**RPG Sponsored Activities at FNCE**

| | | |
|---|---|---|
| Friday, October 24 | RPG Executive Board Meeting | 1:00 pm – 6:00 pm |
| Saturday, October 25 | RPG Executive Board Meeting | 8:00 am – 11:00 am |
| Sunday, October 26 | Renal Dietitian's Breakfast<br>Sponsored by Diehl, Inc. | 7:30 am – 8:30 am |
| Monday, October 27 | DPG Showcase | 10:45 am - 12:30 pm |
| Tuesday, October 28 | Major Session<br>Nutrition and Renal Transplantation<br>Carolyn C. Cochran, MS,RD,CDE,LD<br>Dallas Transplant Institute<br>Dallas Nephrology Associates | 10:00 am – 11:00 am |

**RPG Endorsed Session**: RPG member, Pamela Kent, MS,RD,CSR,LD, will copresent "The Critical Role of Nutrition in Patients with Chronic Renal Insufficiency" on Sunday, October 26 at 10:30 am.


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# The Effectiveness of Lifestyle Intervention in the Diabetes Prevention Program: Application In Diverse Ethinic Groups

**By Linda Delahanty, MS, RD, Shandiin R. Begay, MPH, Norman Coocyate, Mary Hoskin, MS, RD, Mae Isonaga, RD, MPH, Erma J. Levy, MPH, RD, LDN, Kathy Mikami, RD, Sharon Ka`iulani Odom, MPH, RD, Kati Szamos, BS, RD***

**ABSTRACT**

The Diabetes Prevention Program, (DPP) demonstrated that a lifestyle intervention aimed at losing 7% of body weight and achieving 150 minutes of activity per week could reduce the risk of developing diabetes by 58%. Almost 45% of the DPP cohort were minorities including African-Americans, Hispanics, Asians, and American Indians. The lifestyle intervention was highly effective in reducing the incidence of diabetes in each minority group. The DPP lifestyle intervention included four components: a standard "core curriculum," tool box strategies, tailored individual intervention, and "after core" classes and campaigns. The common features of the lifestyle intervention process that helped participants change their diet and exercise behaviors were goal setting, self-monitoring, frequent contact, problem-solving and managing high-risk situations. These features were adapted to accommodate the specific social, economic, and cultural needs of each individual in each racial-ethnic group. If we apply the critical components and features of the DPP lifestyle intervention experience, then we can achieve and sustain the changes in diet, activity, and weight necessary to impact and reduce the public health burden of diabetes. The Diabetes Prevention Program was a randomized, controlled trial which was conducted in 27 centers across the United States to determine if a lifestyle intervention or treatment with metformin, compared with placebo, would prevent or delay the development of diabetes in 3,234 subjects with impaired glucose tolerance (IGT). The trial was completed a year early and found that compared to placebo, the lifestyle intervention reduced the incidence of diabetes by 58% and metformin by 31% over an average of 2.8 years (1). One of the unique features of the DPP was that it was conducted in a cohort representing the ethnically and culturally diverse population of the United States. Overall, more than 45% of the DPP cohort were minorities; African Americans (including people of Afro-Caribbean descent), Hispanics (including Latin Americans and Caribbeans), American Indians (concentrated in the Southwest), and Asian-Americans (including descendants from Japanese, Chinese, other East Asian groups, East Indians, and Pacific Rim Australian populations) (2). The DPP results demonstrated that the lifestyle intervention was highly effective in reducing the incidence of diabetes in all minority groups and the treatment effects did not differ according to sex or race-ethnicity, although women did have higher BMI levels at baseline than men in all racial-ethnic categories (1,2). Since the lifestyle intervention was significantly more effective than metformin in all ethnic groups (1), it is important for clinicians to understand the main components of the lifestyle intervention and how it was tailored to meet the needs of the various minority populations. The goals of the lifestyle intervention were to lose at least 7% of body weight and to increase physical activity to at least 150 minutes of exercise per week. The DPP lifestyle intervention had four components: a "core curriculum," tool box strategies, tailored individual intervention and "after core" classes and campaigns. First, lifestyle participants and coaches reviewed a standard "core curriculum" of 16 individual sessions within 24 weeks that addressed reducing fat intake, increasing activity, problem-solving skills, eating out, managing stress, and dealing with lapses. Each participant had a fat gram and calorie goal that was based on initial weight and targeted a 1–2 lb. per week weight loss (500–1000 kcal. less than weight maintenance calories) and 25% of calories from fat. If participants were not meeting activity and weight-loss goals, then lifestyle coaches employed tool-box strategies to address the specific barriers to success for each individual. For example, participants who had little or no access to exercise equipment might meet with the exercise physiologist on the DPP staff or with a personal trainer. Alternatively, a participant having difficulty achieving the weight-loss goal might be asked to use a meal replacement such as Slimfast for one or two meals per day as a tool-box strategy to help with weight loss. After the first six months, lifestyle coaches continued to provide individual contact at least once per month for the remainder of the study. These individual sessions were tailored to each person's needs and interests and also

*Continued on page 4*

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Articles about successful programs, research interventions, evaluations and treatment strategies, educational materials, meeting announcements and information about educational programs are welcome and should be sent to the Managing Editor by the next deadline.

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## In This Issue





# From the Editor's Desk

Is anybody else annoyed with being called "Dietary"? I jokingly tell our staff who insist on ordering a "Dietary Consult" that we do not have any food, nor can a single hairnet be found in our office! Yet, they continue to refer to us in that anachronistic way, and we have our good-natured ribbing back and forth. In this issue of the Forum, we are bringing you timely and up-to-date information to keep you fresh and "cutting edge". So, ladies and gentlemen, burn your hairnets and seize the future as renal nutrition specialists.

Our understanding of diabetes and its prevention has soared since the results of the Diabetes Prevention Program (DPP) were published last year. Although one arm of the study used a medication that is not suitable for the renal population, significant results were seen in lifestyle modifications that are simple enough for any able-bodied patient to achieve. The members of the DPP Research Group have written an excellent article on helping persons of diverse ethnic groups accomplish these modifications.

In November of 2002, the Centers for Medicare and Medicaid Services issued a Program Memorandum on Levocarnitine for use in the treatment of Carnitine Deficiency in ESRD Patients. Philippa Feiertag does a wonderful job in presenting some of the evidence for the use of intravenous levocarnitine. Follow-up on your own company's policy regarding the charting that should be done to justify this intervention and enhance the opportunity for reimbursement.

Were you aware, that at the American Dietetic Association's (ADA) Public Policy Workshop in Washington, DC this year, the emphasis was broadened to include six key issues: aging, child nutrition, Medicare and Medical Nutrition Therapy, nutrition monitoring, nutrition research, and obesity? While we "think renal" much of the time, as dietitians and citizens we have concern and interest in these broader issues. Maria Karalis makes us think about the root cause of many of these issues as she discusses the evolving portion sizes of the last couple of decades. This is Maria's last column for the Forum, and we thank her very much for her service, and for expanding our horizons.

Once again, Sharon Schatz helps us help our patients with some ideas for refreshments that won't stop the heart, in Kidney Friendly Food Facts. Our new Reimbursement Chair, Julie Geraci, shares some of the outcomes that ADA has reported. Our Renal Practice Group Chair, Jenny Smothers, tells us about some of the exciting opportunities that await us at the Food and Nutrition Conference and Expo (FNCE) this fall, and we receive encouragement from the Council on Renal Nutrition Chair, Susan Reams, to be all we can be. On top of all that, we have some stipend reports from the National Kidney Foundation Spring Clinical Meetings. Enjoy!

You will note that we now have an East and a West Area Coordinator to coordinate the . Lending Libraries. Areas 1,2,and 4 are in the WEST and Areas 3,5,6, and 7 are in the EAST. Any requests should be sent to the appropriate coordinator.

Have a colorful Autumn! I hope to meet many of you at FNCE in San Antonio in October.

