

In CONTROL

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How to Use *In Control*

Each issue of *In Control* offers background, tips, and patient education material on one topic that is important to living well with kidney disease. The 2-in-1 format of *In Control* is designed to make it easy to find the information and share it with your patients.

For you, there are 4 pages of professional content (pages S1, S2, S7, and S8), along with practical tips for putting key concepts into practice.

For your patients, there are 4 pages (S3–S6) of easy-to-read information. There's also a quiz patients can use to test their knowledge.

We encourage you to make copies of *In Control*. Use it to supplement your own education materials, and call us at (800) 468-7777 if you want to reprint an article. Help your patients get “in control” of their kidney disease!

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Dialysis Patients' Need for Protein

Protein-energy malnutrition (PEM) is an all-too-common problem in dialysis centers, affecting an estimated 23% to 73% of patients receiving maintenance hemodialysis.¹ The causes of PEM are many, and may include poor diet due to loss of appetite, protein catabolism caused by dialysis, chronic inflammation, and more.² Whatever the cause(s), patients with PEM are in danger. In adults, PEM is a powerful predictor of morbidity and mortality. In children, PEM is associated with growth retardation.¹

Role of Protein

Dietary protein, especially high quality protein like meat, poultry, and eggs, is the source of the amino acids the body needs to build muscle and maintain healthy cells, organs, and bones. Dialysis patients need more protein than the average healthy adult because they lose protein during dialysis, and because kidney disease alters the body's ability to use and process amino acids.² Dialysis patients who do not get enough protein will develop PEM, putting them at increased risk of death, and decreasing their physical functioning and quality of life.¹

Nutrition Guidelines

The most recent version of the KDOQI Clinical Practice Guidelines for Nutrition in Chronic Renal Failure, published in 2000, addressed the important issue of nutrition in dialysis patients by providing detailed and specific recommendations for clinical

nutritional management of people with chronic kidney disease (CKD).

According to KDOQI Nutritional Guidelines,² the general goals are:

- 1.2 g of protein/kg body weight/day for hemodialysis patients
- 1.3 g of protein/kg body weight/day for peritoneal dialysis patients
- 35 kcal/kg body weight for patients less than 60 years of age
- 30 to 35 kcal/kg body weight for patients 60 years or older

To put these goals into perspective, it is useful to note that the recommendation for daily protein intake for an average, healthy adult is 0.8 g/kg body weight/day.³ Healthy adults in the United States often eat more protein than they need.

Falling Short

Meeting the goals set by KDOQI has proved to be difficult in practice. Data collected by the Centers for Medicare and Medicaid Services (CMS) ESRD Clinical Performance Measures Project reveal that most dialysis patients are currently not meeting the guidelines for serum albumin. Only 36% of in-center hemodialysis patients have serum albumin levels >4.0 g/dL and only 20% of PD patients do.⁴

Unfortunately, this failure to meet nutritional goals is not new. A look back at CMS Clinical Performance data from 1997 reveals that three years before the release of the KDOQI

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Supplement Program Improves Serum Albumin

The National Kidney Foundation of South Carolina began providing free nutritional supplements to needy dialysis patients several years ago. Registered dietitian Roxanne Poole collected data from supplement recipients' applications and follow-up tracking forms beginning in August of 2002. Here's what she found.

Program Description

A 3-month supply of nutritional supplements (either two cans of liquid supplement or 6 scoops of powdered protein per day) was delivered directly to the clinic of each patient who qualified for the supplement program.

To qualify, patients needed to meet the following criteria:

- No Medicaid coverage (and meet other financial criteria)
- Serum albumin <3.5 mg/dL for at least 2 of the last 3 months
-and/or-
- Significant weight loss (>5% in 1 month or >10% in 6 months)

One hundred thirty patients qualified for the supplement program. Half the study subjects were male (65) and half were female. Average patient age was 62.3 years. There were 99 hemodialysis patients and 31 peritoneal dialysis patients. There were 116 patients enrolled because of low albumin, 43 for weight loss, and 29 for both.

