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Feature Article:

How to Increase Early Nutrition Intervention with CKD Patients: Key Insights from a Roundtable Discussion with Renal Dietitians

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What role should nutrition professionals play in managing patients with chronic kidney disease (CKD)? How could primary care providers treating CKD patients better utilize nutrition professionals?

These are the types of questions that the National Kidney Disease Education Program (NKDEP), an initiative of the National Institutes of Health, set out to answer in a recent roundtable discussion with renal dietitians. NKDEP convened a select group of renal dietitians in May 2007. Their task was to solicit ideas regarding ways to help prevent or delay end-stage renal disease (ESRD), also known as kidney failure or Stage 5 CKD, through nutrition intervention in the primary care setting.

Improving care for people with kidney disease is particularly important right now, with the latest National Health and Nutrition Examination Survey (NHANES) data suggesting an increase in CKD and ESRD rates. According to the 1999-2004 NHANES data, approximately 16.8 percent of the U.S. population aged 20 years or older had CKD. This percentage—compared to 14.5 percent in the previous NHANES survey (1988-1994)—demonstrates an increase of almost 16 percent, based on crude estimates of prevalence. In addition, over the past 30 years the incidence and prevalence of end-stage renal disease has increased. The numbers are expected to continue to rise through 2010 (1).

NKDEP is currently focusing on increasing knowledge and efficacy related to kidney disease among all healthcare professionals working in the primary care setting, including nurse practitioners, physician assistants, pharmacists, dietitians, and physicians. As part of this effort, NKDEP is interested in finding ways to promote nutrition intervention for patients with CKD in the primary care setting, where early intervention can significantly impact kidney decline and progression to ESRD. Specific nutrition intervention may include the introduction of a protein-restricted diet in addition to other dietary changes (2, 3).

This article highlights the key insights discussed during the roundtable discussion related to improving nutrition intervention, and outlines strategies identified for nutrition professionals working with patients with kidney disease.

Key Insights from the Roundtable Discussion

Participants stressed that dietitians should be an essential part of the primary care treatment of CKD due to the significant impact of nutrition on maintaining kidney function.

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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 emailed to the editor by the next deadline.

Future Deadlines:
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From the Editor's Desk

I am honored to have the opportunity to serve as your incoming editor this year. I have some large shoes to fill as Cathy M. Goeddeke-Merickel has been wonderful! I have to admit that I am new to this work in a formal capacity, but have been welcomed and led by our RPG team. I can't thank Cathy enough, who is now the managing editor, for her ongoing assistance in this new endeavor. She has worked very hard on organizing the articles for this issue, updating the website, working on the layout with the publisher, and other various tasks to expand the possibilities of this publication in the future. Thank you also to Lesley Wujastyk, for encouraging and inspiring me to take this position.

"In the sciences, we are now uniquely privileged to sit side by side with the giants on whose shoulders we stand."
Gerald Holton

The focus of this issue is chronic kidney disease (CKD). On a personal note, I was anxious to read these articles since this information is valuable to me as a professional and as a granddaughter. One of my grandparents has CKD, and it was great to have a current look at pertinent recommendations to share with my loved one. Lynn Munson provided us with a valuable article on medical nutrition therapy for CKD. She reiterates the importance of providing an individualized approach regarding protein, calories, phosphorus, calcium, sodium, fluid, potassium, and vitamins. Dr. Narva's article reminds us of the importance of getting involved in discussions with other providers and advocating for related legislation in order to optimize outcomes and provide continuity of care. Promoting nutrition intervention in the primary care setting is a valuable opportunity. Early intervention with CKD is clearly beneficial for our patients to help delay the onset of stage 5 CKD. These articles reiterate the valuable role that dietitians play in this process. Please remember to visit the RPG website at www.renalnutrition.org to access the continuing education questions and self-mailer answer sheet for these two articles.

This will be an exciting year for the Renal Practice Group! As you have seen with previous issues, we are dedicated to providing a quality, worthwhile, peer-reviewed publication for nephrology professionals. We are hoping to provide current topics of interest to the community of nephrology dietitians and other professionals. Approved CPE articles will continue to be offered with each issue and the CPE questions and answer sheets are now conveniently available on the RPG website. You are eligible for a total of 3 continuing professional education units for the featured aticle and advances in practice article.

This publication is for you, so please take the opportunity to become involved in any way that you can. We welcome your input in various formats; you could write a research based article, review article, case study, share education materials, or even recommend topics for further review. Please feel free to contact me at Aimee.Zajc@fmc-na.com with any ideas, comments, or suggestions.

Aimee Zajc, RD LD CNSD

Specifically, a specialized nutrition plan may help slow down the loss of kidney function. Participants recommended certain essential diet and nutrition components, including protein, sodium, fluid, potassium, calcium, phosphorus, and calories. In addition, they noted that specific variants of the nutrition plan may change, depending on the individual's stage of disease. By educating primary care providers on how specific nutrition components positively affect the status of CKD patients, dietitians can justify their role in nutrition intervention for CKD.

Dietitians who don't practice renal education daily may not be as familiar with the specific challenges of the renal diet.

An increase in the incidence of CKD will increase the number of non-renal nutrition professionals who will need to provide care to these patients (4). The participants acknowledged that, as a result of reduced time for diet education and lack of basic education materials, non-renal dietitians may face difficulties providing education and care to patients with CKD. Although renal dietitians are often not working in the same facility as primary care providers, there is an opportunity for the renal dietitian to educate other nutrition professionals who do interact with primary care providers on a regular basis. Renal dietitians can convey the importance of nutrition intervention and guide other dietitians about effective renal education materials. In addition, renal organizations such as National Kidney Foundation (NKF), American Association of Kidney Patients (AAKP), and the American Dietetic Association Renal Dietitians Practice Group (RPG), need to promote this as well. The strength of these organizations is that they can reach many people much more efficiently and effectively than the single-person effort of a renal dietitian.

There is a critical need for early intervention through nutrition referrals to improve care of patients with CKD and prevent or delay ESRD.

The renal dietitians stressed that that providers are not regularly referring patients to dietitians for nutrition intervention for CKD. They attributed this trend to a lack of awareness of Medicare reimbursement guidelines for nutrition therapy for CKD, limited understanding of the nutrition components of chronic kidney disease, and possibly a lack of team relationships between dietitians and primary care providers.

Medicare initiated coverage for medical nutrition therapy (MNT) for CKD in 2002. This Medicare coverage supports referral to the dietitian as part of treatment of CKD. However, the renal dietitians noted that physicians might not be aware of this reimbursement option. Thus, there is perception of a lack of Medicare coverage for MNT among primary care providers. (*Please see Figure 1 for more on Medicare coverage guidelines.*)

Figure 1:

According to the Medicare, Medicaid and SCHIP Benefits Improvement and Protection Act of 2000, as of January 1, 2002, medical nutrition therapy services are available for beneficiaries with renal disease. Specifically, patients who have a "reduction in renal function not severe enough to require dialysis or transplantation, with a GFR between 13-50 mL/min/1.73 m² are covered." This coverage involves initial and follow-up visits over a 12 month period (5).

Strategies Identified by Roundtable Participants

Renal dietitians should facilitate education of CKD patients by working with non-renal dietitians to provide information and effective resources and materials.

Renal dietitians can offer workshops and training for non-renal dietitians to help them become more familiar with CKD nutritional guidelines.

All dietitians are encouraged to educate primary care providers on the need for referrals for CKD.

Dietitians can offer providers factual information about the profound impact that a specialized nutrition prescription has in the treatment, management, and prevention of CKD.

All dietitians have an opportunity to inform primary care providers of new reimbursement coverage from Medicare and how to obtain reimbursement.

Dietitians can assist providers in understanding the current Medicare reimbursement for CKD and help them determine if private insurance companies offer this benefit as well.

Dietitians can help ensure continuity of care for patients with CKD by marketing their services and expertise, and developing relationships with primary care providers.

By offering educational sessions for primary care providers on how the dietitian can be effective in treating CKD patients, and providing a list of practicing renal dietitians in their area, dietitians can help facilitate the process of nutrition referrals.