*Patricia Weber*



# 2003 –2004 RPG Executive Committee

*RPG Mission: The RPG is the advocate of the dietetics profession serving the public through the promotion of optimal renal nutrition, health and well-being.*
*RPG Vision: RPG members will be leaders in providing scientifically sound renal nutrition care and education for patients, the profession and the public.*



*Lost in the Mail? If you are aware of any RPG members who have not received their copy of the Renal Nutrition Forum, please tell them to contact the Membership Chair. Please provide their name, mailing address, ADA membership number, and issue(s) missing.*

*We want all members to receive this publication.*

*Where are You? If you have moved recently, or had a name change, please send changes to ADA using the change of address card in the Journal to avoid delayed issues of your Renal Nutrition Forum.*

## The Effectiveness of Life Intervention

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included the use of the tool-box approach. In addition, after the first year, participants could attend and participate in "after-core" group classes (campaigns of four- to eight-week duration that were offered three times per year to help sustain progress with weight and activity goals and provide peer support). A more specific description of the DPP Lifestyle intervention can be found elsewhere (3, 4). The Web site for DPP Lifestyle manuals and other information is www.bsc.gwu.edu/dpp. The nature of the individual sessions, the options for using a tool-box approach to address barriers to success, and the ability to adapt after-core classes/campaigns to the needs of the participants at each center offered lifestyle coaches the flexibility that was necessary to accommodate the specific social, economic, and cultural factors that influence diet and exercise habits in each racial-ethnic group. Of the 1,079 lifestyle intervention participants, 54% (n = 580) were Caucasian, 19% (n = 204) were African American, 16% (n = 178) were Hispanic, 6% (n = 60) were American Indian, and 5% (n = 57) were Asians (Pacific Islanders were in this category); their mean baseline BMI was 33.9 ± kg./m.2; their average baseline weight was 94.1 ± 20.8 kg., and their mean age was 50.6 ± 11.3 years (1). The features of the lifestyle intervention process that helped participants change their diet and exercise behaviors were: (1) goal setting with regard to weight, activity, fat gram, and calorie intake; (2) self-monitoring with regard to achievement of these goals; (3) frequent contact to provide accountability and sustain focus; (4) problem-solving to address goals and potential barriers to achieving them; and (5) emphasis on managing individual high-risk situations. These common features of the lifestyle change process were applied for each participant regardless of racial-ethnic group. However, for each of the ethnic groups, the specific types of goals that were set, the methods of self-monitoring used, the ways to achieve frequent contact, the barriers to achieving goals, and the specific high-risk situations to manage were all reflective of the social, economic, and cultural diversity represented in the DPP.

The success of the lifestyle intervention in achieving behavior change can be measured by the diet, activity, weight, and diabetes prevention outcomes that were achieved. After the first six months, 50% of lifestyle participants had achieved the goal of at least 7% weight loss and 74% of lifestyle participants were exercising at least 150 minutes per week. At one year, the lifestyle participants had decreased daily energy intake by 450 ± 26 kcal. and average fat intake by 6.6 ± 0.2 %. At study end, the lifestyle intervention participants had lost an average of 5.6 kg with 38% maintaining a weight loss of at least 7% and 58% maintaining an activity level of at least 150 minutes. When compared to the placebo group, the lifestyle intervention reduced the incidence of diabetes by 51% in Caucasians, 61% in African-Americans, 66% in Hispanics, 65% in American Indians, and 71% in Asians (1). Each of the sections that follow describe specific considerations for implementing the DPP lifestyle intervention in the African American, Hispanic, Asian, and American Indian subgroups and provide insights about the techniques that were used to tailor the intervention along with case illustrations.

## CLINICAL APPLICATIONS

### African-Americans

The techniques that were used to tailor the DPP lifestyle intervention for African Americans included modifying specific handouts geared toward their culture (i.e., recipe modifications), utilizing food preferences, and identifying additional resources that may be helpful to this group. Lifestyle coaches helped African-American participants change their eating habits by focusing on recipe modification as a way to influence food choices. The following suggestions related to ingredients, time and ease of preparation, cost, taste, and focus of recipes:

- The ingredients should be found easily in local grocery stores, and not sold exclusively in specialty grocery stores. If the ingredient is potentially unfamiliar to participants, provide specific information regarding where it can be found, estimated price, storage, and general cooking information.
- For main dishes, preparation time should be less than 20 minutes and total cooking time should be less than 45 minutes. Breakfast items or side dishes should have a preparation time no more than 15 minutes and total cooking time no more than 30 minutes.
- The preparation instructions should be simple enough for someone with an eighth-grade reading level to follow. The recipe should not call for the use of specialized cooking equipment. A glossary of terms should be included for the recipes to describe new or unfamiliar cooking techniques, such as simmer, sauté, braise, mince, and dice.
- The cost of any particular item (especially if it is a primary part of the dish) should not be prohibitive for any lower middle class person to purchase. In general, avoid recipes that call for expensive cuts of meat or cheeses, specialty grains, or wines/sauces that are used infrequently.
- Cuisines that originate from the African continent tend to be spicier than those originating from Europe. African-American foods generally will have more pepper, salt, and fat to enhance the flavor of food. Usual alternate flavoring methods found in mainstream low-fat/low-salt cookbooks may not always fit the tastes of African-Americans. A chef developed various samples of herb/spice blends that were provided to African-American participants as alternative flavor enhancers. These spices are now sold locally at various supermarkets in Baton Rouge and can be ordered and shipped to other states. (Cajun Injector, Inc., 9180 Hwy 67 South, P.O. Box 97, Clinton, LA 70722, 800/221-8060)
- Sixty-percent of the recipes should deal with modifications of foods typically eaten by many people (i.e., a lower-fat biscuit). Twenty-percent of the recipes should focus on nontraditional uses of familiar foods (e.g., tuna apple salad). The remaining 20% of the recipes can be used to introduce unfamiliar foods (e.g., roasted corn and garlic couscous).

The barriers many of the African-Americans faced throughout this program were perception of body image and family events where food is a big part of the social aspect. Many African-Americans in comparison to other races have a different perception of body weight in terms of

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# Rehab Corner

**By Maureen McCarthy, MPH, RD, CSR** *Maureen is a Renal Dietitian with Renal Care Group– Pacific Northwest Renal Services, Portland, OR and can be reached at mmccarthy@renalcaregroup.com.*

This column features an article submitted to the web page of the Life Options Rehabilitation Advisory Council (LORAC) by Jo Reeder, PT, MCSP, of UVA Health Systems. For other articles filled with helpful ideas, go to LORAC's home page (www.lifeoptions.org), select the "For Renal Professionals" link, and then select "Showcase of Ideas".

**Getting PT Services for Your Patients** *By Jo Reeder, PT, MCSP*
Physical therapy (PT) can be a valuable resource for the dialysis unit team as it treats patients' physical decline. A variety of payers will cover PT services, but certain procedures must be followed.

**How Physical Therapy Services Are Prescribed** In most states, a physician must make the actual PT referral. However, any health care professional (i.e., RN, RD, SW, PCT) can recommend physical therapy to a patient's doctor. PT referrals are for functional decline, decreased muscle strength, decreased joint range, gait problems, new onset of stroke or head injury, and/or a wound affecting function.

After the referral and a patient evaluation, the physical therapist develops a written plan of therapy. This plan includes the diagnosis, treatment plan, goals of therapy, and frequency and duration of the intervention. The physician reviews and approves the plan of care; there is an expectation that the condition will improve in a reasonable length of time.

Most insurance providers allow a set number of visits, and this varies from company to company. If your patient has commercial insurance, check with the patient's insurance carrier about coverage for physical therapy. There are also limitations on Medicare coverage of physical therapy. If your patient has Medicare, a physical therapy provider or the Center for Medicare and Medicaid Services (CMS) regional office can give you information about Medicare coverage for physical therapy services. You can find the phone number for your CMS (formerly HCFA) regional office at www.medicare.gov/Contacts/Home.asp.

The American Physical Therapy Association (APTA) has posted information about reimbursement for physical therapy services on its website at www.apta.org/reimbursement. You can find a chart of state regulations pertaining to direct access to physical therapy evaluation, examination, and intervention at www.apta.org/pdfs/gov_affairs/directalaws.pdf.

**Where Physical Therapy Services Are Provided** Dialysis unit staff can help patients access PT services in different settings. Patients can go to a free-standing, outpatient physical therapy clinic, go to an inpatient rehabilitation center, receive home health physical therapy if they qualify as "homebound" (for definition, see www.hcfa.gov/pubforms/transmit/a0121.pdf), or they can go to the physical therapy department of a hospital.

At University of Virginia Health Systems, for example, physical therapy is provided within the dialysis center so the patients can get their physical treatment before, during, or after dialysis. This on-site PT has been very effective for both patients and staff. It is easier to facilitate on-site physical therapy in a hospital-based unit, but with a little extra planning it can be achieved in a free-standing unit.

