

RENAL REHABILITATION REPORT

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Making the Nutrition Connection

A consistent theme throughout the Life Options program is that good clinical and rehabilitation management are essential for living a long and full life on dialysis. Nutrition is an important part of healthy living for everyone, but it is even more crucial for people on dialysis.

For many reasons, maintaining the proper balance of nutrients, electrolytes, and other chemicals is complex, multifaceted, and somewhat difficult for people with ESRD. One reason is that food and rituals built around food are very meaningful in our society. Special foods have come to symbolize special occasions, both culturally and within individual families.

Unfortunately, these foods may not always be "dialysis-friendly." Renal patients and their families must be especially careful and extraordinarily creative to preserve the meaning and symbolism of food traditions while still remaining faithful to the renal nutrition guidelines.

This issue of the *Renal Rehabilitation Report* is devoted to the topic of renal nutrition in the hope that, given the right information, dialysis patients can enjoy the celebrations of this and many future summers, as they live long and well on dialysis.

For more information about nutrition and rehabilitation, contact the Life Options Rehabilitation Resource Center (RRC) at (800)468-7777.

THE RENAL DIET: A Critical Part of ESRD Therapy

For decades, nutrition management has played an important role in the treatment of end-stage renal disease (ESRD). In the years before dialysis and transplantation were available, dietary interventions were used to relieve the symptoms of uremia and to prolong life.¹

Tremendous advances in the technical, clinical, and rehabilitation aspects of renal replacement therapy have since reduced reliance on extreme dietary treatment. However, neither dialysis nor transplantation can completely restore the biochemical balance maintained by healthy kidneys, and nutrition management remains an important part of ESRD therapy.

What Diet Can Do

Adjustments to diet can help people with kidney failure keep the body's biochemistry in balance. By cutting down on fluids and certain foods, people with ESRD can slow the build-up of uremic toxins in the blood.

Ideally, a meal plan for someone on dialysis will help to minimize the symptoms caused by loss of kidney function. For people who still have some kidney function, following a more controlled meal plan may also help slow the progression of kidney disease.²

Good nutrition is equally important to provide the body with energy and nutrients. Energy is required for all of life's activities, from the most basic to the most physically complex. To build and preserve muscle mass and bone, to digest food and convert it to energy, the body needs nutrients from the right foods.

Meal plans for people with kidney disease are built upon an understanding of the importance of all aspects of their nutrition. "The primary goal of nutritional management for a person with renal disease is always to maintain optimal nutritional status," explains renal dietitian Linda McCann, RD.

If the individual is on dialysis, the secondary nutritional objective is to maintain the safety and effectiveness of these treatments. If the individual has had a transplant, the secondary objectives are to preserve the function of the transplanted kidney and to counteract the side effects of antirejection medications.³

Serious Consequences

Unfortunately, for various reasons, poor nutrition is common among ESRD patients. One study estimated that signs of malnutrition have been observed in up to 70% of hemodialysis patients and up to 51% of CAPD patients.⁷ The prevalence of malnutrition among dialysis patients has serious consequences.

Many studies show a link between malnutrition and increased illness episodes.⁷ Malnourished dialysis patients have more frequent hospitalizations and longer lengths of stay. Malnutrition also increases the need for antibiotics, ventilators, blood products, and other costly treatments. The most serious consequence of all, death, has also been associated with malnutrition in dialysis patients.⁷

The list of medical consequences, both long- and short-term, that may be caused by improper

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RENAL DIETING:

Adaptations for Real Life

For many people on dialysis, adjusting to the renal nutrition plan is one of the most challenging aspects of living with dialysis. First, patients need to learn nutrition guidelines and the reasons behind them. Then, they may have to change some longstanding food habits. Social and cultural pressures to eat and drink can conflict with the guidelines, so following the renal meal plan can be especially hard.

Renal dietitians play an important role in helping patients adjust to a new way of eating. "We try to tailor the diet to the individual, and to include foods they like," says Linda McCann, RD. According to McCann, concern about malnutrition has led dietitians to liberalize the diet considerably over the years. "There aren't as many concrete do's and don'ts as there once were," she explains.

