

## Questions You Should Ask Your Doctor! (Continued)

**Don't ask to decrease your dialysis time** unless you can maintain a URR of 65 percent or more. **Decreasing your dialysis time resulting in a URR below 65 percent may increase your risk of premature death.**

### 3. Is my URR 65 percent or more on the last use of my reused dialyzer?

This is not normally known and therefore should be tested to assure your URR is 65 percent or higher throughout the use of your reused dialyzer. If the resulting URR is below 65 percent in the last use, the reused dialyzer should be discarded. You and your doctor should determine how many uses of the dialyzer are possible while maintaining a URR of 65 percent or higher on every use.

### 4. Is my serum albumin 3.8 g/dl or above?

Ideally, by most tests of albumin, it should be 4.0 or above. If it is below the normal standard, ask your doctor and renal dietitian how you can increase it. This usually requires eating more protein each day. If you are being adequately dialyzed you should have the appetite for it.

## In Summary

*Keep this Advisory handy to determine on a monthly basis (when blood test results are available) if you are receiving adequate dialysis. Don't hesitate to discuss with your doctor the effectiveness of the dialysis treatments you are receiving. Remember, your well-being and life depend on it.*



*The Voice Of All Kidney Patients*

American Association of Kidney Patients  
3505 E. Frontage Road, Suite 315  
Tampa, Florida 33607  
(813) 636-8100 • (800) 749-AAKP  
Fax: (813) 636-8122  
info@aakp.org • www.aakp.org

# aakp

## Inadequate Hemodialysis Increases The Risk Of Premature Death

## AAKP Advisory: Inadequate Hemodialysis Increases The Risk Of Premature Death

*Recent research has revealed that many hemodialysis patients **may not be receiving enough dialysis** to prevent uremic symptoms, serious medical complications and, in some cases, premature death. This is a situation of such profound importance to the welfare and survival of kidney patients that AAKP has concluded a special advisory is necessary to inform and advise patients about the issues concerning the adequacy of dialysis. This Advisory applies to patients who normally have three hemodialysis treatments each week.*

## What is Enough Dialysis?

**T**he hemodialysis treatments you are receiving replace only a small part (less than 15 percent) of the normal function of your kidneys. If you don't get enough of the treatment **your blood will retain too much of the body's waste products that cause uremia and you will always feel sick.** If you are being underdialyzed you can expect to experience many of the following symptoms: chronic weakness and tiredness; real weight-loss; poor appetite; nausea; a taste of ammonia in your mouth; feeling better after treatment than before; yellow skin color; and uremic pericarditis (inflammation of the heart). You will also be at higher risk for infections and prolonged bleeding.

It is also important to recognize that **in some cases** patients can be underdialyzed

Please cut along the dotted lines to carry this card with you. See other side for Hemodialysis Checklist.

To decrease your risk of a premature death, chances of feeling tired and weak, losing weight, having a poor appetite and nausea, you must receive adequate dialysis regularly.

See enclosed questions.

**"INADEQUATE HEMODIALYSIS INCREASES THE RISK OF PREMATURE DEATH."**

without experiencing the most severe complications of uremia. Lesser symptoms are often easily overlooked or denied. But loss of real body weight or failure to gain back your normal weight **should cause worry.** A loss of real weight can be covered up by replacement with water weight. You will know this is happening when post-dialysis weight is unchanged and your blood pressure is getting higher; you get tired more easily when walking or climbing; and you get water in your lungs (pulmonary edema) after gaining the same amount of water weight you used to gain without problems.

On the other hand, **patients who are well-dialyzed will experience the following:** a sense of feeling good; good appetite with more normal weight; feeling like dialysis is not necessary when treatment is due (except for the need to remove fluid); and "you'll wonder where the yellow went." A well-dialyzed patient should be able to look ahead to doing many of the things that were planned before renal disease occurred.

## Are You Getting Enough Dialysis?

**A**re you complaining that your dialysis treatments are too long? **AAKP urges you to recognize that your health and your very life depend on getting the right dose of treatment.** That dose includes, in addition to enough time on dialysis, a large enough dialyzer and a high enough blood flow. If anything, you probably need more time on dialysis than you are getting. Refer to the other information included in this Advisory and discuss your own situation with your doctor and dietitian. You can't



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know too much about what is necessary to keep yourself well on dialysis. Call or write AAKP if you can't get satisfactory answers to your questions. We are anxious to help you to get the best chance at life.

## Checking On The Adequacy Of Your Dialysis Treatments: URR

**Urea Reduction Ratio (URR)** is a number that tells you how well hemodialysis is removing waste products from your body, that is, how effective your dialysis treatments are.

The URR is a percentage based on how much urea was removed during your treatment on the day your blood was drawn. This is calculated by testing the urea level in your blood (blood urea nitrogen, or BUN) before and after the dialysis treatment.