Physical therapy intervention can break the spiral of debilitation and decompensation frequently observed in the ESRD population. In addition, a more physically active, higher functioning end-stage renal disease population may have significantly better long-term survival rates.

Jo Reeder, PT, MCSP is willing to reply to readers' questions and can be reached at jr3f@virginia.edu.

*Do you have a rehab success story highlighting the role of renal dietitians in the process? Contact Maureen McCarthy for an interview that may lead to an article in this column (mmccarthy@renalcaregroup.com; or phone 503-250-5011).*

## Kidney Friendly Food Facts

*continued from page 19*

| Food | Portion | Fiber gm | K+ mg | Phos mg |
|---|---|---|---|---|
| Bulgur Wheat, cooked | .5 cup | 4.1 | 62 | 5 |
| Corn Bran, crude | .5 cup | 32.5 | 17 | 3 |
| Couscous, cooked | .5 cup | 1.1 | 46 | 4 |
| Cream of Wheat, cooked | 1 cup | 1.8 | 43 | 3 |
| Farina, cooked with water | 1 cup | 3.2 | 30 | 0 |
| Kasha, roasted, cooked | .5 cup | 2.3 | 74 | 3 |
| Kellogg's Apple Cinnamon squares cereal | .5 cup | 3.1 | 111 | 13 |
| Kellogg's Blueberry Squares | .5 cup | 3.2 | 122 | 14 |
| Macaroni, enriched, cooked | 1 cup | 1.8 | 43 | 1 |
| Noodles (egg), enriched, cooked | 1 cup | 1.8 | 45 | 11 |

| Food | Portion | Fiber gm | K+ mg | Phos mg |
|---|---|---|---|---|
| Oatmeal, cooked with water | 1 cup | 4.0 | 131 | 2 |
| Popcorn, air-popped | 1 cup | 1.2 | 24 | <1 |
| Quarker Crunchy Bran cereal | .5 cup | 3.2 | 38 | 169 |
| Ralston cereal cooked with water | .5 cup | 3.0 | 77 | 3 |
| Rice, brown, cooked | .5 cup | 1.8 | 77 | 1 |
| Shredded Wheat, rectangular biscuit | 1 each | 2.6 | 103 | 0 |
| Spinach Egg Noodles, cooked | 1 cup | 3.7 | 59 | 19 |
| Wheat Chex cereal | .5 cup | 1.7 | 58 | 134 |

# Stipend Report from the National Kidney Foundation Spring Clinical Meetings, 2003

## The Role of Inflamation in Chronic Kidney Disease

**Presented by T. Alp Ikizler, MD Summarized by Julie Geraci, MED, RD, LD** *Julie is the renal dietitian for Eastern Oregon Dialysis in La Grande, Oregon, which is located in the Northeast section of the state. She can be reached at jgeraci@renalcaregroup.com.*

In 1997, 21% of patients with end stage renal disease (ESRD) died within the first year. Despite recent improvements in the science and technology of renal replacement therapy, the prognosis for these patients remains poor. Several predictors of mortality for ESRD patients have been established, which include increased creatinine, decreased Urea Reduction Ratio (URR), decreased albumin, decreased anion gap, increased age and low deviation from ideal body weight.

Uremic malnutrition and chronic inflammation are also co-morbid conditions that predict poor clinical outcome in ESRD patients. It has been determined that C-Reactive Protein (CRP) is a predictor of mortality as well as a marker of inflammatory state. Normal CRP is <5. With a CRP > 10, the patient has a 4 _ times greater chance of death. Patients with elevated CRP have a 2 _ times greater chance of hospitalization. In a study by Qureski et al, it was determined that patients with > 20 CRP had co-existence of inflammation and malnutrition. These conditions are also closely associated with cardiovascular disease (CVD), which is the major cause of death in ESRD patients. A study by Stenvinkel et al showed that 22% of pre-dialysis patients had malnutrition, inflammation and CVD. This study suggests that chronic inflammation can predispose ESRD patients to a catabolic and atherogenic state.

Inflammation is a response to tissue injury or disease. What causes inflammation? In ESRD patients there are several reasons. First, uremia and decreased renal function. Second, renal replacement therapy. There is the issue of biocompatibility, especially with catheters and inflamed grafts and also, the difference between dialyzers and the dialysis treatment itself. Finally, co-morbidities such as CVD and infectious agents. The consequences of chronic inflammation include muscle loss, anorexia, catabolism and loss of lean body mass. The resulting malnutrition can accelerate the progression of CVD. Although a single common etiology has not been identified in this complex process, there are some nutritional and anti-inflammatory intervention options. As mentioned earlier, CRP is a good marker of malnutrition and inflammation. The CRP can be monitored for several months. If the CRP is consistently over 10, the patient has a very high risk of death. It is possible to use anti-inflammatory agents to decrease CRP. These agents must be used with caution and monitored carefully. More work needs to be done to study treatment options to improve the high mortality and morbidity in ESRD patients.

# Reimbursement Update

**By Julie Geraci, MED, RD, LD,** Renal Dietitian, Eastern Oregon Dialysis, 710 Sunset Drive, La Grande, OR 97850, 541-663-8420, Fax: 541-663-8421, E-mail: jgeraci@renalcaregroup.com

### Medicare Medical Nutrition Therapy

In 2000, Congress expanded Medicare coverage to include Registered Dietitians providing Medical Nutrition Therapy (MNT) to diabetes and renal disease patients. According to information received from the American Dietetic Association (ADA), upon the first anniversary of the benefit, it appears that as many as 10,000 individuals were referred by their physicians to Registered Dietitians for MNT. According to data obtained and analyzed by ADA, these 10,000 individuals represented new referrals for nutrition services. Without the Medicare benefit, they probably would not have been referred to a Registered Dietitian. The experience of the first full year of Medicare MNT appears to be encouraging other health plans to adopt more expansive coverage of MNT. According to recent interviews made by ADA, other health care plans and related institutions continue to follow Medicare's lead. In the 107th Congress, a bill was introduced to expand the Medicare benefit to cover cardiovascular diseases. This bill received tremendous support in Congress in 2002. Due to disagreements between the House and Senate over Medicare prescription drug benefits, no Medicare reforms were enacted. The bill will be reintroduced in the 108th Congress. In order to contain cost outlays, new bill language will limit MNT for cardiovascular disease to 3 hours per year for each Medicare patient referred unless the physician believes additional care is medically necessary. For the latest news on MNT, legislative issues, or seminars, continue to frequently check the American Dietetic Association website at www.eatright.org.

### CMS Learning Module

For those of you interested in learning more about filing claims for MNT, the Centers for Medicare and Medicaid Services (CMS) has a learning module titled "Medicare HCFA 1450" (also called UB92). This program is a claims-filing, computer-based training course. For more information go to www.cms.hhs.gov/medlearn/CBT_1450.asp.



### The Effectiveness of Life Intervention

*continued from page 4*

being overweight and being too thin. Big hips, thighs, and buttocks are considered a "healthy look" in the African-American culture. Being "too thin" is perceived as being anorexic and "not healthy." With that in mind, it was important to negotiate with each participant an agreed-upon weight that would help them meet their goals for the program.

Social events centered on food are a huge part of the African-American culture. Lifestyle coaches provided African-American participants with a "Soul Food Guide Pyramid" handout (www.soulfoodpyramid.org) as a means of including their cultural food preferences into everyday life. Culturally appropriate food guide pyramid use is important since recent studies have shown nutritional deficiencies and health complications related to the African-American diet and lifestyle. In addition, information derived from the classroom setting and from the participants food diaries were compiled to get an overall picture of what specific types of foods they ate in order to gather additional resources they may need. A nutritional software program was used to analyze family recipes and then handouts noting different recipe substitutions were provided to adapt the recipes. Web sites, recipes, cookbooks, and handouts all geared toward African-Americans were all valuable resources for tailoring the lifestyle intervention.

