significant causes of food insecurity were income inadequacy (76.5%), high food prices (41.7%), and lack of affordable, acceptable housing (40.4%). To address food insecurity, the majority of respondents (66.0%) indicated that it is important to focus efforts at all levels, from individual/household to global. Consistent with DC position and policy papers on food security (2005 and 2007), respondents identified system change/redesign strategies as either very effective or effective (56.4% and 31.9%, respectively) in building food security. Strong support for capacity building/substitution strategies was shown, with 51.8% of respondents identifying them as effective and 33.6% identifying them as very effective. Support for short-term relief/efficiency strategies was mixed, with 29.3% classifying them as ineffective, 23.6% having a neutral opinion, and 28.9% classifying them as effective.
Implications and Conclusions: Dietitians of Canada food security position papers support and are supported by the understanding and reported practices of Canadian dietitians.

Living gluten free: diet intervention and beyond

A. Leiper, Capital District Health Authority, Halifax, NS [E]*
Purpose: The Living Gluten Free program is a specialized nutrition education class developed for patients diagnosed with celiac disease. This program addresses appropriate management of a gluten-free lifestyle, while considering the emotional, social, and physiological implications of the disease. Patients are educated on the standard disease diagnosis procedure, symptoms, diet, and needed lifestyle changes. The development of this program was an effort to improve diet adherence, decrease patient wait time for education, and promote a high quality of life in patients while they are living gluten free.
Description of Process or Content: The Living Gluten Free program consists of one group session and a minimum of one individual follow-up session. Maximum class size is ten patients to support optimal patient and educator interaction. The class objective is to explain effectively the disease and its symptoms, and to reinforce the importance of 100% gluten elimination as cancer is a risk with non-compliance. Menu management, label reading, and management of gluten elimination while living with others who do not follow a gluten-free diet are all curriculum components.
Project Summary: The Living Gluten Free program provides patients with practical nutrition education to promote the 100% elimination of gluten. This program also provides lifestyle management support through education about diet control, tips for eating out, and information on how to manage sharing food and food preparation areas with non-celiac persons.
Recommendations and Conclusions: The Living Gluten Free program is a unique approach to addressing the social, emotional, and dietary needs of those diagnosed with celiac disease. Program evaluation through pre- and post-intervention outcome measures has significant research potential.

Using a process evaluation to improve team functioning

M. A. Yurkiw, Regional Nutrition and Food Services, Alberta Health Services–Edmonton area, Edmonton, AB [E]
Purpose: In fall 2007, the four dietetic internship programs in Alberta (including both integrated and postgraduate) decided to re-form into one provincial program based at the University of Alberta. The change is guided by the Integrated Dietetic Internship Core Partnership Team (partnership team), with an ambitious completion date of spring 2009. In April 2008, the partnership team decided to include a process evaluation to facilitate the transition by focusing on clear communication.
Process: While the dietitian undertaking the evaluation is familiar with the internship programs, she is an ex-officio member of the partnership team and observes rather than participates. The process evaluation consists of a series of reflective questions pertaining to the partnership team's functioning and outcomes. Questions are asked twice at each meeting (at midpoint and immediately before adjournment); private interviews will be held if needed. While the questions change to reflect the partnership team's stage of development, they consistently probe functioning: what is going well and what should be modified.
Project Summary: From April 15, 2008, to February 12, 2009, the entire partnership team met six times. Despite individual differences, responses to the process evaluation questions were usually consistent between committee members, which emphasizes a shared experience. Including an evaluation question mid-meeting encouraged partners to focus on the processes and allowed changes to be made on the fly. Evaluation feedback has improved the work plans and documentation for the partnership team (terms of reference and minutes).
Recommendations and Conclusions: Use of a process evaluation allows participants to see their commonalities, highlight differences, improve group functioning, and identify problems before they become serious. Consequently, an Alberta-wide integrated internship program will be in place for the May 2009 intake of students.

Nutrition and Health Education/Public Health Nutrition

Consumers look for healthy options when dining out: learning from the Health Check BC Dining Program

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Objectives: We evaluated consumer attitudes toward healthy dining options in British Columbia (BC) restau-

rants as part of the implementation plan of the Health Check BC Dining Program.
Methods: Nine hundred consumer surveys were collected from diners at participating casual family restaurants to obtain baseline data before implementation. Follow-up surveys were conducted six to nine months after implementation of the Health Check logo on the menu to determine if dining attitudes had changed.
Results: Eight percent of respondents said they look for healthy food choices when ordering items at restaurants; 76% said they had seen the Health Check™ logo previously; 48% said that they would use the availability of the Health Check™ program to help them determine where to dine. Respondents also indicated that taste would not be sacrificed for nutrition, which underlines the importance of developing delicious and nutritious menu items. Follow-up results were consistent with the baseline data. Other program evaluation results will be presented.
Implications and Conclusions: Consumers want healthy choices when dining out in restaurants—a consumer trend that is confirmed by other studies. This study confirmed previous findings that consumers trust Health Check™ and the Heart and Stroke Foundation to evaluate the recipes and provide guidance about healthy options. The Health Check logo beside qualified menu items is vital for influencing point-of-purchase consumer choice. We found that diners want delicious healthy options, a finding that stresses the need to consumer test all new recipes for taste acceptance and appeal. The implications for restaurant operators are apparent as they endeavour to provide healthy options to their customers.

Scanning the missions and functions of Canadian and international public health organizations

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Purpose: We scanned the missions and functions of Canadian and international public health organizations, in order to support the Pan Canadian Task Force on Public Health Nutrition Practice exploration of potential organizational structures to provide leadership for public health nutrition practice in Canada.
Process: A Google search using the term "public health and nutrition and organizations or networks or working groups" was used to compile a list of public health organizations operating at the provincial, national, and international levels. Task force members suggested additional organizations to include in the scan. The final scan included 17 organizations. A template was created to ensure consistent data collection from websites, relevant documentation, telephone interviews, and e-mail exchanges.
Project Summary: Stated missions included the following: promoting the health of target populations; advancing the profession; advocating; acting as the voice of the profession; educating, training, and supporting professional development; providing leadership; sharing information; and liaising with agencies, government, and non-governmental organizations. The organizations performed a variety of functions. Chief among them were facilitating communication and collaboration among members, advocating for the public's health and for professional practice, liaising with external groups and organizations, knowledge translation, and developing and promoting consistent standards of practice.
Recommendations and Conclusions: The findings of this scan were incorporated into the discussion document *Strengthening Public Health Nutrition Practice in Canada.* The task force used the document in workshops, held across Canada throughout the fall of 2008, to generate informed dialogue with public health nutrition professionals and other stakeholders. The purpose of this dialogue was to obtain direction for national leadership and organizational support for public health nutrition practice.

The effect of a healthy lifestyle group education session on the awareness of risk factors for type 2 diabetes in adults diagnosed with prediabetes

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Introduction: Research demonstrates that education strategies can assist in preventing or delaying the onset of type 2 diabetes (T2DM) in individuals diagnosed with prediabetes. The Prediabetes Initiative community education program assists individuals diagnosed with prediabetes by raising awareness about risk factors and about lifestyle strategies that may help counteract these risks.
Objectives: We investigated whether healthy lifestyle group education can help adults diagnosed with prediabetes become aware of their risk factors for developing T2DM.
Methods: Participants completed questionnaires, one (Q1) before the group presentation and one (Q2) after. Participants were invited to complete a third questionnaire (Q3) two to six months later. Questions about risk factors, symptoms, and prevention strategies were included on all questionnaires. Responses were analyzed for differences.
Results: Participants' identification of risk factors increased by 1.2 ± 1.7 ($p<0.0001$, $n=85$) on Q2 vs. Q1, and of symptoms by 1.4 ± 1.9 ($p<0.0001$, $n=56$). Participants' identification of risk factors decreased slightly but significantly by 0.7 ± 2.1 ($p<0.05$, $n=37$) on Q3 vs. Q2, with identification of symptoms remaining similar (0.04 ± 2.3, $p=0.9$, $n=25$). At baseline (Q1), 81.5% of individuals believed T2DM can be prevented or delayed, with 88.7% believing they could prevent or delay their own development of T2DM. After the education session (Q3), an increase to 93.0% and 95.3% occurred for both beliefs (Q3 vs. Q1), respectively.
Implications and Conclusions: Group diabetes education appeared to have increased patient knowledge of risk factors and symptoms, and recognition that T2DM can be prevented or delayed. Further study is needed to examine long-term knowledge retention and application of strategies.

Perceptions of weight and health in an overweight population

H. Sheehan and E. Johnston, Acadia University School of Nutrition and Dietetics, Wolfville, NS [R]*
Rationale and Objectives: The 2004 Canadian Community Health Survey indicated that 23.1% of Canadians were obese, which shows a 35% increase since the Canadian Heart Health Surveys (1986-1992). The purpose of this study was to

investigate why weight-loss attempts have been unsuccessful in addressing overweight and obesity in Canada.
Methods: Individuals aged 18 and over with a body mass index (BMI) of ≥25 kg/m^2 were recruited from the community to participate in a semi-structured telephone interview examining perceptions of weight and health. Interviews were recorded, transcribed, and coded to identify common themes.
Results: Twenty subjects (mean BMI = 31.7 kg/m^2) were interviewed. When asked to describe the healthiest weight for their height, 35% of subjects described a weight that was unhealthy (BMI ≥25 kg/m^2). Of these individuals, all but one were obese. When asked to identify "healthy" individuals from a series of figures, 75% identified at least one overweight male figure as healthy and 65% identified at least one overweight female figure as healthy. In the discussion of "healthy" and "unhealthy" people, commonly discussed themes included overweight (65%), underweight (50%), and obesity (10%). Other common themes were health and physical activity (55%) and healthy eating (45%). Only 25% discussed illness or the need for medical attention as a characteristic of an unhealthy individual.
Conclusion: This study suggests that although most overweight and obese individuals seem to understand the relationship between weight and poor health, they may lack an understanding of what a healthy weight is and what it looks like. This discrepancy may be more pronounced in the obese population.
Implications of Findings: Study results may be useful in the implementation of healthy weight education programs targeting overweight and particularly obese individuals.

School Nutrition/Children and Youth

A pilot study on the use of Photovoice as a qualitative method to determine perceived barriers and facilitators to healthy eating among university students
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Objectives: Photovoice is an innovative qualitative research method in health care, but it has not been used to its full potential in nutrition and dietetics. This pilot study explored the use of Photovoice to determine perceived barriers and facilitators to healthy eating among university students.
Methods: The participants were 28 non-nutrition students aged 18 to 50 who were enrolled in an introductory nutrition class during summer 2008. The students participated in a camera orientation session to review ethics and privacy issues. They took photographs and selected two for class presentation. They chose one of three focus group sessions (nine to 10 students each) to discuss the photographs that represented their perceptions of barriers and facilitators to healthy eating. The moderator used a semi-structured facilitation guide to lead the discussion. Researchers later analyzed the pictures and coded the transcripts.
Results: The discussions generated six overarching themes as either barriers or facilitators: environment, nutrition knowledge, convenience foods, time, media influence, and food cost. More than one-third of the students thought the study was "very involving" and "stimulated their critical thinking." They felt empowered to have been able to share their perceptions with their classmates and "get their voices heard."
Implications and Conclusions: The study elicited important factors that influence the eating habits of university students. Photovoice was shown to be a useful and engaging method for qualitative research on nutrition knowledge and dietary patterns of university students. Dietitians may benefit from the use of Photovoice in understanding their clients' attitudes and behaviours toward healthy eating.

A systems approach to implementing healthy eating guidelines in a school jurisdiction
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Purpose: The Rocky View Schools (RVS) Healthy Eating Initiative aim is to develop and implement healthy eating guidelines that will change the school food environment, making healthy choice the easy choice for students.
Process: This work is a partnership between Alberta Health Services–Calgary and Rocky View Schools, which utilizes a systems approach to promote and sustain healthy eating environments in schools by establishing an infrastructure for people and resources. Grounded in principles of strengthening community action, the project has included consultation with schools throughout the jurisdiction, development of a system-wide representative advisory committee, and completion of individual school food environment assessments to initiate changes within the schools.
Project Summary: The school advisory committee worked closely with health representatives to develop healthy eating guidelines that reflected overall division philosophies and individual school contexts. These guidelines were ratified unanimously by the RVS executive and the board of trustees. Sixty-nine percent of schools participated in the school food environment assessments. A school-level implementation plan has been developed and ratified and is being used to move implementation of the guidelines forward in individual schools.
Recommendations and Conclusions: The development and implementation of this project have highlighted the importance of a systems approach to promote positive social and physical food environments in schools. These system-level changes promote sustainability and provide support to school-level changes. The success of this work has led to the development and implementation of a transferable systems model that has been adopted by other school jurisdictions in Calgary.