It is the patients themselves, however, who must fit renal meals into their lives. According to Kathy Reynolds, RD, LDN, attitude makes a difference. "Some patients simply say, 'This is what is best for me and I'm going to do it,'" she says. "Somehow, they find the self-control they need."¹ Successful patients also find ways to adapt the diet to meet their needs. Following are some examples of renal diet adaptations.

Just a Taste

Hemodialysis patient Kerry Moynihan has been living with renal meal patterns since she was 12 years old. Now, at age 29, she's grown accustomed to it. Even after all these years, however, she still gets tempted. Potato skins and chocolate are her weaknesses.

"We're all human," she says, "and sometimes we go off the diet." Moynihan keeps her indulgences under control by limiting amounts. "If it's not on the diet, I just have a taste," she says.

For Moynihan, the timing for bending the rules is also important. "I don't want to multiply high potassium foods," she explains, "so I don't go off all at once." When the length of time between dialysis sessions is longer, Moynihan is extra careful. "I don't go off my meal plan on the weekends," she notes.

Restricting fluids is still Moynihan's biggest challenge. "I suck on lemons to decrease my thirst, and use hard candies so my mouth isn't so dry," she says. She also uses small cups to be sure she doesn't drink too much.

Moynihan stays motivated to watch her food choices because it makes a difference in the way she feels. "You feel like you have an elephant on your chest if you drink too much," she observes. "Too much potassium makes my heart race, and too much phosphorus makes me itch." She feels better all around when she stays within the meal plan, and is proud of the fact that her lab values are good.

Although Moynihan admits that it took a while to get used to, she no longer feels restricted by the renal nutrition guidelines. "It's just a change you make in order to live," she says.

Moderation

During 14 years of home hemodialysis, the biggest challenge for Jean Thompson has been getting enough to eat. "I fill up fast," she says, "and I have a hard time fitting a snack around my iron medication schedule."

Because Thompson had a bout with malnutrition in the past, her doctor encourages her to eat more protein and calories. "I'm lucky," she states. "I can eat most of the things I want."

Even though she is encouraged to eat, Thompson tries to make good choices. When she and her husband eat out, she often requests substitutions, especially for potatoes.

“You don’t need to be *too* strict,” she says. “The key is moderation.” Although she followed her meal plan to the letter in the beginning, now she is more flexible. “I eat what I want,” she explains, “in moderation.”

Thompson uses monthly lab reports to be sure her diet is in line. “Once you get your values in the right ballpark, you really don’t have much trouble,” she says. “If something is out of whack, you can work on that.” With the exception of an occasional high calcium level, Thompson’s reports are usually fine.

New Habits

For peritoneal dialysis (PD) patients like Lynn Goldring, the renal eating pattern is usually more liberal. “Potassium is not an issue for me,” says Goldring, “and my calcium and phosphorus are wonderful.” It may be less demanding, but even a PD meal plan requires some adjustments.

Goldring keeps a close eye on sugar consumption, because she does not want to gain too much weight. “I always have a bellyful of dialysate loaded with dextrose (sugar),” she says. To compensate, she rarely eats sweets. “Dessert is just not a routine anymore,” she adds.

In the 7 years Goldring has been on PD, she has developed other new eating habits as well. “I’ve really cut back on dairy products, especially cheese,” she says. When she feels like ice cream, she eats Toffuti® instead. Over the years, these changes have become new habits. “Some things I used to like just don’t taste good anymore,” she explains.

Making diet substitutions and adjustments has become a way of life for Goldring, but she doesn’t dwell on it. “I have seen other patients get so nervous about their diet that it makes them miserable,” she says. To keep things in perspective, Goldring tries not to deprive herself

of something she really wants. “It’s not good to be too rigid,” she notes. “It’s better to have a little and not feel deprived. You’ve got to have a life!”