### Hispanics

The University of California, Los Angeles (UCLA) Diabetes Prevention Program Centers had two DPP clinics. Table 1 shows the demographic differences between the two UCLA clinics and the large number of Hispanics that received the DPP lifestyle intervention. Both aspects of the intervention, diet and structured physical activity, were sensitive to the cultural preconceptions about the role of men and women in the Hispanic household. It became clear that most of the women in the program were taught from an early age to become the nurturers, to prepare food for the rest of the family and, as such, were expected to prepare the traditional meals of their culture. This oftentimes meant that these foods were the only ones available. Some of the women explained that their own well-being was secondary, that their main role was one of caregivers to the other family members. Meeting their needs and food expectations was implicit in this role. As the DPP lifestyle coaches honed their listening skills, they were able to effectively tailor the intervention in such a way that it blended naturally into the everyday life of the participants and this produced results. Lifestyle coaches focused the intervention on the participants' personal and cultural goals. Most of the participants sincerely wanted to avoid the onset of diabetes. Many had witnessed family members or friends whose lives had been dramatically affected by diabetes complications. The coaches realized that the challenges lay in the fact that the concept of prevention seemed alien to the health-care model they embraced. The lifestyle coaches soon came to know that most of the participants associated weight loss with disease and had difficulty understanding weight loss as a means to prevent the onset of diabetes. The team of lifestyle coaches respected their views and adapted the intervention to these views and cultural values, always keeping in mind the DPP lifestyle goals of 7% weight loss and a minimum of 150 minutes of weekly physical activity.

The 16 Session Core Curriculum of the intervention gave ample leeway for cultural adaptation. The intervention was implemented by using the following tools and strategies:

- All materials from the Lifestyle Resource Core were translated to Spanish and were thoroughly explained during the individual sessions, with many aspects adapted on a one-to-one basis. All coaches spoke fluent Spanish.
- Continuity and consistency were the axis of the intervention. During the 16 Session Core Curriculum, the participants received midweek phone calls from the coaches to ensure that all materials were understood and the weekly assignment was on track. Continuous monitoring helped to establish rapport and our participants felt cared for, thus awakening in them a sense of belonging, commitment, and personal empowerment.
- After the basic Core Curriculum came the quarterly campaigns for weight loss and increased physical activity. Each campaign underwent a makeover at the UCLA DPP Center. All the materials were translated and adapted. Additional materials were also added that were tailored to the needs and interests of the participants. All campaign series were taught in both English and Spanish. In addition, the UCLA DPP Center created a specific campaign to teach the participants how to shop for food and create weekly meal plans—it was called "Shopping the DPP Way." This campaign was then made available to all DPP Centers and set the foundation for a Hispanic weight-loss meal program based on specific meal plans created by the participants during the campaign. The program provided an important tool and helped several of the participants reach their 7% weight-loss goal and beyond.

### Asian Indians

The UCLA Diabetes Prevention Program Center randomized 12 Asian Indian participants. Table 2 shows the difference of their BMI in relation to other ethnicities within the center. The DPP Asian Indian population had a more difficult time reaching the 7% weight-loss goal. This difficulty was mainly due to their baseline BMI being lower and, even though all of them had IGT (impaired glucose tolerance), they did not perceive themselves as being overweight. Thus, it was especially important to stress the relationship between the risk of the onset of diabetes and abdominal fat and the importance of diet and physical activity as a prevention tool. With this approach, the Asian Indian group maintained an overall 80% compliance to the weekly 150 minutes of moderate physical activity. The lifestyle coaches tailored the diet intervention for Asian Indians by:

- Learning about their eating patterns, specific culture-based foods, and developing targeted educational materials to support their lifestyle modification process.
- Utilizing the knowledge derived from the Asian Indian Food Pyramid to create the "Basic Dietary Guidelines for A Healthful Indian Diet."
- Creating the Asian Indian Meal Plan for Weight Loss. The participants were encouraged to adhere to this

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## The Effectiveness of Life Intervention

*continued from page 5*

meal plan at least one complete week a month. The compliance to the meal plan allowed more accurate monitoring and food recording.

The main key in designing a culturally appropriate lifestyle modification intervention model for the Asian Indians was having the commitment to understand their beliefs in regards to food. Consideration was given to their views on body image as well as what they thought they needed to learn. The relevance of agreeing on the purpose of weight loss cannot be underestimated. It led to sustained action on their part. The lifestyle coaches' own learning process and cultural sensitivity created the environment that promoted not only weight-loss and activity results, but retention of this group of participants throughout the study.

### Pacific Islanders and Other Asians

In Hawaii, there were 24 participants randomized into the intensive lifestyle arm of DPP: 45% (n = 11) identified themselves as Pacific Islander, 33% (n = 8) as Asian, and 21% (n=5) as Caucasian.

The local Hawaiian culture is best described as a stew rather than a melting pot, as the many different ethnic cultures come together and mix, yet maintain their own distinct characteristics. It is the norm for locals to participate and celebrate each other's cultural activities and holidays. For example, it is not unusual for one family to celebrate a baby's 1st birthday luau (Hawaiian), Girl's Day, Boy's Day, and Yakudoshi (Japanese), and Chinese New Year. As in most cultures, a strong food component prevails at all these events, and ethnic foods are served in great variety and quantity. Familiarity with these foods was critical for the Lifestyle Case Manager. It was also a challenge for participants who, for example, diligently recorded ingredients from nine-course Chinese banquets and found that none of the dishes were contained in their Fat and Calorie Counters. Thus, staff spent a considerable amount of time identifying local food resources for fat and calorie information and conducting nutrient analyses for recipes.

The Asian participants were mostly third generation Japanese and Chinese Americans, who unlike their immigrant grandparents, were westernized and belong to a local culture that eats similar foods, and who required little or no distinctive intervention modifications. The local participants in general were provided the same intervention without modification as their ethnic differences have become a unique, multiethnic local culture.

The concept of "ohana," or family in its most extended sense, is deeply engrained in traditional Native Hawaiian culture. Today, as in the past, ohana play an important role in daily living and can serve as a major influence in choosing healthy, as well as unhealthy, lifestyles. Thus, case managers, particularly with the Native Hawaiian participants, focused on including family members in as many of the individual and group sessions as possible.

### Case Study 1

Participant X is a 46-year-old, married female with two children she home-schools. Upon the closing of a family business, she has assumed responsibility as caregiver for her grandmother who has diabetes. X's spouse appears threatened by her desire to make lifestyle changes and sabotages her efforts by, for example, purchasing ice cream and other high-fat, high-calorie foods to bring home to her. Every Sunday, the ohana would gather for a potluck dinner. It was customary for the women to remain in the kitchen after dinner; sitting at the table and talking, nibbling on the leftovers and then cleaning up. Many attempts were made by DPP to increase involvement of family members, to no avail. The spouse never attended group or individual sessions despite numerous invitations. Participant X was unsuccessful in losing weight and incorporating physical activity into her schedule and eventually converted to diabetes.

### Case Study 2

Participant Y is a 47-year-old married male with two children. His family lives in a compound of several homes with family members. Early in the DPP, he recognized the importance of including his family in his efforts to make lifestyle changes, and arranged to have the Lifestyle Case Manager give an evening presentation at his home for his family and close friends, his ohana. The presentation included a brief overview on the history of Native Hawaiian health, a comparison of the traditional Hawaiian diet and contemporary dietary patterns, and finally a discussion on cultural values and traditions in today's society and how they translate to improved health. These concepts were incorporated, as appropriate, into counseling sessions throughout the study particularly with Native Hawaiian participants. Y's family continued to be an important influence on Y, and participated in many of the group and individual sessions. Participant Y reached his weight and exercise goals.

### American Indians

The prevalence of diabetes among the Native American communities is among the highest in the world. Individuals who chose to join the Diabetes Prevention Program (DPP) clinical trial research study were motivated to adhere to their treatment regimens through their desire to impact diabetes in themselves and in their family and to have a lasting impact on diabetes in their communities.

The Lifestyle Balance Curriculum was designed to be usable with various ethnic groups including American Indians. Tools provided such as the Fat Counter book included foods commonly consumed in all communities, with specific foods added to allow for individual community preferences. Locally, recipes were chosen and food plans modified if needed to suit participants' preferences. Local oral translation by staff of any part of the curriculum or instructions was available if needed. Other modifications to the Lifestyle Balance Curriculum were not necessary.

Most of the lifestyle coaches knew the communities or had worked in other Indian communities. Relationships between participants and staff were strong. Some examples of barriers that the lifestyle coach and the participant worked through that were unique to our area were stray dogs, blowing dust, desert heat, and rattlesnakes. As the environmental barriers were overcome through individualized contacts, the participants

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# Kidney Friendly Food Facts

**By Sharon Schatz, MS, RD, CSR, CDE** *Sharon is a renal dietitian with Gambro Healthcare in Lumberton, NJ. She can be reached at Srsmsrd@aol.com or sharon.schatz@us.gambro.com.*

The variety of fruit-based beverages continues to expand and may complicate the counseling process when teaching your patients about what they can eat. Most of our potassium lists show plain fruit juices, not blends or fruit juice cocktails. In previous columns I addressed how potassium may differ in cranberry juice cocktails versus products with 100% juice. Apple juice has also gone "designer". The Old Orchard web site, http://www.oldorchardbrands.net, for example, is great for determining the nutrient content of juices and juice cocktails. Most of the 100% apple juice blends have 280 mg potassium in an 8 ounce serving. Flavors include apple kiwi strawberry, apple passion mango, and apple strawberry banana. Patients, however, can have similar varieties in the juice cocktail versions that contain only 95 mg potassium per 8 fluid ounces. For specific nutrient data, refer to the Old Orchard site. A store locator is also available there.

