What is a Wada test?

Information for patients
Clinical Neurophysiology
What is a Wada test?

This test is officially known as the intracarotid sodium amobarbital procedure (ISAP), but "Wada test" is commonly used. The name comes from the doctor who first performed it, Dr Juhn Wada.

The Wada test looks at language and memory functions on each side of the brain. Language (speech) is usually controlled by one side of the brain more than the other (in most people, the left side), and the Wada test will tell the doctors which side of your brain is more important for language. Memory can be controlled by both sides of the brain; the Wada test tells us about the memory in each side of your brain.

A Wada test is one of the investigations you may have if you are on the epilepsy surgery programme and your seizures have been shown to start in certain areas on one side of your brain. It is necessary to assess the possible effects that surgery may have on memory and speech. You will have seen a neuropsychologist several times and for some people they will recommend a Wada test to obtain further information. If you choose not to undergo this investigation before surgery you will be offered counselling by your neuropsychologist and neurologist.

You should not have this test if there is any chance that you are pregnant.

During this test we can inject a short acting anaesthetic (sodium amytal) into a blood vessel to put one side of the brain to sleep and test how the other side is able to remember simple pictures and words. The test is described in more detail later.
Do I have to be admitted to hospital for this test?

Yes, you will usually be admitted to a neurology ward on L floor, Royal Hallamshire Hospital, on the morning of the test and stay overnight after the test. You can enter the hospital using the main entrance on A floor (outpatients) or the main entrance on B floor (tower block). A 'Welcome to L floor' booklet will be sent with your admission letter. Car parking is limited; please use public transport when possible. Park and ride sites are available across the city to link with bus and tram routes. If you are a blue badge holder, limited spaces are on-site and also in the car park where charges apply. The postcode if you are using a SatNav is S10 2JF.

Should I take my tablets as normal?

We do not ask you to stop taking your tablets.

However, if you are taking insulin or medication for diabetes (e.g. metformin) or any medication to thin the blood (e.g. Warfarin or any other anticoagulant), it is important to let the staff on the ward know before you come into hospital.

What happens before the test?

On the morning of the test you will see a doctor, nurses, a neuropsychologist and a clinical physiologist. They will explain what to expect and give you time to ask any further questions that you may have. When you are sure you understand what happens during the test and have discussed any concerns, you will be asked to sign a consent form for the procedure. We must obtain your consent for any procedure or treatment beforehand. Staff will explain all the risks, benefits and alternatives before they ask for your consent. If you are unsure about any aspect of the procedure or treatment proposed, please do not hesitate to ask for more information.
You will be asked not to eat for 3 hours before the test and to only drink small amounts of water. A clinical physiologist will apply the EEG electrodes using special glue whilst you are on the ward. Approaching the appointment time you will be asked to put on a gown, stockings and paper underwear. After lunch you will be taken on your bed down to the X-ray department where the Wada test will be performed.

**What happens during the test?**

When you arrive in the X-ray department you will be in a room with radiology staff, the neuropsychologist, the clinical physiologist and a medical photographer who will video your memory testing. You will be asked to consent to the video recording. The EEG electrodes are connected to the EEG machine.

The first part of the test is called a cerebral angiogram. This is a special X-ray which takes pictures of the blood vessels in your head and neck. A doctor will inject a local anaesthetic into the groin to numb the area (you will feel a stinging sensation at this time) and then a fine tube (catheter) is passed into an artery in the groin and fed along the artery. You will not feel the catheter being moved and the doctor can follow it using the X-ray machine until it is correctly positioned in an artery in the neck. The doctor will then inject a dye to take pictures of the blood vessels in the head; you will need to lie still for about 20 minutes. You may feel a warm sensation in your head, neck or behind your eyes and some people may experience some visual disturbance or other short lived unusual symptoms, which should only last a couple of minutes.
The Wada test is then performed. The anaesthetic is injected into the catheter in your groin and you will be asked to hold up your arms. After a few seconds you will experience a weakness in one arm; which one depends on the side being tested. You may be unable to speak properly for a few minutes. This tells us which of the two sides of your brain is the most important for language and this differs from person to person. The EEG will monitor that the anaesthetic has taken effect.

At this point the neuropsychologist will ask you to do some simple tasks e.g. remember pictures, words and a simple sum. You may have some blurring of your vision. The anaesthetic usually wears off within 10 minutes and then you will be asked to remember the things that you were shown. We will help you with this, so do not worry. The weakness in your arm will have recovered by this time.

The catheter is then redirected to the other side of the neck and the Cerebral Angiogram and Wada test is repeated to test the other side of your brain. The whole procedure takes between 1 and 1½ hours.

**What happens after the test has finished?**

The catheter will be removed and the wound will be pressed on for 10 minutes to make sure it has stopped bleeding. You will be taken back to the ward on your bed where you will lie flat for 2 hours; this is important to make sure the groin does not bleed again. After this you may gradually sit up in bed for an hour and then in a chair for the following hour before you try walking around. Nursing staff will be checking your pulse, blood pressure and puncture site during this time.

**During this 4 hour period, if you cough, sneeze or move about on the bed it is important that you press on the puncture site.**
When the test is complete, the electrodes will be removed using a solution to dissolve the glue. It is unavoidable that some glue is left in your hair; this will come out after you have washed and conditioned your hair a few times. You may wish to bring an old hat to wear on the way home which you do not mind getting damaged by the solution. You may prefer to bring shampoo and wash your hair before you go home. You can eat and drink as normal and will stay on the ward overnight after the Wada test.

**What are the risks associated with the procedure?**

It is not uncommon to have bruising at the puncture site in the groin, drowsiness or a mild headache.

People having an angiogram have a less than 1 in 500 risk of having a stroke during the procedure. There is less than a 1 in 1,000 chance of an allergic reaction to the dye and rarely a reaction to the anaesthetic is possible.

Occasionally people have a minor skin irritation caused by the products we use to apply and remove the electrodes.

**Are there any instructions for when I go home?**

- Avoid heavy manual work for 7 days.
- You may have discomfort at the puncture site in the groin; you may take paracetamol or your regular painkillers to relieve this.
- Very occasionally the bruising may need further attention.
- If the site bleeds or swells, apply pressure with a clean dressing and lie flat.
What if I am worried when I get home?

If you have any further problems please ring the ward you were on, either:

Ward L1, The Royal Hallamshire Hospital

- 0114 271 2059

or Ward L2, The Royal Hallamshire Hospital

- 0114 271 2419

What happens if the test shows that I might have severe memory problems after surgery?

Over 90% of Wada tests show that people can have surgery without a severe memory change. If the test shows that you may have problems then we may need to repeat the test again in the future. You will also discuss with your neurologist and neurosurgeon whether the benefits of surgery outweigh the risks of memory loss.

The Wada test will not exclude less severe problems with memory occurring after surgery for epilepsy.

When do I get the results of the Wada test?

The doctors will discuss their findings at an epilepsy surgery meeting and then you will normally be contacted by your neurologist to let you know what the results of the test were. This may take 6-8 weeks.
What if I have any more questions?

If, after reading this leaflet, you have any questions please ring the Epilepsy Surgery Co-ordinator

Name ...............................................................

Department of Clinical Neurophysiology

- 0114 271 2372
  Monday - Friday 8.30am - 4.30pm