

## Internship Research Abstracts - DC Conference – Victoria June 13-15, 2013

### **Development and validation of a questionnaire to assess dietitians' knowledge and practice regarding food insecurity in Alberta**

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**Aim:** The purpose of this formative study is to develop and validate a questionnaire that aims to assess the knowledge and practices of dietitians regarding food insecurity in Alberta. The objective of the first phase is the identification of concepts and key themes to ensure content validity of the questionnaire. **Methods:** This study will use qualitative and quantitative methods to develop an instrument to determine the extent to which dietitians assist clients experiencing food insecurity. The methodology will be carried out in two phases: 1) Key themes identified through a facilitated day-long discussion between health professionals and focus groups with clinical and community dietitians will guide the development of a questionnaire to identify knowledge, attitudes, self-efficacy and practice of dietitians regarding food insecurity. 2) Content validity and reliability of the questionnaire will be established through pilot testing and reviews by an expert panel and advisory committee. Construct validity will be determined through factor analysis. **Results:** Food insecurity is an important determinant of health that can lead to a variety of health consequences, yet it is not often detected during the nutritional assessment. Dietitians experience challenges with their role, knowledge, scope and organizational support in the area of food insecurity, and how to assess, counsel and support clients who experience moderate or severe food insecurity. Limited awareness, training and the lack of standardized screening tools for food insecurity are some of the key issues identified in this first phase. **Implications for dietitians:** The results of this study will help in identifying attitudes and knowledge and perceived barriers of dietitians in incorporating food insecurity in the routine nutritional assessment. It will also aid in determining dietitians' training needs regarding screening and support of food insecurity at the individual level and responses at the community level of practice.

## **An overview of vitamin D status and supplementation in the British Columbia home parenteral nutrition program**

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**Objectives:** To describe the demographics, vitamin D status and vitamin D prescription supplementation patterns of the adult Home Parenteral Nutrition (HPN) population in British Columbia (BC). **Methods:** A retrospective chart review was completed for all BC HPN Program participants 18 years and older who were on HPN for a minimum of six months between June 2009 and June 2011. Demographic data, indication for HPN, co-morbidities, prescribed supplemental vitamin D dosing and serum 25-OH vitamin D levels were recorded. **Results:** Thirty-one out of seventy-four charts met the chart review criteria. Short bowel syndrome was the primary indication for being on HPN (81%), followed by intestinal pseudo-obstruction (31%) and small bowel obstruction (6%). Most common co-morbidities included inflammatory bowel disease (71%), osteoporosis (71%), hypothyroidism (12.9%) and non-parenteral nutrition related liver disease (6.5%). Either oral and/or parenteral vitamin D prescriptions were found in 94% (n=29) charts. Of these 29 subjects, 33.6% (n=11) had total (PN & oral) prescribed vitamin D supplement levels of more than 2000 IU/day, 33.6% (n=11) had 1001-2000 IU/day, none had 600-1000 IU/day and 22.6% (n=7) had <600 IU/day. 55% of charts (n=17) had at least one 25-OH vitamin D measurement: 35.3% (n=6) had sufficient vitamin D levels (>75 nmol/L), 64.7% (n= 11) were at risk for vitamin D insufficiency (27.5 – 75 nmol/L) and no participants were deficient (<27.5 nmol/L). **Implications & Conclusions:** The findings of this study help to describe the demographics of the BC HPN population and can be used in developing guidelines for Vitamin D monitoring and supplementation in the BC HPN program. Given that the majority of study subjects were categorized as at risk for vitamin D insufficiency, larger and more consistent supplemental vitamin D prescriptions are warranted in the BC HPN population.

## **Opportunities for skill and knowledge enhancement outside of the classroom: Developing an alumni survey & organizing a stakeholder retreat**

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**Objectives:** Two undergraduate dietetics students worked on a multifaceted project involving development of an alumni survey, and planning activities related to a subsequent stakeholder retreat to inform curricular planning. This unique opportunity allowed students to supplement their formal dietetic education with relevant work experience. **Methods:** Students managed all aspects of the project under the guidance of a professional advisory committee. In creating a comprehensive electronic survey, they reviewed survey methodology, prepared an ethics proposal, and designed survey questions based on a literature review and dietetics workforce surveys. Key informant review and pilot testing were used to refine questions. Results were analyzed using quantitative and qualitative methods and were disseminated via poster presentation and written report. Findings informed design and delivery of a one-day stakeholder retreat involving faculty, preceptors, internship coordinators, alumni, and students. Students were involved in all stages of event planning, including: inviting stakeholders with broad expertise, structuring the day, selecting a venue, creating documentation and presentations, enlisting volunteers, and recruiting an external facilitator. **Results:** Students reviewed project activities against the Integrated Competencies for Dietetic Education and Practice (2013) and identified skill development in 14 competency areas. They gained extensive experience in research, project management, meeting facilitation, long range planning and professional communication. Students valued the opportunity to develop professional confidence, an enhanced understanding of the profession, an appreciation for the inherent complexities of curricular planning, and a sense of meaningful contribution to their future profession. **Implications & Conclusions:** This initiative provided students with valuable knowledge and skills for application in internship and professional practice. Multifaceted projects such as this can provide student opportunities for professional development within or beyond the formalized dietetic curriculum. Dietetics students are encouraged to seek work opportunities relevant to their profession, and program administrators are encouraged to seek funding to make such opportunities available.

## The impact of a “Healthy Lifestyle Education Kit” on eating and physical activity habits in preschool children and their parents: a pilot study

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Experts in nutrition and physical activity (PA) developed a bilingual *Healthy Lifestyle Education Kit* aimed at informing early childhood educators and parents in the importance of healthy behaviours in children. **Objectives:** To assess daily vegetable and fruit (VF) intake and PA habits of preschool children and their parent and examine whether provision of the kit would influence these behaviours. **Methods:** Families with children 2-5 years were recruited from ten daycares in South-Western Ontario. Information on VF intake and PA level of children and parents was obtained from questionnaires before kit distribution (at baseline) and 6 months after. Baseline VF intake and PA level data were compared to *Canada’s Food Guide* and *Canadian PA Guidelines*. One month after kit distribution, parents completed a questionnaire about kit utilization and their satisfaction. **Results:** At baseline, 79% of children and 28% parents (n=47 pairs) were meeting the recommended VF servings/day, which was independent of child-parent relationship (p<0.001). Daily PA levels showed 24% of children and 38% of parents met the recommendations, which was dependent of child-parent relationship. The kit was well received by parents (n=27), 89% reported learning new information and 93% used the kit to encourage healthy behaviours in children. The majority of parents reported using the kit 1-4 times monthly. At 6 months (n=13 pairs) average daily VF intake and PA level were similar to baseline in both groups. **Implication and Conclusion:** Our findings support previous studies that demonstrate many preschool children are not meeting VF intake and PA level recommendations. The education kit was well received by parents; however kit distribution did not influence average daily VF intake and PA level. Future research is needed to identify the factors that influence the use of a health promotional tool targeting health behaviours of preschool children and their families. (Funded by RFSSO)

## **The effects of intentional weight loss in older adults**

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**Objectives:** Evidence-based answers were established for the following questions:

1) What health-related outcomes result from intentional weight loss in overweight/obese older adults? 2) What health-related outcomes does exercise, a combination of resistance and aerobic exercise, have in overweight/obese older adults who intentionally lose weight? 3) What method of weight loss is effective for overweight/obese older adults? **Methods:** A literature search of articles from 2000 to present was conducted using MEDLINE and Cochrane Library databases. Articles reviewed contained a method of weight loss (diet-based, exercise based or both) and participants who were  $\geq 60$  years old with a body mass index (BMI)  $\geq 27\text{kg/m}^2$ . A total of ten articles were critically appraised using the Dietitians of Canada's Evidence Grading Checklist from Practice-based Evidence in Nutrition (PEN) database. The appraised literature was synthesized into key practise points and evidence statements. **Results:** There is fair evidence to support that the combination of diet-based weight loss and exercise as well as diet-based weight loss alone results in significant weight loss and that exercise alone does not produce a significant weight loss. Evidence shows, while intentional weight loss decreases bone mineral density and lean body mass, the addition of exercise may prevent/minimize these losses in overweight/obese older adults. There is fair evidence to support intentional weight loss alone, as well as with the addition of exercise, improves physical function (i.e., activities of daily living). It was found that an increased risk of mortality was not associated with intentional weight loss in overweight/obese older adults. **Implications & Conclusions:** Intentional weight loss in overweight/obese older adults can positively affect multiple health-related outcomes when exercise is included. Further research is needed to determine the strength of the relationships identified and potential confounding variables.