Some web addresses* that contain links to many common foods or their companies are listed below. This may simplify checking out specific products.
http://www.kitchenlink.com/companies.html
http://www.recipegoldmine.com/foodco/foodco.html
http://www.moms-kitchen.com/companies.htm

Phosphorus control is a never-ending quest. Dietitians are often inundated by gastrointestinal complaints that are related to phosphate binder use. The following tables show foods with higher fiber and lower phosphorus and potassium contents. Keep in mind that the portions listed are not necessarily common serving sizes. In next issue's column, there will be tables of higher potassium, lower calorie foods for use in peritoneal dialysis patients who need to increase potassium, but must manage their weight. Please send me your suggestions and ideas for future columns.

**Web sites accessed July 2003.*

| Food | Portion | Fiber gm | K+ mg | Phos mg |
|---|---|---|---|---|
| Apple | 1 medium | 3.73 | 159 | 10 |
| Apple ring, dried | 1 each | .56 | 29 | 2 |
| Applesauce | 1 cup | 2.93 | 183 | 17 |
| Asian Pear | 1 each | 4.39 | 148 | 13 |
| Blackberries, fresh | .5 cup | 3.82 | 141 | 15 |
| Blueberries, fresh | .5 cup | 1.96 | 65 | 7 |
| Boysenberries, fresh | .5 cup | 3.82 | 141 | 15 |
| Cherries, fresh | 1 each | 1.06 | 15 | 7 |
| Cranberries, dried | 2 TBSP | 0.76 | 6 | 15 |
| Cranberries, fresh, chopped | .5 cup | 2.31 | 39 | 7 |
| Fig, dried | 1 each | 2.32 | 135 | 15 |
| Fig, fresh | 1 medium | 1.65 | 116 | 1 |
| Grapefruit, fresh | .5 medium | 1.69 | 159 | 2 |
| Kymquat, fresh | 1 each | 1.25 | 37 | 5 |
| Loganberries, fresh | .5 cup | 3.81 | 141 | 13 |
| Mandarin Orange Sections, canned | .5 cup | 2.24 | 153 | 7 |
| Mango, fresh | .5 each | 1.86 | 161 | 11 |
| Pear, bartlett, fresh | 1 medium | 3.98 | 208 | 18 |
| Pear, Bosc, fresh | 1 small | 3.34 | 174 | 15 |
| Pear, D'Anjou, fresh | .5 large | 2.51 | 131 | 11 |
| Pear, dried | 1 half | 1.31 | 93 | 10 |
| Pineapple, fresh, diced | 1 cup | 1.86 | 175 | 11 |
| Prickly pear, fresh | 1 each | 3.71 | 227 | 25 |
| Raspberries, fresh | .5 cup | 4.18 | 93 | 7 |
| Strawberries, fresh | 1 medium | 0.50 | 34 | 3 |

| Food | Portion | Fiber gm | K+ mg | Phos mg |
|---|---|---|---|---|
| Tangerine, fresh | 1 medium | 1.93 | 132 | 8 |
| Broccoli, chopped cooked | .5 cup | 2.26 | 228 | 46 |
| Cabbage-green, raw, shredded | .5 cup | 0.80 | 72 | 15 |
| Cabbage - red, raw, shredded | .5 cup | 0.70 | 72 | 15 |
| Cabbage, shredded, cooked | .5 cup | 1.72 | 73 | 11 |
| Carrots, cooked | .5 cup | 2.57 | 177 | 23 |
| Carrots, fresh, grated | .5 cup | 1.65 | 178 | 24 |
| Cauliflower, fresh, cooked | .5 cup | 1.67 | 88 | 20 |
| Collard Greens, chopped, cooked | .5 cup | 2.66 | 247 | 25 |
| Corn, white, canned | .5 cup | 2.10 | 195 | 67 |
| Corn, white, fresh, boiled | 1 ear | 2.08 | 192 | 79 |
| Corn, yellow, canned | .5 cup | 1.64 | 160 | 53 |
| Corn, yellow, fresh, boiled | 1 ear | 2.16 | 192 | 79 |
| Corn, yellow, frozen, cooked | .5 cup | 1.97 | 121 | 47 |
| Green Beans, canned | .5 cup | 2.03 | 85 | 21 |
| Green Beans, fresh, cooked | .5 cup | 2.00 | 187 | 24 |
| Green Peas, frozen, boiled | .5 cup | 4.40 | 134 | 72 |
| Green Peas, fresh, boiled | .5 cup | 4.40 | 217 | 94 |
| Green Pepper, raw | 1 small | 1.33 | 131 | 14 |
| Pea Pods, fresh, boiled | .5 cup | 2.24 | 192 | 44 |
| Pea Pds, frozen, boiled | .5 cup | 2.23 | 138 | 37 |
| Turnip Greens, cooked | .5 cup | 2.52 | 146 | 21 |
| Turnips, fresh cubes, boiled | .5 cup | 1.56 | 105 | 15 |
| Barley, pearled, cooked | .5 cup | 3.0 | 73 | 2 |
| Buckwheat groats, roasted, cooked | .5 cup | 2.3 | 74 | 3 |

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**The Effectiveness of Life Intervention**

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Delahanty L, Begay S.R, Coocyate N, et al. The Effectiveness of Lifestyle Intervention In The Diabetes Prevention Program: Application In Diverse Ethnic Groups. Copyright Diabetes Care and Education, a Dietetic Practice Group of the American Dietetic Association. Reprinted by permission from *On the Cutting Edge*, Vol.23; Number 6, 2002.

# Advances in Practice

## Carnitine supplementation in patients undergoing maintenance dialysis therapy

**By Philippa Norton Feiertag, MEd, RD, CSR, LD** *Philippa is a Clinical Analyst/Renal Nutrition Specialist with Clinical Computing, Inc. in Cincinnati, OH. She can be reached at feier@fusenet.com.*

Patients with chronic renal disease are encouraged to engage in moderate physical activity to reduce their risk of cardiovascular disease (CVD) (1). However, exercise capacity in this population is limited by reduced oxygen supply due to anemia and cardiovascular abnormalities, and by decreased muscle strength (2,3). In patients with end-stage renal disease (ESRD), exercise capacity often remains low despite correction of anemia (4). This suggests that impaired muscle metabolism may lead to muscle dysfunction in patients with ESRD.

Considerable attention has focused on levocarnitine (L-carnitine) deficiency as a possible cause of muscle weakness in dialysis patients. L-carnitine is a naturally occurring carrier molecule that transports long-chain fatty acids into mitochondria for use as an energy source, and removes the toxic by-products of fatty acid metabolism (5). Muscle function is critically dependent on an adequate supply of carnitine because long-chain fatty acids are the primary energy source for skeletal muscle. Results of clinical studies indicate that L-carnitine may also play a role in improving lipid profile, increasing response to erythropoietin (EPO) therapy, decreasing hypotension and muscle cramps, improving cardiac function and preserving exercise capacity in dialysis patients (4,5).

Several factors contribute to carnitine deficiency in patients undergoing dialysis therapy, including inadequate intake of carnitine-rich foods (meat and dairy products), decreased carnitine synthesis in the kidney and loss of carnitine during HD (5-7). Approximately 75% of free carnitine is removed from plasma during each HD treatment, resulting in plasma free carnitine concentrations below the normal level of 40 micromol/ L in 95% of patients on HD for more than 6 months (5).

In December 1999, the Food and Drug Administration (FDA) approved L-carnitine injection (Carnitor®) for prevention and treatment of carnitine deficiency in patients with ESRD undergoing dialysis (8). However, the Kidney Disease Outcomes Quality Initiative (K/DOQI) Nutrition Work Group concluded that there was insufficient data to support the routine use of L-carnitine for patients undergoing maintenance dialysis therapy (9). The Work Group recommended additional studies, including clinical trials of L-carnitine for the treatment of hyperlipidemia and EPO-resistant anemia, and outcomes research to identify subgroups of patients who respond to L-carnitine for one or more of its proposed indications.

