Renal Dietitians
a dietetic practice group of the
eat right. American Dietetic Association

Renal Nutrition Forum

A Peer Reviewed Publication of the Renal Dietitians Dietetic Practice Group

Volume 30 • Number 1

In This Issue

Malnutrition in a Maintenance Hemodialysis Patient is Improved with Intradialytic Parenteral Nutrition (IDPN): A Case Study

Mona Soucy, MSB, RD, CSR, LD
Renal Dietitian, Dialysis Care of Maine and Doctoral Student in the Doctorate in Clinical Nutrition Program, School of Health Related Professions at University of Medicine and Dentistry in New Jersey
Bangor, Maine
Email: *msoucy@emh.org*

This article has been approved for 2.0 CPE units. The online CPEU quiz and certificate of completion can be accessed in the Members Only section of the RPG web site via the *My CPEU* link. In addition, this CPE offering is available to current RPG members only and the expiration date is April 15, 2012.

Introduction

Mortality rates continue to be elevated in maintenance hemodialysis (MHD) patients. According to the United States Renal Data System, patients over the age of 65 years of age on hemodialysis have over a 30% mortality rate. This database collects, analyzes and distributes information about patients who have chronic kidney disease (CKD) (1).

High mortality rates in MHD patients have been linked to protein-energy wasting (PEW). De Musert et al, attempted to show that PEW, inflammation and cardiovascular disease are associated with increased mortality in MHD patients. The researchers followed 815 patients with CKD stage 5 on MHD for seven years. They concluded that the concurrent presence of each increased mortality risk due to an additive interaction between these three factors (2).

Mortality has been linked with actual protein intake in MHD patients. In a study by Shinaberger et al, dietary protein intakes were estimated over a two year period by the measure of nitrogen appearance (nPNA) in patients on MHD. In this study the Davita Inc. database was utilized. The database consisted, at the time, of 53,933 patients who were on HD during the two-year study. The data showed that a decrease in protein intake over time was associated with increased risk of death. In this study, the all-cause mortality hazard ratio was case-mix adjusted and also adjusted for markers indicating presence of the malnutrition-inflammation complex syndrome (MICS). An increase in protein intake indicated a trend towards better survival (3).

In a thorough review and meta-analysis of the relationship between serum protein and mortality in adults on long-term HD, Herselman and colleagues concluded that serum albumin showed a significant inverse relation with all-cause and cardiovascular mortality. The treatment of malnutrition and infection in patients on dialysis was recommended to prevent morbidity and mortality (4).

R P G

Renal Nutrition Forum is published quarterly (summer, fall, winter, spring) as a peer-reviewed publication of the Renal Dietitians Dietetic Practice Group of the American Dietetic Association.

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:
June 1, 2011
September 1, 2011
December 1, 2011
March 1, 2012

Please forward information to:
Megan Sliwa, RD, LDN
megansliwa@aol.com

Subscription cost is $35.00 for individuals who are ineligible for ADA membership and $50.00 for institutions.
A check or money order should be made payable to ADA/DPG #21 and sent to:
Sarah Kruger
2605 Crooks Road
Royal Oak, MI 48073
kruger_sarah@yahoo.com

Remember to update your profile electronically in the 'members only' section of ADA's web site. You will need your registration number and web password. Keeping ADA informed of your name and contact information will help avoid delayed issues of your Renal Nutrition Forum.

From the Editor's Desk

Megan Sliwa, RD, LDN
Editor

"Our ability to achieve success depends on the strength of our wings gained through knowledge and experience. The greater our knowledge and experience, the higher we can fly" (Catherine Pulsifer, Author). I came across this quote recently and it reminded me how important it is to embrace continuing education and challenge ourselves to seek out new experiences. Whether you provide patient care, educate students, work in industry or one of the many other roles dietitians in renal care hold today, it is through the most current knowledge and experiences that you will achieve success.

With this in mind, I hope the articles in this issue of the Forum provide you with new and different knowledge and inspire you to search for new experiences. The Feature Article by Mona Soucy, MSB, RD, CSR, LD is a very thorough case study and background on improving a maintenance hemodialysis patient with intradialytic parenteral nutrition (IDPN). Following this is a clinical perspective on IDPN by Jessiana Rose, RD, LDN, CNSD, including an IPDN historical background, when to use IDPN and how albumin is affected with IDPN intervention. After the Feature and Advances in Practice Articles, there are two summaries of sessions at ADA's FNCE 2010 as well as two reprint articles that the editorial staff thought would be worthwhile to share. The first is a reprint from the Dietitians in Health Care Communities *Connections* Newsletter that helps to highlight the clarity of Standardized Language seen in the Third Edition of The International Dietetics and Nutrition Terminology; the second reprint is from the *Nephrology Nursing Journal* and outlines implications of obesity in kidney transplant patients. I also encourage you to review the Calendar of Events for educational opportunities throughout 2011.

I hope you will enjoy this issue of the Forum. The editorial team welcomes your comments and suggestions for future issues as well. And if you've recently attended an interesting seminar or read a compelling article, it is likely that fellow members of the RPG would agree… consider sharing it as an original article submission to the RNF Editorial team.

Please be sure your email address on file is up-to-date with the ADA so you can receive this and other e-announcements. The Spring Forum will be published in electronic format only again this year; the overall feedback for this format has been positive and the cost savings to the RPG budget significant.

As always, I'd like to thank all of the volunteers that helped make this publication possible. With the demands of work and life, time comes at a premium. Thank you to the authors, reviewers, the test writer, the editorial staff and the ADA staff for their contributions, expertise and guidance in this process. ◆

Erratum
from Fall 2010 Forum:

Please accept our apologies, in the print version of the Fall *Renal Nutrition Forum*, Vol. 29, No. 4 on page 9, right column, under the 'Decision Support and Patient Self-Management Materials', the last line of the second paragraph should read, "To improve the provider tool, they suggested more details on dietary intervention, a more functional layout, and an organization that reflects CKD disease progression." Please note that on the RPG web site, the pdf version of the Fall Forum and the pdf of the article have both been corrected.

The Kidney Disease Outcome Quality Initiative (K/DOQI) recommends that dialysis patients consume 30 – 35 kcal/kg/day, as higher energy requirements may be needed for protein sparing (5). K/DOQI also recommends a protein intake of 1.2 g/kg of body weight (BW) per day for stable dialysis patients (5). This is more protein than the 0.8 g/kg of BW that is generally recommended for healthy, non-pregnant, non-lactating adults. One of the reasons for the increased need is the loss of amino acids and peptides during dialysis. It is estimated that 6-8 g of amino acids and 2-3 g of peptides are lost during a dialysis treatment (5). MHD patients may also require more protein due to being in a chronic protein catabolic state. The catabolic state may be secondary from uremia which may increase the concentration of inflammatory cytokines. These cytokines can induce anorexia, increase skeletal muscle breakdown, increase whole-body protein catabolism and accelerate hypermetabolism (6,7). Patients can also have chronic inflammation when they are exposed to dialysis membranes, tubing, and catheters (5). Similarly, the Canadian Society of Nephrology and the European Society for Clinical Nutrition and Metabolism recommend 1.2 g/kg BW of protein and 1.2 – 1.5 g/kg BW of protein, respectively, for HD patients.

Morais et al, studied the correlation of nutritional status and food intake in 44 HD patients. The authors found that 90.9% of patients were considered at nutritional risk or moderately malnourished, with calorie intake falling below the recommendations at 20.7 +/- 6.7 kcals/kg/day. The authors also determined that protein ingestion, at 1.2 g/kg/day, was sufficient to meet protein needs (8).

Few strategies have been successful in improving albumin levels in MHD patients. This may be due to the fact that it is unclear whether a low albumin is the result of malnutrition or just inflammation as many HD patients have an elevated level of c-reactive protein, an indication of inflammation (9). Barriers to adequate nutrition in MHD patients have been identified by previous authors and include but are not limited to poor appetite, restricted fluid intake, inadequate dose of dialysis, inadequate nutrition knowledge, poor food choice behavior, poor food preparation skills, and socioeconomic concerns (10). Other factors include depression, dysphagia, and gastrointestinal symptoms (11).

Therapies to improve the nutritional status of MHD patients have consisted mainly of either renal-specific oral supplementation or intradialytic parenteral nutrition (IDPN). IDPN is the provision of dextrose, amino acids and optional lipids through the venous return line in HD patients.

Fouque and colleagues examined the use of a renal-specific oral supplement in HD patients as it relates to nutritional status and quality of life. The study included 88 patients who were randomly assigned to either the standard treatment group or the supplement group. Both groups were provided with dietary advice by the facility dietitian. The supplement group was instructed to consume 250 ml/day of a renal nutrition supplement for three months. No nutritional supplementation was provided for the standard group. The supplement provided an additional 500 kcals and 18.75 g of protein per day. Measurements of nPNA increased significantly in the supplement group and this was correlated with an increase in albumin levels. Dry BW increased slightly after three months in the supplement group in comparison with the standard group. Patients who complied with the therapy also had improved quality of life scores. The authors clearly state that compliance was key for oral supplementation to be effective and noted that the compliance rate was only 66 % (12).

In 2007, Cano and colleagues published a study in which 186 malnourished HD patients received nutritional supplements with or without one year of IDPN. They found that IDPN, in addition to oral nutritional supplementation, did not significantly improve two-year mortality, compared to controls. However, both groups showed significant improvements in BMI, albumin and prealbumin, due to the fact that oral supplements were provided. The authors also reported that a prealbumin > 30 mg/dL independently predicted a 54% decrease in two-year mortality (13).

Hiroshige and colleagues, proposed utilizing IDPN to treat malnutrition in elderly dialysis patients. Twenty-eight elderly, non-diabetic, MHD patients were selected. Of those twenty-eight, ten patients were treated with IDPN for approximately one year. In patients receiving IDPN, there were significant increases in albumin, transferrin concentrations and total lymphocyte count beginning after three months of treatment and remaining positive during the length of the treatment period. Anthropometric data such as dry BW, BMI, % standard triceps skinfold thickness, mid-arm muscle circumference, and mid-arm circumference also improved after six months of treatment. Controls had gradual decreases in all parameters, including anthropometric measures, albumin, transferrin and lymphocyte count, during the study period. The authors concluded that IDPN was effective in preventing muscle protein catabolism and promoting body protein and fat accumulation in malnourished elderly HD patients (14).

Similarly, Cherry and Shalansky studied the efficacy of IDPN in 24 HD patients. The duration of the IDPN was a mean of 4.3 months. Dry weights were significantly improved at six, nine and twelve months after therapy with a median dry BW starting at 48 kg (range of 34 – 88 kg), six months prior to IDPN initiation and resulting in a dry BW of 53.8 kg (range of 32.6 – 79 kg) at twelve months of therapy. Adverse effects were primarily fluid gains and hyperglycemia. The researchers concluded that IDPN

significantly increased BW and serum albumin in malnourished HD patients (15). Another study on IDPN in patients with MICS found that IDPN increased BW in those patients but did not affect inflammatory status or lipid levels. This led authors to conclude that IDPN is a safe and effective way to treat malnutrition in patients with MICS (16).

Korzets et al, studied the use of IDPN in acutely ill HD patients. Twenty-two HD patients received IDPN after major surgery or medical illness. IDPN was deemed safe for all patients with weight loss ceasing after two months of treatment. The researchers also showed significant improvements in albumin, prealbumin, cholesterol and creatinine levels. They concluded that IDPN can be used safely in HD patients who are acutely ill (17).

Finally, Pupim et al, hypothesized that IDPN would increase the albumin fractional synthetic rate in chronic HD patients. Seven patients were studied during two HD sessions with and without IDPN. The results indicated that patients receiving IDPN showed significant improvement in the fractional synthetic rate of albumin during dialysis. The researchers concluded that IDPN improved protein status in the acute setting in HD patients (18).

Patient Case

The patient is a 52 year old female with a medical diagnosis of CKD stage 5 with initiation of HD. She has a medical history of diabetes mellitus type 2, leukopenia, stroke with right-sided hemiparesis, congestive heart failure, dysphagia, aspiration pneumonia, and mitral regurgitation. Her diet upon hospital discharge was a diabetic/renal diet of pureed consistency with honey-thick liquids. Medications on discharge are listed in Table 1.

The patient had her first outpatient HD treatment on November 6, 2008. The renal dietitian met with the patient's caregiver, which was her sister. The patient lived with her sister and all meals were prepared by the aforementioned. The patient was non-communicative and unable to care for herself. A food-frequency questionnaire was completed with the caregiver to assess energy, protein, fluid and nutrient relevant mineral intake. A weight history revealed that the patient had lost a significant amount of weight over the previous two years, an estimated 80 kg with a drastic reduction in BMI from 47 kg/m^2 down to 28 kg/m^2. This reduction in weight was associated with the caregiver's attempt to improve the patient's blood sugar regulation.