## **What is the role of essential fatty acid (EFA) supplementation with the co-morbid diagnosis of depression in adults and adolescents with anorexia nervosa (AN)?**

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**OBJECTIVES:** This review was conducted to contribute to the PEN (Practice-Based Evidence in Nutrition) Eating Disorders Knowledge Pathway. A thorough literature review was completed to determine if EFA supplementation improves the co-morbid diagnosis of depression in adults and adolescents with anorexia nervosa. **METHODS:** The search terms used were omega-3, omega-6 or essential fatty acid, anorexia nervosa or eating disorder, and depression. Articles examined included omega-3 supplementation or EFA status in subjects with a co-morbid diagnosis of depression and AN. Six case control, case series and cross-sectional studies were evaluated. PEN guidelines were used to critique the literature and grade the evidence to determine the strength of the research. **RESULTS:** From the studies reviewed, the results were separated into two questions regarding oral and enteral supplementation of EFAs. Adolescent females with an eating disorder have been reported to have a total lower fat, saturated fat and omega-6 polyunsaturated fatty acids (PUFA) intake compared to those without an eating disorder. A relationship between depression symptoms, low omega-3 PUFA status and high total omega-6:omega-3 PUFA ratio was observed in one study. The use of 1g omega-3 supplementation daily for three months appears to improve the recovery of adults and adolescents with AN measured by weight gain and improved mood. However, one study suggests that weight gain is essential in normalizing omega-3 PUFA status and that EFA supplementation may not be necessary. **IMPLICATIONS & CONCLUSIONS:** There is not enough evidence to support that EFA supplementation is effective in improving the co-morbid diagnosis of depression in adults and adolescents with AN due to the quality of studies. Further research is warranted.

## **SCREEN<sup>®</sup> administrator satisfaction of resources to support nutrition screening process of older adults in Sudbury, Ontario**

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In 2011, organizations working with older adults in Sudbury, Ontario began to use SCREEN<sup>®</sup> (Seniors in the Community: Risk Evaluation for Eating and Nutrition) to identify nutritional risk in community members over the age of 55. **Objectives:** To assess SCREEN<sup>®</sup> administrator satisfaction of the appropriateness, adequacy, and effectiveness of current resource binder and folder system and to identify areas for improvement or modification. **Methods:** SCREEN<sup>®</sup> administrators were recruited via email (n = 4 out of 38 possible trained administrators) and key informant interviews were conducted in March/April 2013 using a standardized interview template consisting of both open-ended and closed-ended questions. **Results:** Satisfaction with both the resource binder and folder system was contradictory among participants. Strengths of the resource binder and folder system were identified by some participants as helpful, useful, appropriate and satisfactory. Limitations of the resources within the resource binder were identified by some participants as confusing, overwhelming, inappropriate and unsatisfactory for older adults. The folder system was described by some participants as unclear. Administrators provided recommendations for improvement of the resource binder and folder system. **Implications & Conclusions:** Despite a small sample size of four administrators, rich qualitative information and feedback was gathered from the standardized interviews. The information collected will be used to help make improvements to the SCREEN<sup>®</sup> resources and future administrator training.

## **The videoconference telepractices of northern Ontario Registered Dietitians**

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**Objective:** To determine the videoconference (VC) use and readiness of northern Ontario Registered Dietitians (RDs) to inform internship curriculum and short/long term preceptor supports. **Methods:** RDs' views and use of VC were determined using a 15 item online survey (Fluid Surveys<sup>©</sup>). The Introduction Letter and survey link was distributed in February 2013 by the College of Dietitians of Ontario (CDO) to 299 practicing RDs in Local Health Integration Networks 12, 13 and 14. Results were quantitatively analyzed using Microsoft<sup>®</sup> Excel<sup>®</sup> version 14.2.4, 2011 using frequencies and pivot tables. **Results:** A total of 106 RDs (35%) completed the survey with representation from all age groups (20-69 years old), practice areas and geographic centres. Currently 22% use VC with patients/clients and 48% with colleagues. In 5 years, anticipated VC use with patients/clients and colleagues is 71% and 89% respectively. Generally RDs agree VC use is relevant to their practice (74%), although 40% do not agree that VC is easy to access from their practice setting/location. The most useful applications include meetings (81%), education (69%), and liaising with community resources (69%), while diagnosis, discharge/referral planning, and monitoring patient compliance are seen as least useful. **Implications & Conclusions:** With the planned increase in VC use within the next 5 years there is an immediate need to incorporate more VC technology into RD professional development and administrative meetings as well as dietetic intern competencies and curriculum. Incorporation of VC use into RD practice is imminent as the majority of RDs agree that VC does have many applications and the attitudes towards VC are positive. Further knowledge is needed to determine the limitations and barriers to VC use.



## **Vitamin D supplementation recommendations for Roux-en-Y bariatric surgery patients: A systematic review**

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**Objectives:** To determine vitamin D supplementation recommendations for roux-en-y gastric bypass surgery (RYGB) patients using a systematic literature review.

**Methods:** An electronic search of eight databases and six evidence-based knowledge pathways was conducted between September 2012-January 2013. Two researchers independently reviewed and critiqued 25 selected articles using the PEN (Practice Evidence in Nutrition) Article Appraisal Form. Seventeen articles met the inclusion criteria and a systematic review was conducted to develop recommendations for vitamin D supplementation in RYGB patients. These recommendations were then graded using PEN's Evidence Grading Checklist for study strength, consistency of results, clinical impact, generalizability and applicability. **Results:** Four themes were extracted from the pooled data:

supplemental recommendations for all RYGB patients, changes in supplemental vitamin D absorption after RYGB, effects of high pharmacological doses of vitamin D and individualized supplementation needs. The literature shows that vitamin D supplementation of 50,000 IU weekly in addition to up to 1600 IU daily oral supplementation did not cause adverse effects in patients. Supplementation at this level improved serum 25-dihydroxyvitamin D, but did not always optimize vitamin D status in patients. Populations at increased risk of deficiency are African Americans and those with a long post-operative roux limb length. Baseline measurements should be considered when determining supplementation needs.

**Implications & Conclusions:** Further research is required to determine safe and effective supplemental doses to optimize vitamin D status in RYGB patients. Randomized control trials with higher doses of supplemental vitamin D are needed to provide practitioners with the most up-to-date, accurate information, in hopes of improving the overall health of this population.

## **Focus group results from colorectal cancer survivors' experiences regarding nutrition information needs post-ostomy surgery - BC Cancer Agency Vancouver Island Center**

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Colorectal cancer is the most common underlying condition resulting in the need for an ostomy. The formation of an ostomy represents a significant physical impairment that often requires changes to behavior and lifestyle, including diet. At the present time, there is limited consensus on which dietary recommendations help colorectal cancer survivors best manage their ostomy post-operatively.

**Objective:** The aim of this study was to explore colorectal cancer survivors' perceived needs for diet and nutrition information in order to support self-management. Satisfaction with diet and nutrition information was investigated to shed light on current clinical recommendations for fiber-restriction.

**Methods:** Researchers conducted a single focus group with colorectal cancer survivors with ostomies. Four survivors from South Vancouver Island participated. ATLAS.ti software was employed to analyze focus group data and carry out thematic analysis to identify themes. **Results:** A qualitative analysis of the focus group data generated three key themes. All participants had experience with fiber-restriction and felt it helped manage ostomy symptoms and output. Each participant also expressed different needs in terms of diet and nutrition post-operatively. Lastly, participants noted that they received conflicting advice from different health care professionals and organizations. Nutrition information provided by registered dietitians was reportedly most valued. **Limitations:** One small focus group was completed. **Implications and Conclusions:** This study contributes to the future management of colorectal cancer survivors with ostomies by highlighting the efficacy of a fiber-restricted diet following surgery. Registered dietitians were also identified as valuable sources of individualized diet and nutrition information for ostomy management. Findings suggest that increased access to a registered dietitian is necessary to support this patient population.

## **Effective interventions to address organizational factors related to hospital-induced malnutrition: A systematic literature review.**

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Malnutrition in hospitals is a common problem today. Between 33 to 45 % of patients are at risk of malnutrition or are malnourished upon admission. Malnutrition in hospitalized patients can lead to prolonged illness, slowed recovery and medical complications. **Objective:** To conduct a systematic literature review aimed at identifying intervention studies addressing organizational factors that impact malnutrition in hospitals with the goal of informing future projects at Sault Area Hospital. **Methods:** Electronic database searches of PubMed, MEDLINE, CINAHL, Cochrane and Nursing & Allied Health were completed between November 2012 and January 2013 using key words such as malnutrition, undernutrition, nutrition care, nutrition support, food intake, diet therapy, and meal distribution. Only English-language intervention studies examining malnutrition in hospitalized adults (over 19 years) in developed countries were included. Articles meeting the inclusion criteria were reviewed using the McMaster University *Effective Public Health Practice Project* Quality Assessment Tool for Quantitative Studies. **Results:** Four articles met the inclusion criteria. Two articles were of moderate quality; two were of weak quality. The interventions used in the studies included staff education, nutritional supplementation and nutrition counselling on malnutrition. Nutrition education for residents resulted in an increase in the number of nutrition consultations. Nutrition education to nurses resulted in fewer barriers to eating for patients. Providing nutritional supplements and individualized nutrition counselling each resulted in an increased mean energy intake for patients. **Implications & Conclusions:** The interventions identified in this review may be used to inform future projects at Sault Area Hospital. More intervention studies are needed to determine effective organizational strategies to decrease the prevalence of malnutrition in hospitals.