On November 8, 2002, however, the Centers for Medicare and Medicaid Services (CMS) issued a national coverage determination, providing payment instructions for IV L-carnitine for patients with ESRD (10). This determination became effective on January 1, 2003. Intravenous L-carnitine will be reimbursedfor patients with ESRD who have been on dialysis for a minimum of 3 months. Patients must have documented carnitine deficiency, and either EPO-resistant anemia or intradialytic hypotension that precludes delivery of the intended dialysis therapy (10). However, continued use of L-carnitine will not be covered unless improvement is evident within 6 months of treatment initiation.

This column will review L-carnitine's role in muscle metabolism and summarize recent research into the effects of L-carnitine supplementation on health outcomes in patients with ESRD undergoing dialysis.

### Role of L-carnitine in muscle metabolism

L-carnitine is synthesized in the liver and kidneys, and transported to cardiac and skeletal muscle tissue for use in energy production (11). Transport of long-chain fatty acids by L-carnitine into the mitochondrion requires 3 enzymes located on mitochondrial membranes.

At the outer mitochondrial membrane, carnitine-palmitoyl transferase I (CPTI) catalyses the formation of acylcarnitine from fatty acids and coenzyme A (11,12). Carnitine: acylcarnitine translocase (CT) transports acylcarnitine across the inner mitochondrial membrane, where acyl-CoA formation is catalyzed by carnitine-palmitoyl transferase II (CPTII). Acyl-CoA then undergoes beta-oxidation, generating acetyl CoA, which enters the Krebs cycle (11,12). The energy storage

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# Latest Version of USDA's Premier Nutrient Database Released: a press release from the Agricultural Research Service (ARS).

July 30: 2003: An updated version of the Agricultural Research Service's flagship nutrient database was launched today by ARS, the U.S. Department of Agriculture's chief scientific research agency. The database is the major authoritative source of food composition in the United States.

More than 400 new entries have been added to the "USDA National Nutrient Database for Standard Reference, Release 16," or SR16 for short, for a total of 6,661 food items. The database is managed by ARS' Henry A. Wallace Beltsville (Md.) Agricultural Research Center (BARC).

Each food item is shown with an information profile that provides data from among 125 possible food components, such as vitamins, minerals and fatty acids. SR16 is available in a variety of formats, including a consumer-friendly, downloadable version with a nifty search feature for both stand-alone and portable computers.

The database includes both generic and brand-name food items. Information is derived from a variety of rigorously evaluated sources, including USDA-sponsored laboratory analyses, qualified food-industry data and available scientific literature.

Among many upgrades, values for individual carotenoids and for vitamin K have been included for the first time. The carotenoids are a group of red, yellow and orange pigments in fruits and vegetables that may impart beneficial health effects. They include beta-carotene, alpha-carotene, beta-cryptoxanthin, lycopene and lutein+zeaxanthin. The nutrient profiles for many raw fruits, as well as raw and cooked vegetables, have been updated. And the reporting of ready-to-eat breakfast cereals has undergone major updates.

The release also includes new analytical data for many retail meat cuts trimmed to 1/8 inch of external fat, along with updated values for many cuts trimmed of all external fat.

The ARS-BARC Nutrient Data Laboratory in Beltsville, Md., provides free electronic access to SR16 online from its web site and via download onto certain personal computers, hand-held digital assistants and laptops. SR16 also will soon be available for purchase on CD-ROM.

To access SR16, go to: <http://www.nal.usda.gov/fnic/foodcomp>

**Stipend Report**

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- "Foods containing carbohydrate from whole grains, fruits, vegetables, and low-fat milk are important components and should be included in a healthy diet."
- "With regard to the glycemic effects of CHO, the total amount of CHO in meals and snacks is more important than the source (starches or sugars) or type (glycemic index)."
- "Because sucrose does not increase glycemia to a greater extent than isocaloric amounts of starch, sucrose and sucrose-containing foods do not need to be restricted by people with diabetes, however they should be substituted for other CHO sources or if added, covered with insulin or other glucose lowering medication."
- "In insulin-resistant individuals, reduced energy intake and modest weight loss improve insulin resistance and glycemia in the short-term."

To conclude her presentation, Marion summarized "New Nutrition Paradigms", emphasizing MNT based on treatment goals, metabolic profile, and changes patients can implement. Regarding the progressive nature of type 2 diabetes, Marion underscored the importance of understanding that "beta cells fail, not diet and exercise".

**Answer key to the CPEU questions from the Summer issue, Homocysteine: The Newest Uremic Toxin?**

| | |
|---|---|
| *1. C* | *6. D* |
| *2. D* | *7. B* |
| *3. D* | *8. B* |
| *4. B* | *9. A* |
| *5. B* | *10. D* |





**Advances in Practice**

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compound adenosine triphosphate (ATP) is produced when reduced energy carriers formed during beta-oxidation and in the Krebs cycle transfer their energy to the electron transport chain. Effects of L-carnitine supplementation on health outcomes in patients with ESRD

After a short period of time, patients undergoing dialysis have decreased total carnitine in their tissues and low concentrations of free carnitine in their plasma (13). In these circumstances, long-chain fatty acids accumulate outside the mitochondrion, and the lack of available fatty acid substrate results in an energy deficit (14). Carnitine deficiency is more pronounced in patients on HD than in those undergoing continuous ambulatory peritoneal dialysis (CAPD), and in female HD patients than male HD patients (15).

In HD patients, repeated intravenous (IV) administration of L-carnitine (20 mg/kg at the end of dialysis for 9 weeks) increased pre- and post-dialysis plasma L-carnitine levels, which reached a steady state after 8 weeks (16). While L-carnitine levels dropped after supplementation ceased, they remained above pre-treatment levels after 6 weeks, and this has been attributed to the accumulation of L-carnitine in the tissue pool. This is the basis for checking for low carnitine levels to initiate repletion therapy, and why levels are not redrawn at a later date when therapy is continued, following a favorable patient response.

**Treatment of hyperlipidemia**

The K/DOQI Nutrition Work Group reviewed 32 studies published between 1980 and 1995 to evaluate the effect of L-carnitine supplements on hyperlipidemia (9). Most reported on triglyceride levels in HD patients, and a decrease in serum triglycerides was observed in only 7 studies. However, interpretation of these studies was difficult due to small sample size, inclusion of patients with normal triglyceride levels, and differences in L-carnitine dose, administration route, study duration and statistical analysis.

A study published in 1998 described a decrease in serum triglycerides from 260 ± 64 mg/dL to 226 ± 82 mg/dL over a 3-6 month period in hypertriglyceridemic HD patients who received 5 mg L-carnitine/kg body weight IV thrice weekly at the end of dialysis (17). In addition, decreasing levels of plasma total cholesterol (from 5.65 ± 1.53 mmol/L to 4.66 ± 0.3 mmol/L) and low density lipoprotein (LDL) cholesterol (from 2.81 ± 1.43 mmol/L to 1.74 ± 0.86 mmol/L) have been reported in HD patients receiving 15 mg L-carnitine/kg IV thrice weekly after dialysis for 6 months (18).

These studies suggest that relatively low doses of L-carnitine may be useful in the management of hypertriglyceridemic HD patients, and for controlling total and LDL-cholesterol levels.

**Anemia management**

Several systematic reviews suggest an important role for L-carnitine supplementation in anemia management. A number of studies conducted between 1978 and 1999 showed that treatment with L-carnitine increased hemoglobin and hematocrit levels, and decreased dose requirements for EPO in patients with ESRD undergoing HD therapy (9, 19-21).

A placebo-controlled, randomized clinical trial also revealed significant increases in mean hematocrit (from 28.1% to 32.8%), and reduction in mean EPO dose (from 141.3 U/kg to 92.8 U/kg) in patients older than 65 years of age, who received 1 g L-carnitine IV after HD (22). More recently, a 3-month trial of oral L-carnitine (500 mg/day) resulted in a significant increase in both hematocrit and total iron-binding capacity (TIBC) in HD patients with a history of poor response to EPO (23). These studies suggest that L-carnitine supplements may be especially helpful in treating anemia in patients aged over 65 years, and those who are resistant to EPO therapy. Decreased EPO requirements in HD patients receiving intravenous L-carnitine may have the additional benefit of reducing dialysis costs.