Dietitians should encourage a collaborative approach to care by helping to create a referral process in settings where non-physicians are more empowered to make a referral.

Dietitians can work with the entire provider team, including non-physicians, to establish effective practice guidelines for use in the primary care setting. In addition to physicians, nurse practitioners and physician assistants may also have authority to initiate referrals for MNT of CKD with follow-up approval and signature by the primary physician. Although these professionals do not have complete authority over standing orders, they may be more empowered in certain settings to refer to the dietitian, with physician approval. By working with other non-physicians to encourage referrals, the renal dietitian can create an opportunity to develop consensus practice standards.

Developing an Agenda

The participants felt that dietitians can be an essential part of primary care treatment of CKD. They also expressed that substantial improvements in the quality and outcomes with medical nutrition therapy for CKD are needed, and can be achieved with the appropriate strategies initiated by dietitians.

This roundtable discussion is the beginning of a new effort by NKDEP to highlight ways in which we might help promote nutrition care in the primary care setting. We greatly value the participants' time in helping us identify opportunities and formulate ideas on how NKDEP may be able to impact and enhance nutritional care of CKD patients. With much appreciation, we thank our participants including: Theresa Kuracina, MS, RD, CDE, Diabetes Dietitian Albuquerque Indian Health Center; Susan Salmi, RD, LD Renal Dietitian, Kidney Specialists of Minnesota, PA; Karen Basinger, MS, LDN, Renal Dietitians Dietetic Practice Group/ADA Legislative and Reimbursement Chair; and Lois Hill, MS, RD, CSR, Nutrition Solutions. As we develop an active, prioritized agenda, we welcome your input in this ongoing process. Please contact us at nkdep@info.niddk.nih.gov to share your comments and ideas for how NKDEP can work with the nutrition community on improving care of CKD patients.

This article has been approved for 1 CPE unit and the CPE insert can be accessed in the Members Only Section of the RPG website from the CPE Inserts link.

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Medical Nutrition Therapy for the Predialysis CKD Patient

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Chronic Kidney Disease (CKD) affects 1 in 9 U.S. adults, or 20 million people living in the U.S. (1). It is predicted that the number of people needing renal replacement therapy (RRT) will increase from 406,000 in 2000 to 651,000 in 2010 (2). CKD is obviously a growing and costly public health concern. Total Medicare expenditures for CKD reached $18.6 billion in 2004, of which $16.3 billion was spent just providing dialysis (3).

Major causes of CKD include diabetes (DM), which accounts for approximately 40% of cases, hypertension (HTN), which leads to 27% of cases, and glomerulonephritis, which accounts for approximately 13% of cases. The remaining cases are from various other causes, including inherited diseases (such as polycystic kidney disease) and immune dysfunction (3). Approximately 20-30% of diabetics (either type 1 or 2) develop nephropathy, as evidenced by microalbuminuria. Of this group, about 20% of type 2 diabetics will proceed to stage 5 CKD, compared with 50-75% of type 1 diabetics (4). However, there is a much greater prevalence of type 2 diabetes in the population. So, ultimately, these patients constitute a large part of the diabetic population starting dialysis.

The medical community is being urged to screen early for kidney disease. Risk factors for CKD include HTN, DM, family history, and older age. Screening includes checking blood pressure (BP), checking for urinary albumin excretion and looking at serum creatinine. Serum creatinine can be used to estimate glomerular filtration rate (GFR), using the Modification of Diet in Renal Disease (MDRD) equation which can be found at http://www.kidney.org/professionals/KDOQI/gfr_calculator.cfm. The estimated GFR can then help determine whether there is kidney impairment and, if so, to what degree the kidney disease has progressed.

The National Kidney Foundation Kidney Disease Outcomes Quality Initiative (K/DOQI) has classified kidney failure into stages:

- Stage 1 normal GFR $\geq$ 90 ml/min/1.73m^2
- Stage 2 mild low GFR 60-89 ml/min/1.73m^2
- Stage 3 moderate low GFR 59-30 ml/min/1.73m^2
- Stage 4 severe low GFR 15-29 ml/min/1.73m^2
- Stage 5 kidney failure GFR<15 ml/min/1.73m^2

These stages have been set up to allow more uniform diagnosis and care of the patient with CKD. There are a number of K/DOQI guidelines for interventions aimed at slowing the progression of CKD (5). Interventions that have been proven to be effective include:

- tight glycemic control in diabetics
- strict blood pressure control
- use of angiotensin-converting enzyme (ACE) inhibitors or angiotensin-2-receptor blockers

Two of the interventions that have been studied, but with inconclusive results include:

- dietary protein restriction
- lipid-lowering therapy

Medical Nutrition Therapy (MNT) can play an important role in helping slow the decline of renal function and preserve the nutritional status of the patient with CKD. In recognition of this, Medicare now reimburses for MNT provided to patients with CKD whose estimated GFR is 13-50 ml/min. A total of three hours of MNT during the first calendar year, and an additional two hours each subsequent year can be reimbursed (6). Dietary interventions can help improve control of blood pressure, serum lipids, and blood glucose levels. Weight loss can

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be a beneficial part of dietary approaches, but should proceed slowly in the CKD patient, to minimize breakdown of muscle tissue and use of dietary protein for energy.

Activity should be encouraged, both for weight control and to maintain functional status and well-being. This is often challenging for patients who may have co-morbid conditions limiting exercise tolerance and who may be anemic and too fatigued to pursue higher levels of activity.

Protein Restriction

Restricting protein in the diet of a person with CKD may help slow the progress of renal failure. It is thought that high protein intake leads to kidney damage through increased glomerular perfusion and increased intraglomerular capillary pressures (4,7).

Some physicians are reluctant to have their patients follow low protein diets. There are probably several reasons for this. Inadequate calorie intake that could occur with low protein intakes can lead to protein-energy malnutrition (PEM). Patients initiating renal replacement therapy with PEM have poorer outcomes (8). Physicians may also be concerned that the diet is too difficult to follow and don't want to add an extra burden to their patient.

But the primary reason may be because there is still some uncertainty over the benefit of protein restriction in slowing the progression of renal disease. The initial results of the Modification of Diet in Renal Disease (MDRD) study, which was done to demonstrate that low protein diets could slow progression of renal failure, made it look like there was no effect. But secondary analysis showed there probably was a benefit. An initial reduction in GFR, which was probably just a result of the reduced protein intake, made it look like renal function had decreased; it obscured a later reduction in the rate of decline of GFR in the low protein diet group (9). The secondary analyses of the MDRD Study suggested that a lower protein intake retards the progression of advanced renal disease. The study recommended a dietary protein intake of 0.6 g/kg/d in patients with GFR less than 25 ml/min/1.73m^2 (10).

Although direct evidence to support the low protein diet may be lacking, findings from observational epidemiological studies support an association between dietary protein intake and renal disease progression in certain population subsets. Knight, *et al* in the Nurse's Health Study found a relationship between GFR change and protein consumption. In the 489 women with renal insufficiency, each 10g/d increase in protein consumption was linked with an adjusted decrease in GFR of 1.69 ml/min/1.73m^2 (CI, -2.93 to -0.45 ml/min/1.73m^2) (11).

In the 3rd NHANES study, Wrone *et al* found, among a subset of people with co-morbid HTN and diabetes (DM), that those with the highest protein intake had higher odds of having microalbuminuria. They suggested this may raise a concern for the safety of high protein diets (often used for weight loss) in people with both HTN and DM (12).

Protein restriction is recommended by the K/DOQI guidelines, and in late renal failure, a lower protein intake will reduce nitrogenous waste products (13).

K/DOQI guidelines recommend the use of standard body weight (SBW) based on NHANES II data for calculating patients' protein and calorie needs (14). Tables for SBW are available in the ADA Clinical Guide to Nutrition Care in Kidney Disease and in the Pocket Guide to Nutrition Assessment of the Patient with Chronic Kidney Disease available through the Council on Renal Nutrition of the National Kidney Foundation.

To help maintain adequate nutritional status, at least 50% of the protein should be from high biological sources, and adequate calories should be provided to prevent breakdown of dietary protein for energy (13). Traditionally, this has meant using animal sources to provide the HBV protein. Vegetarian diets were discouraged. But it may not be necessary to use only animal sources of protein. As long as calorie intake is sufficient, protein requirements can be met, even with vegetable proteins.