Food Service/Management Issues/Patient Issues

Identifying mandatory training programs for front-line food service staff
L. Button and M. A. Yurkiw, Regional Nutrition and Food Services, Alberta Health Services Edmonton area, Edmonton, AB [E]

Purpose: Since the formation of Regional Nutrition & Food Services (RNFS)–Capital Health Edmonton & area in 1995, we have experimented with a variety of methods for training our 750 front-line staff. The training sessions include legislated programs, those considered mandatory in food services (handwashing), and those of interest to people working in food services (*Canada's Food Guide*). The goal training rate was 70%, but despite the delivery method, training rates averaged 36%.
Process: Potential barriers to increasing our training rates included the definition of "mandatory" and the accuracy of training records. As part of a departmental lean systems initiative, a project was developed to define our mandatory programs, and to confirm our training numbers and the recording accuracy of them.
Project Summary: We received agreement on mandatory programs, a training rate of 100%, and a recording mechanism. "Mandatory" was defined as required by 100% of staff. Through interviews and group meetings, food service supervisors and management staff debated a draft list of 17 mandatory programs. The final list included 16 programs, 11 for front-line staff and five for out-of-scope staff. Business unit-specific lists (e.g., franchise-specific training for retail food services) were developed. These groupings were then validated with the same audiences. Our recording tool, Environment for Scheduling Personnel, was analyzed for its sensitivity. We identified incomplete records of site training and bundled programs weren't broken down to reflect their mandatory components. Resolution of these issues increased our mandatory training rates by 25%.
Recommendations and Conclusions: Currently we are looking at mechanisms to bridge the training gaps: delivery systems, program lengths, timing, and staffing. Mandatory training lists are "living" and will change to reflect organizational and departmental priorities.

What matters most: employee satisfaction

T. Billard, J. Crooks, D. Fenerty, D. MacInnis, J. Pryor, M. J. Taylor, and H. Williams, Capital District Health Authority, Halifax, NS [E]*

Purpose: The aim was to develop a recognition program that would show employees that they are valued as individuals.
Process: In 2006, the food and nutrition services (FNS) management team consulted with employees about how they want to be recognized. During summer 2006, a survey was developed and distributed to all FNS staff, including supervisors. The return rate was 20%. A summary of the responses and a list of common themes were identified, including an FNS appreciation day or week with individual activities, more communications between management and staff, and educational opportunities.
Project Summary: On the basis of the survey, an ad hoc committee chaired by an FNS manager was formed to develop a department-wide plan for staff recognition. Membership included an employee representative from each FNS area (central production, central distribution, central food services, clinical nutrition, restaurant services, and district sites). The committee reviewed all staff survey submissions and prepared a first draft of activities to share with each area for feedback. In February 2007, the committee submitted a final list of activities to the FNS executive team for approval and implementation.
Recommendations and Conclusions: The employee recognition program was launched on April 1, 2007. It includes the following:

- A card signed by the director and a $2 Tim Hortons voucher on staff birthdays.
- Quarterly attendance draws—all employees with perfect attendance in a quarter are recognized. Twelve names are randomly drawn; those drawn receive a $20 Superstore gift certificate.
- Staff appreciation week, the first of which was held in October 2007. Activities included ice cream socials, coffee breaks, and barbecues at all sites. Banners promoting the week were hung at each site. Booths profiling "seasoned employees" were displayed at various locations. Another was held in October 2008.
- The staff Christmas party, a long-standing tradition. The dinner and dance continue to be an annual sellout. Staff raise funds throughout the year to cover the costs; the department also assists financially with the event and gift donations used for door prizes.
- A children's Christmas party, started in 2006. This event is an annual tradition.

The plan is to run the program for three years (2007/2008, 2008/2009, and 2009/2010) and then complete a full evaluation of the various components

Rating the plate: challenges in measuring patient food quality

L. Stoyanoff, E. Leung, H. Fletcher, M. Keith, and J. McLaughlin, St. Michael's Hospital, Toronto, ON [E]*

Purpose: Since hospitalized patients' perceptions of food quality may be influenced by factors external to food quality, we explored sensory qualities of the patient menu and aimed to identify areas for improvement.
Process: Our prospective, blinded taste panels were designed to evaluate the quality of meals served to patients; 105 individuals participated in these panels, where 24 entrees and 13 appetizers were prepared and plated in an identical fashion to those our inpatients received. Items were rated on six sensory properties related to food quality, using a five-point Likert scale. Data were collected on demographics, comfort foods, and foods not commonly consumed. Means, frequencies, and standard deviations were calculated.
Summary: Twenty-one (57%) food items scored below "good" for quality and two (7%) items scored below "fair." A total of 10 (37%) items scored below 50% for whether the item would be chosen in the future, where taste represented the most influencing factor. Among panelists' comments, 59% were negative and 21% were positive. Standard deviations were large for all food items evaluated.
Recommendations and Conclusions: The large variability among the results indicates that preferences vary among participants. By conducting the taste panels with visitors in a public food service area, we were able to measure patient food quality while controlling for the effect of hospitalization and bias surrounding the perception of "hospital

food." With the biases removed, the current menu was rated as "fair" to "good," which indicates a need to improve the sensory quality of the food. This review is valuable as it defines what is an acceptable level of quality for menu items, identifies poorly performing products, and reveals comfort foods that could be incorporated into the patient menu.

Implementation of standardized texture-modified diets in Saskatoon Health Region

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Purpose: The Saskatoon Health Region Regional Menu Advisory Committee consists of members from Food and Nutrition Services, Continuing Care, and Seniors' Health and Rural Health. One objective of this committee is to develop and implement standard menu terminology and associated practices to provide safe, quality care to our clients in facilities across the region.
Process: Standards have been developed on the basis of an extensive literature review and current national and international standards. Implementation occurred through staff educational sessions, display information in the form of posters and brochures, a texture-modified diets reference manual, and standard testing screens to ensure safety and quality of minced and puréed items, both in-house produced and outsourced.
Summary: To date, education has been provided to 350 staff members in a variety of departments within the region. Information on the menu terminology changes has also been shared with clients and family members. Overall, feedback from evaluation forms has been positive.
Recommendations and Conclusions: With this standard terminology in place there will be improved resident satisfaction associated with improved and consistent quality of texture-modified foods. We will also see reduced confusion in interpreting diet orders when individuals are transferred between facilities, as well as an improvement in communicating diet orders among staff. We will know that the change is an improvement when staff members across Saskatoon Health Region are using consistent texture-modified diet terminology and quality measurement tools to provide consistent care to our clients. Future plans include developing methods to ensure service standards are met, as well as developing standardized recipes for texture-modified diets.

In-patient menu delivery systems: not a "one size fits all" option

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Purpose: Recent trials exploring menu delivery have revealed that menu selection processes should be tailored to meet the individual needs of in-patient units. Currently, all our patients record their menu selections using a paper menu system. The aim of this trial was to explore if our current processes meet the needs of individual units, according to patient characteristics and length of stay.
Process: In an intervention post-trial questionnaire design, 40 patients in a short length-of-stay unit were placed on system-select menu delivery, where no menu choices were offered and a meal corresponding to the patient's diet order was provided. A validated questionnaire was administered to consenting patients in order to collect data on their perceptions and expectations with the menu delivery services, as well as their satisfaction with the system-select menu delivery method. Data were examined via descriptive statistics. In-patient unit profile data were assessed against the current menu processes.
Project Summary: Despite a high probability of not receiving their selected choices due to a short length of stay, 63.4% of participants preferred to self-select their meals. Of those participants desiring choice, 57.7% preferred a spoken menu. Meal choice was important because of taste preferences, co-morbidities, or other dietary requirements. Profile data obtained for in-patient units revealed that because of their average patient length of stay, 36.8% of the units were unable to receive self-selected meals with the current paper menu process.
Recommendations and Conclusions: To improve patient-centred care, tailoring menu delivery services to the needs of individual units should be assessed when planning menu delivery options.

Clinical Research (Including Outcomes of Intervention)

Energy intake alteration resulting from diet order modification among LTC residents

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Objectives: Dietary intake insufficiency and decreased nutrient status have been well established in institutionalized Canadian elderly. Dietary consistency modification is often required because of chewing and/or swallowing difficulties within this population. The goal of this research was to assess changes in energy intake of long-term care (LTC) residents when they were switched from a regular diet order to a mechanically modified diet order.
Methods: Ten participants received a regular diet order for seven days of a five-week cycle menu; this was followed four weeks later by a mechanically modified diet order during the same seven days of the five-week cycle menu.
Results: Even with access to additional servings of food at mealtimes, total energy intake decreased significantly for nine of 10 participants, and mean energy intake dropped by 385 kcal + 461 kcal ($p=0.027$) per week.
Implications: This decrease in energy intake may equate to a mean weight loss of nearly 6 lb per year. The findings support the need for further examination of methods to maintain LTC residents' energy intake when there is consistency modification of menu items.
Conclusions: Total energy intake decreases when residents' regular diet order is changed to a mechanically modified diet order providing the same menu items. Care must be taken to maximize the quality and appeal of mechanically modified consistency menu plans for LTC residents.

The endocannabinoids system in weight management

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Objectives: A review was completed of the role of the

endogenous cannabinoid system (ECS) in the regulation of appetite, energy balance, and lipogenesis, and the implications of this newly discovered system for weight management are discussed.
Methods: Materials used for this article were identified through a MEDLINE search of the pertinent literature (1995 to present), including English-language randomized and controlled, prospective, cohort, review, and observational studies. The available experimental and clinical data were summarized.
Results: The ECS has recently emerged as a signalling system that influences multiple physiological functions. Its dysregulation might contribute to obesity, metabolic syndrome, and cardiovascular diseases. The ECS is composed of the endocannabinoid receptors, their endogenous ligands (the endocannabinoids), and the enzymes involved in endocannabinoid synthesis and inactivation, as well as the intracellular signalling pathways affected by endocannabinoids. The research data reveal the ECS's role in regulating food intake, energy balance, and adipose endocrine function in central and peripheral metabolic processes.
Implications: The ECS has become a potential target for the treatment and prevention of obesity, eating disorders, type 2 diabetes, and several risk factors for cardiovascular disease. It is important for dietitians and nutrition professionals to understand the physiological mechanism of the ECS on food intake and lipid metabolism in order to play a pivotal role in weight management and lifestyle intervention.
Conclusions: The ECS has been shown to have a key role in the regulation of energy balance and lipid metabolism; modulation of this system may affect food intake, insulin sensitivity, and lipogenesis. Animal experiments and clinical studies have demonstrated that ECS modulation may become an effective option for weight management. More research should be done on endocannabinoids and their interactions with nutrition.

Oxidative stress and nutritional factors in HCV liver recipients

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Introduction: Hepatitis C virus (HCV) is the primary indication for liver transplantation worldwide. Post-transplant HCV reinfection is universal, and 10% to 30% will progress to cirrhosis within five years. Risk factors associated with accelerated progression include donor age, pre-transplant viral load, steroid bolus, and cytomegalovirus infection. Oxidative stress (OxS) is involved in the pathogenesis of HCV disease pre-transplant, but little is known about its role in disease recurrence. Oxidative stress occurs when the pro-oxidants overwhelm the antioxidant defense system.
Purpose: The goal was to determine if, at 12 months post-transplant, recipients with disease recurrence are more oxidatively stressed than those with no recurrence.
Methods: This was a cross-sectional study of 38 HCV liver recipients, 21 with no recurrence and 17 with recurrence at 12 months post-transplant. The OxS was assessed by measuring liver lipid peroxidation (LPO) and antioxidant potential. Plasma vitamin E, retinol (with high-performance liquid chromatography) and vitamin C (with spectrophotometry) were assessed. Risk factors such as donor age and pre-transplant viral load, as well as anthropometry and three-day food records, were obtained. Data were analyzed using independent *t*-test and multivariate regression.
Results: The liver recipients with recurrence had higher liver LPO (μmol MDA/gram of liver tissue) than did those with no recurrence: 1.59 ± .270 versus 0.896 ± 0.123, p=0.028. No other significant differences between the two groups were noted. A significant relationship was found between liver LPO and HCV disease recurrence, and this significance continued when pre-transplant viral load and donor age were taken into account. Micronutrient intake indicated that both patient groups were not meeting the Dietary Reference Intake for vitamin E.
Implications and Conclusions: At 12 months, HCV liver recipients with recurrence are more oxidatively stressed than are those with non-recurrence. Whether antioxidant supplementation decreases OxS in this population and reduces recurrence in HCV liver recipients is unknown.