A Sense of Control

For people on dialysis, adapting the renal nutrition guidelines to fit their lifestyle is a way to take an active role in their medical care. This active role is likely to produce positive outcomes. Research has shown that patients who participate in their care and maintain a sense of control have a significantly better quality of life.² These findings give patients another reason to follow the renal nutrition recommendations. ♦

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NUTRITION: Thoughts from an Expert



An interview with Maureen McCarthy, MPH, RD, CSR

Oregon Health Sciences University,
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Q. Why do I have to watch my diet so closely? Won't dialysis take the toxins out of my blood?

A. Dialysis does remove toxins from your bloodstream, but there are limits to how much dialysis can do. Healthy kidneys work 24 hours a day, 7 days a week. If you dialyze three times a week, for 4 hours each time, you get 12 hours of treatment each week. You can reduce the

amount of work your dialysis needs to do by following the renal nutrition guidelines.

Q. I feel tired a lot of the time. Could it be my diet?

A. Fatigue is a common problem for people on dialysis, and there are many possible causes, including anemia and inadequate dialysis. Still, diet can play a role. Patients who feel they don’t have the energy or strength to function as they would like may need more protein or more calories in their diet. Chronic fatigue should always be reported to your dialysis team.

Q. There's so much emphasis on fluid control. What are the signs that I'm "overloaded"?

A. The scale is your best tool for monitoring fluids. At most dialysis centers, it is the patient’s responsibility to weigh in and weigh out. Recording your own weight gains will help you see the effects of fluid control.

If you gain too much weight between dialysis sessions, you may also see signs of edema. This may include swollen hands, feet and ankles, or puffy eyes. Fluid overload can also cause fatigue and

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DIET DEBATE:

How Much Protein Is Enough?

The first dietary recommendation patients often get when they learn they have kidney disease is to follow a low-protein diet. Yet, when patients begin dialysis treatments, they are told to eat more protein. This apparent contradiction can be confusing. Is protein good or bad?

The Need for Protein

A healthy diet must include protein. The body uses protein to build and repair muscle and tissue, to provide energy, and to create infection-fighting antibodies. Protein also plays a role in the formation of essential enzymes and hormones.¹

The foods we eat are the body's source of protein. Animal products like meat, fish, poultry, eggs, and dairy products are considered high biological value (HBV) proteins. Plant or

vegetable products like bread, cereal, pasta, rice, and beans are considered low biological value (LBV) proteins. A balanced diet includes a combination of HBV and LBV protein sources.

Predialysis

Research studies have demonstrated that a low-protein meal plan can reduce the symptoms of uremia.² Most symptoms of uremia, except anemia, improve when dietary protein is restricted. These findings make sense because uremic symptoms are caused by the accumulation of protein waste products. For this reason, low-protein meal plans have been used for many years to treat patients with renal disease.²

Recently, speculation that a low-protein meal plan might also slow the progression of renal disease³ has created renewed interest in restricting protein. However, the most extensive

study of this subject, the Modification of Diet in Renal Disease Study (MDRD) yielded inconclusive results on this question.²

More research is needed to determine the effects of protein restriction on the rate of loss of renal function. In the meantime, many clinicians recommend a low-protein meal plan to their predialysis patients to reduce uremic symptoms and reduce the "workload on the (still functioning) kidneys."⁴

After Dialysis

Once dialysis treatment is started, concerns about "overloading" the kidneys are greatly decreased, if not eliminated. Dialysis treatments can perform the work of removing excess toxins from the blood. At this point, therefore, patients are advised to increase the amount of

NUTRITION:

Thoughts from an Expert (continued from page 3)



breathing difficulties. If your weight gains are consistently too high, you are putting a strain on your heart and lungs.

Take a close look at how much you drink, and how you can cut down. Everything that is liquid at room temperature counts as a fluid, including soup, jello, ice cream, and popsicles. Also, talk with your dietitian about ways to limit sodium and control blood sugar, so you won't be so thirsty.

Q. I don't like to cook. Are there pre-packaged foods that fit into a renal diet?

A. Preparing your own meals is the best way to control your diet, but you can use pre-

packaged foods if you learn to read labels carefully. Pay particular attention to the protein and sodium content in each serving portion. Frozen meals, for example, can make good choices when sodium is limited to 1000 to 1500 mg per meal.

