

Queen Elizabeth Hospital Birmingham



Part of University Hospitals Birmingham  
NHS Foundation Trust



# Haemodialysis Blood Results

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[www.uhb.nhs.uk/patient-information-leaflets.htm](http://www.uhb.nhs.uk/patient-information-leaflets.htm)

## Introduction

Every month when you are on haemodialysis a nurse will request to take some blood tests from you. The results of your blood tests are then looked at in a monthly joint meeting with your nurses, kidney doctor and dietitian. Checking your blood results allows us to look at your personal dialysis treatment plan (often called dialysis prescription) and the tablets you are on to see if any changes are needed.

This information leaflet explains why we suggest blood tests each month, the substances that are measured, what the results mean for you and other important aspects of your dialysis care that we check. It also gives information on how you can get more involved.

If you have questions about your blood results or dialysis treatment you should always ask your dialysis nurse or kidney doctor.

## Why are regular blood tests taken?

It is very important that your haemodialysis prescription is tailored specifically to your needs. There are national guidelines which indicate at what level your blood test results should be to help you keep well. By taking regular blood tests we can see how well your dialysis treatment is working and whether your dialysis prescription needs to be changed.

A dialysis prescription is similar to the prescription you pick up from the chemist. The prescription records the dose of dialysis you need to have, the number of dialysis sessions per week, the length of each session and any other requirements.

# What tests and what do the results mean?

## Potassium

Potassium is a mineral in the body that is normally removed by the kidney and will be removed by dialysis. The levels are measured before dialysis to check that in between your dialysis sessions it is not going too high or too low. If your potassium level is higher or lower than set levels it can cause dangerous disturbances with the regular beating of your heart. If the level is too high before dialysis, you may wish to talk with the dietitian to help guide your diet to avoid high potassium foods. If the level is too low, we may need to add extra potassium to your dialysis fluid to help keep it up.

**Your potassium before dialysis should be between  
4.0 – 6.0 mmol/l**

## Bicarbonate

The kidney is important in maintaining the balance of acid in the body. If you have kidney failure the level of acid can rise and cause your bicarbonate level to fall. This is corrected by dialysis.

If your bicarbonate level is too low, we may need to change your dialysis fluid to make sure your acid balance is correct.

**Your bicarbonate level should be between  
18 – 24 mmol/l**

## Urea reduction ratio (often shortened to URR) and or eKt/V

Both URR and Kt/V measurements record the dose of dialysis you've had during a dialysis session. They are calculated from the level of urea in your blood which is one of the toxins usually cleared by the kidney. By measuring the levels of urea in your blood before and after dialysis we can work out how well dialysis is cleaning your blood. If you do not have enough dialysis, toxins may build up in your blood and make you feel unwell. If the URR or eKt/V measurement is low, it may mean that your fistula or dialysis line is not working properly and the nursing staff will look into this with you. It may also mean that we need to change your dialysis prescription to increase how much blood goes through the dialysis machine. This can mean increasing the flow rate of your blood through the machine or using a bigger dialyser (filter). Sometimes, your kidney doctor may suggest that you increase the length of your dialysis session (hours) to make sure your blood is cleaned properly.

**Your URR should be at least 70%**

**Your eKt/V should be above 1.3**

## Phosphate

Phosphate is a mineral that, with calcium, is important in keeping your bones strong. Levels tend to go up in kidney failure as the normal kidney is important in keeping phosphate levels stable. Dialysis will help remove phosphate and keep the level stable. If phosphate levels rise too much it can upset the balance of calcium in the body. This causes a chalky substance to be deposited in your blood vessels, making them very hard. This can lead to problems with your heart and poor blood supply. High levels of phosphate can also make you feel very itchy.

Phosphate is found in a lot of foods but especially foods that are high in protein (e.g. meat, fish, cheeses, milk and eggs). Tablets called phosphate binders help block the amount of phosphate you absorb from your food into your blood. This helps to reduce the phosphate level in your blood. To work properly phosphate binders should be taken just before meals. If your phosphate level is high, you may wish to have some advice about what you are eating (don't just stop eating foods high in protein as your body needs this too!), or a change or increase in the number of phosphate binders you take. Sometimes, despite a low phosphate diet and phosphate binders, this level can be difficult to achieve.

**Your phosphate level should ideally be between  
1.1 – 1.7 mmol/l**

## Calcium

Calcium is also a mineral in the body that provides strength to your bones and allows your muscles to function properly. Calcium levels tend to fall in kidney failure and we may need to give you a tablet called alfacalcidol (Vitamin D) which will help to control your calcium levels. If you take phosphate binder tablets containing calcium (for example Adcal and Phosex) this will also help to increase your calcium level. Some patients with very high parathyroid hormone levels have high calcium levels which may need further treatment.

**Your calcium level should be between  
2.1 – 2.5 mmol/l**

## Parathyroid hormone (PTH)

Parathyroid hormone is a chemical messenger produced by the parathyroid glands which are in the neck. Its job is to control the amount of calcium and phosphate within the blood by taking them from your bones if necessary. It is normal for it to be a little raised in kidney failure. However, if these glands become very over-active the levels can become very high. This can give you aches and pains in your bones and joints and make it very difficult to control your calcium and phosphate levels. High levels can also make you feel very itchy. Alfacalcidol (Vitamin D) is used to help control the levels. If the levels cannot be controlled and they go very high your kidney doctor may discuss other forms of treatment with you.

