



Peritoneal dialysis – all you need to know about your blood results

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Introduction

This information leaflet explains why we check your blood results, the common tests 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.

You will be called for a blood test at the peritoneal dialysis (PD) unit every 1-2 months. The results of your blood tests are then looked at in a special 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.

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 you receive the best quality of peritoneal dialysis care. There are set levels which 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.

What tests and what do the results mean?

Testing the effectiveness of dialysis (Kt/V and PET test)

Adequacy (KT/V) is a measure of how well you are dialysing and to make sure that enough waste products such as urea are being cleared from the blood. It is calculated by measuring the levels of urea and creatinine (molecules normally removed by the kidneys) in your urine and in the dialysis fluid over 24 hour period.

The adequacy test is usually done once every 6 months or more frequently if there have been any changes to your dialysis regime. Dialysis adequacy can be altered by increasing the amount of fluid used either by increasing the fill volume or by adding an extra CAPD bag. Sometimes your peritoneal dialysis

(PD) nurses might discuss the use of automated peritoneal dialysis (APD).

Your Kt/V should be ≥ 1.7 /week
Total Creatinine clearance ≥ 50 L/week/ 1.73m^2

The peritoneal equilibration test (or the PET test) measures how quickly your peritoneal membrane transports various molecules involved in your dialysis treatment. It does this by measuring how much dextrose is absorbed into blood from a bag of dialysis solution and how much urea and creatinine have entered the (drained out) dialysis solution during a 4 hour dwell. The peritoneal transport varies from person to person. Patients who are 'fast transporters' absorb dextrose quickly and would benefit from short dwell times for your dialysis. Your PD team will adjust your dialysis regime based on these results.

Fluid balance on dialysis

If you have kidney failure, fluid can build up in your body. The amount of fluid in your body will depend on whether you still pass urine and how much fluid you drink. Build up of fluid can make you feel breathless and also stretch your heart making it more difficult for it to pump properly.

Fluid removal on dialysis can be made greater by increasing the strength of the bags or by the use of Extraneal (purple bag). APD might also be advised in order to improve fluid balance.

Dehydration can also be easily treated by adjusting the bags to the weakest strength and increasing the amount of fluid you drink. Your dialysis nurse will be able to advise you on how to keep this balance right for you.

Potassium

Potassium is a mineral in the body that is normally removed by the kidney and will be removed by dialysis. If your potassium level is too high or too low it can cause dangerous disturbances with the regular beating of your heart. If the level is too high, you may

need to talk with the dietitian to check that you are not eating too many foods that are high in potassium. If the level is too low, we may suggest diet high in potassium containing foods.

Your potassium 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.

Your bicarbonate level should be between 18-24 mmol/l

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). Special 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 must be taken just before meals. If your phosphate level is high, you may need 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 2.2-2.5 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 between 13.8-62.1 pmol/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 >35g/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 with each blood test as to whether you need any changes in your EPO and iron. Sometimes your level of haemoglobin can be too high. If this happens we may suggest that you stop your EPO for a while to allow the haemoglobin levels to fall a little.

Your haemoglobin level should be 10.0-12.0g/dl

Cholesterol

Having a raised cholesterol level can make you more at risk of a heart attack or stroke. Your doctor may recommend a statin tablet for this.

Your cholesterol level should be less than 5mmol/l

HbA1c

This test is checked if you have diabetes. It is a measure of how well your diabetes is controlled. Good diabetic control is obviously important for your general health. Diabetes control is not provided in the dialysis units and you should make sure that you are either under your GP or local hospital for this.

Your HbA1c level should be below 7.5% (or 58mmol/mol)

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 therefore it is important to control it where possible. High blood pressure may sometimes indicate that you are keeping too much fluid in your body and the nurses may suggest that your target weight is reduced by using strong bags with higher sugar strength. Blood pressure tablets may also be needed.

If you do not do 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

How can I find out about my blood results?

Your PD nurse will be more than able to discuss your blood results and individual plan of care with you.

How can I become more involved?

It is important for you to feel that you are able to take control of your own care. myhealth@QEHB is an internet based system by which you can obtain and view your blood test results online. The site is secure and easy to use, also provides advice and help to manage your condition.

If you are interested in signing up for myhealth@QEHB, please talk to your dialysis nurse or kidney doctor.

Where can I find further sources of information?

Further information can be obtained from:

- The National Kidney Federation: www.kidney.org.uk
- West Midlands Renal Network website: www.wmrn.co.uk
- Go online and view NHS Choices website for more information about a wide range of health topics:
www.nhs.uk/Pages/HomePage.aspx
- myhealth@QEHB: www.uhb.nhs.uk/myhealth-at-QEHB.htm

Useful numbers

PD Unit

Nurse: Monday-Friday 9am-5pm 0121 627 2030

Clerk: Monday-Friday 8.30-4pm 0121 627 2515

PD Manager: Monday-Friday 9am-5pm 0121 627 3784



The Trust provides free monthly health talks on a variety of medical conditions and treatments. For more information visit www.uhb.nhs.uk/health-talks.htm

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