## **Best practice to engage workplaces in KFL&A Public Health's Workplace Wellness Program**

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Workplace Wellness (WW) programs have been shown to increase productivity, morale, retention, and feeling of autonomy among employees while decreasing absenteeism, turnover, sick time/disability, and risk factors for chronic disease. Less than 1% of workplaces in the Kingston, Frontenac and Lennox & Addington (KFL&A) are actively implementing wellness initiatives. **Objective:** Develop a new marketing strategy which includes best practice for promotion and distribution of KFL&A Public Health WW program services to increase workplace engagement. **Methods:** The Program Planning Framework was used to guide research and to develop a new promotional strategy. A systematic search of the literature was completed to find WW best practice guidelines for health promotion, workplace barriers to program implementation and emerging trends. A survey was developed and distributed to businesses in the KFL&A area through Kingston District - Human Resources Professionals Association listserv and to all subscribers of the Living Well e-newsletter who are typically employees or management of workplaces in KFL&A (responders n=73). An e-mail request was sent to the Ontario Society of Nutrition in Public Health's listserv questioning strategies and methods used to distribute WW services and their effectiveness (responders n=10). **Results:** From the data collected a number of common themes emerged. There is a need to develop a social marketing plan with guidance from the business sector. It should include all forms of marketing: face-to-face interaction, website, e-mails, competitions, workshops, blogs, forums, and social media; to maximize service promotion. **Conclusion and Implications:** Findings conclude that many of KFL&A Public Health WWG's strategies continue to be indicated, however, engagement of workplaces can be enhanced by including two-way communication channels for marketing and delivery of services. This will allow the KFL&A Public Health WWG to increase the number of workplaces engaged in wellness programs, reducing chronic disease in the KFL&A area.

## What is the evidence surrounding food cravings and eating disorders?

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**Objective:** This review was conducted to contribute current evidence surrounding food cravings and eating disorders to the PEN (Practice-Based Evidence in Nutrition) Eating Disorders Knowledge Pathway. **Methods:** Searches were conducted using the PubMed, MEDLINE, and EMBASE databases. Search terms used were eating disorders, bulimia nervosa, anorexia nervosa and food craving or food cravings. Only case-control studies with adolescent or adult subjects diagnosed with bulimia nervosa, anorexia nervosa or other eating disorders were considered from the articles reviewed. Articles were critiqued and evidence was graded to indicate strength of results using the PEN guidelines. Evidence statements and Key Practice Points (KPP) for dietitians were written according to PEN guidelines. **Results:** Five case-control studies were included in the results of this review. Results suggest that differences in food cravings depend on the type of eating disorder (ED) and that cravings appear to be more prominent when bingeing is present, as in bulimia nervosa. However, increased cravings were also seen with food deprivation, along with increased calorie intake post-deprivation, in women with and without bulimia nervosa. Food cravings and the desire to binge were highly correlated with feelings of stress, anxiety and cortisol levels in obese patients with EDs. However, there is conflicting evidence in the literature regarding emotional states associated with food craving in people with eating disorders. Cravings in those with problematic eating behaviours did appear to be significantly reduced with mindfulness-based interventions. **Implications & Conclusions:** This review found that the evidence for nutrition professionals regarding the association between eating disorders and food cravings is limited, and of low-grade. Extensive research through larger, randomized controlled trials is needed to make specific recommendations.

## **Development of a focus group guide and survey questionnaire to obtain community perceptions of the food environment**

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Perceived measures of the food environment can help identify important psychosocial, environmental, and financial barriers to food access. **Objectives:** To construct and pre-test a focus group guide and survey questionnaire measuring community perceptions of healthy food access. **Methods:** A review of primary literature from major databases, (i.e., OVID, EBSCO), and grey literature on community food assessments and food system plans was conducted to determine the methodology used to obtain perceptions of the food environment. Key informants from Chatham-Kent Public Health were also consulted through electronic mail and telephone to obtain information and permission to adapt their food system survey questionnaire. From this review, a total of 56 relevant questions were compiled and used to develop focus group and survey questions.

Cognitive interviewing was conducted with a convenience sample of internal staff members from Kingston, Frontenac, Lennox & Addington Public Health, where participants were asked to reflect on clarity, intended meaning, and possible bias. **Results:** From the list of relevant questions, a semi-structured focus group guide and 18-item survey questionnaire was developed. Six participants including three dietitians, one dietetic intern, and two research staff with doctoral degrees participated in the cognitive interviewing session. Recommendations from participants included revisions to exclude professional jargon, simplify response options, and to implement the survey separately from the focus group guide to avoid participant burden. **Implications and Conclusions:** These recommendations will be used to modify the focus group guide and survey questionnaire prior to further pre-testing with stakeholders and pilot testing with community groups. The data collected using these research tools will be utilized to determine the community members' perceptions of the barriers and facilitators of healthy food access. The results will help identify solutions to enhance access to healthy foods.

## **Promoting interprofessional education (IPE) among food and nutrition students: A mixed methods study**

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**Objectives:** The first phase of this research project aimed to address the benefits of IPE implementation in undergraduate dietetic programs and the second phase of this research project aimed to determine if dietetic undergraduate education includes sufficient IPE in its curricula. **Methods:** The first phase was addressed through a systematic literature review (SLR) with a total of seventy articles reviewed. For the second phase, a pilot interview guide was developed in order to understand the dietitians' experiences with interprofessional education. Nine novice dietitians that graduated from Canadian dietetic undergraduate programs participated in interviews. **Results:** Key findings from the SLR were that 1) IPE promoted collaboration between health professionals, 2) IPE enhanced understanding of other professional roles, and 3) IPE improved communication and teamwork skills during undergraduate programs. Timing of IPE implementation and other barriers were also found to play significant roles regarding the effectiveness of IPE provided during dietetic education. Four major themes emerged from the qualitative interviews including 1) the desire to learn about other health professionals' roles, 2) lack of IPE in undergraduate education, 3) challenge of learning to work interprofessionally in dietetic internships, and 4) enjoyment of interacting with professionals to improve client care. **Implications & Conclusions:** This research suggests a need for the increased implementation of IPE education in undergraduate dietetic curricula in order to better prepare students for their eventual professional practice. The timing of IPE needs to be implemented late enough in the degree so students have an understanding of their professional roles, but early enough to decrease stereotypical perceptions of other health professions.

## **A description of new outpatients who completed the Nutrition Screening Tool at the BC Cancer Agency**

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**Objectives:** The purpose of this study was to gather descriptive characteristics of new outpatients seen at the BC Cancer Agency (BCCA) to inform the triaging framework used by Oncology Nutrition. **Methods:** Dietitians triage patients who score at risk for malnutrition based on a validated self-administered Nutrition Screening Tool (NST). A retrospective chart review of 300 outpatients admitted to BCCA's Vancouver Centre (VC) and Centre of the North (CN) from December 2012 to February 2013 was conducted. Information was gathered from the electronic charting system and the NST. Frequency distributions were generated. **Results:** 73% of screened charts were from the VC while 27% were from CN, with 54% being male. 72% were between 50-79 years of age, 17% were between 18-49 years of age, and 11% were greater than 80 years of age. Approximately half of the patients were overweight or obese and 4% were underweight. The most common tumour groups represented were breast (21%), genitourinary (18%), lung (13%), colorectal (10%) and head and neck (10%) cancers. At least 44% of patients were planned for radiation treatment, 29% were planned for systemic treatment, and 13% had no treatment planned. Approximately 34% of new patients scored at risk for malnutrition on the NST. Of these, 85% were at medium risk and 15% were at high risk of malnutrition. Patients reported the following nutrition-related symptoms: weight loss (30%), difficulties with activities of daily living (29%), decreased appetite (22%), diarrhea (12%), chewing and swallowing difficulties (9%), and vomiting (2%). **Implications & Conclusions:** The NST captures patients at risk for malnutrition and will enhance criteria used to triage cancer patients within the nutrition intervention framework. This will further help in care plan development and to support resource allocation. Further study is warranted to gain more information about specific groups identified in this study.