Wild blueberry (*Vaccinium angustifolium*) juice consumption lowers serum glucose and improves insulin resistance in men

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Objective: Wild blueberries (*Vaccinium angustifolium*) have been recommended as a complementary treatment for diabetes in Canada. Few studies have assessed this role in human subjects. Thus, in this study we examined the effect of human consumption of wild blueberry juice on markers of insulin resistance.
Methods: Fourteen middle-aged men with metabolic risk factors consumed wild blueberry juice for three weeks in a single-blind, randomized, placebo-controlled, cross-over intervention trial with a two-week washout period. Compliance was monitored using three-day food records. Fasting blood samples were taken at the beginning and end of each treatment period, and serum was analyzed using various commercial enzyme-linked immunosorbent assay kits.
Results: In general, results showed trends toward a reduction in metabolic risk factors, although these did not always reach statistical significance. There was a decrease in serum glucose (change from baseline: 0.25 ± 0.13 to -0.11 ± 0.08 mmol/L) (p=0.037) and a trend toward decreased insulin concentrations (p=0.088) in the treatment group. Insulin resistance (p=0.066), estimated using the homeostasis model assessment, decreased in the treatment group, whereas it increased in the placebo group. Blueberry lowered levels of inflammatory cytokines (interleukin-6, C-reactive protein, tumour necrosis factor-alpha), and there were trends toward an increase in plasma adiponectin (p=0.095), a hormone that inhibits inflammatory processes and enhances insulin sensitivity.
Implications and Conclusions: These results suggest that dietary blueberry may exhibit anti-diabetic properties in men. However, additional research with a greater sample

size and longer treatment time is needed to define efficacy and dose further.

The effect of a prebiotic supplementation on the quality of life of patients with ileal pouch anal anastomosis

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Objectives: Ileal pouch anal anastomosis (IPAA), the removal of the colon and formation of a reservoir from ileum, is the surgery of choice for ulcerative colitis and familial adenomatous polyposis. However, 10% to 35% of patients develop pouchitis, an inflammation of the pouch mucosa. Microbial imbalances are observed in pouchitis, and inulin has been suggested as a prebiotic treatment. Our objectives were to determine the effect of inulin supplementation on quality of life (QOL), and its practicality and safety as a nutritional supplement in IPAA patients.
Methods: Adults with IPAA (n=8) consented to a blinded, placebo-controlled trial of inulin supplementation. Baseline symptoms were measured for one month before supplementation, followed by a blinded low dose (5 g of inulin) or placebo (maltodextrin) for two weeks and a higher dose (10 g) for six months. Participants recorded any symptoms in a diary, and QOL was assessed using the Short Inflammatory Bowel Disease Questionnaire (SIBDQ) at the beginning and end of the study.
Results: Two participants in the same arm developed significant side effects with the 10-g supplementation: abdominal discomfort, severe gas, and small amounts of blood with defecation were reported. Unblinding determined that these participants were taking the active treatment (inulin), and therefore the study was stopped early. No differences were observed in SIBDQ scores.
Implications and Conclusions: In this pilot study, inulin was ineffective in improving QOL and may have contributed to unpleasant side effects. Future dietetics research should explore synbiotic therapy in IPAA, by combining prebiotics and probiotics for optimal results.
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Testing the viscosity of thickened juices used for the treatment of dysphagia

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Introduction: Commercial products available for dysphagia management include thickening agents and ready-to-serve (RTS) beverages in various consistencies. Inappropriate fluid consistency can affect safety and quality of life.
Objectives: Popular brands of thickening powders and RTS juices used in hospitals and long-term care facilities were tested and compared with the consistency categories set forth in the National Dysphagia Diet (NDD). This study focused on differences in preparation conditions and manufacturer variability.
Methods: Testing conditions attempted to mimic preparation and service situations in clinical practice. All juices were tested using a viscometer and prepared according to each brand's mixing instructions. Thickening powder was mixed with refrigerated cranberry juice and tested immediately and after one hour. Juices were then placed back in the refrigerator for five hours to simulate bulk preparation and delay of service/consumption. The RTS cranberry juices were refrigerated before testing. Juices were tested immediately, and after one hour and two hours at room temperature to simulate service and delay of consumption.
Results: Results were analyzed using analysis of variance and paired *t*-tests. The following types of juices were tested: two brands each of prepared nectar and honey consistencies, and two brands of RTS honey consistency. The majority of juices measured higher in viscosity than recommended within the NDD (p=0.05). Results indicated wide variations within and between brands.
Implications and Conclusions: Product consistency is a major challenge for dietitians and food service staff who rely on manufacturers' products and preparation instructions to provide the safest possible dysphagia management. Individuals and their caregivers are also relying on package labels and instructions for product use. Determining whether products are meeting consumer needs is therefore important.

Is vitamin D status related to the development of diabetes in individuals with cystic fibrosis?

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Objectives: Cystic fibrosis-related diabetes (CFRD) develops in approximately 25% of adults with CF and contributes to increased morbidity and mortality. Evidence suggests that vitamin D deficiency is linked to the development of diabetes in the non-CF population. Because of the high prevalence of vitamin D deficiency (80%) in CF, this study was conducted to assess the association between serum levels of 25-hydroxyvitamin D (25(OH)D) and the development of CFRD.
Methods: A retrospective, case-control chart review was conducted with subjects followed at the adult CF clinic in Toronto. Cases were defined as those with diagnosed CFRD and controls as those with normal glucose tolerance, impaired fasting glucose, or CFRD without fasting hyperglycemia. Routinely measured 25(OH) levels, along with data on pancreatic status, liver cirrhosis, age, gender, previous steroid use, pulmonary function, nutritional status (body mass index [BMI]), and previous lung transplantation were collected. Logistic regression was used to assess the crude and adjusted odds ratios and 95% confidence intervals for the association between serum 25(OH)D and CFRD.
Results: Of 106 subjects, 35 (33%) had CFRD. Mean baseline 25(OH)D levels (standard deviation) were 56.6 (28.9) nmol/L and 63.6 (26) nmol/L for cases and controls, respectively (p=0.25). Cases had lower mean BMIs, poorer respiratory function, and a higher incidence of oral steroid use, liver cirrhosis, and lung transplantation in comparison with controls. Of the variables included in the multivariate regression analysis, lung transplantation and oral steroids were independently significantly associated with CFRD development.
Conclusions: No relationship was found between serum

25(OH)D levels and the development of CFRD. Further research, including prospective studies with a larger sample size, is needed to assess any existing relationship between low serum 25(OH)D and the development of CFRD.

The prevalence of hyperlipidemia and its associated risk factors in HIV-positive ambulatory care patients

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Objectives: As people who have tested positive for human immunodeficiency virus (HIV) are living longer, they are at risk of developing cardiovascular disease (CVD). Given that hyperlipidemia is an important risk factor for CVD, the objectives of this study were to estimate the prevalence of hyperlipidemia and to determine the associations between hyperlipidemia and associated risk factors.

Methods: A retrospective chart review was conducted with a random sample of HIV-positive patients attending the Positive Care Clinic at St. Michael's Hospital. Study variables included most recent fasting serum lipid values, and demographic, clinical, and lifestyle information. Hyperlipidemia was defined as two or more of low-density lipoprotein cholesterol >2.5 mmol/L, total cholesterol >4.14 mmol/L, triglycerides >1.7 mmol/L, high-density lipoprotein cholesterol <0.9 mmol/L, and total cholesterol to high-density lipoprotein ratio >4.0. Outpatients receiving lipid-lowering medications were considered to have hyperlipidemia.

Results: Of 132 patients included in the analysis, 88% had hyperlipidemia. There were no significant differences in age (43.8 ± 9.8 vs. 40 ± 7.2 years), CD4 count (426 ± 233 vs. 377 ± 184 cells/mm^3), or viral load (5386 ± 19466 vs. 912 ± 2774 copies/mL) between those with vs. those without hyperlipidemia. Multivariate logistic regression analysis revealed that being male (p=0.045), non-use of fusion inhibitors (p=0.017), and non-use of street drugs (p=0.020) were significantly related to hyperlipidemia.

Implications and Conclusions: The 88% prevalence of hyperlipidemia in HIV-infected outpatients is higher than expected. Further analysis should take into consideration a strong gender influence and include a larger sample size. This research highlights the need to develop lipid guidelines specific to HIV-positive individuals.

Demonstrating efficacy in promoting lifestyle change and improving lipid profiles in primary care

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Purpose: This study examines the impact of registered dietitians' (RDs) counselling on cholesterol levels and lifestyle factors among patients with dyslipidemia in primary care.

Process or Content: The RD records of 905 patients who were from 38 different primary care practices and seen between 2000 and 2005 (44% of all patients referred to RDs for dyslipidemia) were analyzed for self-reported lifestyle change and changes in total cholesterol (TC), triglycerides (TG), low-density lipoprotein cholesterol (LDL-C), and total cholesterol to high-density lipoprotein cholesterol ratio (TC:HDL-C), pre- and post-counselling saturated and trans fatty acid intake (SFA/TFA), fibre intake, and level of physical activity (PA). Participants received an average of 2.77 RD counselling visits (standard deviation [SD]=1.43; range, one to 27 visits) in the offices of Hamilton Family Health Team physicians. A total of 251 patients (27.7%) reached the TC goal. Average TC fell from 6.45 mmol/L (SD=0.96) to 5.79 mmol/L (SD=1.09); statistically significant changes were found over the RD counselling period for TC, TG, LDL-C, and TC:HDL-C. After RD counselling, 82.6% had diets with <10% SFA/TFA, compared with 30% pre-counselling. Reported dietary intake with ≥15 g of fibre jumped from 32.4% pre-counselling to 78.9% post-RD counselling. Overall, 43% of patients reported moderate or high PA levels before RD counseling, compared with 56.7% after RD counselling.

Project Summary: Statistically significant reductions in cholesterol values and improved lifestyle factors can be achieved after an RD intervention outside a controlled research environment. In over 50% of patients, RDs are effectively able to promote lifestyle changes, such as decreasing SFA and TFA intake and increasing fibre intake.

Recommendations and Conclusions: Referring all high-risk patients with dyslipidemia to RDs for counselling concomitant with pharmacological interventions may increase the percentage of high-risk patients who achieve target LDL-C, which highlights the potential benefit of an RD as part of the primary care team.

Randomized controlled trial for individuals with a brain tumour and steroid-induced diabetes, comparing nutrition education from a registered dietitian with self-education from a pamphlet

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Objective: Approximately 10% to 20% of adult patients with primary malignant brain tumours develop steroid-induced diabetes and can then experience additional fatigue and blurred vision associated with elevated blood glucose. The aim of this study was to evaluate whether nutrition education by a dietitian could improve blood glucose control, reduce fatigue and blurred vision, and increase diabetes knowledge, compared with the current standard of care of self-education from a diabetes pamphlet.

Methods: Thirteen adult subjects with a primary malignant brain tumour and newly diagnosed steroid-induced diabetes were randomized to standard care, self-education with a diabetes pamphlet (S), or a 60-minute consultation and weekly contact as needed with a dietitian (D) for three months. Subjects were recruited from the CNS oncology clinic at Princess Margaret Hospital. Fasting blood glucose, glycated hemoglobin (HbA_{1c}), body mass index, diabetes knowledge acquisition, and self-reports of blurred vision and fatigue were measured at baseline (beginning of radiation treatment) and three months later.

Results: Eleven patients completed the three-month study (D n=6; S n=5). There were no significant differences at baseline and in change scores between groups at three

months. However, there was a non-significant decrease in HbA_{1c} in the dietitian intervention group (p=0.134) and a non-significant improvement in self-reported fatigue for D subjects (67%) compared with S subjects (20%). Weight did not change over the three-month study period and did not confound blood glucose results.
Implications and Conclusions: Analysis of outcomes suggests that individualized dietitian care was clinically relevant, although not statistically significant. Our sample size was too small to detect statistically significant differences between study groups, but the data are clinically encouraging for the dietitian group for HbA_{1c} and fatigue outcome measures. The data suggest that further study is warranted.