In fact, research looking at the type of protein in the diet suggests that vegetable protein may provide some benefits to people with impaired renal function. Data from the INTERMAP study indicates that vegetable proteins are associated with lower blood pressure (15). Knight, *et al* found that in women with mild renal insufficiency, an increased risk of progression of renal disease was

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associated with nondairy animal protein but not with intake of vegetable protein (11). Finally, soy protein appears to be less harmful to the kidneys than animal protein. This may be because soy contains less of the sulfur-containing amino acids. Sulfur-containing amino acids are primarily metabolized by kidneys and have vasodilatory effects that increase renal blood flow and increase glomerular capillary pressure (16).

Concern with using vegetarian diets in renal failure has often centered on the high phosphorus and potassium content of such foods such as tofu, soymilk, legumes and nuts. However, these foods could still be included in the diet. The bioavailability of the phosphorus in plant foods is lower than that in animal meats, and phosphate binders can be taken to help decrease phosphorus absorption. Also, many patients with earlier stage CKD do not yet need potassium restrictions. In the future, perhaps dietary recommendations for early stages of CKD will concentrate more on protein sources than on their quantity.

Calorie Intake

Adequate calorie intake is essential in preventing PEM. Calorie sources for those who are limiting protein can sometimes be limited. Until dietary potassium intake needs to be restricted, fruits and vegetables can add some calories with little protein. Beyond that, fats and sugars can be included in the diet to reach calorie goals. Juices, pop, non-chocolate candies, syrup, honey and table sugar can provide calories without adding excess protein, phosphorus, sodium and potassium. Patients should be encouraged to replace saturated fats with unsaturated fats if they have elevated lipid levels.

Teaching patients to include fats, oils and sugars for calories can be a very difficult part of diet education. People hear messages telling them that healthy eating should emphasize whole grains, generous intakes of vegetables and fruits, and limited consumption of sweets and fats. People who have managed diabetes for many years may have been educated before the days of carbohydrate counting. They may avoid sugar and sweets entirely, and can be very resistant to including them in their diets. It can be helpful to explain how diet priorities change in the face of declining kidney function. Also, reframing the diet changes in a positive light—as a way the patient can work around the kidney's limitations and maintain their health—may be beneficial.

Role of Phosphorus Restriction in the Diet

CKD patients are at high risk for developing secondary hyperparathyroidism and bone and mineral metabolism disorder (BMMD). This disorder can begin as early as Stage 2 or Stage 3 CKD (17). The kidneys are responsible for the activation of vitamin D, to form calcitriol. With the decline in functioning renal mass, less calcitriol is formed and, as a result, intestinal calcium absorption is reduced. Low levels of calcium trigger parathyroid hormone (PTH) secretion, which then stimulates bone release of minerals, in an effort to restore serum calcium levels. Normally, calcitriol provides feedback to the parathyroid (PT) gland, to turn down PTH synthesis and secretion. When calcitriol levels are low, this feedback mechanism is reduced.

As renal function declines, the kidneys also retain phosphorus. Blood phosphorus levels rise and provide another stimulus to PTH release. The result is ever-increasing levels of PTH and the development of secondary hyperparathyroidism. The resulting BMMD is a hallmark of renal failure. High levels of calcium and phosphorus in the blood can result in precipitation of calcium phosphate in soft tissues, including blood vessels. This worsens risk for cardiovascular disease.

Patients may have symptoms of itching from high serum phosphorus levels—or they may have no symptoms at all. The body compensates and keeps serum levels of calcium and phosphorus normal for a long time, but a rise in PTH levels can be an early sign of this metabolic disorder.

Bone and mineral metabolism disorder can be treated in three ways:

- Vitamin D analogs may be prescribed to promote better calcium absorption and reduce the over-stimulation of the PT gland. Some nephrologists also measure serum 25 (OH) D levels and prescribe ergocalciferol supplements to correct deficiencies in early stages of CKD (13).

- If serum phosphorus (P) is elevated, dietary phosphorus restriction may be implemented. It may be appropriate to limit dietary P intake, even when serum P levels are still normal, if an elevated PTH also occurs. Serum P levels are not typically elevated before stage 4 CKD because high PTH levels help maintain a normal serum P level by increasing renal P excretion (17).
- Phosphate binding medications can be given to bind dietary phosphorus. Many of these contain calcium and may also be used to raise low serum calcium levels. Calcium carbonate is a commonly prescribed phosphate binder, but patients are often confused as to its purpose. They may think it is for treating stomach upset, or for prevention of osteoporosis. As a result, they may not take it on a regular basis. If its intended use is as a phosphate binder, then patients need to be educated to take it with meals, and not to see it as optional. If it is prescribed to raise calcium levels, the patient may be advised to take it between meals for better calcium absorption.

If serum phosphorus levels become low, phosphate binding medications should be held. Phosphorus levels can also be low in the absence of phosphate-binding medication—often because of malnutrition. In this case, the diet should not be restricted in phosphorus.

Early and effective control of phosphorus is essential in the effort to prevent or inhibit PT cell hyperplasia and progressive secondary hyperparathyroidism (18). In addition to its importance in the control of BMMD, early P restriction may also play a role in slowing the progression of renal disease (19).

Dietary phosphorus levels should be set at 800-1000 mg/day or about 8-12 mg/kg body weight. The restriction of protein makes this fairly easy, but patients may also need to be taught to limit whole grains, nuts, colas and dairy products.

Calcium

Dietary calcium intake may need attention as well. Calcium intake, including dietary calcium and that from calcium-based phosphorus binders is recommended not to exceed 2,000 mg/day (20-21). A low protein diet is quite modest in calcium content because dairy products are restricted, but the dietitian may need to be alert to a patient's consumption of calcium-fortified foods which will increase total calcium intake. Calcium levels occasionally rise too high, from bone release, from too much calcium absorption from calcium-containing P-binders, or because the patient's dose of vitamin D analog is too high.

Sodium and Fluid

Dietary sodium is usually restricted in CKD. Not only is hypertension a risk factor for developing CKD, but once nephropathy is present, sodium handling by the kidneys is altered. Sodium retention plays a major role in the hypertension that can develop as a result of the CKD—largely because of expansion of the extra-cellular fluid volume. Sodium intake should be individualized to the patient's needs, and will usually fall between 2 and 4 grams/day.

Patients can easily experience tissue weight losses that are obscured by fluid retention. They should be encouraged to take note of edema and also to weigh themselves regularly to track weight changes. Adhering to a sodium-restricted diet can help minimize fluid retention. However, restriction of fluid intake is usually not necessary before beginning dialysis. Patients should be encouraged to drink according to thirst, and should neither restrict nor "push" fluids (21).

Potassium

The potassium level of the diet needs to be individualized. Medications may affect serum levels of potassium. Commonly prescribed medications include diuretics, which may increase excretion of potassium, as well as ACE-inhibitors and angiotensin receptor blockers, which can cause potassium retention. Thus, serum levels must be monitored and the diet adjusted accordingly.

Vitamins

Intake of vitamins may be low on a protein-restricted diet. Patients should be encouraged to take a multiple vitamin. Renal vitamins are formulated to provide water-soluble vitamins only. Fat-soluble vitamins should be avoided as renal failure progresses, especially vitamin A, which is usually elevated in advanced renal failure. High intake of vitamin C should also be avoided as it can cause

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accumulation of ascorbic acid metabolites, such as oxalate, creating a potential for stone formation (22).

Conclusion

The dietitian caring for the CKD patient needs to be able to assess the patient's individual requirements and tailor the diet accordingly, taking into consideration the stage of CKD and co-morbidities. Follow-up care is vital, to monitor nutritional status and changes in kidney function and lab values, which may necessitate adjustments in the diet. By providing individualized MNT, the dietitian can play an important role in improving patient outcomes.

This article has been approved for 2 CPE units and the CPE insert can be accessed in the Members Only Section of the RPG website from the CPE Inserts link.

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NEW DPG Election Process this year!