Lab results on discharge, as indicated in Table 2, were remarkable for hyponatremia, significant hypoalbuminemia, mild depletion of calcium (corrected calcium of 8.48 mg/dL), hypophosphatemia, low iron saturation and anemia with low hemoglobin. Anthropometrics can be summarized in Table 3.

Nutrition diagnosis for this patient at the time of her initial

Table 1
Medications with Dosages and Indications for Use

Medication	Dosage	Indications for Use
Ferrous Sulfate	325 mg daily	Anemia or renal disease
Vitamin C	1000 mg daily	Erythropoiesis
Prandin	0.5 mg t.i.d. before meals	Diabetes Mellitus
Levothyroxine	200 mcg daily	Hyperthyroidism
Levemir	8 units AM	Diabetes Mellitus
Aspirin	81 mg daily	Heart disease
Colace	50 mg b.i.d.	Constipation
Nephrocaps	1 daily	Vitamin supplement for CKD patients
Phoslo	3 capsules with each meal t.i.d.	Hyperphosphatemia
Midodrine	5 mg before each dialysis	Hypotension during dialysis
Aranesp	Per dialysis protocol	Erythropoetin stimulating agent

Table 2
Laboratory Results on Hospital Discharge

Laboratory	Result	Recommended Range for CKD
Urea Reduction Ratio	69.4 %	>65 %
Blood Urea Nitrogen	36 mg/dL	50- 100 mg/dL
Creatinine	2.20 mg/dL	≥10 mg/dL
Sodium	127 mEq/L	132-145 mEq/L
Potassium	4.8 mEq/L	< 5.5 mEq/L
Glucose	155 mg/dL	70 – 110 mg/dL
Albumin	1.9 g/dL	≥ 4.0 g/dL
Calcium	6.8 mg/dL	8.5 – 10.5 mg/dL
Phosphorus	2.8 mg/dL	3.5 – 5.5 mg/dL
Parathyroid Hormone	152 pg/mL	150 – 300 pg/mL
% Saturation	12 %	≥ 20 %
Iron	19 ug/dL	28 – 170 ug/dL
Ferritin	247 ng/mL	≥ 100 ng/mL
Hemoglobin	7.1 g/dL	11 – 12 g/dL

Table 3
Anthropometrics on Discharge

Height	138 cm, 54.3 inches
Weight	55 kg
Usual body weight	90 kg, BMI 47
% of usual body weight	61 %
BMI	28 kg/m^2
% Standard body weight (SBW) according to NHANES II	Unable to assess due to small stature
% of SBW	Unable to assess
Ideal body weight (target BMI 24)	45.7 kg
% of IBW	120 %
Adjusted Body Weight (ABW) Based on K/DOQI Adjusted Edema-Free Body Weight = BWef +[(SBW – BWef) x 0.25]	52.6 kg

outpatient dialysis treatment was determined to be: Increased nutrient needs related to catabolic illness (CKD stage 5 with HD) as evidenced by hypoalbuminemia, hypophosphatemia, anemia, weight loss of > 10 % in 6 months, and food and nutrition-related knowledge deficit of the caregiver.

A nutrition prescription was identified as follows:

- 1500 – 1850 kcals (30 – 35 kcals/kg of ABW)
- 60 – 65 g protein (1.2 g/kg of ABW)
- 2000 mg sodium, 2000 mg potassium, 1000 mg phosphorus, 1500 ml fluid (20)

Following the nutrition prescription, interventions were implemented. These included a Nepro (Abbott Nutrition, Columbus, OH) supplement daily. Nepro provides 19.1 g protein, 425 calories, 250 mg of potassium, and 170 mg phosphorus. Beneprotein (Nestle Nutrition, Florham Park, NJ) was also initiated at home three times per day to provide 18 g of protein, 75 calories and 105 mg of potassium. Nutrition education was provided to the caregiver on the purpose and procedure of the nutrition intervention to improve the patient's nutritional status. At this time, the patient's diet consistency was advanced via rehabilitation with a speech therapist, so that she was now on regular textured food with thin liquids.

The following were monitored as indicators of progress. First the protein profile was monitored with a goal to attain an albumin of > 4 g/dL in MHD (as per the K/DOQI guidelines). Due to the patient also having hypophosphatemia, electrolyte and renal profiles were closely monitored. Dry weight was recorded monthly. Food and nutrition knowledge of the caregiver was utilized to monitor nutrition education results.

Summary of Results

Albumin increased from 1.9 g/dL in November of 2008 to 2.6 g/dL in April of 2010. Weight decreased from an initial weight of 55 kg in November of 2008 to 39 kg in April of 2010. These results can be visualized in Figures 1 and 2. Interventions were unsuccessful to improve albumin to a target level of > 4 g/dL and to stabilize weight between 50 – 55 kg. The caregiver had a basic understanding of the guidelines relevant to the patient's needs and was able to consistently apply knowledge to increase the patient's protein intake, especially with providing oral supplements. However, there remained a need for increasing the patient's energy intake.

Nutrition Outcomes

Figure 1. Serum Albumin Results

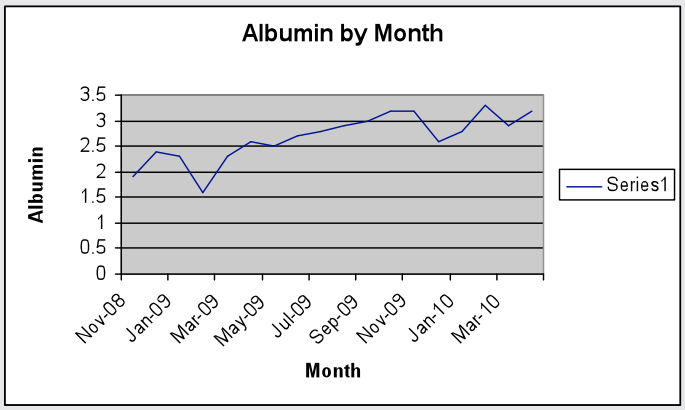
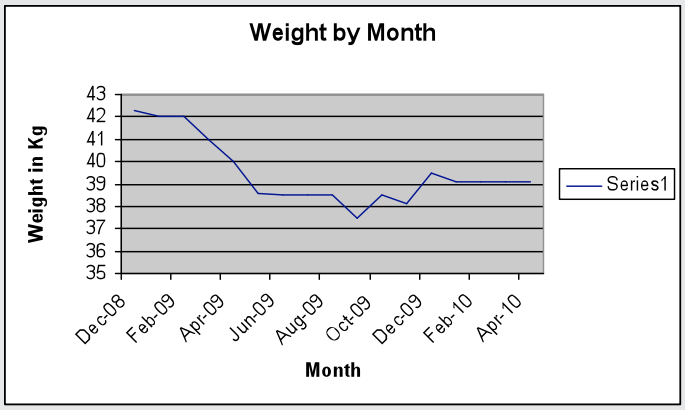


Figure 2. Dry Weight



As a result of these outcomes, a new nutrition diagnosis was formulated as follows: malnutrition related to physiological cause: increased nutrient needs of CKD stage 5 with HD and food given to the patient due to lack of knowledge on the part of the caregiver of the amount of energy and protein required as evidenced by weight loss of 29% in approximately 16 months and inability to achieve target albumin level of 4 g/dL.

A nutrition prescription was identified as follows:

- 1200- 1400 kcals (30 – 35 kcals/kg of ABW)
- 60 – 70 g protein (1.2 – 1.3 g/kg of ABW)
- 2000 mg sodium, 2000 mg potassium, 1000 mg phosphorus, 1500 ml fluid (20)

On 5/13/2010 IDPN was initiated with the following formulation: 300 mL of amino acids 15 % to provide 45 grams of protein, 50 mL of dextrose to provide 35 grams of carbohydrate. No lipids were provided.

Nutrition interventions were continued and IDPN was initiated. The patient's IDPN provided with approximately 300 kcals and 45 g protein, three times per week for a weekly total of 900 calories and 135 g protein.

The following treatment schedule was followed: Tuesday, Thursday, and Saturday with the patient receiving IDPN therapy for 3.5 hours. Table 4 reflects the IDPN provision.

Treatment Protocol for IDPN included a weekly draw of serum potassium, phosphorus and magnesium to assess for possible refeeding syndrome. Point-of-care blood sugars were also to be drawn prior to infusion of IDPN, 2 hours into therapy, and post-IDPN therapy to manage issues of hyper/hypoglycemia.
An insulin sliding scale was ordered by the unit nephrologist.

Summary of Results

Figures 3 and 4 depict results from IDPN therapy. The patient's weight increased from 39.4 kg in April to 40.3 kg and stabilized at 40.1 kg, from July to September with onset of IDPN therapy in May. Albumin increased from 3.2 g/dL in May to 3.6 g/dL in September. There were no signs and symptoms of intolerance from five months of IDPN as evidenced by blood sugars well controlled in the mid-100 range. The caregiver now has a moderate level of understanding of the patient's needs. She can consistently apply nutrition knowledge in food preparation and cooking, providing adequate portions, and meal/snack planning. Oral supplements and diet counseling were not able to arrest weight loss and increase albumin level to the desired range.

The addition of IDPN did successfully stabilize weight,

Nutrition Outcomes

Figure 3. Serum Albumin

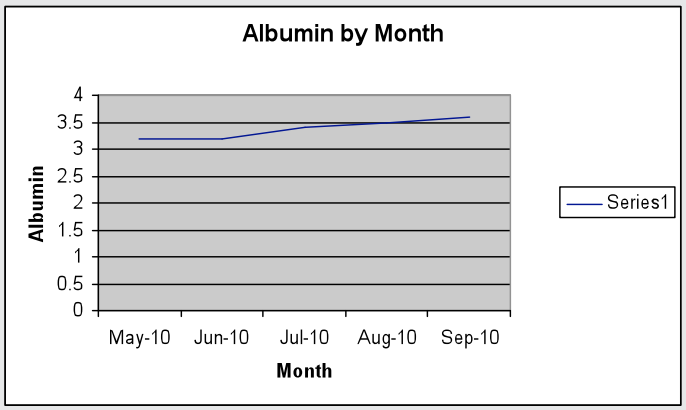


Figure 4. Dry Weight

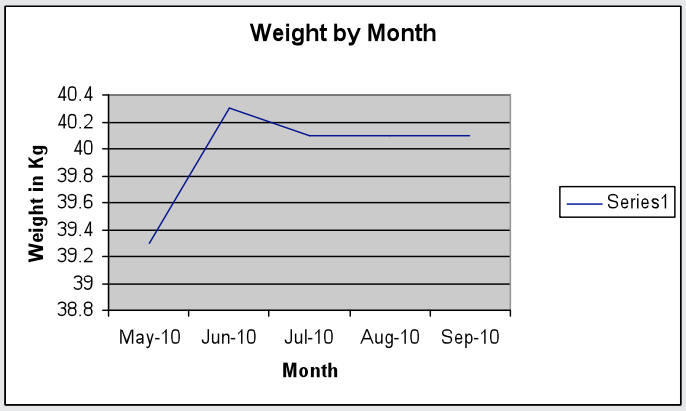


Table 4
IDPN Schedule

Treatment #	Volume in Bag	Rate per Hour	Total Volume Scheduled
5/13	350 mL	44 mL	175 mL (waste 175 mL)
5/15	350 mL	66 mL	175 mL (waste 175 mL)
5/18	350 mL	100 mL	350 mL (use entire bag)

although weight did not increase to the goal range of 50 – 55 kg. Albumin did not reach the target of 4 g/dL and perhaps more time was needed with IDPN for this to be accomplished.

Discussion and Conclusion

This case demonstrates that, in this patient, IDPN was a safe and efficacious tool for improving albumin levels and attenuating weight loss. Dukkipati and colleagues in 2009 attempted in their review to answer the question of whether nutrition support in MHD patients can effectively prevent or improve PEW. After extensive review of the literature, they concluded that there is a role for IPDN in the nutritional support of MHD. However, they commented on the lack of large randomized controlled trials on the effectiveness of IPDN in preventing morbidity and mortality as well as improving quality of life (21).

The patient was provided with a nutrition diagnosis of PEW, perhaps better termed as protein-energy wasting in individuals with CKD maintained on HD. As studies have demonstrated, PEW can lead to increased risk of mortality in patients with CKD (2). Inadequate protein intake as well as suboptimal albumin levels have also been linked to increased mortality risk in patients with CKD (3,4).