## **Outcome based evaluation of Healthy You: The development of a nutrition intervention questionnaire**

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Program evaluation is both an essential and necessary component of program planning and development. The information gathered through program evaluation not only provides evidence for the success of a program but also exemplifies ways in which it can improve. **Objectives:** To research and develop an outcome based questionnaire for Healthy You, a nutrition intervention program offered by the Peterborough Networked Family Health Team. The questionnaire assesses participant changes in nutrition knowledge, physical activity habits, and food intake following the completion of the program. **Methods:** A literature review was conducted using MEDLINE and Cochrane Library databases as well as grey literature. The questionnaire was adapted from existing tools and includes a set of original questions based on specific program content. It was reviewed by dietetic interns and Registered Dietitians (n=10) for appropriateness of content. A pre/post pilot test design was undertaken using program participants (n=20) in order to determine acceptance of the questionnaire for clarity, readability, and length. **Results:** Participant feedback indicated that the overall questionnaire design and length was well accepted given the components being assessed. While responses did not result in significant participant improvements, common response patterns helped identify key areas in which a lack of nutrition knowledge exists. This information will be used to restructure the content and improve the overall impact of the program. **Implications & Conclusions:** Currently, there are a limited number of comprehensive, Canadian-based nutrition questionnaires that are suitable for use among middle aged populations. There is great need for valid and reliable tools that focus on both nutrition knowledge and behaviour changes. With further revision and validity testing, this outcome based questionnaire will contribute to this growing body of knowledge and provide a reliable evaluation tool for similar nutrition intervention programs.

## **Food Security and type 2 DM: Exploring causality and possible solutions**

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**Objectives:** The objective of an Independent Study course was to explore the question, *is there a difference in the prevalence of type 2 diabetes in adults who are food insecure, and those who are not?* Subsidiary topics were the risk of type 2 diabetes in food insecure adults and possible causes for any associations, the impact of food policy/costing and the role of the Social Determinants of Health (SDOH) in all aspects of health, and future directions for healthcare professionals regarding food insecurity and chronic disease. **Methods:** Based on review of the literature, a clear association was made between food insecurity of adults at an increased risk for type 2 diabetes and many other health complications.

**Results:** Study findings include the importance of recognizing food insecurity as a risk factor for chronic disease including type 2 diabetes, and the need for advocacy at a policy level about the cost of food and minimum wage. The importance of recognizing the SDOH in nutrition counselling was addressed, in particular, that lifestyle and behavioural choices are not the only factors influencing health. Potential risk factors for food insecure individuals and chronic disease are extensive such as lack of adequate amounts and types of food, and poor social support. **Implications & Conclusions:** Food insecurity is a risk factor for type 2 diabetes and other chronic diseases for individuals in Canada. Dietetics professionals must be mindful of clients' backgrounds and potential barriers to optimal health. The findings of this project showed that financial restrictions severely limit the ability to achieve and maintain optimal health. Continued support and advocacy for policy change to support low income individuals is required to contribute to improving the health of the population.

## **How is refeeding syndrome in hospitalized patients with anorexia nervosa (AN) affected by early feeding and initial calorie levels compared with delayed/late feeding?**

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**Objective:** This review was conducted to contribute to the PEN (Practice-Based Evidence in Nutrition) Eating Disorders Knowledge Pathway. The practice question addressed recommendations for refeeding syndrome in hospitalized adult and adolescent patients with anorexia nervosa (AN) affected by early feeding and initial calorie levels compared with delayed/late feeding. **Methods:** A thorough literature search yielded cohort and cross-sectional studies evaluating refeeding protocols and the use of predictive equations in hospitalized patients with AN. There were no randomized control trials conducted on this topic. Studies examining all routes of intake (oral, enteral, parenteral) during the refeeding process were used. PEN guidelines were followed for critiquing the literature, formulation of evidence statements and Key Practice Points and grading the evidence. **Results:** Four inconclusive cohort studies attempted to determine the most appropriate calorie prescription that could be universally applied in hospitals. Slow initiation and a gradual increase in caloric intake during the first week of refeeding continues to be standard practice. Small-scale cohort and cross-sectional studies demonstrated that no ideal predictive equations are available to establish sufficient caloric levels for these individuals requiring carefully calculated nutritional rehabilitation. **Implications & Conclusions:** Constant monitoring of pertinent outcome indicators of refeeding such as gastrointestinal tolerance, electrolytes and fluid balance to gauge the metabolic stability of patients with AN, while including extraneous variables such as smoking, mental health disorders, and prior admission to an eating disorders program, may impact the rehabilitative ability of these compromised patients. Larger studies of heterogeneous sample sizes, and across multiple cultural groups using predictive equations to guide the refeeding process are necessary.

## **A description of total parenteral nutrition administration practices in patients admitted under Vancouver General Hospital's General Surgery Services**

A Hsiang, A Kwok, A Lai. UBC Dietetic Internship Program (Vancouver Coastal Health), Vancouver, British Columbia.

**Objectives:** To describe current local TPN practices at Vancouver General Hospital's General Surgery Services (VGH GSS), including TPN indications, duration of suboptimal intake during hospitalization prior to TPN initiation, duration of TPN, TPN initiation at refeeding rate and diet order when TPN was discontinued. **Methods:** A retrospective chart review was conducted on patients who were initiated and discontinued on TPN under VGH GSS between October 2011 and October 2012. Descriptive statistics including means, standard deviations, ranges, frequencies and percentages were used to summarize the data.

**Results:** A total of 143 charts were reviewed in which 101 TPN cases met the inclusion criteria. Prolonged ileus (n = 38) and small bowel obstruction (n = 22) accounted for 60% of documented TPN indications. The mean duration of suboptimal intake prior to TPN initiation was  $7.1 \pm 3.4$  days. The mean duration of TPN was  $14.1 \pm 14.5$  days. In 96% of TPN cases, patients were initiated on refeeding rate. TPN was discontinued on a regular diet in 74% of cases.

**Implications & Conclusions:** Study results will identify future areas of research to aid practitioners in optimizing local TPN practices. A review of TPN practice guidelines by VGH TPN practitioners is recommended to standardize local TPN practices.

## **What is the best treatment for females with anorexia nervosa (AN) and osteoporosis**

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**Background:** PEN (Practice-based Evidence in Nutrition) is an online database developed by Dietitians of Canada to assist international dietitians and other health professionals to advance dietetic practice. **Objective:** A thorough literature review was conducted to answer a PEN practice question as to the best treatment for females with Anorexia Nervosa (AN) and osteoporosis. **Methods:** A thorough literature search was conducted from 2000-2013 with keywords including: anorexia nervosa, osteoporosis, osteopenia, and eating disorder. PEN guidelines were followed for critiquing articles, composing evidence statements, writing key practice points and grading the evidence. **Results:** Early detection of osteoporosis and osteopenia in females with AN is the most important factor in helping to restore bone mineral density (BMD). There are a variety of medical therapies that could increase BMD. There is a lack of evidence supporting the use of oral contraceptives for recovery of BMD in women with AN makes it not an evidence-based treatment at this time. The consensus is that at this time bisphosphonates should not be routinely used in women of child-bearing age with AN. Recovery of BMD in females with AN is greater when weight is restored within a healthy range, and menstrual function is restored. Calcium alone does not significantly contribute to restoration of BMD in females with AN. Weight-bearing exercise will only increase BMD if menstruation is preserved and excess exercise may even reduce BMD, especially if there has not been restoration of menses. **Conclusions:** Weight gain appears to be the most important factor for recovery of BMD in females with AN. More research is needed into alternative therapies.

## **Influence of food cost on diet quality**

S Cohen. Southeastern Ontario Dietetic Internship, Kingston, Ontario.

**Purpose:** This review was to examine the influence of food cost on diet quality and affordability. Results will be included in Dietitians of Canada's Practice Based Evidence Nutrition food security knowledge pathway. **Methods:** A literature review (including studies published between 2007- 2013 worldwide) was completed using PubMed and Ebscohost databases. Articles reviewed investigated the effect of diet cost on diet quality and affordability for various income earners. Studies undertaken in developing countries were excluded, as were commentaries, editorials and narrative reviews. Thirty-two studies were critiqued and graded according to Dietitians of Canada's Practiced-based Evidence in Nutrition (PEN) guidelines. **Results:** Firstly, there is fair evidence that a healthy diet may not be affordable for low-income households. Secondly, high-energy-density diets are associated with lower costs, whereas nutrient-dense diets are associated with higher costs. Evidence also suggests that food cost depends on the price measure used. Lastly, healthier food substitutions may be more expensive than their regular counterparts are, and that the cost of healthy foods appears to be rising at a faster rate than that of less healthy foods. **Implications & Conclusions:** The negative association between low Socio-Economic Status and diet quality may be mediated by food cost and the affordability of a nutritious diet. Manipulation of food costs may alter food consumption. Further longitudinal studies investigating the impact of pricing strategies on diet quality are needed.