DPG members will be made aware of the slate of candidates for 2008-2009 DPG offices at least 30 days prior to the voting process (February 1 - March 3). Look for an announcement of the DPG slate of candidates via email blast. DPG members may also submit petitions for other candidates to the DPG Nominating Committee within 30 days of the posting of the slate. More information will be coming soon about your DPG's ballot, so stay tuned!

Are You Ready to Coach?

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Reprinted with permission from the Weight Management Newsletter spring 2006.

Sport specific coaching has been a viable, respected profession for years. Coaches help athletes develop new skills, enhance old skills, motivate an athlete to excel, and assist an athlete or team in developing successful game plans. Coaches do not perform for the athlete, but enhance the athlete's performance.

Over the past 13 years, personal and business coaching has become a more prevalent career choice and an adjunct to many existing careers. Consumers view coaching as an option for assistance with their lives, careers, health, and wellness. Coaches are in partnership with their clients and provide support to enhance the skills, resources and knowledge of their clients. They elicit strategies and solutions from their clients. The traditional approach of registered dietitians (RDs) and other health professionals is to problem-solve for their patients, tell them what to do, and take responsibility for their patients' actions. The coaching approach has roots in applied behavioral science and utilizes many behavioral and cognitive therapy approaches to empower individuals to take ownership and place value on their goals. Coaching integrates motivational interviewing techniques, appreciative inquiry techniques, staging behavior readiness, powerful questioning, reflective listening, enhanced listening skills, and being in the moment with your patients/clients to elicit change.

Coach training teaches you to be silent and listen, ask thought provoking questions, and reflect back to your client. The process of change begins with the coach guiding his or her client through developing a vision, finding value in that vision, setting goals, realizing obstacles and strategies to overcome them, and empowering clients to be in control of their destiny. Through thoughtful assessment and inquiry, collaborative problem-solving and goal-setting and safe, open, and honest dialogue, coaches help their clients become aware of where they are, where they want to go, and how to get there. Coaching is designed to help people move from the present to the future. When people are stuck in the past, with past issues and concerns, a therapist is the appropriate professional to intercede, not a coach.

The coaching industry has been steadily growing as people have begun to see an increasing need and demand for coaching services. There are hundreds of training programs for various specialties of coaching. As with any industry, some are credible and some are not. I believe that coaching is the "way of the future" and the skill sets learned are invaluable to RDs and other health professionals. Depending on your career goals, one type of training may be more pertinent to you. This article highlights several of the more prominent and respected training programs. To learn more, visit the individual program Web sites provided at the end of the article.

The International Coach Federation

The International Coach Federation (ICF) "is the professional association of personal and business coaches that seeks to preserve the integrity of coaching around the globe" (1). ICF helps people find coaches, supports and fosters the development of the coaching profession; has programs to maintain and upgrade the standards of the profession; conducts a certification program that is the gold standard for coaches worldwide; and conducts the world's premier conference and other educational events for coaches. It is the largest non-profit professional association worldwide of personal and business coaches. The ICF does not provide coach training.

Coach U

Coach U "is the leading global provider of coach training programs. Coach U has offered the most comprehensive coach training programs since 1992. You will learn to coach, build your coaching practice, integrate coaching skills into your current life or work, and develop a strong

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personal foundation. Many people choose to start their coach training with the Core Essentials™ or Core Essentials Fast Track™ programs. These programs provide a solid foundation to become a professional coach (2).

Students have 15 months to complete the Core Essentials™ program and another three years to complete the Advanced Coaching Program or Advanced Corporate Coaching Program. The Core Essentials™ program is a 77-hour program, including topics such as Guiding Principles, Context for Coaching, Listening, Language, Questioning, Core Skills Practice Lab, Situational Coaching, Establishing Yourself as a Coach, Application Practice Lab, and Personal Foundation. Included with the ICF-accredited training program are the license to use predesigned forms, assessments, tools, and other programs; access to the www.CoachInc.com online community; basic listing in the "Find a Coach" directory; and practice and project labs.

Teleclasses are offered on a "rolling" basis. Training program fee for Core Essentials™ program is $2,195 plus $220 for textbooks. Membership for lifetime replays of all classes in all of the training programs can be purchased for a fee of $750. Advanced training programs are available for additional fees.

Coachville

Coachville "is the world's largest hub for life, business and executive coaches. [It] provide[s] resources and training for the world's best coaches. Coachville launched as a global virtual community for coaches on June 2, 2001, founded by the late visionary Thomas J. Leonard, a key player in the field of personal and business coaching. Its mission is ... to improve the quality of coaching worldwide, and to provide a home for every coach. Its guiding principle is 'Adding value for the joy of it'" (3). Thomas Leonard also founded the ICF and Coach U.

Coachville offers numerous training programs, starting with the Thomas Leonard Coaching School, which provides 200 hours of coach training in live teleclasses, recorded formats, and written materials. The program is delivered in eight programs, each with 25 one-hour lessons. Graduation requirements include completion of lessons and exams with scores of 80% or higher. Topics include: the CoachVille Coaching System, Core Dynamics Coaching, Personal Environments Coaching, Coaching Fundamentals, The Happy Human Program, and more. Practicing learned skills within the CoachVille community is highly recommended. The advanced School of Coaching is available and provides additional training and support for additional fees. The Thomas Leonard Coaching School costs $2,495; payment options are available.

Intrinsic Coaching™

Intrinsic Coaching™ "creates healthier people, healthier organizations, and a healthier world. [Intrinsic Coaching™] is for coaches, health professionals, managers, CEOs—it's for anyone wanting a better way to create change and get things done. In operation since 1998, Totally Coached, Inc. focuses on a singular methodology with a singular result: Intrinsic Coaching™ to increase people's capacity to think better about choices, especially by increasing intrinsic thinking in ways that last and also multiply from person to person" (4).

"Most strategies applied toward accomplishing better results for, with, or through people are extrinsic or systemic strategies. While we need them, they aren't enough. Getting better results in almost anything involves increasing intrinsic strategies, and that requires familiarity with intrinsic thinking in the workplace" (4). The 12-week, two-hour training program of live teleclasses aims to shift trainees' thinking from extrinsic to intrinsic. Class size is limited to 16 people. Classes are scheduled continually at multiple times during the week.

The fee for Totally Coached training is $795 and includes live teleclasses, a training manual, other downloadable resources, membership in a Web-based community, audio files of sessions, and feedback from a mentor coach. An additional fee of $20 per continuing education unit credit hour (ADA is not listed, but possibly available) will apply.

The Institute for Life Coach Training

The Institute for Life Coach Training is "a coach training school specializing in training helping professionals (counselors, therapists, psychologists, social workers,

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human resource professionals, and educators) to transition into life coaching. Prompted by the ever-increasing number of therapists wanting to offer coaching services to their clients, Dr. Patrick Williams, psychologist and ICF-credentialed Master Certified Coach (MCC), founded the Institute in late 1998 after completing his own advanced training at Coach University" (5).

The initial 40-hour Foundational Coach Training Program meets twice a week for one hour and limits class size. Topics covered include Introduction to Coaching, Coaching Basics, Powerful Questions and Purposeful Inquiry, Designing the Action, Skills and Tools for Empowering and Forwarding Action, Practice Coaching, Marketing, and Coaching Labs. The fee for Foundational Coach Training Program is $2,295. Advanced training is available, including two specialty training courses in Wellness Coaching, for additional fees. Certification requires completion of the Foundational Coach Training Program and other requirements. The Certified Life Coach (CLC) credential requires additional competencies.

Wellcoaches® Corporation

Wellcoaches® Corporation, "launched in early 2000, is the world leader in coaching wellness, health, and fitness. [It is] the first to deliver standardized, high-volume coaching services via the internet to achieve sustainable behavior change. [The program] integrate[s] the best in science-based coaching methodologies with cutting-edge Web technologies" (6). Wellcoaches Wellness Coach Training and Certification Programs have been designed to meet the unique needs of the experienced health and fitness professional who wants to focus on wellness coaching. Pre-requisites are established for admission into this training program; being an RD will meet the requirements. The certification program is endorsed by the American College of Sports Medicine.