Finally, improvements in albumin level, even as minute as 0.1 g/dL have been linked with improvement in survival and averted hospitalizations in MHD patients (22). Lacson et al, utilized the Fresenius Medical Care North America database to estimate the effect of albumin concentrations on hospitalization, mortality and Medicare end-stage renal disease program costs. The population examined was a very large group consisting of 77,205 MHD patients. Based on a theoretical model, they were able to project 415 saved lives, 2,165 averted hospitalizations and 15 million dollars in cost savings from an improvement of albumin as little as 0.1 g/dL. In their model, improvements in survival, averted hospitalizations and dollars saved grow concurrent with improvements in albumin levels (22). The expected reversal of PEW in this particular patient may lead to less hospitalizations and increased longevity.

This case serves as an example of the positive results achievable in the malnourished HD population by way of medical nutrition therapy in the form of nutrition education, oral supplementation and finally IDPN. Malnutrition is prevalent in MHD patients, with as much as 25% of the HD population suffering from severe malnutrition (13). Documented cases of positive results from administration of IDPN can encourage more dialysis units to attempt this type of nutrition intervention with patients considered at nutritional risk. In the end, larger scale, controlled trials are needed to establish the effect of IDPN on PEW in HD patients as many reviewers have lamented the paucity of larger, well-designed, controlled trials on IDPN. ◆

References

1. USRDS 2010 Annual Report. Available at http://www.usrds.org. Accessed October 3, 2010.
2. De Mutsert R, Grootendorst D, Axelsson J, Boeschoten E, Krediet R, Dekker F. Excess mortality due to interaction between protein-energy wasting, inflammation and cardiovascular disease in chronic dialysis patients. *Nephrol Dial Transplant.* 2008;23:2957-2964.
3. Shinaberger C, Kilpatrick R, Regidor D, et al. Longitudinal associations between dietary protein intake and survival in hemodialysis patients. *Am J Kidney Dis.* 2006;48:37-49.
4. Herselman M, Esau N, Kruger J, Labadarios D, Moosa M. Relationship between serum protein and mortality in adults on long-term hemodialysis: exhaustive review and meta-analysis. *Nutrition.* 2010;26:10-32.
5. National Kidney Foundation: K/DOQI Clinical Practice Guidelines for Dietary Protein Intake for Chronic Dialysis Patients. *Am J Kidney Dis.* 2001;38:S68-S73.
6. Caglar K, Hakim R, Ikizler T. Approaches to the reversal of malnutrition, inflammation, and atherosclerosis in end-stage renal disease. *Nutrition Reviews.* 2002;60:378-387.
7. Moore E, Lindenfeld S. Intradialytic parenteral nutrition: a nutrition support intervention for high-risk malnutrition in chronic kidney disease. *Support Line.* 2007;29:6-16.
8. Morais A, Silva M, Faintuch J, et al. Correlation of nutritional status and food intake in hemodialysis patients. *Clinics.* 2005;60:185-192.
9. Leon J, Jeffrey A, Gilchrist G, et al. Improving albumin levels among hemodialysis patients: a community-based randomized controlled trial. *Am J Kidney Dis.* 2006;48:28 -36.
10. Sehgal A, Leon J, Soinski J. Barriers to adequate protein nutrition among dialysis patients. *J Renal Nutr.* 1998;8:179-187.
11. Mitch W, Maroni B. Factors causing malnutrition in chronic uremia. *Am J Kidney Dis.* 1999;33:176-179.
12. Fouque D, McKenzie J, de Mutsert R, et al. Use of a renal-specific oral supplement by haemodialysis patients with low protein intake does not increase the need for phosphate binders and may prevent a decline in nutritional status and quality of life. *Nephrol Dial Transplant.* 2008;23:2902-2910.
13. Cano N, Fouque D, Roth H, et al. Intradialytic parenteral nutrition does not improve survival in malnourished hemodialysis patients: a 2-year multicenter, prospective, randomized study. *J Am Soc Nephrol.* 2007;18:2583-2591.

14. Hiroshige K, Iwamoto M, Kabashima N, Mutoh Y, Yuu K, Ohtani A. Prolonged use of intradialysis parenteral nutrition in elderly malnourished chronic haemodialysis patients. *Nephrol Dial Transplant.* 1998;13:2081–2087.
15. Cherry N, Shalansky K. Efficacy of intradialytic parenteral nutrition in malnourished hemodialysis patients. *Am J Health Syst Pharm.* 2002;59:1736-1741.
16. Joannidis M, Rauchenzauner M, Leiner B, et al. Effect of intradialytic parenteral nutrition in patients with malnutrition-inflammation complex syndrome on body weight, inflammation, serum lipids, and adipocytokines results from a pilot study. *Eur J Clin Nutr.* 2008;62:789-795.
17. Korzets A, Asolay O, Ori Y, et al. The use of intradialytic parenteral nutrition in acutely ill haemodialysis patients. *J Ren Care.* 2008;34:14-18.
18. Pupim L, Flakoll P, Ikizler T. Nutritional supplementation acutely increases albumin fractional synthetic rate in chronic hemodialysis patients. *J Am Soc Nephrol.* 2004;15:1920-1926.
19. American Dietetic Association. *International Dietetics & Nutrition Terminology (IDNT) Reference Manual. Standardized Language for the Nutrition Care Process, 3rd Ed.* Chicago, IL. 2011.
20. Renal Dietitians Dietetic Practice Group of the American Dietetic Association and the Council on Renal Nutrition of the National Kidney Foundation. Nutrition management of the adult hemodialysis patient. In: *A Clinical Guide to Nutrition Care in Kidney Disease. 2nd ed.* Chicago, IL. 2004:43-55.
21. Dukkipati R, Kalantar-Zadeh K, Kopple JD. Is there a role for intradialytic parenteral nutrition? A review of the evidence. *Am J Kidney Dis.* 2009; 2010;55:352-364.
22. Lacson E, Ikizler A, Lazarus J, Teng M, Hakim R. Potential impact of nutritional intervention on end-stage renal disease hospitalization, death, and treatment costs. *J Ren Nutr.* 2007;17:363-371.

Congratulations to the new Board Certified Specialists in Renal Nutrition as of November 2010

Alaska
Nancy Duhaime, RD

Arizona
Susan Weil Ernst, RD

California
Shirley Berue, MS, RD
Isela Chavira, RD
Laura Disharoon, MS, RD
Evelyn Middleton, RD, CSR
Alanna Nimau Vigil, MS, RD
Annelle Tschida, RD
Peter Williams, RD

Connecticut
Maegan Capasso, RD

Florida
Teresa Rodriguez, RD, LD, CNSD
Frances Smith, RD, CNSC

Georgia
Ruba Jibreen, RD

Hawaii
Raenell Nakagawa, RD, CSR, CDE
Aileen Ueunten, MS, RD

Kentucky
Chastity Bradshaw, RD

Maryland
Catherine Ciliax, RD
Shannon Green, RD, CDE, LDN
Dennis Myers, RD

Michigan
Phyllis Benvin, RD
Tara Lassila, RD
Sue Roscoe, RD, CNSD

North Carolina
Ann Andrew, MEd, RD, LDN
Amy Kearns, RD, CNSD, LDN

North Dakota
Anita Aarestad, RD

New Jersey
Bonnie Birnbaum, MS, RD, CDE
Janet Hilaris, MS, RD, CSR
Sobha Malla, BS, RD
Jennifer Paul, RD, CDN

New York
Valentina Galust, MS, RD, CP
Helen Joe, MA, RD, CDN
Lorelei Schrier, RD

Ohio
Jennifer Brisken, RD, LD
Walter Gordon, RD, LD
Barbara Ploenes, MS, RD, LDN
Ellen Sours, RD

Pennsylvania
Roseann Barrall, RD, LDN
Renee Holden, MS, RD, LDN

South Carolina
Jacqueline Enlund, MPH, RD, LD
Vanessa Jones, RD, LD
Jennifer Snyder, RD

Tennessee
Sandra Dunsmore, RD

Virginia
Loreen Paiva, RD, MA
Stacey Punnett, RD, LD

Wisconsin
Gail Blatz, RD, CD, BS
Teri Karrels, MS, RD
Fran Kittell, RD

Virgin Islands
Joanne White, RD

Nutritionally Focused Intradialytic Parenteral Nutrition (IDPN) Initiation

Jessianna Rose RD, LDN, CNSD
Renal Dietitian - Holy Cross Hospital Dialysis
Silver Spring, MD
Email: *rosejes@holycrosshealth.org*

This article has been approved for 1.5 CPE units. The online CPEU quiz and certificate of completion can be accessed in the Members Only section of the RPG web site via the My CPEU link. In addition, this CPE offering is available to current RPG members only and the expiration date is April 15, 2012.

Introduction

Since inception of intradialytic parenteral nutrition (IDPN) into the dialysis world in 1975, IDPN treatment has experienced different decades of use, overuse, and clinical abstinence (1,2). The pendulum currently seems to be swinging from a period of abstinence to a guarded, but growing usage. Much of the ebb and flow of usage is attributed to compensation available, rather than efficacy of therapy (2). Research has shown that IDPN may improve nutritional parameters, such as albumin levels and body weight (3-5). However, like all intravenously supplied nutrition, IDPN is not without risks, nor is it accompanied by definite long-term outcome improvements (6,7). In fact, reviews of the literature on IDPN show "limited usefulness" to many of the current studies on IDPN efficacy (2,7,8). Given that there is little solid evidence to prove IDPN's efficacy, the registered dietitian (RD), as the nutrition professional, should take the lead in helping to evaluate for a clear nutritional need. This article will explore ways a clinician can evaluate for the effective initiation of IDPN by examining the link of albumin and IDPN, risks of IDPN, and strategies to plan for long-term aggressive nutrition support.

Albumin and IDPN

Much of the debate surrounding IDPN usage is deeply rooted in the prolifically scrutinized, controversial, and volatile laboratory test of albumin (4,5,9). Historically, albumin was considered the prime marker of nutritional status for all people, dialysis and non-dialysis alike (9). In the last five to ten years however, acute care clinicians have begun to recognize albumin more as an inflammatory marker than a nutritional marker. For this reason, aggressive nutritional intervention is no longer solely based on low albumin.

For dialysis, research has shown a strong correlation between low albumin values and increased mortality for dialysis patients (10). Because of this, dietitians and physicians carefully monitor each patient's trends in albumin. However, much like acute-care, it is debatable whether or not this low albumin and increased mortality is truly a nutrition problem of protein-calorie deficit. It has also been suggested that the majority of patients with low albumin are also those with increased disease processes (i.e. surgery, cancer), inflammation, and acidosis. These types of patients would have increased mortality secondary to their medical conditions, not necessarily due to their protein intake. Thus, it is not wise to simply expect that increased protein intake will improve survival. A dietitian is able to realize that most often a low albumin is the symptom of a problem, not the problem itself. He/she identifies that unless the root problem of inflammation or stress is resolved, it is unlikely that the albumin will rise, even with the provision of a high protein diet or high protein infusion (10,11).

Thus, when in comes to initiation of IDPN, clinicians should not base their decision to begin therapy solely on a low albumin value. If nutritional counseling and oral supplementation do not improve albumin, clinicians may propose peripheral nutrition intervention. The hope is if albumin is raised then the patient's outcome will in improve. In cases such as these, the clinical judgment fallacy is that albumin is seen as the problem, rather than a symptom of the problem. It is wise to keep aggressive nutritional intervention as an option, but only if the true problem is a protein deficit, not just hypoalbuminemia.

Risks of IDPN

Clinicians need to consider the risks of IDPN, as it is not a benign therapy. It carries with it several possible risks. In the National Kidney Foundation's Pocket Guide to Nutrition Assessment of the Chronic Kidney Disease patient, there are eleven listed potential complications such as hypoglycemia, hyperglycemia, fluid overload, muscle weakness, and hyperlipidemia (13). IDPN distributors may help to customize the formula to the needs of the patient and to work with the dietitian and dialysis staff to diminish such complications. Clinicians still need to keep these elements in mind when reviewing for IDPN initiation.

In addition, the lipid substrate used in the formulas is omega-6, known for being pro-inflammatory. IDPN can be ordered

Table 1
Questions for the medical team to consider prior to initiating IDPN :

1) Does the patient have a functioning gastrointestinal tract? If so, what prevents the patient from obtaining necessary calories from food? (Ex. food insecurity, pt dislikes protein, poor appetite?)
2) Are there any medications that are interfering with appetite that can be stopped or changed?
3) Has an appetite stimulant medication been tried?
4) What is the long-term goal for the patient in using IDPN? (ex. Weight gain for better quality of life, increased protein to promote wound healing?)
5) Can the long-term goals be achieved through oral supplementation?
6) At what point will the IDPN be discontinued?
7) What is the patient's or family's goals with IDPN?
8) Are there components other than albumin that signal a protein-calorie deficiency? (slow healing wounds, significant weight loss, etc…)

without lipids, but then the provision of calories dramatically drops, rendering the treatment far less effective for some patients. This eliminates any category of patient who needs IDPN for weight gain (as the same amount of calories could easily be consumed in one supplement), and solely for those with a protein-deficient intake.