Community-based Nutritional Care

The prevalence of patients at risk for malnutrition in the Saskatoon Health Region acute care sites using the Malnutrition Screening Tool (MST) and the Malnutrition Universal Screening Tool (MUST)

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Objectives: Malnutrition in the acute care setting is estimated at a rate of 20% to 60%; however, it is often underrecognized in hospitalized patients. Malnutrition results in increased morbidity, mortality, complications, length of hospital stay, and health care costs. Although nutrition assessment is considered the gold standard for identifying a patient's degree of malnutrition, current resource restraints in the Saskatoon Health Region make it impractical for a registered dietitian to screen every patient admitted. Nutrition screening tools may provide a more feasible solution to identify patients who have malnutrition or who are at risk for malnutrition. In the current study, we assessed the prevalence of malnutrition risk using the Malnutrition Universal Screening Tool (MUST) and the Malnutrition Screening Tool (MST) in the same patient population, and compared the ease of using these tools.
Methods: Thirty percent of the medical in-patients (>18 years old) admitted to the acute care sites in the Saskatoon Health Region were consecutively screened using the MST and MUST over a two-day period.
Results: With the MST, the prevalence of malnutrition risk was 34.9% (n=37). With the MUST, the prevalence of malnutrition risk was 37.7% (n=40). A total of 29.2% (n=31) of patients were at risk for malnutrition, using both screening tools. The MST was quicker and more easily administered than the MUST, as it did not require additional calculations or clinical judgment to complete.
Implications and Conclusions: The MST was determined to be the preferred nutrition screening tool as it was quick and easy to use and indicated a similar prevalence of malnutrition as the MUST. It was therefore recommended for implementation in the Saskatoon Health Region.

Multidisciplinary program planning in primary care Family Health Teams

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Purpose: We developed a multidisciplinary diabetes education program supporting chronic disease management in primary care.
Process: A planning team consisting of seven allied health professionals, three physicians, one information specialist, and two people from administration met every two weeks for three months to organize and implement the program. Referral criteria were glycated hemoglobin (HbA_{1c}) of 0.070 to 0.085, type 1 or 2 diabetes for one year, age >18 years, no gestational diabetes and not pregnant, not receiving insulin pump treatment, and suitability for a classroom setting. Patients meeting criteria were selected from two out of seven Couchiching Family Health Team physician clusters. Program referral initiated assessment by a registered nurse (RN), standard lab work, and an information package. Allied health professionals developed critical questions presented during the RN assessment that could necessitate referral before a group session. Patients attended three two-hour group interactive education sessions presented by a pharmacist/certified diabetes educator and dietitian. There were three-month individual follow-up sessions with multidisciplinary team members in the clinic until the patient met the target or one year.
Project Summary: Three groups totalling 19 patients were piloted from September through December 2008. Three-month individual follow-up sessions are still underway. Post-session qualitative evaluations of groups were very positive. The primary quantitative target was $HbA_{1c} \leq 0.070$ within one year; secondary targets included low-density lipoprotein <2.0 mmol/L, total cholesterol to high-density lipoprotein ratio <4.0, blood pressure <130/80 mm Hg, and albumin-to-creatinine ratio <2.0 mg/mmol (male) or <2.8 mg/mmol (female).
Recommendations: Important steps in the process included consultation with community partners (diabetes education centre, Community Care Access Centre), seeking guidance from other Family Health Teams, standardizing terminology in the electronic medical record and utilizing an easy-to-use electronic stamp for documentation, and education and communication within one's own Family Health Team. Program planning for chronic disease management in primary care Family Health Teams is encouraged, with the use of an interdisciplinary collaborative team approach.

Human resources estimates for dietitians in interprofessional primary care

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Objectives: Current registered dietitian (RD) services in Ontario Family Health Teams (FHTs) were assessed to obtain a better understanding of RD practice in primary care and to develop a human resources estimate that can be used at the provincial level for future planning.
Methods: Two surveys were developed, an administrator survey to determine full-time equivalents (FTEs) of FHT service providers and the total clients served (rostered and non-rostered), and an RD survey to determine advances and constraints in current RD practice. Two strategies were

used to survey all 150 Ontario FHTs. A paper-based questionnaire with a return envelope was sent to all 149 RDs (from 90 FHTs) who are members of the Ontario FHT RD group, a volunteer community-of-practice network. Introduction and reminder e-mails were sent to their listserv and the survey was also profiled in a monthly newsletter. The remaining 60 FHTs were contacted by phone to determine if an RD was an FHT provider. Of these, an additional 25 RDs (from 23 FHTs) were sent the survey by regular mail.
Results: For 57 completed administrator surveys (50% of the total FHTs surveyed), we present a population-based human resource estimate of one RD to every 16012 ± 9315 (mean ± SD) FHT clients served, with a range of one RD to every 1200 FHT clients to one RD to every 46000 FHT clients.
Conclusion: Human resource estimates based on inter-professional team membership in all current FHTs in Ontario provide more robust estimates for planning purposes and are an advance over older methods based on RD-to-physician ratios.

Taking care of business: development of a public health visit safety policy and procedures

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Purpose: Health Region B, Zone 2, New Brunswick, had no formal policy or procedures pertaining to the safety of public health staff conducting home visits or fieldwork. In 2007, staff formed an inter-professional visit safety working group and set about developing a public health visit safety policy. The intent was to improve the health and safety of staff working off site where they might be exposed to offensive or threatening behaviour, second-hand smoke, unrestrained pets, alcohol, unsecured weapons, and so on.
Process/Content: In addition to the policy, released January 2009, the working group developed bilingual documentation to include the *Promoting Personal Safety* booklet, client forms and letters (notably for clients who failed to uphold their end of the visit safety policy contract), guidelines pertaining to a buddy system, a home visit schedule form, and feedback and evaluation forms. Once they were approved by public health management, the patient services representative and lawyers, and so on, the policy and support documents were posted on the department's shared drive for employers and employees.
Project Summary: Use of the policy is mandatory with all new clients. The policy is a single-page contract divided into three sections (healthy workplace, safe workplace, and respectful workplace), which staff review with each client. Both parties sign the duplicate contract.
Recommendations and Conclusions: Do not reinvent the wheel: River Valley Health Authority and Seattle Public Health proved valuable sources for the development of both the policy and support documentation. The impact of a visit safety policy on staff members has been significant, as they are no longer dealing with health and safety incidents without guidelines.

Impact of a nutrition intervention with applied motivational interviewing and behaviour change techniques in the Community Cardiovascular Hearts in Motion (CCHIM) program—preliminary findings

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Objectives: Cardiac rehabilitation programs traditionally determine the impact of nutrition intervention according to body weight change. Limited data are captured on patterns in nutrition behaviours leading to weight change. Behaviour interventions, including identification of stage of change, motivational interviewing, goal setting, and confidence measures, have been shown to have an impact on success with adoption and maintenance of healthy behaviours. In the Community Cardiovascular Hearts in Motion (CCHIM) program, nutrition and behaviour change interventions are combined to investigate impact on vascular health outcomes.
Methods: The CCHIM is a multidisciplinary, three-month multi-vascular program combining nutrition intervention, weekly exercise, and risk factor management. Both primary and secondary prevention patients are targeted. Each patient completes a food record, food frequency score, and individual assessment with the dietitian. This information provides the basis on which to determine readiness to change in five key nutrition categories. Patients engage in group education, identify personal nutrition goals, and rate confidence to achieve their goals. Anthropometric measures, clinical data, and team assessments are completed at baseline, program completion, six-month follow-up, and one-year follow-up.
Results: To date 327 patients have completed CCHIM, with 71% achieving weight loss. Average weight lost at three months is 6.5 lb (3.2% of body weight), which is sustained to 12 months (p=0.0001). Readiness to change and confidence to achieve nutrition targets improved for all factors at the three-month mark and was sustained by 12 months. Action readiness for "low fat" (p=0.02) and "portion control" (p=0.001) was statistically correlated with weight loss as an outcome. High confidence for portion control also correlated with weight loss as an outcome (p=0.002).
Conclusions: Enhancing nutrition intervention by addressing motivation, readiness, and confidence to change improves adoption and maintenance of key eating behaviours that support weight loss.

Can a web-based, self-monitoring wellness program augment outcomes and lead to sustained weight management and exercise ability at one year after completing a community cardiac rehabilitation program?

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Objectives: Cardiac rehabilitation (CR) has been shown to decrease body weight, increase exercise ability, and improve lipid profile; however, deterioration of these health benefits is noted post-program. The Community Cardiovascular Hearts in Motion (CCHIM) program was modelled to help prevent these adverse changes, and with the piloting of a post-CR web-based self-monitoring intervention called the Wellness Record (WR), the goal was to maintain key benefits.

Methods: Patients attending the CCHIM 12-week program were assessed, were risk stratified, received individualized nutrition counselling, and attended group exercise and education sessions weekly. All clinical and anthropometric outcomes and behavioural interventions were evaluated at three, six, and 12 months. Of 261 CCHIM program patients, 89 were trained on the WR for self-tracking of wellness goals in eating habits and exercise post-program.
Results: The CCHIM program effect for weight changes was -2.5% (p=0.0001) at three months and -2.5% (p=0.01) at six and 12 months (p=0.01). Exercise improvement was 18% at three months and 14% at one year. The WR group had a -2.9% (p=0.0004) weight change at three and six months, with a weight loss of 4.4% at one year. The WR group exercise improvements were 28% at three months (p=0.0001) and 28% (0.001) at one year.
Conclusions: The addition of the WR to the CCHIM program maintained and enhanced benefits at six and 12 months post-CCHIM program, with further weight management and exercise capacity. The WR should be considered as an added component and offered upon completion of CR to assist patients in self-management and sustain benefits of CR.

Développement d'une grille d'évaluation des menus en services de garde

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Objectif : Une recension des écrits révèle l'absence de grille d'évaluation des menus adaptée aux services de garde. Développer une grille d'analyse de menus et vérifier si celle-ci peut être utilisée pour émettre des recommandations aux milieux.
Méthodes : A partir de sources documentaires exposant des recommandations nutritionnelles pour les enfants d'âge pré-scolaire, une grille fut développée puis soumise à deux nutritionnistes impliquées en consultation en service de garde. Une version révisée fut utilisée par deux autres nutritionnistes sur deux menus cycliques. Les résultats furent comparés pour générer une troisième version de l'instrument qui fut appliquée à trois autres séries de menus.
Résultats : La grille finale inclut 27 énoncés abordant : les groupes et recommandations du *Guide Alimentaire Canadien*, les sources de protéines et leur distribution quotidienne, les sources de fer, les variétés de boissons, l'offre de mets transformés, les produits de faible densité nutritionnelle, les produits cariogènes, la variété alimentaire, les risques pour la sécurité, la prise en compte des allergènes et les caractéristiques organoleptiques. L'utilisation de la grille finale soulève la nécessité de nuancer les recommandations émises en complétant cette analyse par des données sur les recettes, la grosseur des portions, la précision sur l'offre de boissons particulièrement l'eau et le lait, et des considérations pratiques pour réduire les risques d'étouffements.
Répercussions et conclusions : La grille finale sera utilisée pour émettre des recommandations aux directions de services de garde à l'égard de plusieurs composantes importantes dans la promotion de saines habitudes alimentaires à la petite enfance. (*Financé par la Société de gestion du Fonds pour la promotion des saines habitudes de vie*)

EatRight Ontario Dietitian Advisory Service evaluation

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Purpose: EatRight Ontario (ERO) is a pilot program of the Ontario Ministry of Health Promotion that is managed by Dietitians of Canada. It has three service components (toll-free call centre, e-mail feature, and website) that provide Ontarians with access to nutrition information from registered dietitians. In this evaluation, we examined user patterns and perceptions to determine the improvements needed to enhance ERO reach and impact.
Process/Content: Evaluation findings were based on discussions with consumers, health intermediaries, and key informants; a website survey; and analysis of service statistics.
Project Summary: Service reach and recognition are growing, but awareness still needs to be enhanced; usage patterns are most closely related to media promotions. Overall, healthy eating, weight management, and children's nutrition are the most common reasons for accessing ERO; however, there are some differences based on age and gender. The majority of users are English-speaking women with post-secondary education, aged 51 or older, reflecting the typical health information seeker. The service is reaching users from all across Ontario. There is minimal usage in languages other than English. Users report high satisfaction with the three service components. Health intermediaries had suggestions for better alignment of ERO services with existing programming.
Recommendations and Conclusions: Among the public, dietitians, and other health intermediaries there is strong support for ERO service and its potential to help change eating habits. An increased awareness by the public and better understanding of the service by health intermediaries are needed to support program uptake. Increased collaboration and consultation with other health service providers, integration of ERO service into other program services, and sustainable promotions are recommended to improve service utilization rates and perceived value.

