

PEP CONNECT

*Patient
Education
Program*

How Much Cleaner is My Blood After Dialysis?

Dialysis Adequacy: URR and Kt/V

Getting enough dialysis helps you feel well, enjoy a good appetite and live longer.

Dialysis Adequacy: What does it mean? Where did the guidelines for dialysis adequacy come from? How much cleaner is my blood after dialysis and how do I know if I'm getting adequate or enough dialysis?

What is URR and how is it measured? Who do I talk to about my URR? What are the causes of low URR? Look at the URR bulletin board.

What is Kt/V and how is it measured?

How do I improve my URR or Kt/V so that my blood is cleaner and I feel better?

Greenfield Health Systems

Dedicated to Dialysis

To feel well, make sure you get enough dialysis!

Dialysis Adequacy: What does it mean?

Dialysis adequacy is a way to find out how much cleaner your blood is after dialysis. It shows how well a dialysis treatment removes waste products such as urea from the blood. A high urea level means that the levels of many other waste products that are more harmful and not as easily measured are also building up.

Where did the guidelines for dialysis adequacy come from?

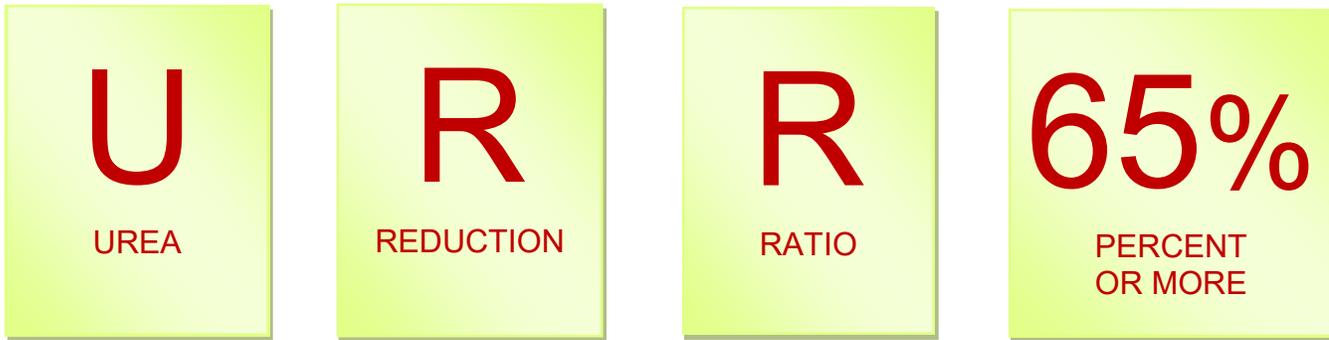
The guidelines for dialysis are based on a project run by the National Kidney Foundation (NKF) where experts review all research done on certain aspects of kidney disease. They then write guidelines to help doctors better treat and monitor patients with chronic kidney disease. Doctors must follow the guidelines developed by the experts.

How much cleaner is my blood after dialysis and how do I know if I'm getting adequate or enough dialysis?

Measuring your URR (Urea Reduction Rate) and Kt/V (explained on page 4) are two ways to determine how much cleaner your blood is after dialysis and whether you are getting enough dialysis. URR is used only with hemodialysis patients. Kt/V is used with in center hemodialysis, home hemodialysis and peritoneal dialysis patients. **Doctors use these levels to determine how much time you need on dialysis. If your URR or Kt/V is not at the recommended level, the doctor will increase your treatment time in order to give you adequate or enough dialysis.**

- 1. If you are on hemodialysis three times per week, a URR of 65% or more or a Kt/V of 1.2 or more means you are getting enough dialysis. 65% out of 100% of your blood was cleaned during that treatment.**
- 2. If you are on peritoneal dialysis (PD), you are getting enough dialysis if the Kt/V is 2.0 or more.**

What is URR and how is it measured? Who do I talk to about my URR?



- Blood tests are done to measure URR and it is usually measured once a month. It may vary from treatment to treatment.
- When measuring URR, the first blood sample should be taken before (pre) the hemodialysis treatment starts. The second sample should be taken after (post) the hemodialysis treatment is finished and the blood pump is slowed or stopped.
- The blood tests measure the blood urea nitrogen (BUN) which measures waste in the blood. Increased BUN levels suggest impaired kidney function.
- The amount of urea in these two blood samples is compared to see how much was removed during dialysis.

Formula:

$$\frac{\text{Pre BUN} - \text{Post BUN}}{\text{Pre BUN}} \times 100 = \text{URR percent}$$

Example:

$$\frac{94 - 31}{94} \times 100 = 67\% \text{ URR}$$

If you are on hemodialysis, you can talk to your doctor each month to review your URR.

Lower URR values are associated with more health problems, hospitalizations and a greater risk of death. Patients with a lower URR are more likely to have symptoms of nausea, vomiting, loss of appetite, weakness or mental confusion. A single low value is nothing to get too worried about if all other values are over 65%. Causes of low URR include:

- Dialysis treatment too short
- **Dialysis treatment stopped early on lab day when URR is measured**
- Problems with blood flow
- Problems with access site (fistula, graft or catheter)
- Artificial kidney too small

What is Kt/V and how is it measured?

Urea removal in peritoneal dialysis is measured by calculating the weekly Kt/V, which shows how effective dialysis treatments are. In hemodialysis Kt/V is calculated per single treatment, rather than per week. Kt/V is different from URR in that it takes into account two additional factors: (1) urea generated by the body during dialysis and (2) the extra urea removed during dialysis along with excess fluid. You can talk to your doctor each month to review your Kt/V. This is a more complicated calculation.

K = dialyzer (artificial kidney) clearance of urea

T = dialysis time

V = patient's total volume water space (patient's weight)

Formula:

$\frac{K \times T}{V}$

How do I improve my URR or Kt/V so that my blood is cleaner and I feel better?

If you are on hemodialysis, make sure you stay your full treatment time to help remove the urea from your blood. To improve your URR or Kt/V if you are on hemodialysis or peritoneal dialysis you may need:

- a better working access site so your blood is better cleaned (fistula or graft)
- a good blood flow through the dialyzer if on hemodialysis so more blood is cleaned at a higher blood flow which is better for you
- to not skip or cut your dialysis hours short so less urea is left to build up in your blood to make you sick
- more time on dialysis so the dialysis machine can clean more of your blood to make you feel better
- to not drink excessive fluids between dialysis treatments so you do not become uncomfortable, experience cramps and so the extra fluid does not remain in your blood and cause other problems such as shortness of breath
- to follow your diet to avoid the build up of extra urea in your blood

The dialysis treatment can only do so much at a time. **As part of the treatment team, your involvement in your care is important.** It is not good for your health to leave extra fluid and urea in your blood from a skipped or cut treatment time. Your body cannot handle having too much removed during a treatment, so the extra fluid and urea that is not removed during a treatment will remain in your body. Research shows that this causes a higher risk of death, hospitalization and medical problems.

This is why staff expects you to come on time and stay your full treatment time, especially on lab days. We care and will do what we can to help you live a healthy life.