## **Assessing the sustainability of Manitoba school breakfast programs: A qualitative approach**

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**Background:** Child nutrition is an ongoing and concerning issue in Canada. Poor nutrition can put kids at risk of developing childhood obesity, malnutrition, disordered eating, type 2 diabetes, iron- deficiency anemia and dental cavities. Schools have been identified as an environment in which child nutrition can be readily influenced. Many children attend school breakfast programs (SBP), these programs offer and promote the consumption of healthy food and drinks throughout the school day and have been found to have many positive impacts on child nutrition and academic performance. Though much research has been done examining the affects of SBP, little has been done looking at the sustainability of these programs. **Aim:** This study will assess key informant's perception on the sustainability of SBP and to identify any factors that may threaten these programs. **Objective:** This study will assess long-term sustainability of Manitoba SBP by examining the beliefs, attitudes and values of the diverse people needed in ensuring that SBP run, including but not limited to: government personnel, funders, superintendents, school principals and SBP program coordinators. **Method:** A qualitative approach will be used to study the sustainability of SBP. Semi-structure interviews using open-ended questions will be conducted with all key informants. **Implications & Conclusions:** Data collected from this study will provide an in-depth examination of the policy environment and sustainability of schools breakfast programs. Knowledge gained from this study will identify any possible threats to sustainability and therefore appropriate and educated recommendations can be made for improving program sustainability for the future.

## **Effectiveness of nutritional interventions on survival time and quality of life in individuals with amyotrophic lateral sclerosis**

S Patterson. Southeastern Ontario Dietetic Internship Program, Kingston, ON.

**Objectives:** To provide evidence based answers to the following questions: 1) Which nutritional interventions can prolong survival time in individuals with Amyotrophic Lateral Sclerosis (ALS)? 2) Which nutritional interventions can improve quality of life in individuals with ALS? Improved quality of life was defined as improving side effects of ALS, (ex: reducing muscle cramps). Results of this review will be included in PEN - Dietitians of Canada's evidence-based on-line tool. **Methods:** A literature search for publications from 2002 to present was conducted within MEDLINE and Cochrane databases. Animal studies were excluded. Relevant articles (N= 31) were critically appraised and summarized into key practice points and supporting evidence statements. Studies were evaluated and graded according to Dietitians of Canada's guidelines. **Results:** There is strong evidence to suggest that the use of vitamin E, L-threonine and creatine are not effective treatments for muscle cramps in ALS. There is no evidence to determine the effectiveness of magnesium or enteral nutrition delivered via PEG tube feeds on quality of life. There is strong evidence to suggest that creatine at daily doses of 5 g and 10 g, and lithium supplementation to achieve serum lithium concentrations of 0.4–0.8 mmol/L do not prolong survival time in individuals with ALS. There is fair evidence to suggest that enteral nutrition delivered via PEG tube feeds can help stabilize weight and prolong survival time in individuals with ALS. **Implications & Conclusions:** Enteral nutrition delivered via PEG tube feeds may help stabilize weight and can prolong survival time in individuals with ALS. This review did not identify any nutritional interventions that have been shown to improve quality of life in individuals with ALS. Further research is needed to better determine the effectiveness of these and other nutritional interventions in this population.



## **Zinc and magnesium deficiencies in anorexia nervosa**

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**Objective:** This review was conducted to investigate the effects of zinc and magnesium supplementation in people with anorexia nervosa (AN), to contribute to the PEN (Practice-Based Evidence in Nutrition) Eating Disorders Knowledge Pathway. **Methods:** A thorough literature search was conducted using search terms zinc supplementation, magnesium supplementation, and anorexia nervosa. Zinc supplementation studies included randomized double-blind controlled and cross over trials published after 1990. One retrospective chart review was used to evaluate magnesium supplementation as there is limited recent literature. PEN guidelines were used to critique articles, formulate evidence statements, develop key practice points, and assign evidence grade. **Results:** Four studies of zinc supplementation in people with AN, and some included those with bulimia nervosa (BN), found that while zinc deficiency is prevalent among people with AN, a standardized dose and frequency of zinc supplementation cannot be recommended at this time. With zinc supplementation, one study found biochemical improvements of zinc status, two studies found faster weight gain, and one study of participants under 15 years of age found no effects. The retrospective review for magnesium status found that certain characteristics such as older aged, black race, purging, high urine pH, hypophosphatemia, and hypocalcemia, were associated with risks of developing hypomagnesium. Magnesium status is recommended to be monitored. **Conclusions:** There is a lack of research in zinc and magnesium supplementation for people with AN. Existing research suggest supplementing zinc to increase the speed of weight gain, but consensus has yet to be reached regarding the safest amount and duration. Hypomagnesemia has been observed and should be monitored throughout the course of increasing intake, but no concrete recommendations can be made for supplementation.

## **What is the inter-rater reliability of the Fraser Health Priority Intervention Criteria tool on acute care wards at Royal Columbian Hospital?**

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**Objectives:** The present study was performed in a pilot format to trial the methodology and calculation parameters involved in determining the inter-rater reliability of the Fraser Health (FH) Priority Intervention Criteria (PIC) tool for registered dietitians (RDs). This PIC tool is used to classify the nutritional acuity level of patients. The study obtained results about the inter-rater reliability of the PIC tool among RDs at Royal Columbian Hospital. **Methods:** Sixty initial nutrition assessment chart notes were selected by the research team, to which two RD raters individually assigned PIC values. The research team created and tested a chart selection procedure and systematically selected charts for the RD raters. The results were analyzed using a quadratic weighted Kappa value to determine consistency among the raters. **Results:** Overall there was 68% agreement in PIC value assignment between the two RD raters. The quadratic weighted Kappa statistic for this study is 0.636 (SE 0.107; 95% CI 0.426-0.846). **Implications & Conclusions:** The quadratic weighted Kappa statistic for this study is statistically significant and indicates substantial agreement between the RD raters. The results imply that a study methodology using 60 nutrition chart notes can successfully test inter-rater reliability of the FH PIC tool for RDs. Discrepancies between raters indicate the need for further revision to the language and simplification of the content of the PIC tool. Following these revisions, usage of the PIC tool should be standardized and RDs should be re-trained on the new protocol. A larger study could then be conducted with RD raters from multiple FH sites. Literature suggests a greater level of agreement may result from a prospectively-oriented study.

**What is the essential role of the registered dietitian (RD) working with eating disorder (ED) patients: what are the therapeutic skills required, what are the boundaries, when does one refer the patient for medical management?**

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**Objective:** This review was conducted to contribute to the PEN (Practice-Based Evidence in Nutrition) Eating Disorders Knowledge Pathway, and to provide further insight into the role of the RD working with patients with ED. **Methods:** A comprehensive literature search was conducted using PubMed and OVID MEDLINE databases. Specific key words included: eating disorder, dietitian, role, therapeutic skills, and psychotherapy. Articles reviewed were published between 1993-2011. Articles that were specific to psychotherapy in ED (i.e. did not address the role of other health professionals or the RD) were excluded. Ten relevant articles were critiqued and graded according to PEN guidelines and summarized into key practice points and evidence statements. **Results:** RDs require additional training/skills in counseling techniques (i.e. motivational interviewing) that they must obtain independently, to work effectively with the complexity involved in eating behaviours. Nutrition therapy alone is not effective in ED treatment therefore, a combination of nutritional and psychological treatments is warranted. In addition, RDs require clearer role definitions and professional boundaries to know when to refer patients for psychological therapy. These findings were supported by limited evidence or expert opinion. **Implications and conclusions:** Although the research findings are supported by limited evidence/expert opinion, they point to the need for additional training/skills that are required when working in the complex area of ED. There is existing research that compares the therapeutic skills that psychotherapists use in ED treatment, however further research is needed to describe and compare the specific therapeutic skills/techniques that registered dietitians use in ED treatment.

## **A cross-sectional nutrition risk assessment amongst a convenience sample of children in the Sea-to-Sky Corridor**

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**Objectives:** To determine the prevalence of nutritional risk among children attending early learning programs in British Columbia's Sea-to-Sky Corridor using the Nutrition Screening Tool for Every Preschooler (NutriSTEP<sup>®</sup>), and use descriptive statistics to report trends in answers to the NutriSTEP<sup>®</sup> questions.

**Methods:** Three early learning programs were included in the study, selected based on established relationships with a community nutritionist. Sites were each visited for a three-hour duration. Parents and caregivers attending each program were invited to complete a consent cover letter and NutriSTEP<sup>®</sup>, a validated screening questionnaire for nutrition risk in children aged 18 months to five years old. Follow-up counseling by the community nutritionist was offered to participants whose children scored at moderate or high risk.

**Results:** Fifty surveys were collected; 34 children were 18-35 months old, and 16 children were three to five years old. Six percent (n=3) of children scored at high risk, 10% (n=5) at moderate risk, and 84% (n=42) at low risk. The majority of high and moderate risk scores (88%, n=7) were among three to five year old children. All participants reported they were "comfortable with how [their child] was growing." Eighty-eight percent (n=44) were comfortable with their child's weight, 6% (n=3) thought their child should weigh more, and 6% (n=3) were not sure. Seventy-four percent (n=37) of participants reported their child decided how much to eat most or all of the time.

**Implications & Conclusions:** A low prevalence of nutrition risk was found among children attending early education programs. The majority of participants reported regularly engaging in behaviours that were indicative of healthy feeding relationships with their children. The high incidence of low nutrition risk found is promising, however further research is needed to assess the risk of children that do not access early learning programs in the Sea-to-Sky Corridor.