Since food package labels do not list potassium content, you will have to learn which foods are high, and choose those foods less frequently. Check with your dietitian for guidance.

Q. How can I learn to cook foods that are healthy for me?

A. There are plenty of cookbooks and recipes dialysis patients can follow when preparing

healthy meals. Your renal dietitian can give you a selection. Many local affiliates of the National Kidney Foundation also have lending libraries that include cookbooks.

Q. My dietitian tells me to eat more protein, but I just don't feel like eating those foods. Should I force myself?

A. An aversion to protein is common, especially in new dialysis patients. There are two reasons. The habit of cutting back on protein may develop as a result of predialysis nutrition counseling. There is also evidence that uremia causes a natural decline in your "taste" for protein.

protein (and calories) in their meal plan to prevent the development of malnutrition.

Unanswered Questions

Most clinicians agree that proper nutrition is important for dialysis patients. Whether patients are on hemodialysis or continuous ambulatory peritoneal dialysis, they have “near normal” to high needs for both calories (35 to 38 kcal/kg/day) and protein (1.2 to 1.3 g/kg/day).⁶ What has been debated is the best way to detect and prevent malnutrition. It is also unknown whether improved nutrition will bring improved outcomes.

Serum Albumin. Several indicators of malnutrition have been associated with an increased risk of death. For example, serum albumin levels have long been used as a measure of nutrition in dialysis patients.

Because protein-calorie malnutrition decreases the body’s production of albumin, it has been assumed that low serum albumin (hypoalbuminemia) is caused by malnutrition.⁷

The association between low serum albumin levels and poor outcomes for dialysis patients has fueled much of the interest in preventing malnutrition. Some clinicians feel the association between low serum albumin level and mortality is so strong that they recommend starting dialysis (and therefore ending strict protein-restricted diets) before end-stage renal failure occurs, to forestall the development of malnutrition.⁵

On the other hand, some researchers have questioned the use of serum albumin as a measure of malnutrition. Serum albumin levels can be affected by many factors, including

the body’s response to inflammation.⁷ There is growing speculation that the poor outcomes associated with low serum albumin may be as much a result of inflammation as malnutrition. To clarify this issue, more research needs to be done using alternative measures of nutritional status, including subjective global assessment and body measurements. Research is also needed to determine the connection between nutrition and outcomes.

Prevention. The assumption that people on dialysis need to increase protein intake to prevent malnutrition has come under investigation. Researchers using a carefully controlled low-protein diet supplemented with amino acids found that “protein restriction does not promote protein deficiency.”⁸ They concluded that with proper dietary counseling

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Q & A Q & A Q & A Q & A

Knowing why your tastes have changed will help you put things in perspective. Your appetite for protein, and other foods, will probably return to normal after 6 to 8 weeks on dialysis. In the meantime, don’t give up! Work with your renal dietitian to find protein sources you like. You need enough protein to stay healthy.

Q. Are some sources of protein better for me than others?

A. Renal dietitians usually recommend that dialysis patients get about 60% of their protein from high biological value (HBV) sources, such as the animal protein in fish, chicken, and lean meats. With HBV

protein sources, you may be able to meet your protein requirements more effectively.

It is possible to get enough protein from plant protein sources, but it is challenging. Soy is the one plant protein that qualifies as an HBV source. Soy protein may also protect remaining kidney function in patients who have not yet reached end-stage renal disease.

Q. I don’t like to take my phosphate binders. What can I do?

A. Today, dialysis patients have a wide variety of binders to choose from. If you don’t like your binder, speak up! Your dialysis team can work with you to find something

you like better. You can also choose to work harder at controlling the amount of phosphorus in your diet so you can cut back on the number of binders you need.

Q. How will I know if I’m making the right food choices?

A. The best measure of success is your monthly lab report. In many ways, your monthly labs are the blueprint for your diet plan. If all your lab values are within the limits set for you, you’re on the right track. On the other hand, you know you need to make changes when something is too high or too low. ♦

THE RENAL DIET:

A Critical Part of ESRD Therapy (continued from page 1)

food choices is troubling. For example, in the short term, too much phosphorus may cause itching. Over time, hyperphosphatemia may result in bone disease, painful hardening of soft tissue, and an increased risk of death.⁸

Fluid overload may produce swelling, shortness of breath, and discomfort during dialysis. In the long term, too much fluid can lead to congestive heart failure. Other consequences of a poorly controlled diet include fatigue, abnormal heart rhythms, even sudden death.