Renal dietitians assessed adherence and collected data on body weight and albumin levels during the 3-month supplementation period. For an additional 3 months after the supplementation period, body weights and albumin levels were also tracked. In all, data for each patient in the study were collected over a period of 9 months [3 months of pre-supplement data from the application (Phase A); 3 months of data during the supplementation period (phase B); and 3 months of post-supplement data (phase C).]

Positive Results

Data collected after 3 months of supplement use showed a statistically

significant increase in serum albumin levels, from an average of $2.9 \pm .4$ mg/dl to $3.45 \pm .4$ mg/dL. Higher serum albumin levels continued throughout the 3-month supplementation period—and persisted for 3 more months after the supplementation was completed (average of $3.49 \pm .4$ mg/dL).

Patients with albumin levels less than 3.0 mg/dL received the most benefit from the nutritional supplements, with albumin levels improving more than 0.5 mg/dL on average (from 2.67 mg/dL to 3.3 mg/dL. P value <0.0005).

Workable Model

Poole has presented the data from her study at the 2006 NKF Spring Clinicals in Chicago, and in the Renal Nutrition Forum of the American Dietetic Association (Fall 2006).¹ "I want to share our results," she said, "because this study provides concrete evidence that the use of nutritional supplements is an effective means of helping needy dialysis patients improve serum albumin levels."

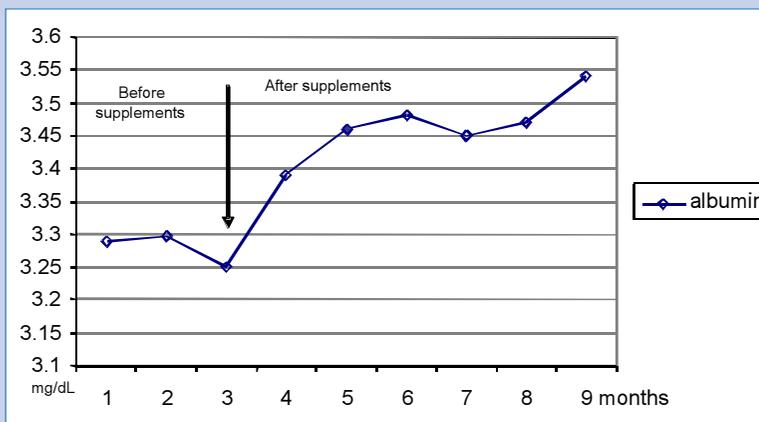
Poole believes that the South Carolina model could be adapted by others. "We used existing personnel and clinical data to keep costs low," Poole noted, "and we didn't need to do additional lab work to measure results."

She is currently in the process of further analyzing study data so that she can report on results about risk factors associated with malnutrition, weight gain/loss as a result of supplementation, and other variables. 

Reference

1. Poole R, Hamad A, Thomas L, Strawhorn P. Impact of nutritional supplements on albumin levels of dialysis patients: nutrition supplement grant program NKF of South Carolina. *Ren Nutr Forum* 4:1-9, 2006.

Mean Albumin During Study



n=130 patients, p <.004

Reprinted with permission, Renal Nutrition Forum, fall 2006, vol. 25, no. 4. Renal Dietitians, a dietetic practice group of American Dietetic Association.

Q & A: Ask the Expert

An interview with Maureen McCarthy, MPH, RD, CSR, LD

Transplant Dietitian, Oregon Health and Science University, Portland, OR

McCarthy is an emeritus member of the Life Options Rehabilitation Advisory Council (LORAC), and has spent 20+ years working with dialysis patients.

Q: Why do so many Stage 5 CKD patients (those on dialysis) fail to get enough protein in their diet?

A: For many, the problem begins before they start dialysis. In Stage 4 CKD, patients often experience a spontaneous decline in protein intake. If, in addition, they overdo recommendations to restrict dietary protein, they arrive at dialysis already undernourished. The problem is likely to worsen in the first few weeks on dialysis because patients lose protein during treatments, but do not regain their appetites for at least 6–8 weeks. Even when a taste for food returns, it may be hard to eat enough protein to re-establish good nutritional status.

Q: What should dialysis caregivers know about serum albumin and dietary protein?