## **A literature review of the experiential learning tools: OSCE and peer-to-peer simulation**

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Undergraduate programs that incorporate experiential methods of teaching are more successful in developing communication skills in future health professionals than didactic styles. Objective structured clinical exams (OSCE) are an established experiential tool for assessing clinical competence and communication skills. Peer-to-peer role play (PRP) is a similar learning technique that provides feedback and identifies students' areas for improvement. **Objective:** To conduct narrative reviews of PRP and OSCEs in order to identify the benefits and drawbacks of PRP and how it compares to an OSCE as an experiential learning tool. **Methods:** Electronic searches were conducted from October 2012 to February 2013 using PUBMED, CAB Direct, Google Scholar, and ProQuest. An initial search included the terms OSCE, students and objective structured clinical exam that retrieved twenty five articles. A secondary search for PRP included the terms: peer-to-peer, role play, students and simulation. Results produced twelve articles. **Results:** OSCEs are considered the gold standard experiential learning technique. However, to create a valid and reliable OSCE requires a large input of time and money developing multiple testing stations, training evaluators and 'patients', which is difficult to implement with a large group of students. Nevertheless, OSCEs provide students with influential feedback regarding communication and counseling skills. When compared, there were significant improvements in counseling techniques and communication skills for both OSCE and PRP participants. While there were no significant differences in applicability or skill acquisition, students preferred using actors as patients to PRP. Preferences were given to actors as students viewed PRP as artificial or unstructured. However, PRP provides a safe, non-judgmental environment to practice, enhances students' confidence, increases patient empathy and sensitivity, and improves history taking. **Implications & Conclusions:** OSCEs are likely prohibitively expensive for nutrition undergraduate programs to implement. If PRP closely resembles reality, it is an effective and comparable alternative to an OSCE.

## **Efficacy of Craving Change <sup>TM</sup> on self-management of eating behaviours**

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**Objective:** To determine the effects that Craving Change <sup>TM</sup> has had towards developing positive health behaviour in order to ascertain the continuing needs of participants following completion of the program. **Methods:** An open-ended interview guide was developed to assess the impact of the program on participant's eating behaviours. Willing participants from the Saskatoon Health Region were randomly selected and interviewed by one member of the research team, while another member recorded responses. Descriptive coding, topic coding, and thematic coding were used to assess the data. **Results:** Overall, participants reported that the course beneficial and that they were more aware of the reasons for their eating behaviours. However, as time passed, the information from the course became harder to use, and many reported resuming to old and undesirable behaviours. The need for additional support, either individually or in a group setting, was reported by most interview participants. **Implications and Conclusions:** This research has found that Craving Change <sup>TM</sup> is a beneficial program and that providing follow-up for participants who have completed the course would help ensure its long-term efficacy. Continued peer and professional support via the internet, phone or in subsequent meetings were of greatest interest from participants.

## **The role of probiotics in the prevention and treatment of Necrotizing Enterocolitis**

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**Objective:** The purpose of this review was to create evidence-based practice guidelines for health professionals on the role of probiotics in the prevention and treatment of NEC. The practice points are found in the online knowledge translation service, Practice-Based Evidence in Nutrition (PEN). **Methods:** A thorough review of the literature from September 2009 – January 2013 for clinical outcomes associated with supplementation of probiotics in NEC was completed. Seven studies, the majority being systematic reviews or cohorts, were critiqued and graded for the quality of the evidence using Dietitian's of Canada PEN guidelines. Key practice points, or succinct practice recommendations, were developed from the appraised literature. **Results:** There is good evidence to support the use of probiotics in the prevention of NEC in very low birthweight infants (VLBW). Evidence suggests that probiotic supplementation may also reduce the risk of mortality in this population, but does not appear to decrease the occurrence of sepsis. Evidence-based guidelines, developed by Desphande et al., optimize the use of routine probiotics in preterm infants. Use of a multi-strain product containing *Lactobacillus* and *Bifidobacterium* species at a dosage of  $3 \times 10^9$  CFU/day is most effective for infants born at <32 weeks. There is limited evidence that supplementation of probiotics in extremely low birthweight (ELBW) infants should be avoided secondary to lack of efficacy and safety data. It is in the infant's best interest that probiotic use be stopped during acute illnesses, such as sepsis, NEC, or perinatal asphyxia, as there have been no intervention studies investigating the use of probiotics in the treatment of NEC. **Conclusions:** Daily probiotic supplementation until at least 35 weeks corrected age or discharge can reduce the risk of NEC and mortality in VLBW neonates. Further research is needed to determine the optimal strain, dosage, and safety of probiotics in premature infants.

## The role of probiotics in the management of irritable bowel syndrome

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**Objectives:** To update an existing PEN (Practice-based Evidence in Nutrition) practice question on the role of probiotics in symptom management of Irritable Bowel Syndrome (IBS). PEN is a Dietitians of Canada international online knowledge translation service. **Methods:** A review of the recent literature was conducted on the clinical outcomes of probiotic supplementation for IBS. Twenty nine studies were critiqued and included in the update. **Results:** There is limited evidence that *B. lactis* DN 173010 improves overall symptoms, abdominal pain, and urgency in constipation-predominant IBS symptoms. There is limited evidence that a combination probiotic (VSL#3) reduces flatulence in IBS with bloating, but not in diarrhea-predominant IBS. In single organism studies, *Lactobacillus* genera do not appear effective for patients with IBS; *Bifidobacteria* and certain probiotic combinations demonstrate some efficacy. *B. infantis* 35624 at a volume of  $1 \times 10^{10}$  CFU/ml was the only probiotic to show overall symptom relief. Preliminary evidence suggests that *Lactobacillus GG* at  $1 \times 10^9 - 3 \times 10^9$  CFU twice per day may be useful for treating children with abdominal pain-related functional gastrointestinal disorders. *L. plantarum* 299v showed improvement in the overall symptom management of IBS, *S. boulardii* improved quality of life, *B. bifidum* significantly improved global IBS-related symptoms as well as quality of life, and *L. brevis* KB290 significantly alleviated subjects' abdominal pain. In six RCT's that evaluated multispecies probiotic combinations (varying dosages and time frames), all were effective in reducing symptoms. **Implications & Conclusions:** Symptoms of IBS appear to improve with daily probiotic supplementation. A wide variety of probiotic strains and dosages appear to alleviate IBS symptoms and improve quality of life. Further research is needed to determine the optimal strain, dosage, and treatment time of probiotics in IBS patients.



## **The role of probiotics in the prevention and treatment of Antibiotic-Associated Diarrhea**

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**Purpose:** To update the current Practice-Based Evidence in Nutrition (PEN) practice question: *Are probiotics effective in the prevention and in the treatment of antibiotic-associated diarrhea and specifically, Clostridium difficile diarrhea?* This review focused on the role of probiotics in the prevention and treatment of antibiotic-associated diarrhea (AAD). **Methods:** A literature review was conducted for articles (years 2008 to 2012), focusing on antibiotic-associated diarrhea and probiotics. Dietitian's of Canada PEN guidelines were used to assess the evidence from seven studies. The results and conclusions of the studies were used to update the key practice points for the PEN practice question. **Results:** Several studies (n = 5 systematic reviews) demonstrated that probiotics are effective for the prevention and treatment of antibiotic-associated diarrhea in pediatric and adult populations. *Lactobaccillus* and *Saccharomyces* genera either alone or in various combinations significantly reduced the development of AAD. In particular, *Saccharomyces boulardii* was shown to have a protective effect on developing AAD in adults and children. The minimum dosage is 10<sup>10</sup> CFU/day. Pediatric studies suggest *Lactobaccillus rhamnosus* and *Saccharomyces boulardii* at a dose of 5 x 10<sup>9</sup> – 4 x 10<sup>10</sup> CFU/day may be effective in preventing the development of AAD. Probiotics were administered for the duration of the antibiotic treatment or for an additional period (3-14 days) after the antibiotics had been discontinued. **Conclusions:** Current research supports the use of probiotics for the prevention and/or treatment of AAD in adults and children. More research is required to determine the optimal probiotic strain dosage and the duration probiotics should be administered.

## **Staff experiences with the Traditional Diet Program (TDP) at Whitehorse General Hospital (WGH)**

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The TDP is a unique program in Canada that provides Aboriginal patients with traditional foods during hospital stay at WGH. **Objective:** To explore WGH staff experiences with the TDP through examining their attitudes, perceptions, beliefs and knowledge of the program to better inform the need for cultural competence training. **Methods:** Participants were recruited from departments that were involved in patient care or delivering the TDP using convenience sampling in nursing units (NU), First Nations Health Programs (FNHP) and food services (FS) at WGH. A questionnaire was developed, tested, and administered through interviews by the author. **Results:** Forty four interviews were completed; the response rate was 47%. Of total participants, 66% have worked at WGH for a period of 0-5 years with 16% of total respondents having been with the organization for less than one year. Almost all (98%) respondents agreed or strongly agreed the traditional diet program is an important part of care for First Nations patients at WGH, and 93% of staff surveyed felt the TDP is a service that First Nations patients value. A quarter of respondents (25%) felt they did not know enough about the TDP, this included staff from NU (73%) and FS (27%). Several staff members interviewed (35%) felt the institutionalization of the TDP limited the quality/authenticity of foods offered. **Implications and Conclusions:** Most staff surveyed hold a positive view of the TDP. More cultural competency staff training on the TDP may be needed in FS and NU; a large portion of this sample population worked at WGH for 0-5 years. The TDP is run in a hospital setting and does have limitations as to what food can be provided; certain protocols need to be followed to ensure patient safety. Future research might look at patient satisfaction with TDP meals.