Utilizing videoconference technology to deliver health information to patient groups: a northeastern Ontario experience

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Objective: The Regional Cancer Program services an area of 414,925 km^2. Some patients travel as many as five hours to receive services in Sudbury. In an effort to meet patients' needs, five nutrition education classes were offered by videoconference (VC) to Community Oncology Cancer Network (COCN) sites closer to home. A questionnaire was administered to patients and caregivers to determine participants' perspectives on receiving nutrition

education using VC. The process of organizing and delivering the classes was documented.
Methods: All patients actively receiving treatment in Sudbury or at one of six COCN sites were welcome to attend one of the Nutrition During Treatment sessions. Posters were displayed at each site to advertise the sessions. A questionnaire containing 19 five-point Likert-type questions and two open-ended questions was pretested, revised, and subsequently administered. Demographics were also collected. The data were analyzed for descriptive statistics using SPSS, version 15.
Results: Of the 29 patients and nine caregivers who attended the session, 81.9% would attend another VC session. Overall, participants were satisfied with the service provided. Patients also appreciated the opportunity to interact with other cancer patients.
Implications and Conclusions: Videoconference technology has the power to bring people together. The main stumbling blocks in delivering the sessions were technical and administrative in nature. Technical difficulties were experienced in four of the five sessions. Organizing and scheduling the classes required a significant amount of resources. This research contributes to the understanding of the resource needs, provides recommendations about delivery of this service, and lays groundwork for other disciplines to present via VC.

Nutritional Assessment/Dietary Intake

Action plan for providing renal diets in a long-term care facility

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Purpose: Registered dietitians in long-term care (LTC) settings may be required to provide residents with complex therapeutic diets, including renal diets. At the O'Neill Centre (Toronto, Ontario), a 162-bed LTC facility with five dining areas, 11 residents require a renal diet because of chronic kidney disease (CKD), hemodialysis (HD), or peritoneal dialysis (PD). Due to the nature of the LTC setting, implementation of a renal diet can be daunting; for example, the food service employees (cooks, serving staff) and health care aides (all shifts, including casual staff) must be familiar with who requires the special diet, and what foods are to be provided. The philosophy of care in LTC homes emphasizes resident choice, and so balancing serious health threats while respecting residents' wishes is paramount. We developed an action plan to address the many challenges that arose when implementing the renal diet at the O'Neill Centre.
Project Summary: The action plan included identifying the low-potassium (K) diet as the focus for the "renal diet" used at the O'Neill Centre, modifying the menu, education sessions for staff, developing visual aids for posting in the serveries, developing handout material for dietary, nursing, and program staff based on the O'Neill centre menu, monitoring, and follow-up. In addition, nursing staff were educated about appropriate foods/beverages to be used for treating hypoglycemia or constipation. Dietitians in the outpatient clinics (CKD, HD, PD) were contacted monthly for lab values, including albumin and K.
Recommendations and Conclusions: Optimal nutrition care for LTC residents prescribed a renal diet involves continuous education and follow-up for staff working in the facility.

Calcium and vitamin D supplementation to enable adequate intake in ambulatory care patients: steps in developing a hospital medical directive, nutrient assessment, and supporting e-learning tools

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Purpose: The rationale for developing a medical directive for oral calcium and vitamin D supplementation for patients in our ambulatory hospital setting was generated from our clinical observation that many patients may not be meeting adequate intake for these nutrients, despite nutrition counselling. The implications of deficiencies in both have negative long-term effects on health. In Ontario, it is outside the scope of practice for registered dietitians (RDs) in hospitals to prescribe vitamins and minerals, and, therefore, a medical directive is necessary.
Process: Project components included a retrospective chart review of ambulatory patients from diverse areas of care within the University Health Network, a large tertiary care hospital. We conducted a comprehensive literature review, developed competency and assessment tools to facilitate implementation of the directive, and undertook a broad consultative process with key hospital stakeholders.
Project Summary: A retrospective review of 150 charts confirmed our observations. We conducted an extensive literature review on health benefits of optimal calcium and vitamin D intakes and contraindications for supplementation. A decision algorithm was created. The medical directive passed the Clinical Operations and Medical Advisory Committee review and approval process. The team designed an e-learning tool for RDs to complete before its initiation, enabling them to demonstrate essential knowledge, skill, and judgment required for implementation. We developed an electronic calcium and vitamin D calculator that can improve current methods of estimating nutrient intake.
Recommendations and Conclusions: Developing and implementing this medical directive are proactive ways to enable patients to achieve adequate calcium and vitamin D intakes.

Healthy eating perceptions and nutritional risk of older adults residing in rural and northern Manitoba

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Introduction: Healthy eating perceptions and assessment of the nutritional risk of older adults in rural areas have largely been unexplored. In order to develop nutrition intervention strategies to promote and support healthy eating in rural communities, we need a better understanding of the factors that influence the eating behaviours and dietary practices of older adults.

Objectives: We assessed healthy eating perceptions and nutritional risk among older adults in rural and northern Manitoba.
Methods: Five focus groups were conducted in three rural and two northern Manitoba communities. Thirty-nine individuals (males = 14 [35.9%]; females = 25 [64.1%]) participated in the sessions. Two questionnaires were administered to all participants for demographic information, food consumption patterns, attitudes toward health and nutrition, and nutritional risk screening. Data were analyzed via frequencies, cross-tabulations, and nonparametric correlations (Spearman's rank).
Results: Seventy-four percent of participants reported their self-rated health as good-excellent compared with others their age. Eighty-nine percent of the sample reported that their diet was as healthy as or healthier than that of others their age. Individuals who rated their health as good-excellent also rated their diet as healthy or healthier compared with others their age (r_s=0.355, p=0.036). Nutritional risk is correlated with annual income (X^2=12.671, df=6, p=0.049), importance of healthy food consumption (X^2=10.769, df=4, p=0.029), importance of eating nutritious foods (X^2=8.285, df = 3, p=0.040), and daily food eating patterns (X^2=15.897, df=3, p=0.001).
Implications and Conclusions: The data will assist in the development of nutrition intervention programs to improve the nutritional well-being of older adults who are at nutritional risk and reside in rural areas. (*Funding provided through a sub-grant from New Emerging Team [NET] Grant, CIHR*)

Nutritional contribution of white potatoes and specifically french fries in the diets of US children: NHANES 2003-2006

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Objective: The purpose was to understand the current nutritional contribution of white potatoes, including French fries, to the diet of US children.
Methods: Using 24-hour recall data from the National Health and Nutrition Examination Survey (NHANES), 2003 to 2006, we determined the contribution that white potatoes (excluding potato chips) and specifically French fries make to the diets of children aged two to 18 years (n=7332).
Results: Average consumption of white potatoes and French fries was 31.7 and 13.3 g/day per capita, respectively, and 89.8 and 72.1 g/day for consumers only, respectively. In consumers, white potatoes made a significant contribution (percentage of intake in parentheses) of the following nutrients: fibre (18.7%), potassium (16.9%), vitamin B6 (15.5%), copper (13.0%), and magnesium (10.7%). White potatoes provided 8.4%, 9.4%, 8.9%, and 6.1% of calories, carbohydrates, total fat, and saturated fat, respectively, in consumers; additionally, white potatoes provided meaningful amounts (≥5% of intake) of vitamin K, vitamin C, thiamin, niacin, phosphorus, vitamin E, iron, and folate. French fries provided 10.2%, 9.3%, 13.9%, and 9.8% of calories, carbohydrates, total fat, and saturated fat, respectively, while making a significant contribution of the following nutrients in consumers: fibre (19.4%), potassium (16.1%), vitamin B6 (14.7%), vitamin K (14.4%), magnesium (10.5%), and copper (10.0%). Additionally, French fries provided meaningful amounts of vitamin E, thiamin, niacin, phosphorus, iron, and folate. Sodium from French fries was only 4.4% of total sodium intake.
Implications and Conclusions: White potatoes, and specifically French fries, provide significant quantities of nutrients in the diets of American children.

Vitamin D intake and recommendations for long-term care residents

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Purpose: Our goal was to assess the dietary vitamin D intake among elderly residents in a long-term care (LTC) veterans' facility and make recommendations about vitamin D supplementation.
Methods: Three-day tray audits were completed for all meals and snacks, including nutritional supplements such as BOOST® and an in-house high-protein pudding. The daily vitamin D intake for each resident was calculated and compared with the recommended Adequate Intake (AI) amount of 600 IU. The vitamin D content of foods was calculated using the Canadian Nutrient File and product labels. Resident charts were reviewed for micronutrient supplements and diagnoses.
Results: The average amount of vitamin D available to residents (n=30) was 414 IU daily. The amount of vitamin D consumed by residents was an average of 295 IU each day. Those who were provided with nutritional supplements as part of their meals and snacks received an average of 480 IU of vitamin D each day; however, they consumed just 357 IU. Those who did not receive nutritional supplements as a part of their meals and snacks received an average of 245 IU of vitamin D and consumed 207 IU. Micronutrient supplementation varied in the amount prescribed from >600 IU (43%) to <600 IU (30%) to none (27%). Chart reviews showed that one-third of residents in the study had a diagnosis of osteoporosis, osteoarthritis, falls, or fractures.
Conclusions: None of the study participants consumed the recommended AI of 600 IU at any point during the study; on average, participants consumed just 49% of the recommended AI. The results of this study suggest that all LTC residents require vitamin D supplementation of at least 400 IU to achieve the current recommended AI of 600 IU.

Canadian eating habits and nutrient intakes: confirming what we know, identifying action items

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Objectives: Intakes and food sources of nutrients were determined in the Canadian population, and differences for Quebec were examined.
Methods: A unique methodology to assess food consumption patterns, developed in the United States by General Mills, has been adapted for the Canadian market. Three datasets are combined—Nielsen Panel Data/National Eating Trends for seven-day food records from households representative of the Canadian population, 1999-04 National Health and Nutrition Examination Survey data for age- and sex-specific serving weights of foods, and Canadian Nutrient File 2007b and software from the University of Minnesota for nutrient profiles of each food consumed—to examine "usual" consumption of food categories, specific foods, and/or specific brands of foods, and to determine dietary differences between groups.
Results: Canadians' macronutrient intakes are within the proportions recommended, but Canadians are falling far short of fibre recommendations. In terms of micronutrients, over-intake of sodium and under-intakes of several vitamins and minerals relative to targets, notably vitamins A, C, D, and E, and calcium and magnesium, are evident. An examination of food sources for the energy and nutrients of concern in the diet suggests that Canadians may have some room to reduce calories from foods outside *Canada's Food Guide* and to increase servings of vegetables, fruit, and milk products. These trends are generally consistent between the Quebec population and Canadian population as a whole, with a few notable differences, particularly in food selection.
Implications and Conclusions: This information is instructive as a basis for actionable nutrition advice for populations and individuals, for the examination of policies relevant to the food supply (e.g., fortification), and for the design of food products to promote the nutrition status of Canadians.

Research Methodologies

Comparison of food record, 24-hour recall, and digital photography to assess energy intake and nutritional status

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Objectives: Accurate assessment of energy intake (EI) is integral to nutrition evaluation and monitoring. Usually self-reported EI methods including food records (FR), 24-hour recalls (24HR), and food frequency questionnaires are used. The most accurate way to measure EI is still not established, and most energy balance (EB) studies indicate under-reporting of EI intake when self-reported EI methods are used. Digital photography (DP) may provide an easier and more accurate way to collect and assess EI data. This study determined the comparability of three EI methods: FR, 24HR, and DP.
Methods: Kinesiology students (n=19) received training, practice, and feedback sessions before completing a seven-day FR, which included two days of DP with subsequent 24HR. All records were verified and entered into FUEL Nutrition Software by a registered dietitian. Between-methods comparison of total energy (calories), carbohydrate, protein, and fat was done.
Results: No significant differences for EI or macronutrient content were found between the three EI methods, except for fat content being lower for DP, regardless of gender. Substantial within-individual variability was present. Most participants preferred DP over FR as it was a quick and easy method for recording their EI.
Implications and Conclusions: Portion size estimation, motivation, and memory often affect accurate EI reporting; DP appears to eliminate or reduce those potential sources of error, which may result in improved intervention outcomes as a result of more accurate nutritional assessments. All methods could be used together to enhance understanding of an individual's dietary intake. Any of the three methods could be used independently; however, further research is required before recommending that the FR method be replaced with DP.