Although urea is just one of the body's waste products, how effectively it is removed indicates how well other waste products have been removed. Many doctors use URR to monitor your dialysis treatments. As part of your own treatment team, you should know your monthly URR and ask questions when it gets too low.

### So What Should Your URR Be?

**Evidence indicates that for adequate dialysis, URR should be above 65 percent.** If your URR falls below 65 percent you should ask your doctor to investigate it. Low URR for one month could be due to a problem with the specific treatment tested. You should ask your doctor to review that specific treatment and test. If the review doesn't explain the low URR, it may mean

there's an ongoing problem. Your dialysis treatments are not removing enough wastes and some appropriate steps will need to be taken.

### How To Calculate Your URR

**A**lthough the URR usually doesn't appear on your lab report, it's easy to figure out yourself. Find the pre-dialysis BUN and post-dialysis BUN numbers on your lab report, then:

- ▲ Subtract the post-dialysis BUN from the pre-dialysis BUN to get how much BUN was reduced.
- ▲ Divide this figure by the pre-dialysis BUN to get the "ratio."
- ▲ Multiply by 100 to get the percentage.

#### Formula:

$$\frac{\text{PreBUN} - \text{PostBUN}}{\text{PreBun}} \times 100 = \text{URR percent}$$

#### Example:

$$\frac{94 - 32}{94} \times 100 = 65.9\%$$

If you need help finding your URR, ask your doctor or dietitian.

### Some Units May Use KT/V Instead Of URR As The Measure Of Adequacy

**Y**our dialysis unit may use the KT/V ratio instead of URR. This is fine. However, since there are a number of different formulas for figuring KT/V it is very important to equate it with URR. Ask for the values pre and post BUN which were used to calculate your KT/V. Use those pre and post BUN values in the example provided to

calculate your URR. The KT/V should not be calculated from numbers provided by the manufacturer for the efficiency of the dialyzer but must be calculated with the same blood tests as the URR. It is also important to distinguish between what KT/V the doctor prescribes and what KT/V is delivered; i.e., what you actually receive.

AAKP's recommendations for a minimum adequate dialysis is a delivered KT/V above 1.2. If your unit uses the KT/V ratio, substitute the KT/V above for the URR values in the discussion of the questions you should ask your doctor.

### How Should Blood Be Drawn?

**T**he blood samples for BUN must not be drawn from the blood lines while you are being dialyzed. Samples should be taken from needle tubing before and five minutes or more after treatment depending on length and efficiency of dialysis. Shorter dialysis times with higher blood flows require a longer wait before blood is drawn, possibly up to 30 minutes – due to a rebound effect – for an accurate measure of your dialyzer efficiency. Use of an appropriate formula for estimating the degree of urea "rebound" may be okay. Please discuss this further with your doctor (or nurse) if you have questions.

### Maintain Proper Nutrition

**M**aintaining proper nutrition (eating enough protein daily) can effect your BUN. The monthly blood (serum) test for albumin, which also appears on your lab report, provides a valuable check on nutritional status. **The serum albumin should be above 3.8 g/dl.** Serum albumin levels may vary due to other conditions. For example, if you are still making urine with a lot of protein in it then you could have a subnormal albumin level. You need to discuss any subnormal albumin levels with your doctor or dietitian to determine the cause and appropriate response.

Patients who are maintaining proper nutrition and being well-dialyzed **should not be losing weight or suffering from a poor appetite.** If you are well-dialyzed and are still losing weight then another cause should be sought. If you are experiencing other symptoms you should speak with your doctor and dietitian about these symptoms and the appropriate steps that should be taken to diagnose the problem.

### Is Your Blood Access OK?

**G**ood dialysis depends on having a blood access (fistula, graft) that works well. Poorly functioning accesses cause inadequate dialysis as well as many visits to the hospital, most of which can be avoided if the problem is detected and corrected early. You should talk with your doctor about your access and ask him to check it and make sure it is working properly. If your arterial (red) needle "sucks" or your venous (blue) pressure is too high, there is a problem with your access and it needs to be fixed.

### Questions You Should Ask Your Doctor!

1. Is my URR 65 percent or higher?
2. If my URR is below 65 percent, what must be done to increase it to 65 percent or more?

There are several possible steps that could be taken to increase your URR to this level:

- ▲ The most effective step is to increase your time on dialysis.
- ▲ Increase the size or change the type of dialyzer.
- ▲ Increase your blood and/or dialysate flow rate.

## AAKP Adequacy of Hemodialysis Checklist

### Questions to ask your doctor:

1. Is my URR 65 percent or higher on a regular basis?
2. If it is not, what must I do to increase my URR to 65 percent or higher?
3. Is my URR 65 percent or higher on the last use of my reused dialyzer?
4. How many uses of my dialyzer will ensure that my URR is always 65 percent or higher?
5. Is my serum albumin 3.8 g/dl or higher?
6. If it is not, how do I improve my diet to ensure my serum albumin is 3.8g/dl or above?

*Continued*