The10-week comprehensive training program consists of 10 90-minute live weekly teleclasses on topics including Introduction to Wellness Coaching, Client Relationship Skills, Behavior Change, Motivational Interviewing, Wellness Planning, Client Assessment, Conducting Coaching Sessions, Appreciative Inquiry, Self-Efficacy, and Coaching Career Visions. Participants should allow five to six hours a week for classes, reading assignments, and coaching practice. The following items are included in the training fee: a training manual, weekly outlines and assignments, buddy coaching, use of the Wellcoaches Web platform for 12 months, one year Wellcoaches Web membership, two months of licensee teleclasses, and 20 CPE's for RDs.

Additional requirements must be met for certification and licensure. Additional monthly membership and licensing classes are offered for continuing education. Playbacks of all classes, including continuing education, and previous lectures are available. Mentor coaching is available and recommended with the Wellcoaches training program. Live teleclasses are offered several times a week, as well as available by telephone playback and Web audio recordings to provide several ways to make up a missed class. The training/certification program fee is $895; early-bird registration discounts are often available.

Now that you have learned a little about various coach training programs, you may ask, "How would I benefit, as an RD." The more accurate question may be, "How would my clients benefit from this training?" As an RD, we bring a great deal of knowledge to the session with our client. The client also brings a great deal of knowledge. Through coach training, we can better facilitate behavior change by more accurately assessing readiness to change and ability to change; learn to use skills of motivational interviewing, appreciative inquiry, and active listening; and eliminate the "shoulds" and replace them with the "I wills."

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- The RPG website offers both professional and patient resources. For example, the dedicated website column Kidney Friendly Facts offers practical tips, handouts and timely information for the nephrology professional to use for patient education. Sharon Schatz, MS, RD, LD, the column author, provides a new column every other month. The most recent column submission was in September. Check it out along with many other resources.
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Correction:

The article *Rules of the Write: Make Words Short and Simple For All Clients* by Jane Byrnes appeared in the RNF summer issue on page 15 and was reprinted with permission from both the author and the Nutrition In Complementary Care Practice Group, American Dietetic Association.

In 2007, a Public Policy Workshop (PPW) was held to address some of the emerging and ongoing issues ADA members face in their areas of specialty.

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Understanding Nutritional Genomics and its Practical Applications

Ruth DeBusk, PhD, RD;
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Colleen Fogarty, MS, RD;
and Bette Bischoff, MD, RD
for The Nutrigenomics for Dietitians Initiative

Introduction

The integration of genomics into food and nutrition applications has begun. The process is expected to impact virtually every subdiscipline of dietetics, from food science and nutrition science research to clinical nutrition interventions to the development of functional foods and dietary supplements. This emerging field of study is called nutritional genomics, "nutrigenomics" for short. Genes provide the information that's translated into how we look, how we function. In nutrigenomics, the focus is on how genes affect our ability to extract, absorb and use bioactive components in food to support life and the ability of these bioactives, in turn, to influence the expression of the our genes.

Nutrigenomics research is expected to continuously move us closer to defining the best match between our food choices and our genetic makeup (our "genotype"), providing a solid foundation upon which to base diet-related disease interventions and health promotion approaches. Panels of genetic markers will identify which individuals will respond favorably or unfavorably to particular dietary approaches. As with the need to match drug therapy to an individual's genotype (pharmacogenomics), it is important to match food components to our genes in order to achieve maximal effectiveness and to avoid negative consequences that can occur when the environment is at odds with the individual's genotype. Additionally, dietary components, as functional foods or dietary supplements, will be used to increase or decrease the expression of particular genes in order to improve the functioning of individuals and populations.

The impact of nutrigenomics will extend far beyond the obvious clinical nutrition applications, however. Equally important will be the applications to food science and the development of health-promoting foods, the need to educate consumers and professionals alike in this new science, and the development of nutritional standards for different populations. Thus, virtually every aspect of dietetics will be affected. For reviews of nutrigenomics and perspectives on its anticipated applications, see references 1-13.

Genetic Principles

A brief discussion of the basic principles underlying nutrigenomics is helpful in understanding the potential applications. For background information, see the review by Kauwell (1), introductory genetics and human genetics textbooks (14-17), *Genetics: the Nutrition Connection (*18), *It's Not Just Your Genes!* (19), and the nutrigenomics postings on the NCC web site (www.complementarynutrition.org).

DNA is the genetic material, a molecule that carries information encoded within its linear arrangement of nucleotides. A gene is a sequence of DNA that directs the synthesis of a protein. Proteins perform the work of cells and function in a variety of ways: as an enzyme, receptor, transporter, communicator, hormone, or regulatory factor. Many genes influence or are influenced by environmental factors, such as the bioactive components found in food (both nutrients and non-nutrient components, such as phytochemicals). Either the protein coded for by the gene influences the ability to use (eg, digest, transport, metabolize) particular bioactive food components or the expression of the gene itself is influenced by certain bioactives.

Changes can occur within the genetic material. Because DNA is an informational molecule, any change can potentially alter the outcome when DNA is converted to protein. In some cases changing the base component within a single nucleotide [A (adenine), C (cytosine),

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G (guanine) or T (thymine)] leads to major dysfunction. Well known are the inborn errors of metabolism, such as phenylketonuria and galactosemia. This classical application of genetics to nutrition practice is one in which dietetics professionals have long played a valuable role. Advances in nutrigenomics now permit practitioners to focus on genetic changes that alter function less dramatically as well as those that are expressed within certain environments. Although all of these changes—major and minor—are technically mutations (changes in the DNA), there is a preference among those in the field to refer to the changes that have major impact as "mutations" and those that have minor impact as "genetic variations/gene variants" to distinguish the two.

Presently the type of gene variant most relevant to nutrigenomics is the single nucleotide polymorphism (SNP, pronounced "snip"). A SNP by definition is common within a population, occurring in >1% of the individuals. The change may be a single base change or the loss or addition of a limited number of bases (micro-deletion/micro-addition). SNPs serve as "markers" for genes, a way to detect the presence of the change in DNA. Changes may occur in the coding region of the gene, in its promoter (regulatory) region, or be physically close to the gene but not actually within it. Criteria for selecting a SNP as a marker for disease susceptibility is discussed later in the article.

Nutritional Genomics vs. Nutrigenomics vs. Nutrigenetics

Unfortunately, confusion in terminology often accompanies the emergence of a new discipline. The term "nutritional genomics" refers to the discipline itself and encompasses nutrigenetics and nutrigenomics. Both terms describe diet-gene relationships. Nutrigenetics concerns how an individual's genetic makeup (genotype) affects the ability to process and use food, which in turn determines the nutritional requirements for that individual. In other words, nutrigenetics focuses on the impact of genetic variation on the ability to use food to supply optimal nutritional needs. The increased requirement for folic acid by individuals with a particular variation of the 5,10-methylenetetrahydrofolate reductase (MTHFR) gene is an example of nutrigenetics. In contrast, nutrigenomics concerns how environmental factors, such as nutrients and other bioactive food components, influence gene expression. The decrease in expression of inflammatory-promoting genes by omega-3 fatty acids is an example of nutrigenomics.

Just like a focus on genetics preceded the current emphasis on genomics, nutrigenetics will likely be the focus of the early work integrating genetics into food and nutrition. For further discussion of nutrigenomics vs. nutrigenetics, and of genetics/genomics as applied to nutrition, see the review by Ordovas and Corella (20) and the nutrigenomics postings on the NCC web site (www.complementarynutrition.org).