The refinement of content analysis instruments and their application in nutrition

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Purpose: Pilot testing was completed with a coding sheet and code book to be employed in research examining nutrition messages in Canadian women's magazines.
Process: Utilizing available literature and books related to content analysis, we systematically developed and revised both the coding sheet and the code book to capture all explicit messages (i.e., precisely and clearly expressed and mentioning a nutrient of interest) and implicit messages (i.e., with an implied although not directly expressed relationship between a nutrient and the material presented) related to four micronutrients of interest (calcium, vitamin D, iron, or folate) within advertisements, editorials, images, recipes, articles, or letters to the editor.
Project Summary: So that rigorous instruments could be developed for use by any coder, the following criteria were selected, defined, and assessed for each message: the magazine (*Chatelaine*, *Canadian Living*, or *Homemakers*), the magazine issue year and month, the identification, the coder, the nutrient, the format, type, features, and purpose, what the nutrient was presented in relation to, the population for which the message was intended, the reference, the food source of each nutrient, the message space occupied on each page, the accuracy of the content and congruence with Canadian nutrition policy, and ease of understanding.
Recommendations and Conclusions: As a result of our pilot study, some of the criteria that were originally perceived to be important and mutually exclusive were deemed to be redundant, and the instruments have been modified to reflect this observation. Content analysis tools require extensive testing before they can be utilized to ascertain key messages from print media.

Vulnerable Groups and Their Nutritional Needs

Impact evaluation of *The Cost of Eating in BC* report

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Objectives: The objective of the evaluation was to determine the uses and reach of *The Cost of Eating in BC* report.

Methods: The evaluation involved an electronic survey using a snowball distribution approach (through dietitians working in public health, agencies who endorsed the report, and British Columbia [BC] and national connections who had contacted Dietitians of Canada about the report) and an electronic citation search.

Results: Survey respondents (n=97) used the report for their advocacy efforts, and in media and internal reports with a reach of at least 500,000 potential readers. Both electronic and print formats were well received: 87% of respondents (including registered dietitians in BC, dietitians working in public health, social workers, staff of non-government organizations, newspaper and radio reporters, educators in dietetics, social work, or nursing, politicians and government ministry staff, and community advocates) indicated they read the report and forwarded it or presented the findings at meetings or consultations to support their advocacy efforts. The citation search (using Google) yielded 453 hits. These were categorized as within and beyond BC, and by use of the report (to raise awareness, to support users' views/agenda, and as calls to action). The reach of the report through these varied connections is not quantifiable but would be in the millions of readers.

Implications and Conclusions: The main effect and strength of the report were raising awareness and providing solid evidence in support of advocacy efforts. Barriers to use were related to timing of the report's release, and the need for more regional information. Results showed widespread acceptance of the report content and format as a trustworthy, reliable source of information to support varied advocacy efforts.

The effect of a low glycemic index diet on blood glucose control in women with gestational hyperglycemia

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Objectives: This pilot study examined the effect of a low glycemic index (LGI) diet on maternal glycemic control, maternal and neonatal outcomes, and participants' perception of the diet in women with gestational hyperglycemia.

Methods: Participants (n=47) were randomized into the control group or LGI group at 28 weeks of gestation and provided with group-appropriate food-substitution lists, $20 of food/week, and blood testing strips. Food and strips were provided to facilitate study participation and promote standard care. Measurements obtained from participants' medical charts included maternal self-monitored blood glucose (SMBG), weight gain, demographic data, and infant birth weight. Fasting blood was collected at baseline and one month post-intervention. A combined-form questionnaire and diet record were collected weekly.

Results: Diet GI was higher with the control (58 ± 0.5) than with LGI (49 ± 0.8) (p=0.001). Glycemic control improved in both groups, and there was no significant difference between groups. The SMBG after breakfast was directly related to pre-pregnancy body mass index (BMI) in the control group but not the LGI group (p=0.021). Mean infant birth weight with the control was 206 g higher than with LGI (NS). Study foods were rated good and participants were willing to consume them post-intervention.

Conclusions: Use of an LGI diet in this sample was feasible and influenced the relationship between pre-pregnancy BMI and postprandial BG. A larger study will be done to test the effect of an LGI diet on birth weight.

"Thought About Food?" tools for influencing policy on food security

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Purpose: This presentation highlights several tools, two of which are bilingual, designed to engage those from diverse backgrounds to raise awareness about food security and, ultimately, build capacity to influence policies and systems to address food security issues. The presentation showcases examples of how these tools have been used in Nova Scotia (NS) and across the country to support sustainable community approaches to food security.

Process or Content: Since 2001, partners, including women with experience of food insecurity, family resource centres/projects, community-based organizations, government, and academic and health and social services professionals, have engaged in a number of projects employing participatory approaches to address the problem of food insecurity in NS.

Project Summary: The development of several "Thought About Food?" tools and resources enabled the partners to take action on food security. Examples of these tools and resources are a participatory model and tools for ongoing monitoring of the affordability of a nutritious diet, a workbook on food security and influencing policy, a DVD entitled *Food Security: It's Everyone's Business*, and a food security policy backgrounder and lens for policy-makers to assess the impacts of policy and budget decisions on food security.

Recommendations and Conclusions: These tools provide a mechanism for strengthening collaborative capacity at local, provincial/territorial, and national levels to address food

insecurity. This work has influenced policy and practice within NS and has been used by many groups in other jurisdictions working on policy and system-oriented approaches to food insecurity.

What policy strategies are appropriate for promoting food security in remote First Nations communities?

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Purpose: Recommendations were generated for policy strategies to promote food security in remote First Nations (FN) communities. This was accomplished by applying the results of a systematic literature review to the Food Security Reference Group's "conceptual model for promoting food security in FN and Inuit communities."

Content: A systematic literature review was conducted to address the following questions: Why is food security important and relevant for Aboriginal Canadians? What do we know/need to know about food insecurity for Aboriginal Canadians and specifically remote FN communities? How can we apply what we know/do not know to current policies? What are potential policy strategies for food security in Aboriginal populations, and how can we apply these to a remote FN context? English-language peer-reviewed publications, reports, and grey literature were gathered from a search of electronic academic databases; selected Aboriginal, food security, and health websites; Google and Google Scholar; key authors; and non-indexed Aboriginal journals. The search included documents from North America and Australia, and search strings of keywords covered food security, policy, and related terms.

Project Summary: Findings from the literature review were synthesized according to implications for the development, implementation, and evaluation of food security policies. Potential food security policies were categorized according to the points of intervention from the Food Security Reference Group conceptual model.

Recommendations and Conclusions: Given their susceptibility to food insecurity and their unique and threatened food system, remote FN communities require special considerations for policy strategies. The recommendations generated through this intensive process may help FN decision makers to adopt policy strategies to address the compelling problem of food insecurity. (*Funding provided by CFDR and CIHR*)

Profil alimentaire des écoliers de Nouveau-Brunswick

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But : Tracer le profil alimentaire des écoliers des districts scolaires 1 et 2 du Nouveau-Brunswick. Objectifs; Évaluer chez les écoliers : les caractéristiques socio démographiques; la participation à la planification/préparation des repas; les habitudes alimentaires et le niveau de conformité de l'alimentation au *Guide alimentaire canadien* (GAC).

Méthodes : Tous les parents des enfants des districts scolaires 1 et 2 ont été sollicités à participer à l'étude, 296 parents ont accepté. Un questionnaire envoyé par les enseignantes à la maison a permis de recueillir les informations recherchées.

Résultats : Un peu plus de la moitié d'écoliers (58,8%) était âgés de 10-13 ans; 12,2% et 29% étaient âgés de 6-9 et 14-18 ans respectivement. Le français était la langue maternelle de 65% d'écoliers, autant des filles que des garçons de 10-13 ans parlaient l'anglais ou le français comme langue maternelle. Soixante et dix pourcent d'écoliers appartenaient à une famille intacte, 18% à une famille monoparentale. Presque tous (97%) consommaient des collations, 60% ne prenaient aucun supplément vitaminique. La majorité (82,5%) déjeunait tous les jours, soit en famille (23,5%) ou seul (22%). Cinquante-huit pourcent soupaient en famille à tous les jours et 34% seul quelque fois par semaine. Près 48% d'écoliers participaient à la planification/préparation des repas. Le niveau de conformité au GAC est inadéquat, les enfants de tous âges consommaient moins de légumes/fruits et plus de viandes que ce recommandé, ceux âgés de 6-9 et 14-18 ans moins de produits céréaliers et ceux de 10-13 et 14-18 ans moins de laits et substituts.

Conclusions : Ces résultats démontrent l'importance de faire des campagnes de promotion du GAC auprès de cette clientèle.

Nutrition Education

Perceptions of antioxidants in women attending a breast cancer risk assessment clinic

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Objectives: This qualitative study examined women's perceptions about the meanings, functions, sources, and health effects of antioxidants.

Methods: Seventy-nine women attending an Odette Cancer Centre breast cancer risk assessment clinic were recruited through convenience sampling to participate in semi-structured interviews. Data were analyzed using thematic content analysis.

Results: Most participants (98%) had heard the word "antioxidant" before, and 84% accurately identified one food source. The media were participants' primary source of antioxidant information. Participants' perceptions of antioxidant functions fell into two categories—those that take place before and after a health threat. Two themes described the former category: "prevention… a best defense mechanism" and "to boost strength and good health." Three themes captured the latter category: "fights diseases, free radicals, and cancer," "acts as a purifier or cleanser," and "undoes the harm that I am consciously or unconsciously doing to my body." Participants were hungry for answers to questions, including what antioxidants are, why they need them, how much they need, and where antioxidants are found.

Implications and Conclusions: Our findings can support nutrition educators in developing materials that translate evidence on the following topics to meet the information needs of women attending breast cancer risk assessment clinics: reliable sources of antioxidant information, a definition of antioxidants and their functions, an explanation of tolerable upper limits and potential health effects of excess supplementation, the total antioxidant capacity of common foods, and an explanation of the role of antioxidant-rich

foods as part of the plant-based diet recommended to reduce chronic disease risk.

Promoting comprehensive programming for the risk reduction and management of osteoporosis in the Chinese- and English-speaking populations

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Purpose: The goal of the Bones for Life program is to increase the public's knowledge and awareness of bone health and osteoporosis in relation to risk factors, signs and symptoms, early diagnosis, treatment, and prevention, and to minimize the risk of falls and bone fracture incidents to help seniors maintain their independence.
Process: Osteoporosis is often known as the "silent thief" because bone loss occurs without symptoms. Over 80% of all fractures in people over age 60 are osteoporosis related. Physical activity, combined with adequate calcium and vitamin D, plays an important role in this process. The Bones for Life program is a partnership between Osteoporosis Canada (OC) and South Riverdale Community Health Centre. The program integrates OC's Break Through program, developed through funding from the Ontario Osteoporosis Strategy, and additional components developed by the Community Health Centre.
Project Summary: The Bones for Life program totals seven sessions covering various aspects of bone health, including physical activity, medications and drug treatments, nutrition, self-management and falls prevention, and home safety. Participants also partake in gentle physical activity, cooking a bone-healthy snack, and sharing stories. The knowledge, awareness, and skills gained were evaluated through pre-post program testing and six-month follow-up. Of the participants who attended at least 80% of the seven sessions (five sessions), 100% (n=16) in the Chinese group and 100% (n=9) in the English group demonstrated increased understanding of bone health; however, the degree of increased understanding varied among participants. At the six-month follow-up, 80% of the participants in both groups stated that they had made at least one change in their bone-healthy lifestyle since joining the program.
Recommendations and Conclusions: Through comprehensive programming, Bones for Life participants gain knowledge, self-efficacy, and skills to manage their bone health.