A: Many articles in the literature identify serum albumin as the strongest predictor of hospitalization and death in dialysis patients. However, dialysis staff members should recognize that lab values for serum albumin are affected by many factors, including access problems, hospitalizations, infections, and more. Nutrition is important, of course, but we must consider a variety of factors when we interpret serum albumin values. Too often, we scold our patients about food choices and eating habits, when there may be other reasons

patients fall short of meeting goals for serum albumin values.

It is estimated that about 40% of all dialysis patients are malnourished. But severe protein-calorie malnutrition is not common in the U.S. Every dialysis staff member should be alert to the signs and symptoms of declining nutrition—a drop in intake, sudden changes or absence of interdialytic weight gains, unplanned weight loss, lack of interest in food, and others.

Q: What is most important for patients to know about getting enough protein?

A: Probably the biggest thing for patients to know is their own personal goal for protein intake and calories needed. Patients should be sure their dietitian helps them translate the general KDOQI guidelines into specific, personal goals so they know exactly what they are aiming for each day. In addition, patients should work closely with their dietitians to make realistic choices for the best, high-quality protein sources based on their needs, budget, and preferences.

Q: What is the best way to help patients get all the protein they need?

A: There is no substitute for monthly, one-on-one sessions with the renal dietitian. She or he can help patients understand goals, but can also work with them to understand why lab values may be up or down.

There may be a reason(s) other than diet alone. Dietitians can also provide specific guidance about the best food choices for an individual patient, including the use of nutritional supplements, if necessary. Creative suggestions for food preparation and selection, especially on dialysis days when patients may be too tired to put much effort into cooking, can be a big help.

Q: Does dialysis treatment modality make a difference?

A: Hemodialysis (HD) patients seem to do a little better than peritoneal dialysis (PD) patients in terms of meeting goals for serum albumin levels, but there's lots of room for improvement. This happens because PD patients lose more protein with daily treatments. Of course, daily HD also increases protein losses, but improved appetite often allows a better intake to balance things out.

In one study [Galland et al. *Semin Dial* 17(2), 2004], 17 conventional HD patients who converted to short daily HD showed significant increases in daily protein intake, daily energy intake, serum albumin levels, and body weight. The authors suspected that “increased frequency was more important than increased dialysis dose,” and concluded that “short daily HD appears to be a suitable method to improve nutritional status in dialysis patients.” In my own experience, short daily HD patients feel so much better that their appetites are enhanced, and they simply eat better. 

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Dialysis Patients' Need for Protein

nutrition guidelines, only 37% of in-center hemodialysis patients had serum albumin levels >4.0 g/dL.⁵

Serious Consequences

When dialysis patients fall short of nutritional goals, the consequences are serious, indeed. A report of data collected by the Dialysis Outcomes and Practice Patterns Study (DOPPS) provides confirmation of the risks associated with PEM.

According to DOPPS, the risk of mortality increases as serum albumin levels decrease.⁶ In fact, the mortality risk is more than twice as high for patients with serum albumin levels <3.3 g/dL when compared with patients who meet the 4.0 g/dL nutritional guideline. Similarly, DOPPS data show that low levels of serum creatinine (<10 mg/dL) were also associated with an increased mortality risk.⁷

Call to Action

The well-documented problems associated with poor nutritional status, combined with the reports showing that large numbers of dialysis patients are at risk for PEM, have prompted experts to call attention to “the need to develop quality improvement programs targeted at nutrition.”⁸

Comprehensive nutritional counseling remains the intervention most recommended to help improve nutritional status.¹ One-on-one sessions can help identify and address the many factors that may prevent patients from eating enough protein. In many cases, these factors are not related to dialysis. For example, dental problems, depression, low-protein ethnic food preferences, and/or lack of funds can all limit protein intake. In some cases, clinicians may recommend the use of oral supplement programs (see page S2) to improve nutrition.¹ Other, less commonly used strategies (e.g., use of appetite stimulants, parenteral nutrition, and/or steroids) remain unproved.¹

Recently, another promising strategy to improve nutritional status has emerged: the use of more frequent dialysis. Although clinicians have always known that ensuring adequacy is an important factor in providing good care, several studies have demonstrated that serum albumin levels improve with daily and nocturnal hemodialysis.¹ Another study by Galland and Traeger reported increased

protein intake in patients treated with short daily hemodialysis, leading the authors to conclude that “short daily hemodialysis appears to be a suitable method to improve nutritional status in dialysis patients.”⁹

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Quiz Answers

1. True
2. True
3. True
4. False. Dialysis *does* filter out protein from your blood.
5. True

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Protein: an Important Part of Your Dialysis Diet

You know that you may need to eat less salt, phosphorus, and potassium on dialysis. What you might not know is that you need *more* of something, too: protein.