## **High variability in DHA status occurs in young children and is not explained simply by low intakes of fish or DHA**

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**Objectives:** To determine whether or not low fish or DHA intakes are associated with low DHA status in children. **Methods:** Dietary intake was collected for 200 children 5-6 years of age from parents using a food frequency questionnaire (FFQ), and three 24-hour recalls. Specific questions on fish, fortified foods, and supplements were included. Venous blood was collected, and DHA determined in red blood cells (RBC). Dietary intakes were estimated using ESHA Food Processor SQL, with all foods and beverages checked for accurate information on fat and fatty acids. **Results:** Using the 24-hour recall, 16.5% of children consumed fish on the day prior to blood collection, and 33.1% ate fish on at least one of the three 24-hr recall days, suggesting 83.5% and 66.9% are non-fish consumers. But, 82.4% of children ate fish at least once/month, based on the FFQ. Using the FFQ, DHA intakes were skewed: median (5<sup>th</sup>-95<sup>th</sup> percentile) of 48.8 (5.26-216) mg/day. RBC DHA was correlated with dietary DHA:  $r=0.381$ ,  $P<0.001$ . Both fatty and lean fish were also correlated with RBC DHA ( $r=0.412$ ,  $P<0.001$ ;  $r=0.241$ ,  $P=0.006$ ). The mean $\pm$ SD RBC DHA was  $5.68\pm 1.62$ , with a 5<sup>th</sup>-95<sup>th</sup> of 2.88-8.54. Children with DHA intakes below 50mg/day (< 2 servings of fish/month), showed a 5<sup>th</sup>-95<sup>th</sup> percentile range of RBC DHA of 2.55-8.16 (n=75) compared to 3.03-9.14 [n=44) in children consuming >100mg/day DHA.

**Implications & Conclusions:** This study shows one and three day food records lead to high misclassification of children for fish and DHA intakes. Importantly, the association between DHA intake and blood status is weak, explaining less than 20% of the variation in DHA status. Variability in RBC DHA is high, particularly at lower DHA intakes. Fish consumption may not be required to achieve a high circulating DHA, but other dietary and genetic factors clearly suppress DHA status. Supported by CIHR.

## **Are the perceptions involving appetite, hunger, and satiety cues different in people with eating disorders? What changes are expected with recovery?**

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**Objective:** To answer a practice question related to eating disorders (ED) and appetite, hunger and satiety cues for the PEN (Practice-Based Evidence in Nutrition) Eating Disorders Knowledge Pathway. **Methods:** A thorough literature search was conducted using keywords: eating disorders, anorexia nervosa (AN), appetite cues, hunger, and satiety. Inclusion criteria used for trials was female adolescents and adults with an eating disorder at the time of the study (i.e. AN or bulimia nervosa), as well participants with an absence of an ED (healthy control group). One trial included participants who had recovered from an ED. The trials identified were critiqued, summarized into evidence statements, and developed in to key practice points which were graded for their strength of evidence. **Results:** The five eligible cross-sectional studies used examined various sample sizes, eating disorder/food-related stimuli, and perception measurement tasks such as acoustically elicited startle-eyeblick modulation (SEM), functional magnetic resonance imaging, heartbeat perception task, and subjective ratings. The altered cognitive processing and reduced ability to perceive bodily signals experienced by a person with an ED may contribute to their already reduced food intake. Even participants who had recovered from an eating disorder had incomplete normalization of eating behaviours. **Conclusions:** Altered perceptions of appetite, hunger, and satiety cues experienced by people with an ED may decrease appetite, reduce visceral sensations, and reduce capacity to experience pleasure while eating when compared to healthy controls. Despite weight restoration in people who have recovered from an ED, evidence suggests persistent pathology; therefore there is a high risk of relapse in this population.

## **A descriptive analysis of adult parenteral nutrition practices in acute care hospitals in Fraser Health**

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**Objectives:** To date, there are no large-scale studies describing parenteral nutrition (PN) practices in Canada. The objectives of this study were to determine the current PN practices and characteristics of patients who received PN in Fraser Health (FH). **Methods:** A retrospective chart review was conducted, including adult in-patients receiving one or more courses of PN from April 1, 2011 to March 31, 2012. Patients from eight FH hospitals where PN is administered were included. Electronic documentation from registered dietitians (RD) was used to obtain information such as age, duration of PN, indication for PN, nutritional status and reason for PN cessation. **Results:** There were a total of 324 courses of PN administered to 287 patients, 27 of whom received PN more than once. The mean age of patients was 63 years (SD 17, range 18-96). The most common indications for PN were acute abdomen and bowel obstruction, each with 58 courses. Other common indications for PN included the inability to obtain enteral access or provide sufficient nutrients enterally and major stress or surgery where enteral nutrition (EN) was not expected within 7-10 days. Mean duration of PN was 16 days (SD 25, range 1-237). Patients received a mean of 1591 calories (SD 453, range 540-2540) and 86g protein (SD 26, range 47-250). Among patients receiving PN, 49% were found to have a Subjective Global Assessment (SGA) score indicating moderate to severe malnutrition. The most common reason for PN cessation was the ability to tolerate an oral diet (n = 114, 33.9%) followed by tolerance of EN (n= 65, 19.3%) **Conclusion & Implications:** These findings provide a description of adult in-patient PN practices across FH. This baseline data could be used for future research and to inform revisions made to existing PN protocols to ensure best practice.

## **Investigating the application of the Mini Nutritional Assessment- Short Form (MNA-SF) in convalescent care facilities in Interior Health (IH)**

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**Objectives:** The Mini Nutritional Assessment-Short Form (MNA-SF) is a validated screening tool used to identify nutrition risk in ages 65 and older. Study objectives were to determine the length of time to conduct the screen, determine patient nutrition risk scores and whether a Registered Dietitian (RD) was involved in the care of patients deemed to be at risk. **Methods:** Participants were recruited from two convalescent care facilities within IH. Timed, face-to-face interviews using the MNA-SF were conducted with consenting patients. For patients classified as "at risk of malnutrition" or "malnourished" from the screening tool, verification of an RD referral or involvement was confirmed via communications with the site RD. **Results:** Out of 92 eligible participants, a total of 60 people (65%), with a mean age of 82 years, consented to participate. The MNA-SF scores classified 83% (n=50) participants as either "malnourished" or "at risk of malnutrition". 7 of the 21 patients (33%) deemed malnourished and 15 of the 29 (52 %) patients deemed at risk of malnutrition received a referral to see an RD. The primary reason for admission was bone fracture (53%), followed by infection (18%). 75% of patients who had fracture as their reason for admission scored in the "at risk of malnutrition" or "malnourished" categories. The mean time to complete the screen was 3 minutes and 50 seconds. **Implications & Conclusions:** Within IH convalescent care facilities, the MNA-SF classified the majority of consenting patients as "at risk of malnutrition" or "malnourished". With more than half of these patients unknown to the site RD, implementing a quick screening tool such as the MNA-SF could help identify nutrition risk more efficiently. However, more research is needed to determine if a direct RD referral would be appropriate for everyone who is identified at nutrition risk by the MNA-SF.

## **Analysis of the Providence Health Care clinical nutrition website usage and evaluation of the website as a nutrition education resource**

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The Providence Health Care (PHC) Clinical Nutrition intranet website was launched in 2006 and was designed to serve as a nutrition education site for PHC staff. Today the website contains nutrition articles and information about PHC dietitians. **Objectives:** 1. Analyze website usage and trends over the last two years. 2. Gather user feedback through a short survey. 3. Provide recommendations for future development of the website. **Method:** A quantitative analysis per Webtrends of total website activity in 2011 and 2012 was used to evaluate usage and generate ideas for future improvement. An online user feedback survey on Fluidsurveys was designed with questions addressing occupation, satisfaction, frequency of visits, navigation, and future development. A total of 155 survey invitations were sent out to the subscribers of the website's listserv. **Results:** Analysis of website usage data showed consistent visit frequency of 577 average visits per yearly quarter. Visit frequency increased by 51% when email notifications were sent out via the listserv. The highest website activity was from 8:00 am to 3:30 pm, Tuesday through Thursday. Average visit durations were similar amongst all website categories, with an average duration of 2.5 minutes per page in 2011 and 2012. The survey response rate was 28% (n=43). Respondents found the website is easy to navigate (95%) and users were satisfied (87%). The top recommendations were more current nutrition research, more nutrition tips, and an "Ask a Dietitian" system. **Implications & Conclusion:** This study will be shared with PHC dietitians involved in the website's development. Recommendations include building upon the website as an education resource and increasing its reader base.