Nutrition education and cooking programs for adults with mild to moderate developmental disabilities: a needs assessment

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Objectives: Needs and preferences were explored among agency managers, support workers, and adults with mild to moderate developmental disabilities for a nutrition education and cooking program, and recommendations were made for its development.
Methods: Thirty adults with mild to moderate developmental disabilities participated in individual interviews; seven managers and 21 support workers from five agencies in Hamilton, Ontario, took part in three focus group discussions. Elements of grounded theory, such as concurrent data collection and analysis, data saturation, a constant comparative method, and triangulation of informants and analysts, were used to guide the research.
Results: All participants indicated a need for nutrition education and cooking programs for this population. Agency managers focused on the overall vision of the program; support workers concentrated on program content and teaching strategies; individuals with developmental disabilities expressed personal needs, preferences and concerns. Seven major themes were drawn from the three data sources: poor eating habits, safety concerns, low transferable skills, social relationships, limited funding, staff training and development requirements, and resource needs. Emergent themes were framed within individual, interpersonal, organizational, community, and public policy levels of the Social Ecological Model. The creation of a logic model provides a framework for the program.
Implications and Conclusions: Dietitians can play key roles in the development, implementation, and evaluation of nutrition education and cooking programs for this population. The collaboration of multiple community partners in delivering services will be important. At the policy level, it will be necessary to address the needs of individuals with aging caregivers and improved access to registered dietitians for this population.

"It's a good guide, but…": perceptions of *Canada's Food Guide to Healthy Eating* among urban Ontario adults

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Objectives: The objective of this research was to develop a conceptual analysis of the meaning of *Canada's Food Guide to Healthy Eating* among urban adults.
Methods: Twenty men and 20 women aged 24 to 71 were purposively recruited in two Ontario cities. They participated in individual in-depth interviews in which they discussed their understanding, beliefs, and use of the food guide. Transcribed interviews were analyzed using a constant comparative method.
Results: Three themes (relevance, trust, and resentment) delineated the participants along a continuum of responses to the food guide (accept, negotiate, ignore, reject, and resist). Participants who accepted the food guide welcomed it as relevant and trustworthy advice. Those who displayed a negotiated response also trusted it, but most searched elsewhere for more relevant information. Several in this category could not comply with the recommendations because of financial constraints. Participants who ignored the food guide believed it was trustworthy but irrelevant. Those who rejected it were skeptical of the recommendations, perceiving that marketing boards and the food industry had influenced the content. Participants who resisted the food guide's advice believed that following it would bring harm, rather than health.
Implications and Conclusions: Appreciation of a continuum of responses toward this type of dietary advice can promote

more effective practice. Including the public in discussions about the legitimacy of stakeholders involved in the food guide's development may increase its relevance and trustworthiness. These findings also highlight the need for a national food and nutrition policy, of which food guides are but one component.

Examining breastfeeding promotion practices through the lens of health literacy

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Objective: National surveys indicate that 48% of Canadian adults over age 16 have low literacy skills, with even more having low health literacy according to the Canadian Council on Learning (2008). At a time when health literacy is emerging as a public health concern in Canada, this research examines the extent to which professional and lay practitioners incorporate dimensions of health literacy in their promotion of breastfeeding.

Methods: This qualitative case study was set in a health district in northeastern Nova Scotia where breastfeeding initiation rates are lower than national averages and where health literacy has been identified as a population health issue. In-depth face-to-face interviews were conducted with 30 professional and lay practitioners. Practices in one hospital-based and two community-based settings were observed. Data were analyzed for themes, using an iterative process of constant comparison. Interview informants and mothers provided feedback on preliminary findings in focus group interviews.

Results: Practitioners did not share a common understanding of health literacy—a finding that parallels those in the literature. Practitioners' discomfort in identifying clients with low literacy skills reflected concerns about the stigma associated with low literacy and about incorporation of health literacy into their breastfeeding promotion practice. A focus on the functional health literacy deficiencies of clients, not on their capacities, appeared limiting in addressing the complexities of breastfeeding promotion.

Conclusions: These findings have implications for breastfeeding promotion, including the engagement of practitioners in critical reflection of their breastfeeding promotion practices through the multi-faceted lens of health literacy.

Dietetic Practice and Education: Innovative Approaches

Film in nutrition education and dietetics training

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Purpose: This presentation describes my experiences as a documentary film student and filmmaking plans for use in nutrition education and dietetics training. I embarked on the study of documentary film to learn skills that would allow me to broaden the reach of research findings and nutrition education messages.

Process or Content: Filmmaking stages (development, preproduction, production, post-production, and distribution) relate to the steps involved in conducting practice-based dietetic research (defining a research question, preparing for data collection, data collection, analysis and interpretation, and dissemination/knowledge transfer).

Summary: Film has myriad applications in nutrition education and dietetics training. Film may be sponsored or dietitian-auteur works presenting the filmmaker's point of view. Sites such as currenttv.com, youtube.com, and rocketboom.com offer locations to broaden the reach of nutrition messages by posting short films. In dietetics training, film can bring the outside world to the classroom, raising awareness of what students can expect in the work world they are about to enter and the types of situations they will encounter.

Recommendations and Conclusions: Film uses in nutrition education and dietetics training include celebrating food and eating, providing information, offering instruction/demonstration, raising awareness, advocating for social change, or any combination of these. Dietitians interested in research and education are encouraged to study filmmaking or to partner with filmmakers to broaden the reach of their efforts.

Stirring the senses: storytelling to enhance teaching and learning

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Purpose: Educational strategies often include one or more of the cognitive, affective, and psychomotor learning domains to enhance the uptake of knowledge, attitudes, and skills, respectively. It is probable that the more one integrates these learning domains while teaching, the greater the likelihood of student retention of the educational concepts covered. This notion is exemplified by Edgar Dale's "cone of experience." Originating in 1946, this classic construct illustrates that the more a learning experience emulates a real-life event, the more likely the information will be remembered. Presumably, purposeful inclusion of stories that encapsulate the emotional, sensory, and cognitive elements of real-life events would also serve to enhance student learning experiences and outcomes. The purpose of this presentation is to review the potential benefits of storytelling in teaching and learning.

Process: Informal process and outcome evaluations of students from various educational and work settings over the past two decades have provided a personal referent for the benefits of storytelling in student learning. Settings have spanned higher educational institutions, hospitals and public health centres, and diverse local, national, and global communities. Examples of stories that have resonated with students are provided in this presentation. Reported benefits to student learning are also discussed, including retention, synthesis, richness, and interest.

Project Summary: Nutrition educators and students may benefit from collating stories—old and new—as they progress in their education and subsequent practice, with the aim of enhancing teaching and learning.

Recommendations and Conclusions: Further quantitative and qualitative research is recommended to develop a more solid evidence base around the benefits of storytelling in education. Documenting and discussing other benefits of

storytelling, including its potential to influence policy and practice, are also recommended.

Canadian dietitian preceptors' perceived knowledge, skills, attitudes, and training

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Objectives: The purpose of this study was to learn about the perceived knowledge, skills, attitudes, and training needs that Canadian dietitian-preceptors identified would assist them in supporting learners, and to identify barriers to dietitian-preceptor training.

Methods: This study used a progressive study design involving the development and administration of two online surveys. Findings from the first informed development of the second survey. Results were tabulated as percentages and chi-square analysis was conducted ($p<0.05$) to determine relationships between age of preceptors and years of practice and the responses to the statements.

Results: Over 94% of respondents agreed that preceptors should be knowledgeable about assessing learning needs, promoting skill and development, and evaluating a learner's progress. Fifty-two percent of respondents remained neutral on the skill statement that preceptors should be able to write for publication (lay and professional audiences). Respondents neither agreed nor disagreed with the statement that dietitians-preceptors should be certified (through non-credit preceptor training or courses). Eighty-five percent of respondents disagreed with the statement that preceptors should have a graduate degree.

Impact and Conclusions: These results will help identify training/professional development content and formats about preceptoring, and will inform advocacy efforts for support of dietetics training programs.

Spotlight on food systems: using service learning to augment undergraduate nutrition curricula

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Purpose: Service learning was used in undergraduate nutrition courses to highlight local food systems.

Process or Content: Recently, Canadian and American dietetic conferences have discussed the need to refocus curricula on foods and food systems. This need guided a collaborative project between VOICES Antigonish, a local community food network, and members of the Department of Human Nutrition, St. Francis Xavier University. Service learning, an experiential learning process, provided the framework for course-based projects, which were determined by VOICES to meet their needs.

Project Summary: Five student groups from two undergraduate courses, Community Nutrition (HNU 365) and Food Availability (HNU 405), worked with VOICES on a community-defined problem, which emphasized making connections between classroom theory and real-world experience. Projects included development of awareness-building and advocacy tools, organization of a community forum to discuss local food systems, and contributions to a community–university research project to determine local food access in downtown Antigonish. Student evaluation was based on a written project report emphasizing reflection, experience sharing in classroom discussions, and feedback from VOICES participants.

Recommendations and Conclusions: This service learning technique garnered enthusiastic responses from all partners, with VOICES committing to further service learning placements in coming years. Students and instructors found the project cemented understanding of working in partnership with a community agency and provided links between theory and practice. Challenges for all partners involved the time commitment required to work effectively and collaboratively. Service learning and community–university partnerships are key tools for integrating foods and food systems into classroom instruction for future nutrition professionals.

A process for enhancing supports for BC dietetic intern research: a vitamin research initiative

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Purpose, Process, or Content: The challenges involved in providing interns with a quality research experience are many: time limitations, variable student and preceptor research knowledge and skills, lack of project funding, complex study approval requirements, and limited university-based assistance. A unique vitamin-related funding initiative provided an opportunity to enhance internship research supports.

Project Summary: For 2008 to 2009, interns (n=30, nine research groups) are required to conduct their research on vitamin-related topics. A province-wide internship research advisory group was formed and a consultant hired to liaise with students and preceptors to assess, document, and address their learning needs. A letter of intent process was introduced to provide peer review for proposals. During the initiative, students and preceptors have sought advice on meeting university and health authority approval requirements, as well as specific issues related to all phases of the research process. They have expressed appreciation for the "just in time" learning approach used (in contrast to having a standardized research education series). Learning needs have been addressed using e-mail correspondence and conference call meetings. The issues/questions raised are being used to revise internship research documents and pre-internship training. A video-conference research symposium is planned to disseminate results and provide continuing education.

Recommendations and Conclusions: Dietetic practice-based research is a complex undertaking. Supports are needed to ensure that interns have a positive learning experience and that the studies produced are of sufficient quality to inform dietetic practice. We intend to retain many key features of this initiative and are exploring how we can enhance university-based supports for internship research. (*Funded by the Vitamin Class Action Fund*)

Clinical Research

The effects of fibre fortification on gastrointestinal function and energy intake in children with a history of constipation

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Objectives: Constipation is a common problem in children and may be related to low fibre intakes. The objectives of this study were to determine children's acceptance of foods fortified with pea hull fibre or inulin, and to determine the effect of fibre fortification on gastrointestinal function, abdominal discomfort, and energy and fibre intakes of children with a history of constipation.

Methods: Participants (two to 10 years old, n=13) were randomly assigned to three-week fibre and placebo periods in a cross-over design. Pea hull fibre (4.0 to 7.6 g/day; 3.6 to 6.8 g/day fibre) was incorporated into snack foods and inulin (5.0 g/day; 4.5 g/day fibre) was added to beverages; the placebos were non-fortified snacks and maltodextrin (5.0 g/day). Stool frequency, stool consistency, abdominal pain, and snack and inulin intake were documented.

Results: Exclusion of one subject with diarrhea-type stools led to a significant difference between groups for stool frequency (n=10, 0.54 ± 0.18 vs. 0.67 ± 0.22, p=0.002). Stool consistency, using the Bristol Stool Form Scale, showed no differences between groups (p=0.379), and there was no difference in abdominal pain (p=0.129). Inulin (91%) was consumed more consistently than the fibre snacks (77%). Intake of the snacks and supplements was not different between the placebo and treatment. Energy intake was significantly lower during the fibre vs. placebo periods (n=12, 1307 ± 296 kcal/day vs. 1441 ± 285 kcal/day, p=0.035).

Implications and Conclusions: The additions of pea hull fibre to snack foods and inulin to beverages were well accepted by children and no adverse effects were reported. Fibre fortification may provide an alternative means to treat pediatric constipation and may lower energy intakes.