Nutritional Evaluation in IDPN Initiation

The 2000 KDOQI guidelines state, "Individuals undergoing maintenance dialysis who are unable to meet their protein and energy requirements with food intake for an extended period of time should receive nutritional support." This guideline includes the provision for a full-nutritional assessment prior to starting nutritional intensive intervention, such as IDPN. A dietitian is most qualified for this sort of assessment as he/she is familiar with the patient's nutritional habits and attitudes. He/she is aware of crucial evaluation criteria such as: the patient's willingness and ability to meet needs orally, specific food patterns, possible barriers to meeting needs orally/enterally, and the patient's nutritional history. It is essential that before initiating IDPN all "first-line" nutritional interventions should be considered. This includes counseling, oral supplementation trials, and consideration of tube feeding. IDPN is a convenient intervention to implement since it does not require patient adherence, a feeding tube or vascular access (2). A clinician should look past convenience and albumin toward a patient-specific assessment for true need of this therapy. It is impossible to expound upon all the individual circumstances where IDPN would be the appropriate therapy, but through comprehensive nutrition evaluation, dietitians can help the team identify and treat the true issue at hand (See Table 1).

Conclusion

IDPN may be a useful therapy in some instances. However, if used inappropriately it can end up being an aggressive but minimally beneficial therapy. The RD should take the lead in encouraging the medical team he/she is working with to review the big picture and the long term goals of the patient. ◆

References

1. Foulks C. Intradialytic Parenteral Nutrition. In: *Nutritional Management of Renal Disease.* Baltimore, Maryland: Williams & Wilkins; 1997.
2. Moore E, Lindenfeld S. Intradialytic Parenteral Nutrition: A Nutrition Support Intervention for High-risk Malnutrition in Chronic Kidney Disease. *Support Line.* Oct 2007;29:6-13.
3. Bossola M, Tazza L, Stafania G, et al. Artificial nutritional support in chronic hemodialysispPatients: a narrative review. *J Ren Nutr.* 2010;20:213-223.
4. Kaysen A, Levin N. Why measure serum albumin levels? *J Ren Nutr.* 2002;12-148-150.
5. Gabay C, Kushner I. Acute phase proteins and other systemic responses to inflammation. *N Engl J Med.* 1999;340:448-454.

6. Friedman A, Fadem S. Reassessment of albumin as a nutritional marker in kidney disease. *J Am Soc Nephrol.* 2010;21:223-230.
7. Balmer P, McNurlan M, Hutler H, et al. Chronic metabolic acidosis decreases albumin synthesis and induces negative nitrogen balance in humans. *J Clin Invest.*1995;95:39-45.
8. Lecker S, Goldberg A, Mitch W. Protein degradation by the ubiquitin-proteasome pathway in normal and disease states. *J Am Soc Nephrol.* 2006;17:1807-1819.
9. NKF/KDOQI Guidleines 2000. Evaluation of Protein-Energy Nutritional Status. Available at: http://www.kidney.org/professionals/KDOQI/guidelines_updates/nut_a03.html. Accessed January 10, 2011.
10. Cano N, Fouque D, Roth H. Intradialytic parenteral nutrition does not improve survival in malnourished hemodialysis patients: A 2-year multicenter, prospective, randomized study. *J Am Soc Neph.* 2007;18:1583-1591.
11. Pupim L, Flakoll P, Brouillette J. Intradialytic parenteral nutrition improves protein and energy homeostasis in chronic hemodialysis patients. *J Clin Invest.* 2002;110:483-292.
12. Dezfuli A, Scholl D, Lindenfeld S, et al. Severity of hypoalbuminemia predicts response to intradialytic parenteral nutrition. *J Ren Nutr.* 2009;19:291-297.
13. Kalantar-Zadeh K, Kopple J. Is there a role for intradialytic parenteral nutrition? A review of the evidence. *Am J Kidney Dis.* 2010;55:352-364.
14. Foulks C. An evidence-based evaluation of intradialytic parenteral nutrition. *Am J Kidney Dis.*1999;33:186-192.
15. McCann, L. Malnutrition. In: *Pocket Guide to Nutrition Assessment of the Patient with Chronic Kidney Disease, 4th Ed.* New York, NY: National Kidney Foundation; 2009.

Calendar of Events

April 2011

National Kidney Foundation 2011 Spring Clinical Meetings
MGM Grand
Las Vegas, NV
April 26-30, 2011
www.kidney.org/news/meetings/clinical/index.cfm

April/May 2011

American Transplant Congress 2011
Pennsylvania Convention Center
Philadelphia, PA
April 30-May 3, 2011
www.atcmeeting.org

June 2011

ADA Leadership Institute (Invitation Only)
Scottsdale, AZ
June 9-12, 2011
www.eatright.org/leadershipinstitute/

2011 Joint International Congress of ILTS, ELITA & LICAGE
Valencia, Spain
June 22-25, 2011
http://www.ilts.org/

August 2011

NATCO 36th Annual Meeting
Hyatt Regency San Francisco
San Francisco, CA
August 13-16, 2011
www.natco1.org

September 2011

ADA Food & Nutrition Conference and Expo
San Diego, CA
September 24-27, 2011
www.eatright.org/fnce/

November 2011

American Society of Nephrology ASN Renal Week 2011
Pennsylvania Convention Center
Philadelphia, PA
November 8-13, 2011
www.asn-online.org/education_and_meetings/

2011 Organ Donation Congress 11th Congress of the International Society for Organ Donation and Procurement
Buenos Aires, Argentina
November 27-30, 2011
www.isodp2011.org.ar

Nepro® with CARB STEADY®

therapeutic nutrition for people on dialysis

Use under medical supervision

Nutritional support designed exclusively for people on dialysis

- Excellent source of high-quality protein to help meet nutritional needs and replace protein lost during dialysis
- Low in phosphorus, potassium and sodium
- Has Carb Steady® carbohydrate blend designed to help manage blood glucose response
- Good source of fiber, including prebiotics
- Kosher, halal and suitable for lactose intolerance

Available Through:

- Home Delivery (1-800-986-8502)
- www.abbottstore.com

Also in pharmacy section next to Glucerna® at:

Walgreens · RITE AID · Giant · H-E-B · Stop&Shop

NEW NEPRO® KIDNEY CLUB!

Offers. Education. Support.

Learn more at nepro.com/kidney-club

75935/OCTOBER 2010 LITHO IN USA

Abbott Nutrition

FNCE Update

Kelly Ziemkiewicz, RD, LDN, CDE
Renal Dietitian
Chicago, IL
Email: *Kelly.Ziemkiewicz@fmc-na.com*

On November 6, 2010 the American Dietetic Association (ADA) kicked-off its annual Food & Nutrition Conference & Expo in Boston with record attendance. Nearly 11,000 nutrition professionals attended this year's conference to learn about healthcare reform, opportunities for registered dietitians (RDs) in the restaurant industry, social networking and everything in between. The gluten free diet and "green" living were also prevalent topics. The ADA dedicated an entire pavilion to gluten free, natural and organic products on the Expo floor which featured over 65 exhibitors of these products alone.

With all of this, plus over 13 educational topics per session to choose from, narrowing down relevant topics was a welcome challenge. As a renal dietitian, "Sodium Reduction: Not Just a Grain of Salt," presented by Janelle Peralez Gunn, MPH, RD and Christine Johnson, MBA struck closest to home. Renal dietitians may likely be aware of the striking facts highlighted at the beginning of the session. A huge public health impact could be made if Americans reduced sodium intake to 2,300 milligrams or less per day, which would reduce hypertension cases by 11 million and save 18 billion dollars in healthcare costs. However, the actuality of coming anywhere close to reaching these numbers is complicated by the variation of sodium content in similar foods across the United States (US) and even other countries. The speakers pointed out that currently there can be huge differences in the sodium content of US products, such as a tomato sauce, which may be confusing to consumers. One brand of sauce might have 250 mg sodium and another might contain 580 mg sodium. There is also variability in sodium levels of the same product in other countries. For example, a Burger King Double Whopper in Brazil has 1,300 mg sodium per portion, while the same product contains only 819 mg sodium in Italy.

However, dietitians are no longer alone in their quest to educate Americans on the health benefits of sodium reduction. A national coalition of cities, states and health organizations is trying to help Americans with the goal of reducing the sodium intake of the nation by 20% over the next five years. This effort is known as the National Salt Reduction Initiative (NSRI) and is coordinated by the New York City Department of Health and Mental Hygiene. The NSRI is working with food manufacturers and restaurants to voluntarily reduce sodium in their products by 2014. This initiative is based off a successful program in the United Kingdom where up to a 40% sodium reduction was achieved in some food products.

When a company voluntarily signs onto the NSRI, it "pledges that its overall sales in a given category will meet the relevant target for salt content," even if some individual products do not. For example, "a company selling three equally popular lines of crackers could keep one of them salty as long as its overall cracker sales meet the target." The target for each product category is a 25% reduction from the 2009 sales-weighted mean sodium baseline. Companies participating in the NSRI include, but are not limited to: Heinz, Kraft Foods, Hostess Brands, Mars, McCain Foods, Starbucks, Subway, and Unilever. The ADA and the National Kidney Foundation are two of the many organizations also participating.

While many manufacturers are pledging to reduce sodium, some of these same companies are substituting potassium chloride for the sodium chloride in food - a real concern for renal dietitians and patients. The NSRI is tracking the use of potassium chloride in the data and although it will be analyzed, it is important as renal dietitians to highlight this potential change in ingredients to our patients.

National programs, such as the NSRI, are a dietitian's ally in sodium reduction of the US food supply and bring consumer awareness to the subject. Keep an eye out for progress made by the NSRI and other government-led initiatives such as the Institute of Medicine's "Strategies to Reduce Sodium in the United States" report, First Lady Michelle Obama's "Let's Move" program and the 2010 US Dietary Guidelines released January 31, 2011. ◆

References:

National Salt Reduction Initiative. Available at www.nyc.gov/health/salt. Accessed December 1, 2010.

RPG Needs Volunteers…

The Renal Nutrition Forum Editorial Committee is looking for authors, peer reviewers and an Assistant Editor for 2011-12.

If you're interested in any of these please contact Megan Sliwa, RD, LDN at megansliwa@aol.com

2010 FNCE Program Session Summary

Valinda L. Baldwin, RD, CSR, LD
Recipient of an RPG educational stipend for the 2010 Food and Nutrition Conference/ExpoConference & Expo
Renal Dietitian
Cranberry, PA
Email: *v.baldwin@usachoice.net*

The following article is pertinent information from a session I attended at FNCE this November in Boston, MA. I would like to share a summary of the knowledge I attained from the speakers there. The speakers for this Tuesday morning session were as follows:

Arianna Aoun, MS, RD, CSR, LD
Barbara Hutson, RD, LD
Jessie Pavlinac, MS, RD, CSR, LD

Chronic Kidney Disease (CKD)

Medical Nutrition Therapy Best Practices

"Evidence –Based Dietetics Practice is the use of systematically reviewed scientific evidence in making food and nutrition practice decisions by integrating best available evidence with professional expertise and client values to improve outcomes." (ADA Scope of Dietetics Framework; Approved by ADA House of Delegates)

As providers of Medical Nutrition Therapy (MNT), guidelines have been established to prevent and treat complications of CKD and minimize the impact of other co-morbidities on the progression of CKD. These guidelines were also established to reduce variations in practice among RDs. Ratings regarding the strength of evidence have not been provided in the following article.