The State-of-the-Science

Common to both nutrigenetics and nutrigenomics is the importance of developing an extensive body of research from which practical applications will derive. Key issues that are being addressed include:

- identifying which genes are diet-responsive and to which bioactive food components;
- understanding the mechanisms by which these components communicate with the genetic material and the proteins and other molecules involved;
- identifying which foods are rich sources of each major bioactive;
- identifying gene variants of each diet-responsive gene and its impact on function;
- developing and validating diagnostic tests that detect those gene variants known to impact response to diet;
- surveying populations and identifying which gene variants are most prevalent, which thus defines the most prevalent disease risks;
- developing nutritional guidelines for intervention in the case of dysfunction that has already developed ;
- preventing disease from manifesting in individuals known to be susceptible; and
- converting these research findings into practical applications for customized nutrition approaches for populations at particular risk as well as for individuals

Clearly, nutrigenomics is a science in progress. Not surprisingly, there is controversy surrounding the degree of readiness for application in practice. Central to the controversy is the selection of the gene variants that form the basis for diagnostic tests that alert one to increased risk for developing particular chronic diseases. It's helpful to establish criteria for selecting a SNP as a diagnostic marker for nutrigenomics applications:

- ideally, the SNP has a measurable effect (change) on function, such as on enzyme activity or gene expression;
- this change in function is reflected in an effect on a measurable biomarker, such as homocysteine or cholesterol levels or cognitive ability;
- the SNP has been found to be associated with a state or condition, such as the vitamin D receptor (*VDR*) gene and osteoporosis or the angiotensin-converting enzyme (*ACE*) gene and exercise activity (21-24);
- there is a diet-gene interaction (such that diet can intervene in a positive way on the effect of the SNP on function and so that, once you identify a person with a particular SNP, there's positive action that can be taken to better their situation); and
- there is a significant amount of peer-reviewed literature supporting the association of the SNP with this effect on function and its phenotypic outcome.

These standards for SNP selection are goals towards which the field of nutrigenomics is moving. You will find for many SNPs that there are gaps, some minor, some major. You will need to use the scientific literature as your primary source of information in order to stay abreast of developments as the practical applications are finetuned over time.

Genetic Screening for Diet-Related Gene Variants

Screening for diet-related variants is simple and noninvasive. Any cell with a nucleus contains the total complement of DNA and can serve as the test material. The most readily available are the buccal cells that line the inside of the cheek. Using a sterile swab containing a brush-like tip, the cheek tissue is swabbed to collect the DNA sample. The sample is then sent to a laboratory where the DNA is extracted, amplified in amount, and prepared for analysis of the particular DNA sequences of interest. Within 2-4 weeks, a report is received that contains the results of the analysis. Some companies will provide only genetic results and others may include health implications and suggestions for nutrition and other lifestyle changes that can help to minimize risk of disease susceptibility. Whether the report is sent directly to the individual or to the health care professional depends upon the laboratory used.

At the time of this writing, at least six companies offer screening for diet-related gene variants that are associated with disease susceptibility. Such testing is a relatively new service and does not fall under standard laboratory accreditation requirements. However, some companies take great care to insure that the laboratories they use follow standard laboratory quality assurance measures and voluntarily seek certification and accreditation. In deciding among the available testing choices, the following questions can help to determine which options best meet your needs.

- Is the test accompanied by an informed consent form? This form should address how your DNA will be used and how privacy is ensured.
- What happens to your DNA following testing? Ideally you want your sample destroyed and the data not released to anyone without your written consent. In certain circumstances, there may be an opportunity for your sample and test results to be included in ongoing research. If you wish to participate in such research, your informed consent form should provide the pertinent information and require your written consent.
- Which risks are assessed (eg, which disease susceptibilities are examined)?
- Which SNPs are tested?
- What is the scientific documentation associating each SNP to a particular disease?
- For each SNP, is there action that can be taken to reduce risk? If so, what is the scientific documentation for these associations?
- Does the company perform the testing itself? If not, which laboratory is used?
  What are the credentials of the laboratory? At a minimum, the lab should have quality control procedures in place and many states require CLIA-certification (Clinical Laboratory Improvement Amendments of 1988) (25).

- Has each test been validated for accuracy and sensitivity? If so, how can you obtain information pertaining to validation?
- What is the minimum age for testing? (eg, does the company test children below the age of consent?)
- How long does the process take from the time a sample is sent until the report is received?
- Is there someone with whom I can discuss the results and their implications? If so, what are the credentials and experience of this individual?

Examples of Nutrigenomic Applications

There are many examples within cardiovascular disease that illustrate how nutrigenomics/nutrigenetic approaches are being practically applied. Clinical practitioners have long been aware that individuals vary significantly in their response to dietary therapies designed to change plasma lipid concentrations. The application of nutrigenomics approaches helps to clarify the basis for the inter-individual differences in response and providing guidance for therapeutic interventions.

There are a number of diet-responsive genes involved in healthy vascular function, and SNP variants have been identified for many of these genes. Using genes that are known to impact serum lipid levels as examples, several have SNPs that are clinically useful: the genes for apolipoprotein E (APOE), apolipoprotein A-1 (APOA1), cholesteryl ester transfer protein (CETP), hepatic lipase (LIPC), and lipoprotein lipase (LPL).
It's helpful to know the gene variants that an individual has (or that the majority of a population is likely to have) and how these gene variants interact with dietary factors when working with clients on effective ways to lower serum lipid levels. For this article, the APOE gene and its common variants will be used as an example of how the practitioner might use nutrigenomics to customize dietary advice.

A primary role of apolipoprotein E (apoE) is to facilitate the interaction between triglyceride-rich chylomicrons and intermediate-density lipoprotein particles and their respective receptors. The clinically useful SNPS for APOE are three variants (alleles): E2, E3, and E4, with E3 being the most common form. Two amino acid residues are involved in the DNA sequence difference among the alleles. E3 has cysteine at position 112 and arginine at position 158, E2 has a single amino acid change at position 158—a cysteine rather than arginine, and E4 has a single amino acid change at position 112—an arginine rather than cysteine. Individuals can have one of six genotypes: 2/2, 2/3, 2/4, 3/3, 3/4, or 4/4.

A number of studies have examined the interaction between APOE alleles and dietary factors and provided guidelines for dietary therapy. Corella and Ordovas provide an excellent overview in their 2005 review (26). Details that are known are indicated below. In general, individuals with at least one E4 allele have the highest basal levels of various lipids and show the greatest lipid-lowering response to a low-fat diet. Those with at least one E2 allele have the lowest basal lipid levels and are helped the least by a low-fat diet.

The following summarizes ways in which the presence of either the E2 or E4 allele have been found to influence response to dietary interventions designed to improve serum lipid levels (responses are in comparison to the more common E3 allele as the control).

Those with one or more E2 alleles:

- have the lowest serum total cholesterol, low-density lipoprotein-cholesterol (LDL-C), and apoB levels of the three APOE alleles (26);
- have the highest triglyceride (TG) levels of the three APOE alleles (26);
- are the least responsive to a low-fat diet (26);
- are the most responsive to oat bran and other soluble fibers (27);
- are the most responsive to endurance exercise (seen in men, no effect in women) (28);
- increased their high-density lipoprotein-cholesterol (HDL-C) in response to endurance exercise (28); and
- are the most responsive to the lowering of TGs by fish oil supplementation (29).

Those with one or more E4 alleles:

- have the highest serum total cholesterol, LDL-C, and apoB levels of the three APOE alleles (26);
- have the lowest basal serum HDL-C levels of the three APOE alleles (26);

- have elevated fasting and postprandial triglyceride levels, though somewhat lower than E2 individuals (26);
- are the most responsive to a low-fat diet (26);
- are the least responsive to oat bran and other soluble fibers (27);
- are the least responsive to the lipid-lowering effects of exercise (28);
- have the least beneficial response to fish oil supplementation (increased total cholesterol and reduced HDL-C) (29);
- have increased LDL-C levels when they drink alcohol (30);
- do not increase HDL-C levels when they drink alcohol as is common in those without an E4 allele (31);
- have increased LDL-C levels when they smoke (32); and
- have increased carotid artery intima-media thickening when they smoke (33).

Just glancing at this list of gene-diet interactions, it is clear that whether an individual has the E2 allele or the E4 allele would make a difference in which diet and lifestyle choices were recommended for improving vascular health.

Similarly, clinically useful SNPs related to polyunsaturated fat and HDL-C levels (APOA1; (34-37)), folate and homocysteine levels (MTHFR; (38-43)), hypertension and responsiveness to salt restriction or the DASH diet (AGT; (44-46)), as well as a number of other SNPs that influence LDL-C and HDL-C levels have been identified (see Corella and Ordovas for an excellent review of multiple gene-diet interactions and pertinent SNPs (26).