Dietary vitamins C and E and carotenoids intake and risk of renal cell carcinoma

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Objectives: The association between dietary intake of vitamins C and E and carotenoids and the risk of renal cell carcinoma (RCC) was examined.

Methods: Between 1994 and 1997, in eight Canadian provinces, mailed questionnaires were completed by people with 1138 incident, histologically confirmed cases of RCC and 5039 population controls. Measurement included information on socioeconomic status, lifestyle habits, and diet. A 69-item food frequency questionnaire provided data on eating habits two years before data collection. Odds ratios (ORs) and 95% confidence intervals (CIs) were computed using unconditional logistic regression.

Results: Dietary intake of β-carotene and lutein/zeaxanthin was significantly inversely associated with the risk of RCC. The ORs for the highest versus the lowest quartile were 0.72 (95% CI, 0.58-0.90) and 0.77 (95% CI, 0.62-0.95), respectively. The significant inverse association with β-carotene and lutein/zeaxanthin was more pronounced in women and in overweight or obese subjects. The relation of β-carotene to RCC was stronger in ever smokers, but that of lutein/zeaxanthin was stronger in never smokers. No clear association was observed with vitamin C and E, β-cryptozanthin, and lycopone.

Implications and Conclusions: The findings provide further evidence of dietary factors related to RCC risk. A diet rich in β-carotene and lutein/zeaxanthin may play a role in RCC prevention.

Dietary iron sources and daily iron intakes in women with human immunodeficiency virus

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Objectives: Iron deficiency anemia (IDA) is a common condition in women with human immunodeficiency virus (HIV), but its relation to dietary iron intake has not been investigated. The objectives of this study are to identify the prevalence of IDA, and to determine total dietary iron intake and food sources in HIV-positive women.

Methods: Women were recruited from St. Paul's Hospital, Oak Tree Clinic, and Vancouver Native Health Clinic. Inclusion criteria were confirmed HIV status, age >19 years, and no current pregnancy. The iron food frequency questionnaire was used to determine dietary iron intake, and IDA was defined as hemoglobin <120 g/L and transferrin saturation <16%.

Results: Preliminary results are available for 31 subjects, but data collection is ongoing. Of the women, 45% had IDA, but only 29% took iron supplements; 87% had iron intakes <18 mg (excluding supplements), with a mean iron intake of 13 mg/day. The majority of dietary iron sources came from grains (51%), followed by meats (28%), fruits and vegetables (18%), and dairy products (3%). Of the women, 52% used food assistance programs.

Implications and Conclusions: These results indicate that IDA is a common problem in women with HIV and that inadequate dietary iron intake prevails. Despite the fact that meat products are the best dietary iron source, this group obtains most dietary iron from grain products. This may indicate that socioeconomic factors such as food insecurity are implicated in limiting access to iron-rich foods. Further research is needed to determine the link between dietary iron intakes and IDA persistence in women with HIV, when controlling for other predictors.

The effect of relocation to a personal care home (PCH) on the nutritional status, eating habits, and nutrition attitudes of adults aged 60 years and older

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Introduction: Inter-institutional relocations, intra-institutional relocations, and relocation from home to a personal care home (PCH) are stressful experiences and often occur

at a traumatic moment in life. The effect of relocation to a PCH on nutritional status is unknown, yet under-nutrition is common among PCH residents.
Objectives: We explored the effect of relocating to a PCH on the nutritional status, eating habits, and nutrition attitudes of adults aged 60 and older.
Methods: Fourteen Caucasian older adults (female=57%) with an average age of 83 (standard deviation=9.79) consented to participate. Sixty-four percent of participants experienced inter-institutional relocation. Anthropometric, biochemical, clinical, and dietary information was collected at time points A (two to three months following relocation) and B (six to seven months following relocation) through face-to-face interviews, medical chart reviews, and communications with nursing staff.
Results: At time B, cognitive function declined ($z=-2.185$, $p<0.05$) and the number of medications prescribed increased ($z=-2.00$, $p<0.05$). At both time points, 25-hydroxyvitamin D levels were insufficient among 83% of participants. Mean serum albumin was 34.4 ± 7.2 g/L at time B and the prevalence of nutritional risk increased from 57% to 77%. Dietary intake was inadequate according to *Canada's Food Guide* recommendations. Nutrition attitudes did not change.
Implications and Conclusions: Six months following relocation, nutritional risk was more prevalent, with early evidence of possible protein–energy malnutrition. Nutritional inadequacies may result if dietary intakes do not improve. A collaborative approach is needed to assess environmental, psychosocial, and nutritional factors that contribute to poor dietary intake and to develop an intervention program.

Vitamin D status in veterans living in a long-term care facility

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Introduction: Optimal vitamin D status is defined by serum 25-hydroxyvitamin D (25(OH)D) >30 ng/mL and severe deficiency by 25(OH)D <6 ng/mL. Food and supplemental intake and sun exposure influence vitamin D status. These often are not self-selected by institutionalized elderly people.
Objectives: Data were obtained on serum values of vitamin D (25(OH)D) and health biomarkers. Theoretical food selection, preferences, anthropometry, and functional and cognitive status were assessed in institutionalized veterans.
Methods: This prospective observational study occurred in spring and summer 2008. Subjects were assessed at baseline, eight weeks, and 16 weeks for weight, prescriptions, supplements, and serum chemistry (glucose, calcium, albumin, total proteins, parathyroid hormone, and osteocalcin), and a complete blood count also was done. Age, height, and medical status were documented. Lipid profiles, Mini-Mental State Examinations (MMSE), and Frail Elderly Functional Assessment questionnaires were obtained at baseline and final evaluations. Menus of the three days before each blood sampling were analyzed for variety and vitamin D content.
Results: Forty male participants were recruited. At baseline, the average age was 85.2 ± 3.3 years, weight was 76.0 ± 3.3 kg, height was 1.70 ± 0.09 m, body mass index was 26.12 ± 4.14 kg/m^2, and MMSE was 23 ± 7. Routine blood chemistry was in the normal ranges. Serum 25(OH)D was 23.6, 27.3, and 29.6 ng/mL at baseline, midway, and final assessments, respectively. Baseline and final levels are statistically different ($p<0.01$). The most important sources of vitamin D were milk and food supplements. Participants consumed eggs nearly five days/week.
Implications and Conclusions: The subjects were relatively healthy elderly men presenting a deficient vitamin D status. An increase in 25(OH)D level was observed in this population, possibly because of sunlight exposure during the summer.

Enhancing Dietetic Practice and Professional Development

Prenatal nutrition: process to revise national guidelines on iron, folate, fish and omega-3 fats

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Purpose: The national prenatal nutrition guidelines on iron, folate, fish, and omega-3 fats were reviewed and updated, to ensure they are consistent with the Dietary Reference Intakes and *Eating Well with Canada's Food Guide*.
Process: The process to revise the prenatal nutrition guidelines was conducted in an open and transparent manner. Draft content was prepared with assistance from an expert advisory group representing various sectors: public health, academia, primary care, and community health. Stakeholders were provided with an opportunity to review draft content and provide feedback on the proposed revisions through an online consultation process. Registered dietitians provided the majority of consultation responses. Stakeholder feedback was considered in finalizing the prenatal nutrition guidelines and web-based content launched on the Health Canada website in April 2009. To inform dietitians, physicians, nurses, midwives, and pharmacists of the web release, a public notice postcard was distributed broadly through journal inserts and direct mailing.
Recommendations and Conclusions: Folic acid supplementation with a multivitamin–mineral (MVM) supplement at a daily dose of 400 µg continues to be recommended for neural tube defect risk reduction and to help meet higher needs of pregnancy. The daily MVM supplement should also provide 16 to 20 mg of iron throughout pregnancy. This level of iron supplementation was set based on dietary intake modelling. It is expected that this amount of iron will adequately supplement current dietary iron intake of Canadian women. Additionally, women are encouraged to continue to eat at least 150 g of cooked fish each week during pregnancy as part of a healthy pattern of eating, while limiting exposure to methyl mercury from certain species of fish. Fish contains omega-3 fats and other important nutrients for pregnancy.

Toward evidence-based guidance for nutrition education based on consumer needs and preferences: emergence of the Collaborative Client-Centred Nutrition Education conceptual framework

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Objectives: We report the final data collection phase of a study designed to develop evidence-based, client-centred nutrition education guidelines based on the nutrition education needs and preferences of consumers.

Methods: Two-part telephone discussion groups were conducted with Canadian dietitians with experience in nutrition education (n=18; four groups). Dietitians applied to participate in response to broadcast e-mail invitations. Groups were organized to ensure practice area, practice duration, and geographical diversity. Calls were recorded, transcribed, and analyzed using content categorization. During the first call, groups discussed consumer survey findings from an earlier phase of the project and provided input into the development of practice points for nutrition education. During the second call, participants shared feedback on the draft practice points document that emerged from analysis of transcripts from the first call.

Results: Discussions revealed the complexity inherent in nutrition education and the advanced skills required of dietitians to assess their contexts and their values/beliefs about the nature and purpose of nutrition education, to obtain and interpret information from clients, to devise education approaches that integrate requisite and client-derived knowledge, and to assess client comprehension and needs for additional supports. On the basis of these findings, the Collaborative Client-Centred Nutrition Education conceptual framework and updated practice points document emerged.

Implications and Conclusions: The conceptual framework and practice points have the potential to support training, research, and professional development in nutrition education. We are not aware of other research efforts to develop evidence-based approaches to nutrition education that have integrated views of consumers and dietitians.

Mapping resiliency among dietitians

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Objectives: Resiliency is the capacity to endure life's challenges and has implications for the way dietitians do their work and the relationships they cultivate. The purpose of this research was to explore dietitians' experiences of resiliency in the context of their professional practice in order to begin to understand how dietetics can become a place that fosters resiliency.

Methods: This project enlisted dietitians in an experiential narrative inquiry through use of a resiliency map. At three four-hour sessions, six female participants, led by an experienced facilitator, used the map as a means to narrate the complexity of their practice. Clinical, community, public health, industry, research, and educational practice were represented. Participants had practised from a few years to more than two decades. Each session was audiotaped, transcribed verbatim, coded according to emergent themes, and analyzed using feminist discourse analysis.

Results: Three themes emerged: disconnection, workplace conflict, and relational resiliency, which were further informed by gender, emotionality, and burnout. Participants were drawn to dietetics by the opportunity to help others, but voiced disillusionment toward the disconnection between their expectations and the reality of practice. Participants described extreme stress in the context of dietetic practice, including disembodiment, isolation from family and colleagues, and moral tension where ideals fell subject to constrained prescriptions of practice. Participants spoke of physical, spiritual, mental, and emotional fatigue, the latter an indicator of the first phase of burnout. The act of sharing their experiences marked the participants' relational resilience.

Implications and Conclusions: Loss of connection, conflict, and suppression of emotions limit the capacity to build resilience. There is a demonstrated need to engage constructively with these issues in the workplace. Fostering relational resiliency in professional practice could improve workplace outcomes for dietitians.

Action Schools! BC—healthy eating: effects of a whole-school model in changing the eating behaviours of elementary school children

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Objective: Effectiveness was assessed for a school-based obesity prevention initiative that utilizes a whole-school approach in effecting change in students' intake of fruit and vegetables (FV), students' knowledge, attitudes, and perceptions about FV, and students' willingness to try new FV.

Methods: Five intervention schools were selected to represent geographic and socioeconomic variation. A second set of five schools were selected as matched usual practice (UP) schools. Intervention schools received resources, training, and support to implement activities in six action zones that support healthy eating within the whole school. The classroom action zone included tasting activities that exposed students to new FV. Student level outcomes were measured at baseline and at three-month and 18-month follow-up, using the following self-report questionnaires: 24-hour recall, food frequency questionnaire, knowledge, attitudes, and perceptions survey, and food neophobia scale.

Results: A total of 444 students completed the questionnaires at 18-month follow-up (246 intervention and 198 UP). Significant differences were found between conditions over time while controlling for baseline levels. Fruit servings, FV servings, FV variety, and willingness to try new FV increased in intervention schools.

Implications and Conclusions: Healthy eating initiatives that adopt a whole-school framework can change the eating behaviours of elementary school children. Providing opportunities to taste FV can be effective at enhancing students' willingness to try new FV.