The focus of this guideline spoken of during the session was on MNT for adults with CKD stages 1-5, including post kidney transplant, not on dialysis. Guidelines started with initial diagnosis of CKD. These are the key points:

1) MNT provided by a registered dietitian (RD) should be initiated at the diagnosis of CKD in order to maintain adequate nutrition status, prevent disease progression and delay renal replacement therapy (RRT) per federal or state guidelines. This should occur at least 12 months prior to need for dialysis or transplant.
2) It is recommended that MNT be provided by an RD approximately 2 hours per month, every one to three months, for up to 1 year for effective intervention. This would be dependent upon nutrient intake, protein-energy malnutrition, mineral and electrolyte disorders or presence of illness.
3) Initial assessment should include food and nutrient intake, medications, knowledge, beliefs and attitudes towards readiness to change behavior, factors affecting access to food/nutrition-related supplies (e.g., safe food and meal availability), actual body weight, history of weight change, serial weight measurement and adjustments for suspected impact of edema, ascites or polycystic organs, biochemical parameters/mineral and bone disease (MBD) along with health/medical history.
4) Assessing weight: The RD may use published weight norms in anthropometric assessment of individuals with CKD (e.g.,IBM, Hamwi method, Standard Body Weight, BMI, Adjusted Body Weight), however these may have drawbacks and should be used with caution. IBW is the body weight associated with the lowest mortality rate for a given age, sex and frame size and is based on the Metropolitan Life Insurance Height and Weight Tables. (Caution; not generalized to the CKD population and data gathering methods were not standardized.)

> KDOQI (Kidney Disease: Improving Global Outcomes) supports the theory that 25% of excess body weight in obese patients is metabolically active tissue and may be subtracted with the use of ABW (adjusted body weight) as well as adding 25% for underweight patients.

5) Biochemical Parameters: Assessment of these should include glycemic control, protein-energy malnutrition, inflammation, kidney function, mineral and bone disorders, anemia, dyslipidemia, electrolyte disorders and others as appropriate.
6) Health and medical history: become knowledgeable of other disease states present such as diabetes, hypertension, obesity and disorders of lipid metabolism.
7) Diet Prescription: The RD should use a multi-faceted approach including education and counseling in healthy behaviors, treatment to reduce risk factors and self-management.
   a) *Protein/Energy: For a non-diabetic CKD patient with GFR <50ml per minute the RD should prescribe 0.6-0.8 gm dietary protein per kg of body weight per day. For GFR <20ml per*

minute, the RD should consider a very low protein-controlled diet providing 0.3 to 0.5 g dietary protein per kg of body weight per day with addition of keto acid analogs to meet protein requirements. For diabetic nephropathy, the RD should recommend 0.8-0.9 gms of protein per kg of body weight per day as a level of 0.7 gms per kg body weight may result in hypoalbuminemia. In kidney transplant recipients (after surgical recovery), the RD should recommend 0.8-1.0 gms per kg of body weight which supports the allograft survival and minimizes impact on co-morbid conditions.

Energy: The RD should recommend or prescribe 23 kcal to 35 kcal per kg body weight based on weight status and goals, age and gender, level of physical activity and metabolic stressors.

b) *Potassium: It is recommended that in stages 3-5 CKD that potassium intake be limited to 2.4 gms per day, with adjustments based upon serum potassium levels, blood pressure, medications, kidney function, hydration status, acidosis, glycemic control, catabolism, and GI issues.*
c) *Phosphorus: It is recommended that in stages 3-5 that 800-1000mgs per day or 10mg-12mg phosphorus per gram of protein be prescribed. For post kidney transplant with hypo-phosphatemia, the RD should recommend a high phosphorus intake (diet or supplement) to replete serum phosphorus as needed.*
d) *Calcium: It is recommended that in stages 3-5 that the RD should recommend a total calcium intake not exceeding 2000 mgs per day.*
e) *Vitamin D: The RD should recommend vitamin D supplementation to maintain adequate levels of vitamin D if the serum level for 25-hydroxyvitamin D is less than 30 ng per ml (75nmol per L).*
f) *Multivitamins: The RD should recommend a multivitamin for those with no known deficiency (biochemical or physical) and who may be at a higher nutritional risk.*
g) *Anemia: The RD should recommend oral or IV iron administration if serum ferritin is below 100 ng per ml and TSAT is below 20%. Vitamin B12 and Folic Acid: The RD should recommend vitamin B12 and folic acid supplementation if the MCV is over 100 ng per ml and serum levels of these nutrients are below normal values.*
Vitamin C: The RD should recommend the DRI for vitamin C to improve iron absorption for adults with CKD who are anemic.
L-Carnitine: The RD should not recommend L-Carnitine for anemic CKD patients as there is insufficient evidence to support the use of L-Carnitine in the management of anemia with CKD including post kidney transplant.
h) *Diabetes: The RD should provide MNT for diabetes care to manage hyperglycemia to achieve a target A1C of approximately 7%.*
i) *Fish oil/Omega-3 fatty acids: The RD should advise the patient on the conflicting evidence regarding effectiveness of this strategy. (There is inconsistent evidence to support fish oil supplementation to improve renal function, however evidence does support the benefit of fish oil supplementation in reducing oxidative stress and improving lipid profile in adults with CKD including post kidney transplant.)*
j) *Sodium: The RD should recommend a sodium restriction of less than 2.4 gm per day with adjustments based on blood pressure, medications, kidney function, hydration status, acidosis, glycemic control, catabolism, gastrointestinal issues, including vomiting, diarrhea and constipation.*

8) Physical activity: If not contraindicated, the RD should encourage patients to increase frequency or duration of physical activity as tolerated.
9) Coordination of care: The RD should coordinate care with an interdisciplinary team through requesting appropriate data, communicating with referring provider and indicating specific areas of concern or needed reinforcement.
10) Monitoring and evaluating: The RD should continue to monitor and evaluate various biochemical parameters, adherence to nutrition and lifestyle recommendations related to those gathered in the initial assessment. This information will be needed to determine the effectiveness of MNT in the CKD and post transplant patients.

The above information is a wonderful tool to use in the area of MNT for CKD. I only encourage those who have read this to

consider purchasing the audio recording of this Tuesday morning FNCE 2010 session #324. Go to www.eatright.org/fnce for more information on purchasing the audio recordings.

In conclusion, I am able to come back from FNCE with more focus in my CKD practice. Evidence-based practice enhances credibility with other healthcare team members and will help RD's be more effective and efficient in their practice.

Citation:

Evidence-based Nutrition Practice Guidelines on Chronic Kidney Disease is published at www.adaevidencelibrary.com and copyrighted by the American Dietetic Association; accessed on August 27, 2010.

The CKD toolkit has just begun development and will be available for purchase on Evidence Analysis Library store within the ADA website www.eatright.org upon completion.

RPG Member Benefits

CPEUs Offered and Online CPEU Management Tips

Catherine M. Goeddeke-Merickel, MS, RD, LD
RPG Website Editor/Coordinator
www.renalnutrition.org

Are you maximizing the CPEU opportunities offered by RPG via the peer-reviewed publication, Renal Nutrition Forum as well as those offered for purchase on the RPG website?

The Renal Nutrition Forum, the RPG peer-reviewed publication, is published 4 times a year and offers a minimum of 2 CPEU approved articles, usually the Feature and Advanced Practices, each issue. That is 2-4 CPEU hours per issue! What is more exciting is that members are able to take the quizzes for these approved CPEU articles online on the RPG website. Once the quizzes are completed with a 70% passing score the CPEU is reflected in an online summary. This online summary is a useful tool to access to view and print a list of those CPEUs offered by RPG and completed by each member. This includes both the CPEUs offered in the RNF every issue and also the CPEUs for purchase as mentioned below that are offered for the webinars.

In addition, RPG also offers a series of 4 webinars for purchase that offer CPEU for each webinar completed (2 CPEUs hours/webinar). The webinars are educational modules that assist individuals in studying for the CDR specialty certification exam for a Specialty in Renal Nutrition. And yes, members do receive a discounted price for not only the webinars but also the educational brochures offered on the RPG website for purchase.

If you haven't completed any of the online CPEU quizzes offered by RPG yet, members can access the online CPEU section on the RPG website via the MY CPEU tab at www.renalnutrition.org It is important to understand that when a CPEU activity is completed and recorded in the RPG online CPEU management system that this does not mean that it is reflected in your ADA/CDR Professional Development Portfolio (PDP). Thus it is the responsibility of every ADA member to record their CPEU activities into their respective Portfolio. One exception to this rule is that the CPEU approved articles offered through the Journal of the American Dietetic Association (J Am Diet Assoc) allow members the option to have the CPEU recorded in their PDP log. Thus if you choose this option when completing and passing a quiz online from J Am Diet Assoc the CPEU activity will be reflected in your PDP. Otherwise the Online CPEU recording benefit offered by RPG is intended to assist members by providing a detailed summary of CPEU activities that can then be recorded by each member into their respective PDP.

If you have additional questions about your Portfolio (PDP) please contact **the Commission on Dietetic Registration (CDR) via www.cdrnet.org or call Toll Free: 800/877-1600 Ext. 5500.**

Please remember that anytime you have an issue when trying to access your CPEU info, complete a CPEU quiz, print a certificate or any issue in general related to navigating the RPG Web site to email helpU@renalnutrition.org to submit your issue or inquiry. You can expect to receive a timely response and follow-up to resolve the issue or problem. We are committed to ensuring that you are able to access and use the RPG website to maximize your member benefits!

We sincerely hope that you have been able to utilize this valuable member benefit and look forward to hearing your feedback for new ideas and ways to improve the benefits and resources offered to our members. We appreciate your membership and hope that you continue to be a part of RPG! Thank you….

The Nutrition Care Process/ International Dietetics and Nutrition Terminology (IDNT): Third Edition 2010(1)

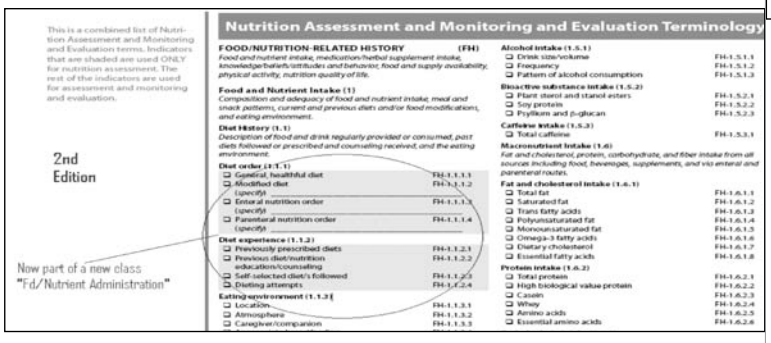
Maggie Gilligan, RD, LDN
Member at Large for Informatics, Nutrition Care Process / Standardized Language Committee; Multi Media Coordinator, DHCC DPG
Charlotte, NC
Email: *mmgilligan@gmail.com*

Reprinted with permission from *Connections Newsletter (DHCC)*, Fall 2010.

What's new? Well, the steps of the Nutrition Care Process have not changed, but the release of the Third Edition has brought a great deal of clarity to some International Dietetics and Nutrition Terminology (IDNT). The following is a brief summary of key changes within The Nutrition Care Process/ International Dietetics and Nutrition Terminology (IDNT): Third Edition 2011

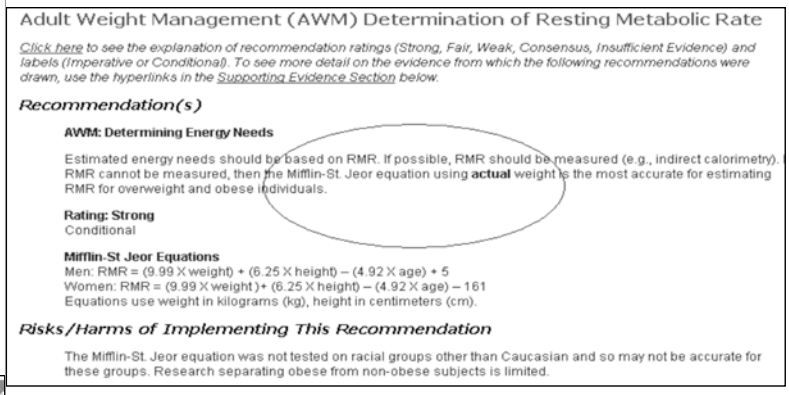
Assessment

- The addition of a new class of Food and Nutrient Administration was formed since the items of diet order, diet experience, eating environment and Enteral/Parenteral Nutrition Administration did not address the premise of the domain which was intake...these assessment areas address diet history vs. intake.



- Food/Nutrition Domain
  - Fluid/Beverage Intake – clarifies that oral fluids include amount and type
  - Food Intake now includes special products such as nonnutritive sweeteners, gluten free foods, lactose free foods.
  - Food preferences are now listed under Belief and Attitudes, since it does not represent 'intake' data.
  - Enteral and Parenteral Intakes have been separated into two unique areas.
- Biochemical Domain
  - Glucose/Endocrine Profile clarifies that random glucose is a synonym for casual glucose.
  - Protein Profile includes indicator for antibody level and allows for amino acid levels to be a monitoring criteria.
- Nutrition Focused Physical Findings
  - Overall Appearance can now be used as a monitoring term.
- Comparative Standards Domain
  - Adjusted Ideal Body Weight (AIBW) or the metabolically active weight for overweight/obesity has been added as a reference weight.*

* Please see the Evidence Library for recommendations on how to calculate estimated energy needs for overweight and obese persons.