Research has shown that to live long and well, people on dialysis need more protein to prevent malnutrition and muscle wasting.

Your body uses protein:

- To build and repair muscles
- To provide energy
- To make antibodies, and some enzymes and hormones
- For healthy bones, hair, and skin

Serum albumin is a blood test for protein that you'll see on your monthly lab reports. You want to have a level of at least 4 grams per deciliter (4.0 g/dL). If yours is lower, talk with your doctor and your dietitian.

Types of Protein

There are two types of protein in the foods you eat, and most people eat both.

High biological value (HBV) protein includes:

- Meats (beef, pork, lamb)
- Poultry

(chicken, turkey, duck)

- Seafood (fish, shrimp, clams, crab, etc.)
- Dairy (milk, cheese)
- Eggs (or just egg whites)
- Soy (tofu, soybeans)

Low biological value (LBV) protein is found in foods like:

- Nuts
- Dry beans and peas
- Some grains (brown rice, buckwheat, quinoa)

Most non-meat protein is also high in potassium and/or phosphorus. If you are a vegetarian, talk with your dietitian to see how to make a meal plan work for you.

Dialysis Removes Some Protein

When dialysis filters out wastes from your blood, it also removes protein. If you don't eat enough to make up for what's lost, your body will start to use the protein from your muscles to get the energy it needs. This can cause:

- Fatigue
- Higher risk of infections
- Weight loss

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Christine: Meeting the Protein Challenge

Christine has faced many challenges in her life. Rising above poverty throughout her childhood, Christine was diagnosed with kidney disease as a college student. Now, 32-year-old Christine is on dialysis and dealing with what she says is the hardest part of kidney failure: “In my opinion, protein is the toughest thing dialysis patients have to deal with.” But as she has in the past, Christine faces this challenge head-on and with great success.

A Rough Start

Christine was an “angry, frustrated, and mean kid” living in poverty with her mother and 5 siblings. “All that people in my area thought about was providing food for their families and paying the bills,” she explains. “Many kids dropped out of high school to work so they could provide income for the family, and that’s what I planned to do, too.”

But someone would help change the course of Christine’s life. “My high school Spanish teacher saw past my anger and gave me the guidance and support I needed,” recalls Christine. “Over time, as I grew to trust her, she offered her home to me to live in, providing me with the stable support I needed.” With her new support system, Christine did well in high school and went on to college. “I was *very* motivated to achieve these goals, and I did!”

In her second year of college, Christine had back pain, and during a basketball team physical found that she had kidney disease. “I was told I had a disease called focal segmental glomerulosclerosis that

made my kidneys have a lot of holes in them,” says Christine. “The doctor was very abrupt and unsympathetic, and told me that in about 10 years I would have to go on dialysis.”

Ignoring the Inevitable

Christine put her new diagnosis behind her and graduated college in 1998 with a social work degree. For the next four years, she bounced between serving as an AmeriCorps member and working as a social worker. “That is when my fatigue really started to hit me,” recalls Christine. “I moved to Oregon to get away from the southern heat and to visit my best friend who was having a baby.”

The cooler climate and slower pace helped Christine feel better. Two years later, she moved back to South Carolina to be closer to family. “After 6 months, I crashed again with fatigue, loss of appetite, swelling—the works!” says Christine. “I refused to see a doctor because I was in denial; I also didn’t trust doctors too much. I moved back to Oregon and was sick for a full year before I finally went to see a kidney specialist!”