The effect of L-carnitine supplementation on hemoglobin and hematocrit levels on patients undergoing CAPD has also been studied (25). Two grams of oral L-carnitine/day for 3 months elicited significant increases in hemoglobin (from 11.0 ± 1.1 g/dL to 11.9 ±1.0 g/dL) and hematocrit (from 35.4 ± 3.3% to 38.1 ± 3.4%). EPO doses needed to achieve a target hematocrit of 36% decreased significantly from 3833 ± 3326 U/week to 1292 ± 1712 U/week. However, according to the 2002 package insert for Carnitor□, "the safety and efficacy of oral levocarnitine has not been evaluated in patients with renal insufficiency." The metabolites of oral levocarnitine can accumulate and are potentially toxic.

**Controllingintradialytichypotension and muscle cramps**

Intradialytic hypotension and muscle cramps occur frequently in HD patients and therapy is often marginally effective (25,26). Prolonged and repeated hypotensive episodes may interfere with dialysis adequacy, thereby impacting patient morbidity and mortality.

Most studies of intradialytic symptoms reviewed by the K/DOQI Nutrition Work Group suggested a beneficial effect of L-carnitine in reducing hypotension and muscle cramps, and improving patients' overall sense of well being (9). Even low-dose L-carnitine treatment (500 mg/day for 12 weeks) improved muscular symptoms in approximately two-thirds of HD patients who had previously reported muscle weakness, fatigue and/or cramps (26). At the end of this study, plasma carnitine levels were normal or slightly above normal ranges. The fatigue domain of the Kidney Disease Questionnaire (KDQ) was also significantly improved in patients receiving IV carnitine post-HD for 24 weeks versus placebo (4).

**Improving cardiac function**

Cardiac muscle, like skeletal muscle, is dependent on long-chain fatty acids as an energy source (5). Dysfunction of the left ventricular wall is responsible for considerable morbidity, and CVD accounts for approximately 50% of the mortality, in patients with ESRD (9).

Two studies reviewed by the K/DOQI Nutrition Work Group evaluated ejection fraction as an indicator of left ventricular function; their findings, however, were contradictory (9). A statistically significant

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increase in ejection fraction occurred in 13 HD patients who received L-carnitine IV after each dialysis session for 3 months. In a randomized, placebo-controlled trial in 28 HD patients, there was no difference in baseline and post-treatment ejection fraction between the placebo group and the group receiving 2 g L-carnitine IV after each dialysis session for 6 weeks.

Results of a study published in 2002 suggest that left ventricular function improves in dialysis patients with impaired left ventricular function who receive L-carnitine therapy (27). In these patients, mean ejection fraction increased significantly from 32.0% at baseline to 41.8% after 8 months of L-carnitine supplementation.

### Preservation of exercise capacity

Severity of exercise impairment varies in clinically stable ambulatory HD patients, and may interfere with their normal daily activities (28).

The K/DOQI Nutrition Work Group performed a detailed review of 5 studies published between 1980 and 1991, which evaluated the effect of L-carnitine on physical activity in patients with ESRD (9). Although results indicated a modest beneficial effect of L-carnitine supplementation on exercise capacity, the Work Group concluded that there was inconclusive evidence regarding the role of L-carnitine in muscle function in patients with ESRD. They did, however, support short-term trials of L-carnitine for up to 4 months in selected patients with decreased muscle strength and exercise capacity.

More recent studies of physical activity in HD patients have used oxygen consumption during maximal exercise (VO2 peak) as an indicator of exercise capacity (4,28). Retrospective analysis of data from 193 HD patients who had undergone exercise testing showed no significant correlation between plasma carnitine level and VO2 peak (28). Similarly, 2 randomized, placebo-controlled trials showed no effect of IV L-carnitine supplementation on VO2 peak, despite increased plasma carnitine concentrations (4). However, a secondary analysis in this study revealed that L-carnitine therapy was associated with a significantly smaller deterioration in VO2 peak during the 6-month trial. Thus, IV L-carnitine treatment may prevent decline in exercise capacity in patients undergoing maintenance HD therapy, permitting physical activity that may contribute to improvements in quality of life.

The Table summarizes recent research on the effects of L-carnitine therapy on health outcomes in dialysis patients. A significant increase in serum albumin (from 34.8 ± 7.3 g/L to 46.0 ± 5.4 g/L) has also been reported in HD patients receiving 15 mg/kg L-carnitine IV 3 times weekly after dialysis for 6 months (18). While therapy appears to have a positive impact on several health outcomes in this population, and L-carnitine injection is approved by the FDA for preventing and treating carnitine deficiency in ESRD, no national coverage policy for L-carnitine existed prior to this year. Thus, local fiscal intermediaries have determined reimbursement for L-carnitine, leading to inconsistencies in its availability for dialysis patients. (8).

An interdisciplinary panel convened by the National Kidney Foundation in 2002 developed best practice recommendations for use of L-carnitine in patients undergoing maintenance dialysis therapy (29). Based on review of scientific and clinical evidence, this panel recommended L-carnitine for anemia, intradialytic hypotension, cardiomyopathy and muscle weakness in patients with clinical signs and symptoms of carnitine deficiency.

Further studies will be required to determine optimal dose and duration for L-carnitine therapy. Trials of L-carnitine supplements may also be justified for selected patients who do not respond to standard therapy for muscle weakness and reduced energy, which affects both their quality of life and risk of developing CVD.

**Table: Recent Research on Effects of L-carnitine Therapy on Health Outcomes in Dialysis Patients**

| Health outcome | Observed effects of L-carnitine supplements |
|---|---|
| Improved lipid profile | • Decrease in serum triglycerides in hypertriglyceridemic hemodialysis (HD) patients (16)<br>• Decrease in plasma total cholesterol and low-density lipoprotein (LDL) cholesterol in HD patients (17) |
| Increased response to erythropoietin (EPO) | • Decrease in mean EPO dose in HD patients > 65 years (21)<br>• Increase in hematocrit and total iron binding capacity (TIBC) in HD patients with history of poor EPO response (22)<br>• Increase in hemoglobin and hematocrit, and decrease in required EPO dose in continuous ambulatory peritoneal dialysis s(CAPD) patients (23) |
| Decreased intradialytic hypotension and muscle cramps | • Decreased muscle cramps and improvement in the fatigue domain of the Kidney Disease Questionnaire (KDQ) (4, 25) |
| Improved cardiac function | • Increased ejection fraction in dialysis patients with impaired left ventricular function (26) |
| Preservation of exercise capacity | • Smaller deterioration in peak exercise capacity in HD patients, as indicated by oxygen consumption during maximal exercise (VO2 peak) (4) |

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## Chair Messages

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your job duties and "extra" tasks in a professional manner to achieve maximum performance and quality outcomes.

Fulfill your role as a valuable team member. Other team members look up to us, physicians consult with us, and patients have a tendency to share more than their diet-related issues with us. We must remain accountable to our patients and be an advocate for them.

The second "A" in "RAAP" is in recognition of the Assertive role we carry as the renal dietitian. The power of knowledge is the method by which we project ourselves and channel our ideas, either directly or indirectly to our team members. We have the talents to convince and empower our patients/clients thus improving their quality of care and life. The renal dietitian is whom I would describe as being the initiative professional. In addition to being a pro-active clinician or better known as the nutrition expert, we are also involved in many other aspects of care that may lie outside the "traditional" role of the renal dietitian.

For example, many renal dietitians manage vitamin D or anemia protocols in their unit. Some renal dietitians recruit patients for renal nutrition-associated studies. Renal dietitians have been involved in quality improvement projects, assisted with the re-designing of training manuals, or re-defined and/or designed upgrades on the company's computer system for documentation purposes.

Just remember to remain as active as possible and as interested as you can be. Don't take the back seat on the bus; become a "co-pilot" in your dialysis facility or in your research setting. Renal dietetics encompasses a wide variety of opportunities and it is more than just a "job." It needs to be viewed as a professional career.

Being a "RAAP" person means sharing and learning with others along the path of success. As a transformational leader, we must realize and recognize the strength that is within our grasp and to take the initiative, reshape the healthcare we can deliver, and thrive on the "chaotic" situations. We need to be weaving an interdependent tapestry of care within the workplace. The opportunities, which seem to unfold before us, will embrace each of us and make us realize that as individuals, we do make a difference amongst our colleagues and patients. Don't hesitate to advance yourself for a higher level of professional growth.