Summary

Nutrigenomics can enhance the assessment of nutritional status by providing information not available through other means and by forming the basis for a logical rationale for interventions. Further, this set of tools can be used to define more rigorously the nutrient requirements of individuals and population groups and, thus, their dietary recommendations.

Considerable progress has been made in associating gene variants with particular conditions, understanding how these variants alter responses to food, and how to use food to elicit desired gene responses. There is no doubt that much research remains to be carried out. Studies with greater numbers of healthy individuals stratified by genotype, age, and sex with carefully controlled dietary and other lifestyle interventions will certainly provide additional valuable information. However, it is our collective opinion that there is a solid foundation upon which to screen for gene variants and adjust recommendations for lifestyle choices based upon the information currently available. However, we cannot stress enough the need for practitioners to use the scientific literature as their primary source of information and to regularly adjust their recommendations in line with new findings as they emerge in this rapidly moving field.

Nutrigenomics has already come a long way—far enough for dietetics professionals to realize that the future of nutrition will be interwoven with genetic information. The time has come for us to embrace and absorb the new and exciting opportunities that nutrigenomics provides. A part of this learning will be the vigilance and questioning that will be required: identifying and understanding the sound and substantial research that already exists, while being on the lookout for new nutrigenomic research or, even better, being part of collaborations that initiate this research. Additionally, as dietetics professionals we need to position ourselves as the respected, credible professional that is best able to translate and communicate the latest developments in nutrigenomics to the public. This includes investigating the companies and laboratories that offer nutrigenetic testing, asking the hard questions alluded to in this article, and finding partners that we can trust as we bring nutrigenomics into our practices. Be constantly aware of the ethical, legal and social issues that will arise and seek answers from credible sources. By sitting on the sidelines and waiting for others to pursue these lines of questioning, we will likely miss out on a unique opportunity to join in the new era of nutrition. The future is now.

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CONGRATULATIONS

Lynda Hanning, MPH, RD of Charlottesville, VA, was the winner of the "Count the Kidney Beans" FNCE raffle. She guessed a total of 1100 kidney beans and won a copy of *A Clinical Guide to Nutrition Care in Kidney Disease*. (The total number of kidney beans was 1104.)

Outstanding Service Award

Cathi J. Martin, RD, CSR, LDN, was nominated and selected as the RPG 2007 Outstanding Service Award Recipient. Cathi was the invited speaker at the RPG Member and Industry Recognition Breakfast that was held as one of the RPG scheduled events during the 2007 Food & Nutrition Conference & Expo recently held in Philadelphia, PA. She presented an interesting and inspiring presentation about the magical benefits of volunteerism based on her experiences. Her presentation was entitled "Volunteering is Magic". She has graciously provided a copy of her presentation so that all of our members will have the chance to view her "magical" presentation. Please access the RPG home page via www.renalnutrition.org to access the link to her presentation.

Cathi has been a Renal Dietitian for the past 14 years. She is currently a Clinical Dietitian Account Manager for NutrePletion Resources in Nashville, TN. Cathi has been involved with RPG as the Managing Editor and Editor and the Executive Committee as Chair-Elect, Chair and Immediate Past Chair. In addition, she served as the National Kidney Foundation (NKF)-Council on Renal Nutrition Chair of the Spring Clinical Meeting Program for 3 years. She has also been involved as one of the three co-chairs for the Scope of Practice/Standards of Professional Performance Committee on Renal Nutrition, faculty member of the NKF-KDOQI workshops on bone and mineral metabolism and a workgroup member on the Evidence Analysis for Chronic Kidney Disease (CKD) and the CKD Performance Measures for Physicians from the American Medical Association. She has been invited to present lectures on many renal nutrition related topics both nationally and internationally. In addition, she has published numerous articles in peer-reviewed nephrology journals.

Dietetic Practice Groups Celebrate 30th Anniversary Congratulations Renal Dietitians DPG!

The dietetic practice groups (DPGs) are commemorating their 30th anniversary this year. In addition to continuing to provide members with targeted information and opportunities to network, the DPGs are experiencing a growth in membership. In 2001, 42% of ADA members belonged to at least one of the DPG groups. By 2007, that number has grown to about 47% or approximately 31,400 members that have a membership in one or more of the 29 available DPGs. DPG member surveys show that informative peer-reviewed publications, newsletters, listservs, Web sites, and educational symposiums are the member benefits that keep participation strong.

The following is an alphabetical list of the Renal Dietitians (RPG) Chairs who have provided leadership and helped the DPG grow successfully since 1977, the year of RPG's inception. We also want to thank our members since the RPG would not be possible without YOU!

Judith A. Beto, Rebecca P. Bradley, Eleanor L. Brown, RD, Karen L. Buntjer, Laura Byham-Gray, Carolyn C. Cochran, Marcia G. Davis, Patricia DiBenedetto Barba, Anne S. Diefendorf, Catherine M Goeddeke-Merickel, D. Jordi Goldstein-Fuchs, Roberta R. Henry, Lois J. Hill, Heidi H. Hoover, M. Alison Hull, Anne Ishmael, Teresa Kelly, Pamela S. Kent, Bonnie R. Martin, Cathi J. Martin, Martha D. Massie, Charlotte Roberts, Kathy Schiro Harvey, Jennifer C. Smothers, Nancy S. Spinozzi, and Patricia Weber.

2007 Highlights and Overview of RPG

Lois Hill, MS, RD, CSR
RPG Chair

As fall arrives, changes are in the air with school starting and the seasons changing. And so it is with Renal Dietitians Dietetic Practice Group (RPG). The American Dietetic Association 2007 Food & Nutrition Conference & Expo (FNCE) was held in Philadelphia, Pennsylvania, September 29 – October 2. The RPG jointly co-planned a session with the Medical Nutrition Therapy Practice Group on Sunday, September 30, 2007. The featured speakers were Kamyar Kalantar-Zadeh, MD, PhD, MPH and Sara Coleman, RD, CSR, CDE, who presented The Nutritional and Inflammatory Evaluation in Dialysis Patients (NIED Study): What You Need to Know. The RPG membership breakfast and business meeting was held on Monday, October 1, 2007. Cathi Martin, RD, CSR, LDN, the 2007 RPG Outstanding Service Award winner, was the featured speaker at the membership breakfast and meeting.

Other highlights of the 2007 RPG year include:

- Membership - over 2100 members
- Renal Nutrition Forum issues are posted online at www.renalnutrition.org.
- Continued professional education units (CPEUs) for the Renal Nutrition Forum are now available online at **www.renalnutriton.org** in the members' only section.
- Professional meeting stipends, post baccalaureate scholarships and grant funds for research are available for RPG members.
- The first RPG Workshop was held April 9, 2007. This workshop provided participants with necessary information to study and prepare for the Certified Specialist in Renal Nutrition (CSR) exam.
- The 2006 RPG Outstanding Service Award winner Laura Byham-Gray, PhD, RD presented The Future of Renal Dietetics, Practice, Education and Research: Shaping Advanced Level Practice, which highlighted the history of the renal dietetics practice "from butter balls to dosing Vitamin D…we've come a long way." The Nutrition Care Process and evidence-based practice were also discussed. The hot topics of renal dietetics practice were identified as: nutrigenomics, adults of the pediatric "globesity" epidemic, geriatrics, and preventing chronic kidney disease progression. These trends will require new skills for the renal dietitian including a demand for advanced level practitioners. Advanced level practice for the renal dietitian was defined as "an individual who develops a more intuitive understanding of renal dietetics and practice reflecting a range of highly developed clinical skills and judgments acquired through a combination of experience and education."
- Regarding The Nutrition Care Process, the RPG is currently having discussions with the National Kidney Foundation Council on Renal Nutrition about the Nutrition Care Process with a focus on Chronic Kidney Disease.

For more information on these RPG projects or other RPG issues, please visit the RPG web site www.renalnutrition.org for contact information and resources.

The National Diabetes Education Program (NDEP) has copyright-free materials in up to 20 adaptations. The consumer diabetes materials are culturally tailored for high-risk audiences in Spanish and 15 Asian and Pacific Islander languages, and adaptations of these materials have been made for African Americans, American Indians and Alaska Natives. Free resources are also available for health care professionals.