**Your parathyroid hormone level should be if possible:  
13 – 63 pmol/l**

## Haemoglobin

It is very common for kidney patients to be anaemic. This can make you feel tired and lacking in energy. This is because kidney failure stops the kidney producing erythropoietin (EPO) which is a chemical messenger that allows the body to make more red blood cells. Haemoglobin is what we use to measure the level of your red blood cells. We can give you back EPO as injections to help boost the making of red blood cells and give iron to make sure that this happens easily. We will assess each month when we see your results as to whether you need any changes in your EPO and iron. Sometimes you can have too high a level of haemoglobin. If this happens we may suggest that you stop your EPO for a while, if you take it, to allow the haemoglobin levels to fall a little. This is because high levels of haemoglobin have been shown to make it more likely for your fistula to clot or for your blood pressure to go up. Very occasionally we take some

blood away from you at the end of a dialysis session if we feel the haemoglobin level has gone too high.

**Your haemoglobin level should be 100 – 120g/l**

## **Albumin**

Albumin is a protein in the blood. If the albumin level is low it is usually because you have been unwell recently or are finding it difficult to eat properly. A dietitian may recommend some special supplements for you to help improve your health.

**Your albumin level should be in normal range  
at QE or Diaverum units this is more than 35g/l  
at Fresenius units this is more than 30g/l**

## **Other important aspects of your dialysis care**

There are other aspects of your care that are monitored to make sure you receive the best quality of dialysis.

### **Blood pressure**

High blood pressure can be linked with heart disease and strokes and it is therefore important to control it if possible. High blood pressure may sometimes indicate that you are keeping too much fluid in your body and the nurses may suggest that your dry weight is reduced. Blood pressure tablets are also sometimes needed. Sometimes it can be difficult to balance the treatment of your blood pressure so that tablets don't make it fall too low during dialysis and make you feel unwell. Your nurses can discuss

this with you if it is a problem. Some dialysis patients have low blood pressure. This may not be a problem, but if it is making you feel dizzy either on dialysis or between sessions you should let your nurses know.

### **Weight loss on dialysis**

If you have kidney failure, fluid will normally build up in your body between dialysis sessions. The amount of this fluid will depend on whether you still pass urine (this can often stop in kidney failure) and how much you drink between your dialysis sessions. It is very difficult to take off large amounts of fluid during a four hour dialysis session without making you feel unwell. Build up of fluid between sessions can make you feel breathless and also stretch your heart making it more difficult for it to pump properly. Your nurses can help you with suggestions of how much fluid you can take and tricks to make this easier.

You should gain as little weight as possible between dialysis sessions and aim for not more than 2kg. Even this may be too much for smaller patients.

### **Blood flow rate on dialysis**

The blood flow rate is the speed the blood is taken out of your body and pumped around the dialysis machine. The faster the blood flow rate, the more of your blood can be cleaned of toxins during your dialysis treatment. Usually a fistula allows better blood flow rates than a line and increasing the size of your needles can allow a much faster blood flow rate and may be something your doctors or nurses suggest. If the blood flow rate is low this may mean that there is a problem with your haemodialysis line or fistula which needs sorting out.

**Your blood flow rate should be at least  
350ml/min if possible**

## Time on dialysis

Most people should have haemodialysis at least 3 times per week and each session should last at least 4 hours. This makes sure that your blood is cleaned properly and toxins are removed. There may be differences in your dialysis prescription and your kidney doctor or nurse will agree your personal dialysis prescription with you.

If you do not receive your full dialysis prescription each week you will be putting your health and well-being at risk. You may have:

- High potassium levels which can affect your heart
- Too much fluid in the body which can lead to fluid on the lungs, shortness of breath, swollen ankles and high blood pressure
- Loss of appetite
- Itching
- Feeling tired

You should be having dialysis for at least 4 hours three times a week unless you agree a different plan with your doctor.

## How can I find out about my blood results?

Your named nurse will be more than able to discuss your monthly bloods and individual plan of care with you. Please remind your nurse if you have not been told your results.

## How can I become more involved?

It is important for you to feel that you are able to take control of your own care. Renal Patient View (RPV) is a UK-wide internet based system by which you can obtain and view your blood test results online. The site is secure and easy to use and also provides advice and help to manage your condition.

Visit [www.patientview.org](http://www.patientview.org) for more information and ask your nurses and doctor for more information.

myhealth@QEHB is a system specific for all patients of the Queen Elizabeth Hospital Birmingham (wherever you have your dialysis) which lets you see all your blood results, medical letters and appointments.

For more information visit [www.myhealth.uhb.nhs.uk](http://www.myhealth.uhb.nhs.uk) or ask your kidney doctor.

## Where can I find further sources of information?

**Further information can be obtained from:**

- The National Kidney Federation [www.kidney.org.uk](http://www.kidney.org.uk)
- NHS Choices website has information about a wide range of health topics [www.nhs.uk](http://www.nhs.uk)

More UHB renal patient information is available at [www.uhb.nhs.uk/renal-pi.htm](http://www.uhb.nhs.uk/renal-pi.htm)





The Trust provides free monthly health talks on a variety of medical conditions and treatments. For more information visit [www.uhb.nhs.uk](http://www.uhb.nhs.uk) or call 0121 627 7803

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