Diagnosis and Treatment

Christine went to a doctor who was willing to see her for free. “At this point, I had no job, no money, no insurance, and was living with my best friend and her family,” explains Christine. “The doctor treated me like a person and told me I could die if I didn’t take care of myself—no one ever said that to me before.” Christine’s kidney function was at 15%, and she started in-center hemodialysis in January of 2006.

“I was depressed,” recalls Christine. “As a social worker I was used to helping others and now I needed help. The doctor convinced me to apply for financial assistance and that was really hard because I had worked so long not to be ‘on the system.’” But Christine’s “eyes started to clear” and she realized she had to get control over her disease. “I said to myself, ‘Will I sit and let it take over or not,’” says Christine. “After that I buckled down and moved on with life.”

Her first major decision was to switch to peritoneal dialysis (PD). “I couldn’t be on the move with in-center dialysis,” she explains. “Plus, the people around me were worse off than I was and it depressed me.” She first switched to manual PD and now does PD with a cycler, stating, “I am much happier because it doesn’t interfere with my day.”



The Protein Challenge

Christine has found that keeping her protein level up is the biggest challenge of life on dialysis. “On PD you lose more protein and I have to eat three times the amount a ‘normal’ person eats—with less of an appetite!” relays Christine. “They want me to eat good-quality protein such as meat, egg whites, or fish, so I’ve really had to discipline myself.”

While she has always followed her meal plan, Christine’s protein level has improved since switching to PD. “My appetite is better on PD than it was on in-center dialysis plus I’m not hesitant to eat and try new things,” explains Christine.

For added protein, Christine tried protein shakes. Her verdict: “Gross and expensive.” Christine knew someone at Quixtar who recommended their protein bars and shakes. “I checked with my dietitian and was told they’d be okay for me to have. They tasted great!”

Protein Tips and Tricks

Christine has found creative ways to add protein into her diet. “If I eat 1/3 of a piece of chicken and feel full I add an extra bite ‘for the road,’” she explains. “When I’m full I always add one extra bite of protein at the end of the meal. I also eat six or seven small meals rather than three large ones.”

Having someone to answer to also helps Christine. “If I don’t get enough protein I have less energy, take more naps, and get cranky,” she explains. “My roommate knows right away if I’m not following my diet!” Christine also has a bulletin board in the kitchen to track her protein, salt, phosphorus, and potassium. “I do treat myself once a week to a special item, but then I carefully plan how I eat the rest of the day.”

An Active Future

Christine is looking forward to a bright and active future. She went back to school and will finish a computer degree in 1 year. “I know that if I eat good sources of protein I won’t be dragging around and can have a pretty normal life,” says Christine. “Protein sounds like a simple thing but it takes time and discipline to work into your diet. When you do, your energy really improves.” 🌟

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Protein: an Important Part of Your Dialysis Diet

Research has linked higher levels of protein in the blood to longer life for people on dialysis. Low protein levels are linked with poorer survival.

Good Dialysis Helps Your Appetite

One sign of *uremia* (a buildup of wastes in the blood) is a loss of appetite, especially for protein. Ask your dietitian about tasteless or flavored protein powders you can add to soups, applesauce, or juice. He or she may have other tips to add more HBV protein to your meal plan, too.

If you don't want to eat or can't face meat, you may not be getting enough dialysis to feel your best. Ask your doctor how you can get more treatment. You may want to think about home dialysis. People who do longer or more frequent dialysis at home clean more wastes out of their blood, so they have a better appetite and can eat more protein.

For More Information...

To learn more about protein and dialysis visit Kidney School Module 9: *Nutrition and Fluids for People on Dialysis* available at: www.kidneyschool.org.

Protein Quiz

Now that you've read about how important protein is in your dialysis diet, try to answer the true/false statements below to see how much you've learned (answers are on page S8).

1. People on dialysis need more protein to prevent malnutrition and muscle wasting.
 True False
2. Some of the ways your body uses protein are to build and repair muscles, to provide energy, and to make antibodies.
 True False
3. Your protein level should be *at least* 4.0 g/dL.
 True False
4. Dialysis does *not* filter out protein from your blood. True False
5. Research has linked higher levels of protein in the blood to longer life for people on dialysis.
 True False

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