## **The Role that Al Ritchie Health Action Centre Plays in the Lives of the Community Members it Serves**

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**Objective:** The purpose of this project is to determine the role that Al Ritchie Health Action Centre plays in the lives of the community members it serves.

**Methods:** Student researchers developed an interview guide that consisted of fifteen open ended questions and eight demographic questions. The researchers conducted in-person interviews over a one week period at ARHAC. All participants were recruited through the ARHAC and in order to participate in the study, individuals needed to have visited ARHAC more than 3 times. Each participant was provided with an honorarium to participate in the study.

**Results:** Twenty-five participants were interviewed out of a possible one hundred and fifty-nine participants. The majority of participants that took part in the study were female and greater than sixty-five years of age. Researchers found that the majority of the respondents attended ARHAC for the community involvement, social inclusion, and social support provided. When participants were asked '*why they returned to ARHAC*' twenty-five percent of responses indicated social inclusion, meeting new people, the welcoming atmosphere, and socializing. Another twenty-five percent of responses indicated that the programs and services at ARHAC offered value that encouraged further engagement. Furthermore, when participants were asked about the role that ARHAC plays in the community, forty percent indicated ARHAC to play a positive role in community involvement such as encouraging volunteerism and hosting community events. **Discussion:** Informal experiences, such as social support, social inclusion, community involvement, and a client-centered focus, are a fundamental component of ARHAC's services and support of community residents. This holistic approach creates an environment that allows a greater capacity for relationship building and allows community residents to feel more supported, which has a positive, lasting effect on the lives of those the ARHAC serves.



## **Prenatal weight gain: Results of a retrospective chart review of Healthiest Babies Possible Program (HBPP) Regina, SK**

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**Purpose:** To determine the number of women who attend HBPP at Four Directions who achieve the recommended prenatal weight gain according to IOM guidelines. **Methods:** A retrospective chart review of 205 clients admitted to the HBPP at Four Directions from 2008 to 2010. Data collected included demographics, medical history, lifestyle factors, medications, supplements, dietary patterns, program attendance, infant's birth weight, neonatal complications, weight upon entry and throughout participation. **Results:** Participants ranged from 15 to 42 years of age (mean = 23.76 years). The majority of participants were single (58%) and had less than grade 12 education (61%). Eighty-seven percent reported having some form of social support. Nineteen percent of women reported having diabetes, and almost half (44%) reported experiencing nausea or emesis at program entry. The majority of women reported consuming the appropriate number of servings of dairy (62%), meat and alternatives (63%), and grain products (61%). Seventy-five percent of women did not meet the recommended number of servings of vegetables and fruit. Fifty-three percent participants were considered food insecure. Women participated in HBPP for a mean of 31 weeks, and attended an average of 8.9 programs and 3.2 office visits. Sixty-two out of 87 women had adequate data for total weight gain to be analyzed; of these, 21% of women gained an appropriate amount of weight, while 50% of women gained more than the recommended amount of weight. **Conclusion:** Only 21% of HBPP participants achieved the recommended prenatal weight gain for all BMI categories. The majority of women who reported nausea and/or vomiting at program entry gained an inappropriate amount of weight, therefore it would be beneficial to flag women for additional support to assist them in gaining the recommended amount of weight.

## **Sodium Content in Rural Long Term Care Facilities in the Regina Qu'Appelle Health Region**

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**Objective:** The purpose of this research was to determine the sodium content of the rural RQHR LTC menus based on a four week menu cycle, and to determine how they compare to the existing Canadian sodium guidelines and to other LTC menus across the country. **Methods:** In order to accomplish this purpose, 11 LTC menus from rural RQHR were entered into Computrition and compared to the Canadian sodium guidelines as well as other centres across Canada. It was found that all rural RQHR LTC facilities as well as all the external menu analyses provided more sodium to their residents than what was recommended by Health Canada (2,300mg/d). In addition to sodium, total calories, protein, carbohydrates, fibre, fat, iron, calcium, vitamin D, folate, vitamin B12, and potassium were also examined to provide a full picture of the adequacy of the current LTC menus.

**Results:** The rural RQHR LTC facilities provided anywhere from 104-185% of the UL for sodium. The menus supplied between 2,398 mg/d to 4,245 mg/d of sodium. Calcium ranged from 363 mg/d to 1,234 mg/d. Vitamin D was consistently low in the rural menus and ranged from 12.0 IU/d to 234.4 IU/d. The menus provided 1,348 kcal/d to 2,390 kcal/d. The rural menus provided between 16.7 g/d and 25.4 g/d of fibre. There was 52.0-118.9 g/d of protein supplied in the rural menus. **Implications & Conclusions:** This information will allow the rural RQHR LTC Registered Dietitian to make suggestions to the rural menus in order to provide the best possible nutrition to the residents of the rural RQHR LTC facilities.

## **Applying the Edmonton Obesity Staging System to a cohort of bariatric surgery recipients to establish a classification of obesity**

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**Objectives:** To identify at what stage of obesity the Edmonton Obesity Staging System (EOSS) would classify RQHR's bariatric clients, and assess whether the clinic is providing surgical interventions to appropriate clients. **Methods:** A retrospective chart review was conducted using medical charts from clients who received bariatric surgery through Regina's Bariatric Assessment Clinic from 2010 – 2012. A data collection tool was developed to allow for consistent staging of the clients according to the EOSS. Client demographics, physiological, physical and psychological parameters and post-surgical outcomes were collected. The data was analyzed to determine the most prevalent obesity stage among the clients, as well as gender and age distributions, average time between admission and surgery, and any differences in outcomes between EOSS stages. **Results:** In total, 199 patient charts were reviewed. The majority of the clients (65%) were classified as Stage 2, 34% were categorized as Stage 3, and 1% as Stage 1. One-year post-surgery, Stage 2 clients had lost more weight than Stage 3 clients. Stage 3 clients entered the program with the greatest number of comorbidities. Type 2 diabetes, hypertension and sleep apnea among Stage 2 and 3 clients greatly decreased post-surgery, while the number of unknown diagnoses increased. A similar phenomenon was seen with medication usage. **Implications & Conclusions:** The results of this study indicate that the majority of clients being treated are classified as Stage 2 and 3, suggesting that current selection criteria used favours clients with obesity related comorbidities. Given the high amount of post-surgical unknowns, interpreting the relationship between EOSS stage and outcomes was difficult. Further research on the variations in surgical outcomes for each of the EOSS stages is needed. Concrete and standardized guidelines for classifying clients should be developed before the EOSS be used in practice to prevent ambiguity when staging.

## Vitamin D intake and status of 5 - 6 year old children in Vancouver

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**Objectives:** To estimate vitamin D intakes of children in Vancouver B.C., determine the proportion meeting the Estimated Average Requirement (EAR), and vitamin D status based on plasma 25 hydroxy (OH) vitamin D (25(OH)D).

**Methods:** A cross-sectional study of 200 children 5 - 6 years of age was conducted from July 2010 to March 2013. Vitamin D from diet and supplements was estimated by food frequency questionnaire (FFQ) and 24 hour recalls. Plasma 25 (OH)D was determined by LC/MS-MS and vitamin D status classified based on the Institute of Medicine as: deficient ( $<30$  nmol/L), insufficient (30-50 nmol/L) and sufficient ( $\geq 50$  nmol/L). **Results:** The median vitamin D intake from foods was 6.4  $\mu\text{g}/\text{day}$ . 77.4 % of children were given supplements, providing a median additional intake of 10.0  $\mu\text{g}/\text{day}$ . Total median vitamin D intake in children taking and not taking supplements was 15.1  $\mu\text{g}/\text{d}$  and 6.6  $\mu\text{g}/\text{d}$ , respectively. Based on diet alone, 81.8% of children consumed vitamin D below the EAR, compared to 22.6% in children when supplements were included. Children obtained 85.3% of vitamin D from supplements and fortified foods, and 14.7% from natural food sources. The median plasma 25(OH)D was 62.4 nmol/L, but did not differ between children given or not given supplements. The median plasma 25 (OH)D from January to March was 56.2 nmol/L and 68.4 nmol/L from July to September ( $p=0.014$ ). 81.3% of children were 25(OH)D sufficient, 16.8 % of children were insufficient, and 1.9% were vitamin D deficient. Vitamin D intake and plasma 25(OH)D were significantly correlated during winter October – December, January – March  $p \leq 0.001$ , but not during summer, April-June, July-September ( $p=0.05$ ).

**Implications and conclusions:** Children are reliant on supplements and fortified foods to achieve the recommended vitamin D intakes. Adequate dietary vitamin D is particularly important to reduce risk of vitamin D insufficiency in the winter months.