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What is warfarin?

Warfarin is a drug that can be given to young people if they are:

- At risk of forming a blood clot
- Or have developed a clot and need treatment.

Warfarin is an anticoagulant tablet taken by mouth and works by increasing the time taken for your blood to clot.
The coagulation (blood clotting) system

The human body depends on the blood circulating all the time to provide its organs (e.g. the heart, brain, skin) with oxygen and nourishment. To keep the blood flowing well it needs to be of a certain consistency. It also needs to be able to plug any leaks that may occur, like when you cut your finger.

The wall of the damaged blood vessel is sealed off by a tiny blood clot (sometimes called a thrombus). This clot is formed as a result of proteins that circulate in the blood in a dissolved form. When an injury occurs the proteins go into action to form a blood clot. This is a natural process and necessary to stay in good health.

If a clot forms when it shouldn’t, it can be carried in the blood to other parts of the body (embolism) and this can then lead to serious problems, e.g. stroke. This is the reason for the blood thinning treatment.

How warfarin works

Warfarin works by slowing the blood clotting process down. It prevents the clotting proteins (vitamin K) from doing their job fully. Vitamin K is present in food and milk (see section on diet), and is used to treat overdoses of warfarin or in people who have a high INR (clotting level). You may have noticed that once you are on warfarin, when you cut yourself it takes a little longer to stop bleeding.

Everybody reacts differently to warfarin so the dose must be worked out each time for every patient.

The action of the tablets can last quite a long time in the body; it takes about 3-4 days to see an effect. This means that a change in dose will not be reflected in the blood test until 3-4 days later. The only way to test the effectiveness of the treatment is by taking a blood sample and seeing how long it takes to clot.
Why you might need to take warfarin

With some diseases or medical problems blood clots are produced more easily than normal. These include:

• Cardiomyopathy (heart muscle problem)
• After insertion of an artificial heart valves
• Some heart operations, e.g. Fontan procedure

Your doctor has put you on anticoagulant treatment because of one of these conditions.

The INR test

Measuring the INR

The unit of measurement used is called the INR (International Normalised Ratio). This is simply a numerical scale.

The normal measurement is about 1

The higher the number, the longer it takes the blood to clot!

Warfarin and target INR

We will try and keep your blood clotting to within a certain numerical ‘target’ (number) depending on your medical condition. This is known as the target INR. Most common targets are 2 to 3 or 2.5 to 3.5 units of INR. We try to keep the INR within a safe range (sometimes known as a therapeutic range) as many things can affect how warfarin works in the body, (drugs, diet, ill health) and many children will not be in their range 100% of the time, which is why regular blood tests are necessary.

Frequency of blood tests

A blood test is required regularly to check that the INR level is within the target range. If you are unwell or start any new medicines we usually ask for a blood test to check if this has affected the INR level. If the warfarin dose is adjusted a blood test is required soon afterwards to check the effect. If the INR is
too low a warfarin dose may need to be increased, if it’s too high a dose may need to be decreased or missed.

Please do not adjust your warfarin dose without the advice of the anticoagulation team managing your treatment.

**Warfarin tablets available:**

<table>
<thead>
<tr>
<th>0.5 mg white</th>
<th>1mg brown</th>
</tr>
</thead>
<tbody>
<tr>
<td>3mg blue</td>
<td>5mg pink</td>
</tr>
</tbody>
</table>

**What are the side effects of warfarin?**

**Overdose**
The following can be signs of overdose (too much Warfarin):
- Haemorrhage is the major side effect of warfarin! Seek urgent medical attention if major bleeding.
- A high INR ( >5 )
- Heavily bleeding gums
- Heavy periods
- Bruises for no reason
- Nosebleeds that last longer than 10 minutes or regular nose bleeds
- Blood in the urine
- ‘Coffee ground’ or any blood stained vomit or the passing of black or bloody stools.
- If you observe any of these signs or other unexpected or unexplained signs you should do an INR check and ask your doctor for advice.

**Too little Warfarin (signs of clotting)**
- Low INR ( < 1.5 )

More serious symptoms are:
- Pains in the legs or chest can be a symptom of a clot thrombosis or embolism.
- Breathlessness.
Other side effects of warfarin include:

- hypersensitivity to warfarin
- rash
- alopecia (hair loss)
- diarrhoea
- nausea
- vomiting
- Changes to skin circulation resulting in ‘purple colour toes’ or skin necrosis (darkened skin)
- Jaundice (yellowish tinge to the skin).

Effects of other drugs on the INR

The drugs you take regularly that are prescribed by your doctor will have already been taken into consideration. You need to be aware that new medicines may affect the INR level, such as some antibiotics.

Some other sorts of medicine you may buy at the chemist can also affect the INR level, e.g., when you have a cold you may wish to take some painkillers or other medicines. You must tell the chemist that you already take warfarin as some medication may interact with it. You should also check if you wish to use any herbal/homeopathic treatments as some also interact with warfarin. Some drugs stop warfarin from working as effectively, some increase its effectiveness.
Some common drugs that will have an effect on the INR:

- Some heart drugs; Amiodarone
- Some analgesics (painkillers), long term use of paracetamol
- Aspirin
- Ibuprofen (Nurofen, brufen)
- Some antibiotics
- The flu vaccine: side effects can include ‘flu-like’ symptoms, and it is best to check an INR level a few days afterwards to check it has not been affected.
- Vitamins
- Steroids
Lifestyle

Any change in lifestyle or wellbeing may also influence the effectiveness of warfarin therapy. An example of this may be going on holiday to a place in which there is a big change in climate or diet. If you are unwell, for instance if you have flu, sickness or diarrhoea, or start any new medication, you should inform your anticoagulation team and check your INR. They will advise you of the best time to check it and any dose adjustments if necessary.