Diagnosis

- Ten new nutrition diagnoses were added. The first five include the label of 'predicted'. A predicted problem is based on observation, experience or scientific reason.
  - Predicted Suboptimal Energy Intake
  - Predicted Excessive Energy Intake
  - Predicted Suboptimal Nutrient Intake
  - Predicted Excessive Nutrient Intake
  - Predicted food-medication interaction

These nutrition diagnoses may have a substantial impact addressing the nutritional needs of the elderly since we, as healthcare providers, may have concerns of a potential suboptimal intake. For example, a resident/patient/client of a subgroup (e.g. pressure areas) may be at increased likelihood of suboptimal nutrient intake. The use of a predicted diagnosis may be able to prevent the

development of an inadequate/suboptimal intake.

- The other new diagnosis include:
  - Inadequate Parenteral Nutrition Infusion
  - Excessive Parenteral Nutrition Infusion
  - Less than Optimal Parenteral Nutrition
  - Limited Food Acceptance –to be used for individuals who choose or accept very limited food choices due to physiological or behavioral issues, aversion or harmful beliefs/attitudes.
  - Limited Access to Nutrition-Related Supplies (e.g. test strips, adaptive equipment).
- The diagnoses of Inadequate or Excessive Oral Food/ Beverage Intake were renamed to Inadequate or Excessive Oral Intake.
- Involuntary Weight Loss was renamed Unintended Weight loss with a clarification of the etiology may be derived from the decreased ability to consume sufficient energy.
- Involuntary Weight Gain was renamed Unintended Weight Gain.
- Other changes included changes to the working definition of 'bioactive substances' as used in the two diagnoses of Inadequate Bioactive Intake and Excessive Bioactive Intake. The goal here was to increase the latitude of what a 'bioactive substance' is considered to be.
- Clarification of Altered GI Function (NC 1.4) and Impaired Nutrient Utilization (NC 2.1). Altered GI Function encompasses problems inside the Gastrointestinal (GI) tract to include exocrine function of liver, pancreas, with digestion, absorption and/or elimination where as Impaired Nutrient Utilization includes problems with metabolism of nutrients once they have entered the circulatory system.
- Clarification of Swallowing Difficulty and Biting/Chewing Difficulty addresses problems related to ingestion
- Malnutrition (NI 5.2) – indicators were refined based on the current efforts between the American Dietetic Association and the American Society for Parenteral and Enteral Nutrition (ASPEN). These groups are in the process of developing and submitting an etiology-based nomenclature for describing and coding adult malnutrition.

Intervention

- The intervention of Initial/Brief Education and Comprehensive Education were renamed/replaced with the following since the terms (initial/brief and comprehensive) were felt to be confusing
  - Nutrition Education – Content
  - Nutrition Education – Application
- Enteral and Parenteral Nutrition were divided into separate interventions, which is consistent with the assessment terminology separation of these terms. In short, the new interventions include Enteral Nutrition and Parenteral Nutrition/IV Fluids.
- Bioactive Substance Supplement was renamed Bioactive Substance Management since this may include the addition or change in the provision of a bioactive substance.

Monitoring And Evaluation

- Since the terms for assessment and monitoring are one in the same, please see the above Assessment section for key changes.

In closing, please keep in mind that the step of monitoring is about our ability to "monitor measure and evaluate" against a criteria to determine outcomes of nutritional care. Additionally, as the Evidence Library and the Nutrition Care Process continues to evolve, our evidence based practice will be well substantiated as nutrition care providers. ◆

Reference

1. International Dietetics and Nutrition Terminology (IDNT) Reference Manual: Standard Language for the Nutrition Care Process. 3rd ed. Chicago, Il: American Dietetic Association; 2011.

Thank you . . .

***Our Thanks* to reviewers:**
Desiree DeWaal, MS, RD, CD
Eileen Katz, MS, RD, LD
Mary Piccolo, MA, RD
Karen Kritsch, PhD, RD
Mary B. Sundell, RD, LDN, CCRP
Sara Erickson, RD, CSR, LDN, CNSC

***Thank you* also to:**
Amy Hess-Fishl, MS, RD, LDN, BC-ADM, CDE
for providing our test questions.

***Additional Thanks* are extended to:**
RNF Managing Editor **Stacey Phillips, RD**; web site editor **Cathy M. Goeddeke-Merickel, MS, RD, LD**; RNF Ad Editor **Emily Cutler, MS, RD, LDN**; RPG Chair **Kathy Madigan, MS, RD, LDN, CSR, MBA**; Manager, DPG Relations **Susan DuPraw, MPH, RD** and ADA DPG Relations Director **Diane Juskelis, MA, RD, LDN** for proof copy review.

Implications of Obesity and Kidney Transplantation

Kay Atkins, MS, RD and
Nancee VanderPluym, MS, RD
Kay Atkins, MS, RD
Transplant Nutrition Specialist
Phoenix, AZ
Email: *kay.atkins@bannerhealth.com*

Nancee VanderPluym, MS, RD
Nutrition Specialist
Scottsdale, AZ
Email: *nancee.vanderpluym@hotmail.com*

Reprinted in entirety from *Nephrology Nursing Journal,* 2009, Volume 36, Number 6, pp 651-653. Reprinted with permission of the publisher, the American Nephrology Nurses' Association (ANNA), East Holly Avenue, Box 56, Pitman, NJ 08071-0056; 856-256-2320; FAX 856-589-7463; E-mail: nephrologynursing@ajj.com ; Web site: www.annanurse.org

Introduction

In the United States, obesity of adult men and women continues to be a problem. This trend is also observed in the population with chronic kidney disease (CKD) Stage 5. Transplant programs and insurance companies have developed weight criteria for patients desiring kidney transplants. Weight reduction programs and/or surgery may be used to help patients meet these criteria.

Obesity and Various Concerns

From the years 1999-2000 to 2003-2004, obesity rates for men increased from 27.5% to 31.1% (Ogden et al., 2006). For women in the same time period, the rate was flat, dropping only slightly from 33.4% to 33.2%. Body mass index (BMI) greater than 40 kg/m^2 (severe overweight) occurred more frequently in women (6.9%) than men (2.8%). Obesity is a disincentive for kidney transplant. Surgery for persons who are obese takes longer, has more health risks, and uses more hospital resources. The system of payment does not take into account the level of difficulty of the surgery. The result is a discrimination of persons with obesity; the higher the BMI, the less likely these persons will be called for transplant (Sergev et al., 2008). Persons with morbid obesity can still benefit from kidney transplant.

Delayed graft function has long been a problem for persons with BMI greater than 35 kg/m^2. This translates into less graft function long-term (Massarweh, Clayton, Mangum, Florman, & Slakey, 2005). However, is this a small price to pay to transplant someone who will have a reduced cardiovascular risk with a transplant compared to remaining on dialysis? Death from a cardiac event for persons on dialysis is 20 to 40 times greater than the average population (Collins, Li, Ma, & Herzog, 2001). This study also showed that persons with a kidney transplant have a cardiovascular risk twice as high as the general population. This appears to be from the aberrations of calcium/phosphorus metabolism of CKD.

The majority of poor outcomes for persons with kidney transplant are hypothesized to occur in persons with obesity (BMI greater than 36 kg/mg^2), yet the highest rate of graft loss has been found in underweight persons with BMI less than 18 kg/m^2 (Meier-Kriesche, Arndorfer, & Kaplan, 2002). Results from this study showed a U-shaped bar graph with more graft failure in patients with BMIs greater than 30 and less than 20 kg/m^2.

Survival rates for persons on dialysis are different than for patients who have received transplants. Leavey, McCullough, Hecking, Goodkins, and Port (2001) found that persons with a BMI of 30 or greater had a better survival rate than when compared to persons with acceptable BMI (BMI 23 to 25 kg/m^2). This survival benefit does not appear to translate to the person with a kidney transplant.

Surgical complications, such as wound infections, have been shown to be increased in patients who are obese (Pirsch et al., 1995). This increases the length of stay in the hospital and the utilization of insurance benefits.

Non-Surgical Weight Loss Prior to Transplant

Increased BMI may cause CKD (Hall et al., 2004). Obesity causes hyperfiltration of the kidney and can cause glomerulopathy. Weight loss can improve renal function for obesity-related glomerulopathy and for other kidney diseases, such as IgA nephropathy. Studies have shown that weight loss successfully delays the onset of renal disease (Chagnac et al., 2003).

Losing weight for patients on dialysis can be very difficult. Many patients are not physically active. Many nephrologists permit exercise, but persons with obesity on dialysis are stressed and fatigued. Low calorie fluids and vegetables are the cornerstone of weight loss regimens. Nutritionally, persons needing hemodialysis cannot eat a large quantity of vegetables to reach satiety. Because of the large number of dispensable (low biological value) amino acids in vegetables, laboratory values (such as blood urea nitrogen) may increase. If urine output is diminished, fluids cannot be taken freely. Persons dialyzing via peritoneal dialysis have the added calorie burden of dextrose in the dialysis solution. Dextrose solutions provide additional carbohydrate calories with no other nutrients. As much as one-third of the daily caloric intake can be absorbed from the solution, depending on the dwell time and percentage of dextrose in the solution (Byham-Gray & Wiesen, 2004). Many persons on peritoneal dialysis have an unlimited fluid

intake. If the patient must use more concentrated solutions, the caloric intake can quickly become expensive.

The best person on the renal team to assist with weight loss is the renal dietitian. Skills for this condition are in the arsenal of the renal nutrition professional; however, caseloads are high. Some renal dietitians are overwhelmed with renal nutrition protocols without adding treatment of obesity to their responsibilities. For best outcomes, a team composed of the nephrologist, dietitian, psychologist, nurse, physical therapist, and patient should be utilized (DiCecco, 2007). A multi-pronged approach to making long-term lifestyle changes can be taken, with behavior modification, record keeping, physical activity, medications, psychological issues, and nutritional components.

Internet resources are also available to persons who are obese and who have access to a computer. These programs can be costly depending on the amount of clinician time provided. Tate, Jackvony, and Wing (2006) concluded that in the first three months, weekly, customized, one-on-one feedback produced more weight loss than an interactive site. Personal instruction was imperative.

Surgical Weight Loss

Bariatric programs and their surgeons are reluctant to perform bariatric surgery on obese persons with CKD, especially for those on dialysis or awaiting transplantation. The Roux-en-Y gastric bypass procedure (RYGBP) reduces both the size of the stomach and length of the small intestine. The restricted part of this procedure involves creating a small 30 cc stomach pouch and is created from the upper portion of the stomach with the gastric remnant being surgically separated. The gut is cut part way down the jejunum and is connected to the newly formed pouch (gastrojejunostomy). The duodenum is connected to the lower jejunum. The "Y" remains connected to the gastric remnant. Usual limb length is now about 150 cm or less, which reduces the prior high risk of protein malnutrition but potentially remains a risk factor.

Malabsorption with gastric bypass results from re-routing the small intestine. Several essential vitamins and minerals are at risk, including B-12, folic acid, B-1, B-6, iron, calcium, and potentially zinc and magnesium. Life-long supplementation is required with monitoring of blood levels and physical symptoms to avoid nutrition deficiencies (Aillis, Blankenship, Buffington, Furtado, & Parrott, 2008). This malabsorption potentially has a direct effect post-transplant. Rogers et al, (2005) completed a pilot study assessing the pharmacokinetics of immunosuppressive agents post-transplant. The conclusion from this limited study suggests higher doses are likely in this patient population to achieve adequate drug exposure.

Protection of the gastric pouch is essential to prevent marginal ulcerations, which can quickly progress to bleeding and perforation (Benson-Davies & Quigley, 2008). Nausea, pain, and vomiting require appropriate assessment. Risk of ulceration is greatest in the first 12 months post-surgery, occurring in 1% to 16% of patients. Primary contributing factors include nicotine, NSAIDs, alcohol, and stoma stenosis. Proton pump inhibitors (PPIs) are frequently prescribed post-surgery and require assessment of continued use after three to four months.

A group of 41 persons with extreme obesity and varying stages of CKD have been followed by the University of Cincinnati (Alexander & Goodman, 2007). Five of these individuals had their kidney function resolve or stabilize after RYGBP. Ten other patients who were transplanted subsequently developed severe obesity, and RYGBP was performed. Nine of the other 41 participants went on to have kidney transplants after gastric bypass to lower BMI. Decreasing co-morbidities (diabetes mellitus, hypertension, hyperlipidemia) in relation to cardiovascular disease was a significant benefit resulting from surgically induced weight loss for these patients with CKD.