As we have heard before, "Go the Distance!" It has worked for me and it can for you also. By the way, I will guarantee that the next time you hear RAP music, you will think of this Chairperson message and me

# Stipend Report from the National Kidney Foundation Spring Clinical Meetings, 2003

## Integrating Nutrition Therapy into Diabetes Management: Adjusting Insulin and Carbohydrate Counting

**Presented by Marion J. Franz, MS, RD, CDE**

**Summarized by Debra Blair, RD, CSR, LD** *Debra is from Northampton, MA, and works for Fresenius Medical Care. She can be reached at (413)739-5601.*

Marion Franz helped to separate "old" from "new" nutrition paradigms in her evidence-based presentation on medical nutrition therapy (MNT) for diabetes. This computer-interactive session provided opportunities to learn and apply principles of insulin therapy, practical aspects of carbohydrate counting, as well as nutrition recommendations for individuals with type 1 or 2 diabetes. Throughout her presentation, Marion emphasized the importance of a patient-centered approach: listening to the individual, starting with what they are willing and able to do, and promoting their right to eat healthfully.

New strategies for flexible insulin regimens were detailed and include "rapid-acting" insulin (lispro or aspart) given bolus in divided doses at mealtimes (and with snacks, if eaten), along with a daily basal or "background" dose of "24-hour-acting" insulin (glargine). Insulin dose is calculated based on the patient's weight (0.3-0.7 Units/kg/day), with leaner, well-controlled, symptom-free individuals at the lower end of the range. For some with type 2 diabetes, even higher doses (average of 1.2 Units/kg/day) may be required. The total daily insulin Units are then divided by 2, with _ for background and _ for bolus. Background insulin is usually given at bedtime, while bolus doses are divided according to "insulin-to-carbohydrate (CHO) ratio" at meals and snacks.

To determine the "insulin-to-CHO ratio", Marion recommends patients begin by keeping a 3-day food diary. The total daily bolus dose is then divided by the total number of carbohydrate choices (1 choice=15gm CHO) that the patient desires per day. This equals the insulin-to-CHO ratio. (For example: total bolus insulin of 15 Units, divided by 15 CHO choices per day, would result in an insulin-to-CHO of 1 Unit per CHO choice.) Distribution of insulin dose is based on the CHO choices in the patient's usual meal/snack pattern. Initially, patients are encouraged to maintain consistency in meal timing and the amount of CHO at meals. After 3-5 days insulin may be adjusted, with basal based on pre-meal blood sugar, and bolus based on 2-hour post-prandial results. A post-meal blood glucose <180 is the goal.

Marion discussed the evolution of MNT for people with diabetes. While pre-1994 recommendations identified an "ideal" nutrition prescription for everyone, in 1994 the focus shifted to "goals and nutrient-related strategies to achieve goals; macronutrient distribution based on food/nutrition assessment, metabolic profile and treatment goals". Beginning in 2002, recommendations based on "evidence" rather than "group consensus" have formed the foundation for MNT for diabetes. These recommendations are graded (A,B,C or E), with "A" level supported by the strongest evidence. "A" level evidence recommendations include:

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# Chair Messages

**By Jennifer Smothers, RD,LD**
*Jennifer is a Regional Dietitian Coordinator for the Mid-South Region of Renal Care Group. She can be reached at jsmothers@renalcaregroup.com.*
**And Susan M. Reams, RD, CSR, LD** *Susan is Chair of the Council on Renal Nutrition of NKF and a renal dietitian at Mercy Medical Center in Des Moines, IA. She can be reached at sreamswdm@prodigy.net.*

**Jenny:** Greetings! I hope you all have had a great summer, and have been able to take a little time for "R and R" with your family. As we prepare for another school year, and getting back in the routine of school and all of its associated activities, I want to remind you about FNCE 2003. The meeting will be held October 25-28, 2003 in San Antonio, Texas –so save the date! Pre-conference activities will begin mid-week before the meeting starts, and other activities will also be scheduled after the meeting adjourns. A summary of the activities planned for Renal Dietitians include:

- **Renal Dietitian's Breakfast**, sponsored by Diehl, Inc., the producer of "Vitamite" milk substitute. The Breakfast will be on Sunday, October 26, at 7:30-8:30 a.m. at the San Antonio Marriott Rivercenter, Conference Room #12. All Renal dietitians are invited to join us! The winners of the "Vitamite Recipe Contest" will be announced, and you will have a chance to meet the RPG Executive Board.
- **"The Critical Role of Nutrition in Patients with Chronic Renal Insufficency"** presented by one of our past RPG Chairs, Pam Kent, MS, RD, CSR, LD on Sunday, October 26, 10:45-12:30 noon.
- **DPG Showcase** will be on Monday, October 27, from 11: 30-1:30, in the Convention Center. RPG will participate as we share and 'network' with each other.
- **"Nutrition and Renal Transplantation: Conquering Nutrition Problems Toward Successful Outcomes"** presented by Carolyn Cochran, MS, RD, CDE, LD on Tuesday, October 28, 10:00- 11:00 a.m. This session is sponsored by RPG.

I hope many of you will be able to attend this year's meeting, and participate in these activities, and many of the other special events at FNCE. It will prove to be a stimulating and exciting meeting. I am pleased to be working with a great group of renal dietitians this year on our RPG Executive Board. We have several 'new faces' in key committee positions, and interest is high. Please take a minute to scan over the names of those who are serving our association on this year's Roster listing. As you see, each "Area Coordinator" position now also carries with it a key committee chairmanship. This change was made in order to make our Board smaller, but stimulate growth and leadership in our Practice Group. I am proud to be working with such a professional group of renal dietitians!

As always, our Board is looking for ways to better meet the needs of YOU, our membership. We strive to go beyond your expectations; please let us know when we are not meeting your needs as an RPG member. It is indeed an honor and a privilege to serve you!

**Susan:** Let's "RAAP"…… And, I'm not referring to RAP music either. So now that I've caught your attention, you're probably wondering about why I'm writing my guest Chairperson message about "RAAP." I'm planning to augment the RAP music letters in my message and emphasize the characteristics of a renal dietitian and how we've positioned ourselves in the acute, chronic and nephrology research communities.

So, what does "RAAP" mean? It is in reference to Respected Accountable Assertive Professional. In my role as the CRN Chairperson, and in my career years as a renal dietitian, I can see the big picture of not only where we have been as members of the renal healthcare team, but more importantly, as a person with goals and vision, I can also see where we are going with this incredible journey. The high standards of practice we embrace as renal dietitians have allowed us to branch out because of our professional commitment to our patients and team members.

I would now like to take this opportunity to define what I mean by "RAAP" and look at how we can re-shape and focus on enhancing the quality of patient care and to re-package our personal strengths. I will first define the first and last words of my abbreviation message: Respected and Professional.

These two words seem to go hand in hand. If we maintain a respectful and professional attitude towards our clients, such as including them in the decision-making process, allowing them to voice their opinions and to make choices, this will only lead to a reciprocal return of respect from them. Instead of telling them what is best for them, be pleasant and polite with your teaching methods. You will go much further in convincing them that what you're saying may improve their health outcomes.

To gain respect, we need to demonstrate and be respectful with whom we interact. Our teammates and patients will gain trust in our professional capabilities as long as we're willing to recognize their strengths, weaknesses, and what they are capable of accomplishing. We need to exercise enthusiasm, commitment and dedication in our profession to produce the best results.

The next two words I would like to highlight from "RAAP" are Accountable and Assertiveness. These are the adhesive bond we use to hold ourselves to our commitments. Regarding accountability, renal dietitians need to take advantage of every opportunity they can, in order to learn more about what is current in the renal healthcare community. Work closely with your team members. Even though we all function interdependently, it takes all of us together to provide the best quality of care to our clients. If you're involved in a project, take it to completion and do what it takes to get there. Perform

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**Advances in Practice**

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***Nominations Wanted for American Dietetic Association/Council on Dietetic Registration (ADA/CDR)***

The Nominating Committee is accepting nominations for enthusiastic, visionary, and dedicated individuals for the 2004 ADA/CDR ballot positions and the Leadership Database. The nominations form is available on the member-only web site at http://www.eatright.org/Member/85_8070.cfm. Nominations can also be sent electronically to nominations@eatright.org. The deadline for submitting nominations for 2003-2004 slate is November 1, 2004.

REMINDER: The 2004 elections will occur by electronic ballot only beginning February 5, 2004. Members will again have the opportunity to request a paper ballot. More details and information will be forthcoming.