You should also try to stick to a fixed time of day for taking your warfarin tablets; between 6pm - 7pm in the evening is ideal.

Diet

You should eat a healthy balanced diet.

Some foods that you eat every day contain a substance called vitamin K which is involved in the blood clotting process. It does not matter how much vitamin K you eat when you start warfarin as the dose is worked out around it.

Foods rich in vitamin K include green leafy ones such as cabbage, brussel sprouts, broccoli, spinach and also avocado, soya bean products, Swiss hard cheese and cranberry juice.

You do not need to avoid any foods but binge diets are not recommended!

Babies on formula milk may require higher doses of warfarin as there is less vitamin K in formula than in breast milk.
Sports

It is best to avoid contact sports, especially rugby, but football, hockey or cricket (which are not contact sports) are fine provided you remember that any contact injury sustained during play is likely to result in greater bleeding or bruising. Martial arts are not recommended.

Children may do PE and games at school. However, please talk to the anticoagulation team for advice about any sports or activities you wish to do.

**Letting the school know**

Booklets are available for teachers/staff at school. Please make sure your teachers, especially your sports teacher, know you take warfarin tablets in case you get an injury.
Think about what to do if you have an injury!

**Cuts**
Press for 10 minutes with clean cloth. If bleeding does not stop, take patient to A&E dept.

**Head injury/ bump to the head**
Be more vigilant, as cuts to the skin can be clearly seen, however bumps to the head which may cause internal bleeding are not so obvious. If more than a very minor bump it is advisable to be checked by a Doctor.

We strongly recommend wearing cycle helmets to reduce the risk of a head injury when riding a bicycle.

Symptoms to look out for after a head injury include:
- Drowsiness
- Feeling dizzy when walking or standing up
- Vomiting
- Worsening headaches
- Problems with vision such as blurring
- Changes in behaviour
- Fits/convulsions

If any of these symptoms happen you must contact the Accident and Emergency Department straight away.

**Nose bleeds**
- If you have a nose bleed carry out normal first aid (cold flannel/compress on bridge of nose/forehead).
- Lean your head forward
- Pinch the bridge of the nose firmly for at least 10 minutes
- If nose bleed persists contact your anticoagulation team or A&E department to get your INR checked.

When attending an A&E department make sure you inform the staff you are taking warfarin tablets.
General health and safety

**Surgical or dental procedures**
In the event of any planned medical investigations, operation or dental procedure it may be necessary to stop the warfarin treatment for a few days. The doctor/surgeon will usually consult your doctor/nurse responsible for your warfarin management and ask for the necessary advice.

**Immunisations and vaccinations**
All injections and vaccinations must be given under the skin (subcutaneously) and not into the muscle as this may cause bruising.

Firm pressure should be applied to the site for 10 minutes afterwards.

**Holidays and travel**
If you are going on holiday in this country or abroad let your anticoagulation team know and arrange an INR check before you go.

If you are away for some time you may need an INR check locally.

Make sure you have enough warfarin tablets and carry them in your hand luggage in case of lost suitcases! Travel insurance is essential if going abroad. Diarrhoea and vomiting (which you may experience with foreign travel) will affect the absorption of your warfarin and your INR level could get very low very quickly.
Anticoagulation record book

Your anticoagulation team will give you a book to record your INR, warfarin dose and all your treatment details.

Growing up!

As children grow their needs will change

**Medic alert jewellery:**
consider for older children, particularly if away from home.
Information is available at www.medicalert.org.uk

**Shaving**
For older patients, we advise electrical razors rather than blades.

**Periods/ pregnancy**
Periods may be heavy and last longer than normal.

It is very important that all girls taking warfarin should be told about the importance of contraception, as warfarin can be harmful to the baby, particularly during the first 12 weeks of pregnancy.

Pregnancy must be discussed with your doctor and special arrangements made for anticoagulation care

You may find it helpful to discuss these issues with a member of the team managing your warfarin therapy.

**Body piercing:**
This is not recommended due to the risk of bleeding and infection.
Alcohol:
Alcohol can also affect your blood test and should be taken in moderation. Excessive alcohol should be avoided as it increases the risk of bleeding.
Caroline Hinton & Kathy Lurcook
Children’s Cardiac Liaison Nurses
01865 234985

Further information;
www.childrens-heart-fed.org.uk
Tel.0808 808 5000
A national charity that provides a range of information leaflets.

www.younghearts.co.uk
Tel. 01608 658834
e-mail: support@younghearts.co.uk
A local charity that includes a number of parents whose child or teenager is on warfarin treatment.
If you need an interpreter or need a document in another language, large print, Braille or audio version, please call 01865 221473 or email PALSJR@orh.nhs.uk