Two other procedures have been used with persons who are severely obese. These procedures are restrictive only, with no malabsorptive complications. Gastric banding is one procedure that physically divides the native stomach into two parts. The pouch or upper-banded stomach initially holds the food. The band creates a small outlet, slowly allowing passage of food into the lower stomach. No anatomical changes are made; however, the band requires adjustment to alter the internal diameter so food volume is restricted.

The second procedure is the vertical sleeve gastrectomy (VSG). This restrictive surgery permanently reduces the size of the stomach by 75% to 85% (sub-total gastrectomy). During sleeve gastrectomy, the larger, rounded part of the stomach is resected. The remaining stomach looks like a long sleeve (or hose). This procedure maintains an intact pylorus and gut. This VSG procedure is still considered experimental by most providers, including Medicare. Data are currently being compiled for this procedure to be accepted as a viable weight loss surgery option.

Documentation using these two restrictive-only procedures in persons with CKD who are obese is not readily available. A potential benefit with these procedures would be assisting with medication dosing after transplant since no anatomical changes are made.

Conclusion

Renal transplantation continues to be the desired treatment for the majority of persons with CKD Stage 5, but obesity appears

to lead to poorer outcomes in transplanted individuals. Both non-surgical and surgical weight loss treatments can be used to help patients prepare for potential transplantation. ◆

References

1. Aillis, L., Blankenship, J., Buffington, C., Furtado, M., & Parrott, J. (2008). Bariatric nutrition: Suggestions for the surgical weight loss patient. *Surgery for Obesity and Related Diseases, 4(*4 Suppl.), 1-36.
2. Alexander, J.W., & Goodman, H. (2007). Gastric bypass in chronic renal failure and renal transplant. *Nutrition in Clinical Practice,* 22(1), 16-21.
3. Benson-Davies, S., & Quigley, D. (2008). Screening postoperative bariatric patients for marginal ulcerations. *Journal of the American Dietetic Association, 108*(8), 1369-1371.
4. Byham-Gray, L., & Wiesen, K. (2004). *Clinical guide to nutrition care in kidney disease.* Chicago: Diana Faulhaber.
5. Chagnac, A., Weinstein, T., Herman, M., Hirsh, J., Gafter, U., Ori, Y. (2003). The effects of weight loss on renal function in patients with severe obesity. *Journal of the American Society of Nephrology, 14*(6), 1480-1486.
6. Collins, A.J., Li, S., Ma, J.Z., & Herzog, C. (2001). Cardiovascular disease in end-stage renal disease patients. *Americal Journal of Kidney Diseases, 38*(Suppl. 1), S26-S29.
7. DiCecco, S.R. (2007). Medical weight loss treatment options in obese solid-organ transplant candidates. *Nutrition in Clinical Practice, 22*(5), 505-511.
8. Hall, J.E., Henegar, K.R., Dwyer, T.M., Liu, J., da Silva, A.A., Kuo, J.J., & Tallam, L. (2004). Is obesity a major cause of chronic kidney disease? *Advances in Renal Replacement Therapy, 11*(1), 41-54.
9. Leavey, S.F., McCullough, K., Hecking, E., Goodkin, D., & Port, F.K. (2001). Body mass index and mortality in 'healthier' as compared to with 'sicker' haemodialysis patients from the dialysis outcomes and practice patterns study (DOPPS). *Nephrology Dialysis Transplantation, 16*(12), 2386-2394.
10. Massarweh, N.N., Clayton, J.L., Mangum, C.A., Florman, S.S., & Slakey, D.P. (2005). High body mass index and short- and long-term renal allograft survival in adults. *Transplantation, 80*(10), 1430-1434.
11. Meier-Kriesche, H., Arndorfer, J.A, & Kaplan, B. (2002). The impact of body mass index on renal transplant outcomes: A significant independent risk factor for graft failure and patient death. *Clinical Transplantation, 73*(1), 70-74.
12. Ogden, C.L., Carroll, M.D., Curtin, L.R., McDowell, M.A., Tabck, C.J., & Flegal, K.M. (2006). Prevalence of overweight and obesity in the United States, 1999-2004. *Journal of the American Medical Association, 295*(13), 1549-1555.
13. Pirsch, J.D., Armburst, M.J., Knechtle, S.J., D'Allessandro, A.M., Sollinger, H.W., Heisey, D.M., & Belzer, F.O. (1995). Obesity as a risk factor following renal transplantation. *Transplantation, 59*(4), 631-647.
14. Rogers, C.C., Alloway, R.R., Alexander, J.W., Austin, J., Boardman, J.W., Cardi, M.A., et al. (2005). *A pilot study to determine the pharmacokinetics of various immunosuppressants in transplant recipients who have undergone gastric bypass surgery.* Paper presented at the meeting of the International Transplant Society, May 2005.
15. Sergev, D.L., Simpkins, C.E., Thompson, R.E., Locke, J.E., Warren, D.S., & Montgomery, R.A. (2008). Obesity impacts access to kidney transplantation. *Journal of the American Society of Nephrology, 19*(2), 349-355.
16. Tate, D.F., Jackvony, E.H., & Wing, R.R. (2006). A randomized trial comparing human e-mail counseling, computer-automated tailored counseling, and no counseling in an internet weight loss program. *Archives of Internal Medicine, 166*(15), 1620-1625.

Additional Reading

Haase, J. (2007). Pretransplant obesity: A weighty issue affecting transplant candidacy and outcomes. *Nutrition in Clinical Practice, 22*(5), 494-504.

Renal Dietitians Chair Message

Kathleen M. Madigan, MS, RD, LDN, CSR, MBA
RPG Chair

"Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity." The words of George Patton ring true for what we are experiencing now that we are fully enmeshed in bundling. I would like to share with you my top ten list of things to do, not only to survive, but also thrive in our new era of bundling.

1: Work as a team. Now, more than ever, we need to work as a team towards our common goal of quality care for our patients.

2: Get patients involved. They are major stakeholders in their own care and need to understand how they drive their own outcomes.

3: Be proactive. Respond to trends immediately as they develop.

4: Keep quality of care key. No matter what else is happening around us, we are here for our patients and they continue to count on us.

5: Network – Listen to our colleagues. Sometimes even just a slightly different slant on an idea we may have tried in the past, and found to not work, can make a huge difference in success.

6: Go back to the basics.

7: Accept the challenge. For those of us who have been in the renal sector for a long time, we have seen many changes over the years. We have also met the challenges associated with change in the past, and we will continue to do so.

8: Utilize every program available. The extra work will only help with success.

9: Continue membership in the Renal Practice Group; this DPG provides multiple professional benefits.

10: Start now to be ready for 2014! ◆

RPG Awards, Grants and Scholarships

Are you aware of the awards, grants and scholarships available to you as a member of the Renal Dietitians Dietetic Practice Group (RPG)? Complete the specific form found in the Awards/Stipend section of the RPG web site and submit it to the RPG Award Chairperson, Sandy McDonald-Hangach at syhangach@msn.com. All applications must be received by April 30th with the exception of the Conference/Meeting Stipend Award that can be applied for year round.

Award/Stipend Link:

http://www.renalnutrition.org/members_only/awards.php

Conference/Meeting Stipend Award:

RPG will award an applicant the opportunity to attend an educational seminar or conference of their choice. The program must include issues and/or treatments for CKD patients. In return, the applicant is required to submit an article for the RPG Renal Nutrition Forum, which should include relevant information that can be shared with other practice members. Awards are distributed throughout the year on a first come, first serve basis.

Research Grant:

RPG offers a onetime award of up to $2000 for a member pursuing an original research project in an area related to or benefitting those with renal disease. See research grant application for specific details. All applications are due by April 30th.

Scholarship:

RPG offers a onetime Scholarship award of $2000 for anyone pursuing a post-baccalaureate degree in a field applicable to renal nutrition. Scholarship is only applicable towards tuition and applicant must exemplify experience in renal nutrition. Additional details can be found on the specific scholarship form. All applications are due by April 30th.

Outstanding Service Award:

RPG offers one Outstanding Service Award (OSA) per year to the Renal Dietitian in RPG who has demonstrated leadership, promoted the dietitians' role with CKD, and has shown initiative and dedication to renal patients. This prestigious award includes a full sponsorship to ADA's Food and Nutrition Conference and Expo (FNCE) including FNCE registration with 2 night's lodging/ 3 day's per diem and transportation. The recipient will also be a featured speaker at a RPG sponsored event. See nomination form for additional details. All applications are due by April 30th.

Stipends for travel to conferences/meetings for 2010-2011 year are no longer available. New conference/meeting stipends can be applied for starting in June, 2011.

Scholarships/Research Grant-RPG is accepting applications for the 2010-2011 year; applications are due by April 30.

Outstanding Service Award Applications are due by April 30.

2011 ADA Member Benefits Update

Why ADA is Right for You

With over 71,000 members—and more joining every day—the American Dietetic Association comprises members whose needs, interests, skills, and backgrounds span the entirety of the dietetics profession. To meet the needs of a diverse and growing membership, ADA offers an ever-expanding array of member benefits designed to help you develop your skills, advance your career, and achieve your professional goals. As a member of the nation's largest organization of food and nutrition practitioners, you have access to a wide variety of benefits, including professional publications, networking opportunities, and professional development resources, to name just a few. With all of the benefits available to you, plus a steady stream of new and improved offerings on the way throughout each year, it can be hard to keep up with the full spectrum of career-enhancing benefits your membership allows you to enjoy.

Of course, ADA wants you to take full advantage of all the opportunities available to you, so this article provides a listing of some of the newer and most important resources ADA provides, accompanied by brief descriptions of their function. Please feel free to share this list with your colleagues, or direct it to someone you think may qualify for membership—we've made this article open access so non-members can see what they're missing!

Networking and Promotion Resources

E-Mentoring: Debuting this summer, ADA's new national online system will enable optimal matches between ADA member mentors and mentees based on a variety of qualifications such as geographic location, years of experience and practice area. The system also provides comprehensive e-mentoring tools to enhance online communication between both parties. ADA invites you to share the knowledge and expertise you've developed through the years by being a role model and helping to ensure a solid foundation for the future of the dietetics profession. Members can find additional mentoring tips and tools on the Mentoring Resources page in the Career Center at www.eatright.org.

Member Interest Groups (MIGs): Member Interest Groups are groups of ADA members who have a common interest. Unlike dietetic practice groups or affiliates, member interest groups focus on areas other than the practice of dietetics or geographic location. As divisions of the national organization, MIGs reflect the many characteristics of ADA's membership and the public it serves. Current MIGs include the National Organization of Men in Nutrition (NOMIN), Chinese Americans in Dietetics and Nutrition (CADN), Latinos and Hispanics in Dietetics and Nutrition (LAHIDAN), the National Organization of Blacks in Dietetics and Nutrition (NOBIDAN), Fifty-Plus in Nutrition and Dietetics (FPIND), Filipino Americans in Dietetics and Nutrition (FADN), and Muslims in Dietetics and Nutrition (MIDAN).

National Nutrition Month Materials: National Nutrition Month (NNM), celebrated every March, is an annual nutrition education and information campaign created by ADA that's designed to focus attention on the importance of making informed food choices and developing sound eating and physical activity habits. ADA provides food and nutrition professionals with access to a wide variety of supporting materials to help convey this important message, including fact sheets, flyers, classroom guides and games, recipes, press releases, and event ideas.

Registered Dietitian Day: March 9, 2011 was the fourth annual Registered Dietitian Day. This special occasion was created by the American Dietetic Association to increase the awareness of registered dietitians as the indispensable providers of food and nutrition services and to recognize RDs for their commitment to helping people enjoy healthy lives. Registered Dietitian Day promotes ADA and RDs to the public and the media as the most valuable and credible source of timely, scientifically-based food and nutrition information.

Find a Registered Dietitian Online Referral Service: ADA's Find a Registered Dietitian online referral service is free to Active category members representing their own private practice, group practice or employer. Consumers and businesses search this Web-based site to connect with members who provide nutrition consulting service expertise.

Me, Inc., Online Branding Toolkit: ADA has developed this online branding toolkit to provide you with the resources needed to improve your brand, including communication tips, downloadable promotional flyers, developing your online presence and much more.

Public Relations: ADA's public relations activities promote registered dietitians to the public, professional peers, and legislators. The goal is to inform all audiences who the food and nutrition experts are and how to contact them. Public education campaigns and ADA spokespeople also inform consumers and other health professionals about nutrition and the important role of the registered dietitian.