The National Kidney Foundation Dialysis Outcomes Quality Improvement initiative (NKF-DOQI™) recognized the crucial role of nutrition in patient outcomes. A report of the first draft of its nutrition guidelines was presented in spring 1999, and final guidelines will be released to the public in fall 1999.

A Nutrition Plan

For dialysis patients and professionals, developing a nutrition plan based on the NKF-DOQI guidelines is a crucial but complex process. First, each patient must undergo an initial nutrition assessment. The assessment should include evaluation of eating habits, as well as body measurements, lab tests, and medical history. In many dialysis facilities, a comprehensive nutritional evaluation called a subjective global assessment (SGA) is also used to classify a patient's nutritional status.⁴

Next, individualized and specific nutritional goals will be set. These goals are based on the results of the nutrition assessment and a variety of other factors, including level of kidney function, cause of kidney disease, lifestyle, patient age, treatment modality, and other medical conditions. Target levels will be set for protein, calories, fluid, sodium, potassium, calcium, and phosphorus.

Throughout this process, the renal dietitian plays a key role. It is the dietitian who incor-

porates the patient's nutritional needs, dietary limits, and food preferences into a meal plan that will maintain health and that the person on dialysis can follow and enjoy.⁵ The dietitian also takes primary responsibility for teaching patients about renal nutrition, and helping them learn how to plan their meals.

The Patient's Role

Designing a nutrition plan that meets a patient's needs can be challenging, but success depends more on the patient than on the plan. The reason is simple: it is the patient who must make the commitment to follow the plan and make the right food choices.

Unfortunately, compliance rates are often poor among ESRD patients. Studies have shown noncompliance rates as high as 86% with various aspects of treatment, including medications, fluid and diet, and consistency in returning/staying for treatments.⁶

There are many reasons why patients find it difficult to follow the renal eating plan. For some, the food choices seem complex and restrictive. There can also be confusion, since dietary recommendations for renal patients are often contrary to those for the general public.

In addition, following the renal meal plan requires changing well-established habits and behavior patterns. Most troublesome of all, people with renal failure sometimes suffer from conditions such as anorexia, nausea, vomiting, depression, and other conditions that interfere with their ability to eat.

Impact on Rehabilitation

Maintaining good nutritional status affects patient outcomes in the area of rehabilitation. In fact, good nutrition has been identified by the Life Options Rehabilitation Advisory Council (LORAC) as a prerequisite to renal rehabilitation. Patients need adequate nutrition to have the energy and physical strength to undertake

rehabilitation. Says Linda Moore, RD, LDN, "It would be difficult to improve the functional status of someone who is malnourished."

The connection between nutrition and renal rehabilitation is not just theoretical. One study found that better nourished hemodialysis patients were more likely to be employed.⁹ Because the ability to work is often used as an objective measure of both successful rehabilitation and quality of life, the impact of nutrition is clear.

Dialysis teams today use a variety of methods to assess nutritional status. More research is needed to identify the best assessment techniques and to fully understand the relationships between nutritional markers and outcomes. Nevertheless, following the renal nutrition plan offers important medical and quality of life benefits to people with ESRD.

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EATING WELL ON DIALYSIS:

The Most Important Renal Diet Essentials

For people with kidney failure, many of the things they have learned about “eating right” no longer hold true. Dialysis and predialysis patients must learn new rules about what’s good and what’s bad. With so much to learn, what should patients focus on first?

“No two patients will have exactly the same renal diet,” says renal dietitian Linda Moore, RD, LDN. “Meal plans and nutritional goals should be individualized to fit specific needs.” Still, there are some “essentials” for people on hemodialysis. Moore gives top priority to the following guidelines.