To access this valuable information and link please visit the RPG website (www.renalnutrition.org) and click on the Member Resources link.

Research - Be Part of the Solution

Maria Karalis, MBA, RD, LDN

One of NKF CRN's goals is to "stimulate, support, encourage and disseminate nutrition-related research." To support these efforts, CRN provides research grants totaling $30,000 every year, with an emphasis on supporting research in basic or applied research in the area of renal nutrition*. Additionally, CRN has a Research Bulletin Board on the NKF website that provides guidance for CRN members to develop and implement research protocols through an interactive mentorship process. Unfortunately, these resources are underutilized and our overall progress on this particular goal can be improved. In fact, the majority of the original research submitted to the JREN, is not from nephrology dietitians.

Theoretically speaking, in our daily clinical practice, we already participate in research activities (i.e. define a problem, gather data, propose a hypothesis, provide an intervention and document results). We shouldn't be intimidated by research, since we already have the scientific skills needed. We all know that nutritional status is linked to morbidity and mortality. So, we should be at the forefront of determining the most effective interventions to improve quality of care in CKD patients. It is our responsibility to do this.

Alison L. Steiber, PhD, RD, LD, recently published a series of inspirational articles in the Renal Nutrition Forum on "Dietitians in Research." She very clearly outlined the importance of conducting renal nutrition research, the components of research and how dietitians can acquire the skills and knowledge to conduct research. If you haven't read them, I'd encourage you to read them, re-read them and then take action! Be part of the solution! Our entire profession and the quality of care provided to CKD patients, depends on our willingness to participate in research. I'd like to also encourage you to reach out to your peers that have participated in research – Judy Beto, Jerrilynn Burrowes, Laura Byham-Gray, Jordi Goldstein-Fuchs, Linda Moore or Alison Steiber (just to name a few).

The ADA recognizes "the importance of advocating for research in practice-based settings." Questions of vital importance to the profession of dietetics are being addressed through "communities of practitioners and scholars working together," also known as the Dietetics Practice Based Research Network (DPBRN). I'd like to propose that the NKF CRN National Research Question (NRQ) is comparable to the DPBRN, where a primary investigator submits a proposal and renal dietitians around the country participate. It's been over two years since we've had a NRQ and the CRN Executive Committee will be taking a proactive role in increasing our research efforts. Preliminary discussions are underway to develop a research advisory board to identify areas of research needed in answering questions important to our profession.

There are many unanswered questions in renal nutrition and evidenced-based outcomes are needed in order to defend our nutrition interventions. For example, in terms of patient outcomes, do we know if one teaching method is more effective than another? Do we know how patients are using food labels, if at all? As a matter of fact, in collaborating with the FDA, the NKF found no data on this issue to defend their case for adding phosphorus to the food label. Other research ideas can be found in the NKF K/DOQI Nutrition Guidelines - after the rationale for each guideline, there is a section entitled "Recommendations for Research."

I am excited about the opportunity we have as nephrology practitioners to enhance our profession. Let's join efforts working towards improving healthcare delivery to CKD patients and move our profession forward by leading the future of renal nutrition.

*Grant proposals are due December 1 (Letter of intent was due October 15). If you have any questions about the grant submission process, contact Debbie Benner, CRN Research Grants chair, at (714) 393-0029, or call the NKF Office of Research Administration at (800) 622-9010, ext. 225.

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Steiber, A. Dietitians in Research: Part 2. *Renal Nutrition Forum* Winter 2007, Vol. 26. No. 1:10-14.

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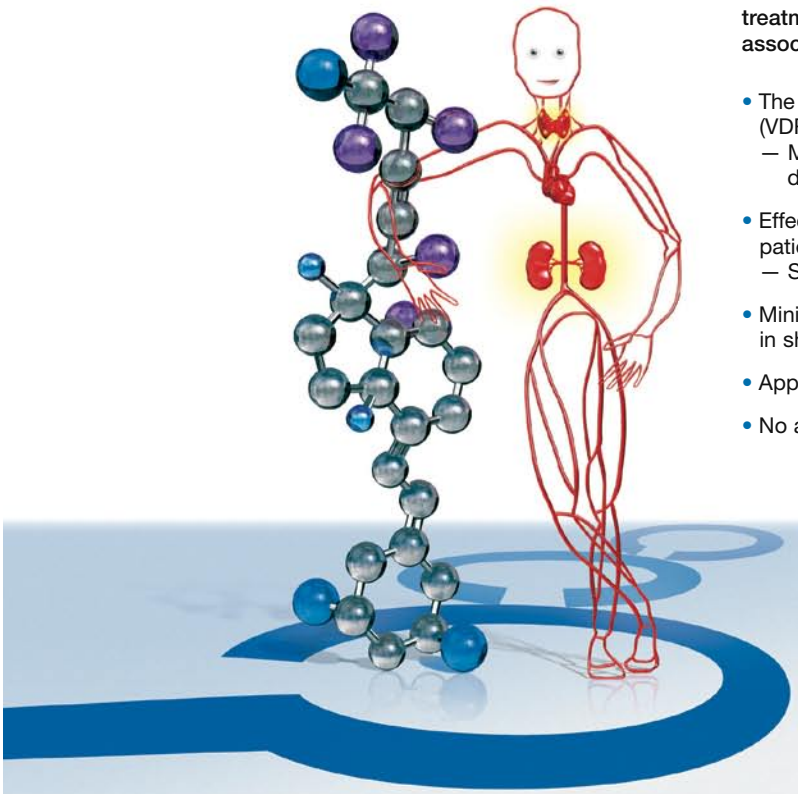

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- Adverse events with greater than 5% frequency with ZEMPLAR vs placebo, regardless of causality, were nausea (13% vs 8%), vomiting (8% vs 4%), and edema (7% vs 0%)

References: **1.** ZEMPLAR Injection [package insert]. North Chicago, IL: Abbott Laboratories; 2005. **2.** Data on file. Abbott Laboratories. **3.** IMS data. December 2006. **4.** Lindberg J, Martin KJ, González EA, Acchiardo SR, Valdin JR, Soltanek C. A long-term, multicenter study of the efficacy and safety of paricalcitol in end-stage renal disease. *Clin Nephrol.* 2001;56:315-323. **5.** Martin KJ, González EA, Gellens M, Hamm LL, Abboud H, Lindberg J. 19-Nor-1-α-25-dihydroxyvitamin D_2 (paricalcitol) safely and effectively reduces the levels of intact parathyroid hormone in patients on hemodialysis. *J Am Soc Nephrol.* 1998;9:1427-1432. **6.** National Kidney Foundation. K/DOQI clinical practice guidelines for bone metabolism and disease in chronic kidney disease. *Am J Kidney Dis.* 2003;42(suppl 3):S1-S201.

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Vision: RPG members are a valued source of expertise in nephrology nutrition.

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Text format: Times New Roman font, 12 pitch, double space.
Tables/illustrations: Tables should be self-explanatory. All diagrams, charts and figures should be camera-ready. Each should be accompanied by a title and brief caption that clearly explains the table, chart, diagram, figure, illustration, etc.
References: References should be cited in the text in consecutive order parenthetically. At the end of the text, each reference should be listed in order of citation. The format should be the same as the *Journal of the American Dietetic Association.*
Reference citation examples:
Article in periodical:
Knower WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention or metformin. *N Eng J Med*. 2002;346:393–403.
Book:
Institute of Medicine. *Dietary Reference Intakes: Applications for Dietary Assessment*. Washington, D.C.: National Academy Press; 2001.
Chapter in a book:
Walsh J. Which insulin to use and how to start. In: *Using Insulin*. San Diego, Calif.: Torry Pines Press; 2003.
Web site:
Medscape drug info. Available at www.medscape.com/druginfo. Accessed Feb. 3, 2004.
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All submissions for publication should be submitted to the editor as an email attachment (MS word file). The feature articles from the Renal Nutrition Forum will be posted on the Members Only Section of the RPG website (password protected). Thus, please include a brief abstract along with feature article submissions.

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