Information Resources

www.eatright.org: ADA's Web site, redesigned in 2010, is faster, more user-friendly, offers a more powerful search function, and can be personalized to meet your needs. Eatright.org features five sections specifically targeted to members, students, the public, the media, and other health professionals, making it easier for all visitors to access the content they want. Build your MyADA profile and get involved with quick links to blogs, forums, surveys, and online communities—and get connected by easily subscribing to and sharing e-newsletters, RSS feeds, podcasts, and videos. And

as always, eatright.org keeps you informed with 24/7 access to scientific and professional resources, and links that are essential for any food and nutrition practitioner. The secure, member-only site can be accessed using your member ID and password, and provides a wealth of information and programs in a location that guards your privacy.

Eat Right Weekly: This weekly e-newsletter provides members with access to career resources, research briefs, continuing education opportunities, ADA updates, policy and advocacy issues, and a variety of other news.

Daily News: Opt in to receive this key resource for keeping abreast of the top news stories concerning dietetics and the profession. Delivered to your e-mail inbox every weekday morning, ADA's Daily News is a quick review of the nation's leading food, nutrition, and health headlines, with links directly to the articles.

Career Resources

ADACareerLink: ADA's online job service allows you to post résumés, target searches by specialty and geographic location, respond directly to job listings, and receive e-mail alerts about new positions. For a fee, you can also recruit professionals for your organization. Access this indispensable service under the Career Center in the Member section of eatright.org.

Compensation and Benefits Survey of the Dietetics Profession: This comprehensive report details compensation for dozens of core RD and DTR jobs, broken down by region, education, experience, supervisory and budget responsibility, and several other factors. You can also use this information to determine fair market value for your services by accessing the interactive salary calculation worksheet available at eatright.org, which is based on a statistical model developed with data from the survey. The worksheet offers a rough idea of what professionals with similar characteristics and in similar situations earn, on average, and provides a sense of the relative importance of each factor in predicting salaries. Members enjoy significantly reduced pricing for this downloadable report.

Center for Career Opportunities: The Center for Career Opportunities is a 1-day exhibit opportunity for FNCE exhibitors and other employers to meet face-to-face with qualified nutrition professionals who are interested in employment opportunities. Attendees are encouraged to bring their résumés in order to participate fully and get the most from the experience. Employers who have participated in the event have commented on the high caliber of potential recruits, and with attendees coming from across the country, you could find your next dietetics employee or employer at this event no matter where you are located.

MNT Practice Resources: There is a wealth of information on ADA's Medical Nutrition Therapy (MNT) Web page to help members understand the business of dietetics. Consider it your one-stop shop for practice management education. Learn about codes for nutrition services, how to become a Medicare provider, private insurance reimbursement, tips to expand MNT coverage, telehealth, and more. Popular advocacy materials available for download include the MNT Works marketing toolkit, ADA's payer brochure for increasing MNT coverage, and a step-by-step billing presentation called "Cracking the Code: Billing Potential beyond Medical Nutrition Therapy." Access these resources at www.eatright.org/mnt.

Eat Right Messages: The Eat Right Messages Program is an online and print nutrition education program that is available on ADA's Web site as print-ready, two-page handouts in PDF format. Content includes a statement promoting registered dietitians and a special section where members can include personalized contact information.

Evidence-Based Nutrition Practice Guidelines and Toolkits: Located in the Evidence Analysis Library, these guidelines provide disease-specific nutrition recommendations using a systematic approach that assures nutrition care is based on scientific evidence. Toolkits accompany the guidelines and provide Medical Nutrition Therapy tools used for documenting patient encounters and collecting outcomes.

Educational Resources

Center for Professional Development: The premier choice for lifelong learning, the Center for Professional Development offers conferences, workshops, meetings, lectures, live phone teleseminars and webinars, e-learning, CD-ROM and online courses, and audiotapes. ADA's professional development opportunities are easily accessed through the Center under the Professional Development tab on the Member section of eatright.org.

Leadership Institute: ADA's Leadership Institute is an integrated, intensive, multi-format training program in the theory and practice of leadership in dietetics. The purpose of the program is to enhance the leadership competencies of ADA members both conceptually and interpersonally, through a combination of information, skill development, and practice-based educational experiences.

Free Online Journal Continuing Professional Education (CPE): Since January 2008, ADA members have been able to easily complete their Journal CPE quizzes online at www.eatright.org. See which quizzes you've already completed and take one that's still available to complete for credit. Quizzes are scored automatically online, and once all questions are answered correctly,

Member Benefits Update...

CPE credit for completed quizzes may be added directly to your Professional Development Portfolio.

For a more extensive list of benefits, visit the members-only section of ADA's Web site at www.eatright.org or call the Member Service Center at 800/877-1600, ext 5000, Monday through Friday, 8:00 AM to 5:00 PM Central Standard Time.

Looking for new patient education material?

Check out the recent additions posted in the patient education section of the RPG web site. New handouts focus on dialysis-friendly snacks, low and high potassium foods, and renal friendly snacks for kids. The Kid Friendly Renal Snack handout is available in Spanish and English. Visit **www.renalnutrition.org** for more information.

Don't forget to access the RPG News section for announcements and valuable references
http:/www.renalnutrition.org/

Web Site Extras

Visit RPG's web site: www.renalnutrition.org for helpful professional and patient resources

Exciting New Updates:

New Webinar Section Under Materials for Purchase tab: Offers a series of 4 webinars for purchase with approved CPEUs for each webinar. The topics covered are modules for review of those found on the Certification Specialty Exam in Renal (CSR).

Check the web site for additional webinar offerings later this year!

HAVE YOU USED YOUR ONLINE CPEU RECORDING MEMBER BENEFIT LATELY?

Access the My CPEU link via
http://www.renalnutrition.org/members_only/my_cpeu.asp

Access the Calendar/Meetings section for a comprehensive list of CPEU opportunities and upcoming conferences
www.renalnutrition.org/calendar/index.php

Access the RNF Patient Education E-Supplement
www.renalnutrition.org/members_only/insert.php

Access to Award/Meeting stipend info
www.renalnutrition.org/members_only/awards.php

Renal Nutrition Forum Pt Education Handouts
www.renalnutrition.org/members_only/insert.php

Access to Articles of Interest
www.renalnutrition.org/members_only/interest.php

Access to current & archived Renal Nutrition Forum issues
www.renalnutrition.org/members_only/feature.php

Evidence Analysis Library (EAL) information and tips for using this valuable resource
www.renalnutrition.org/members_only/resources.php

For more information about the Certification Specialty Exam in Renal (CSR)
www.renalnutrition.org/faq/index.php

Member input & suggestions are a vital part of improving our member resources such as the web site. Please submit your ideas and suggestions to Cathy M. Goeddeke-Merickel, Web Editor via cmgmerickel@gmail.com

"Never underestimate the power of dreams and the influence of the human spirit. We are all the same in this notion. The potential for greatness lives within each of us."
~Wilma Rudolph

CRN Chairperson Message

Karen Wiesen, MS, RD
NKF-CRN Chair

The time has come again when we look back on our previous year and resolve to better ourselves. Whether to lose weight, drive safer, or be kinder to others, we start the year off with hope that come the end of the year we will have accomplished our goals to improve upon the person we are. This year, I challenge you to better yourself by promoting yourself. Go ahead; toot your own horn, throw yourself a party! In this new era of bundled payment, we HAVE to show our worth.

Each day we go into work providing nutrition care for our patients and education to our healthcare team. We advocate for our patients to make sure they receive proper medications and education, but when do we advocate for ourselves? We are more than just the "food experts." We are trained and knowledgeable in the entire realm of renal care, not just food. Our expertise drives outcomes in anemia management, bone mineral management, fluid management, and kinetic management. Without our input, outcomes and future payments are affected.

This year, data will be collected on anemia and kinetic management which will affect our units' payments in 2012. Nutrition plays a significant part in maintaining adequate red blood cell formation and adequate blood flows for urea removal. Without adequate protein intake, vitamin B supplementation, zinc intake and iron supplementation, more erythropoietin is required for red cell production. Without good phosphorus control dialysis accesses are at risk for calcification, leading to inadequate blood flow and poor urea removal. Thus, increasing costs and putting our units at risk for receiving less than optimal payments in 2012.

There are direct relationships between nutritional status, phosphorus levels and hospitalizations. Hospitalizations result in fewer payments to our dialysis units and increase erythropoietin needs post hospitalizations.

We cannot wait until 2014 when phosphate binders are included in the bundled rate to show our worth. We must stand up and be proactive, advocate for ourselves, and show our financial worth. So, take some time this year to talk to your healthcare team about what you can do! Remind doctors to prescribe a renal multivitamin to help with anemia status. Speak up at CQI meetings with ways to improve albumin levels to help reduce hospitalization rates. Point out to your administrators that if you don't have enough time to work with patients, outcomes will suffer and costs will go up. We may not be the people who put the patients on the machine, but we are the people who make sure there are patients to put on! So lift your glass and toast yourself! May you have a profitable and self-rewarding year! ◆

2010-2011 RPG Executive Committee

Mission: Renal dietitians dietetic practice group is leading the future of dietetics by promoting and supporting its members working in nephrology nutrition.
Vision: RPG members are a valued source of expertise in nephrology nutrition.

OFFICERS:
Chair
Kathy M. Madigan, MS, RD, LDN, CSR, MBA
kmnutrifit@verizon.net

Immediate Past Chair
Patricia Williams, RD, LDN
pwilliamsrd@gmail.com

Chair-Elect
Rachael Majorowicz, RD, LD
majorowicz.rachael@mayo.edu

Secretary
Jane Louis, RD, CSR, LD
louisjl@att.net

Treasurer
Sarah Kruger, MS, RD
kruger_sarah@yahoo.com

RNF EDITORIAL BOARD:
RNF Managing Editor
Stacey C. Phillips, RD
staceycphillips@yahoo.com

Web Editor
Cathy M. Goeddeke-Merickel, MS, RD, LD
cmgmerickel@gmail.com

RNF Editor
Megan Sliwa, RD, LDN
megansliwa@aol.com

RNF Assistant Editor
Sara Erickson, RD, CSR, LDN, CNSC
saraericksonrd@gmail.com

RNF Advertising Editor
Emily Cutler, MS, RD, LDN
emilycreamer@aol.com

NOMINATING COMMITTEE:
Nominating Chair
Kathy Ricketts, MS, RD, LDN
kricketts@shire.com

Nominating Member
Kathy Schiro Harvey, MS, RD, CSR
kathyh.rd@pskc.net

Nominating Member
Therese Shumaker, RD, LD
shumaker.therese@mayo.com

Membership Chair
Cynthia J. Terrill, RD, CSR, CD
cindy.terrill@hsc.utah.edu

AREA COORDINATORS/COMMITTEE CHAIRS:
Area I/CQI-Outcomes Chair
Chhaya Patel, MA, RD, CSR
chhaya.patel@davita.com

Area II Awards/Scholarship Chair
Sandy McDonald-Hangach, RD
svhangach@msn.com

Area III/Education Chair
Dee Ann Harwell, MS, RD, LDN
di8tician@aol.com

Area IV/Lending Librarian (Western US)
Covers areas 1, 2, 4
Nadiya Lakhani, RD, LD
nadiya.lakhani@gmail.com

Area V/Lending Librarian (Eastern US)
Covers areas 2, 3, 6, 7
Sandra Oliverio, MS, RD, CSR, CD
oliverio.d@att.net

Area VI/Legislative /Reimbursement Chair
Karen Basinger, MS, RD, LD
kbase1@comcast.net

Area VII/Historian Chair
Deborah Brommage, MS, RD, CSR, CDN
dbrommage@yahoo.com

ADA CONTACT:
Manager, DPG Relations
Susan DuPraw, MPH, RD
800/877-1600 ext. 4814
sdupraw@eatright.org

RNF Guidelines for Authors

Article length: Article length is determined by the Editor for each specific issue. The feature article (including abstract) is approximately 3000 words (not including tables/graphs). Other articles are usually 1000-1500 words; member highlights and reports are approximately 400-500 words.

Text format: Times New Roman font, 12 point, 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.
Author information: List author with first name, middle initial (if any), last name, professional suffix and affiliation below the title of the article. Also include the primary author's complete contact information including affiliation, phone, fax and email address.

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.

Megan Sliwa, RD, LDN
Editor, *Renal Nutrition Forum*
3942 Preserve Crossing Blvd. E
Columbus, OH 43230

Renal Dietitians

a dietetic practice group of the
American Dietetic Association

eat right.™

Visit the Renal Dietitians "Members Only Section" for valuable patient and professional resources @
www.renalnutrition.org