Don’t skip meals. According to Moore, malnutrition is a common problem among people on dialysis. “Because of this, patients really can’t afford to miss any nutrients or calories,” explains Moore.

Moore estimates that many dialysis patients skip one, or even two meals, on dialysis days. For some, it’s a question of convenience. “They’re away from home a good part of the day for treatment,” she notes. “Unless they take the time to pack a lunch or snack, many end up missing a much-needed meal.” With this in mind, patients should ask dietitians to make suggestions for healthy, packable foods.

There are several other factors that may contribute to patients’ skipping meals. For example, some research suggests that lack of transportation and/or money to buy food is a problem for many patients, particularly those who live in urban areas.¹ In addition, some dialysis facilities have begun to prohibit eating and drinking in the unit—a controversial practice that can make it difficult for patients to fit in three meals a day.

Aside from these factors, some patients skip meals because they just don’t feel like eating. “If there is a physical reason they are not eating,

patients need to talk about it,” says Moore. “In many cases, the dialysis team can help solve the problem.”

Limit potassium. Patients on a renal meal plan need to limit many things. According to Moore, this is particularly true for potassium, which, by itself, can reach lethal levels. Learning to limit potassium does not have to be difficult, however. “It’s usually a matter of cutting back on fresh fruit and vegetables,” says Moore.

“No two patients will have exactly the same renal diet. Meal plans and nutritional goals should be individualized to fit specific needs.”

—Linda Moore, RD, LDN

Restrict fluids. There is also concern about patients who gain too much fluid weight between dialysis sessions. “Twenty years ago, the average weight gain between sessions was 2 to 4 pounds,” says Moore. “Today, the average is 6 to 8 pounds, and it is not uncommon to see a patient gain 20 pounds between sessions.”

Taking that amount of fluid off during dialysis often caused painful symptoms in the past. Now, most dialysis machines allow sodium modeling programs (a process of adjusting the sodium concentration of the dialysate during treatment) to relieve those painful symptoms. The result, speculates Moore, is more comfortable dialysis, AND a greater tendency to be lax about fluid intake.

Moore cautions that there are still long-term side effects of too much fluid. “All of that water causes swelling of internal organs, especially the heart,” she explains. “I tell my patients it’s like blowing up a balloon: every time you blow up a balloon, it stretches just a little. If you do it time after time, the balloon gets so stretched out that eventually it goes totally limp. When that happens to your heart muscle, it can result in congestive heart failure.”

Control phosphorus. The problems caused by too much phosphorus take time to appear, but they can be serious. They include bone disease and hardening of the soft tissues. Moore stressed the importance of taking binders as prescribed to avoid these problems. “If phosphorus levels are still too high,” she says, “the dietitian can recommend changes in diet.”

Following the renal meal plan involves more than these four essentials, and patients need to work with their dietitians to develop a comprehensive dietary plan. “People on dialysis can learn to regulate intake of foods that are potential problems and can learn to regain a sense of satisfaction with food,” says Moore. “It takes time and a lot of interaction with their dietitian.”

For More Information

For more information about eating after kidney failure, contact the National Kidney Foundation (NKF) Information Center at (800)622-9040. ♦

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Linda Moore is Chair of the Council on Renal Nutrition of the National Kidney Foundation. She is currently employed by SangStat, The Transplant Company.™

DIET DEBATE:

How Much Protein Is Enough? (continued from page 5)

and supplements, many predialysis patients could safely delay the start of dialysis.

A Matter of Timing

At what point in the course of renal failure is it best to move from the low-protein meal plan of predialysis to the higher protein recommendations of a dialysis patient? The answer is not always clear. Considerable debate is underway concerning the nutritional needs of dialysis patients, the relationship between protein intake and malnutrition, and the effects of protein restriction on the need for dialysis.

Until research provides additional data, the decision about the best time to start dialysis

must be left to the patient and his/her nephrologist. Nutrition counseling from a renal dietitian will play an important role in this decision, as well as the patient's ability to comply with dietary recommendations. The risk of developing malnutrition and its devastating impact on clinical and rehabilitation outcomes remains an important concern. ♦

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