

## Warfarin Therapy

### Introduction

Warfarin is an anticoagulant tablet. It is named for the Wisconsin Alumni Research Foundation (WARF), which was involved with its initial development in 1944. It was initially marketed as a pesticide against rats and mice, and is still popular for this purpose. After its introduction it became clear that it was an effective and relatively safe form of prevention of thrombosis and embolism (abnormal formation of blood clots that travel in the circulation and cause problems elsewhere in the body by blocking the artery or vein) in many disorders. It requires active monitoring as its suitable dose varies from person to person. The blood test which is either taken in the normal way or as a finger prick test, checks the INR (International Normalised Ratio). The INR compares how fast blood clots compared to an international standard. Normal blood clots at fast on the international standard, so has an INR of 1.

### How does it work

Warfarin acts on the liver to prevent the formation of the proteins that go on to create fibrin which is the basic component of a clot. It does this by acting on chemicals produced from the Vitamin K in our diets. As our bodies have stores of these proteins that last a few days warfarin will only start to thin the blood efficiently after a few days. In the same way when you stop warfarin it takes the body a couple of days to replace these proteins and so the blood thinning effect will remain for a few days after you stop. As well as acting on the liver, warfarin is removed from our bodies by the liver. We are all slightly different in how efficiently our liver removes warfarin as we are all slightly different in age,

size and sex, and we all eat different foods, take different medications and drink different amounts of alcohol. This is why the dose of warfarin needs to be tailored to each individual and is also why the dose of warfarin needed can change from time to time, for instance drinking more alcohol when on holiday or taking a course of antibiotics for an infection.

To prevent the risk of stroke in Atrial Fibrillation the blood need to be 2-3 times thinner, so that it takes two to three times longer to clot than the standard and thus has an INR of 2-3. By measuring the INR, anticoagulant (warfarin) clinics ensure that your blood is thinned to just the right amount. Too little warfarin (INR<2) wont have the full benefit of preventing strokes, whereas too much warfarin (INR>4) thins the blood too much and can put you at risk of bleeding heavily when you cut yourself and of bruising badly when you fall. When you first start taking warfarin you will attend the anticoagulant clinic frequently as they adjust your dose to suit you. Most people find once they are established on warfarin their INR is pretty stable and they need only attend the clinic every 6-12 weeks.

However you have to watch out for things that can affect your warfarin level to keep it stable. One of these is alcohol. Taking alcohol in itself is not a large problem but changing your average alcohol intake will alter how much warfarin you require. Another thing you have to watch out for is medications including cough remedies, herbal cures and many other over-the-counter medications. In short you are fine to have a couple of paracetamol for a headache but anything else you should seek advice of your doctor or local chemist.

As your warfarin level can change without you realising it, you should take care to avoid cuts and bruises; for instance use a thimble if you are sewing, use an electric razor when shaving, etc. This all can sound a bit daunting but the vast majority of people who take warfarin do so without any problems.

### Dosing

Warfarin tablets are colour coded to aid in taking them appropriately.

Dose	Colour
0.5mg	White
1mg	Brown
3mg	Blue
5mg	Pink

When taking warfarin you may be asked to take various combinations of tablets:

'Take 2 browns and a white' to achieve a dose of 2.5mg'

Or you may be asked to break a tablet in half to achieve a dose:

'Take half a pink tablet' to achieve a dose of 2.5mg'

It is important to follow the advice of the clinic to ensure your warfarin is taken at the correct level to ensure your INR is in acceptable range.

It is important to keep a note of your INR, Warfarin dose and next appointment and this is usually done with the aid of a Yellow Warfarin Therapy book. This book should be taken to each of your clinic appointments.

### Side effects

**Haemorrhage (Bleeding):-** Clearly a medication that thins the blood will make you more likely to bleed. Haemorrhage is when you bleed excessively due to the blood being thinned too much. In a well monitored warfarin service this risk should be reduced to less than 1%.

**Bruising:-** This is caused by suffering small bleeds underneath the skin, if you notice you are bruising without injury then it is advisable that you contact your doctor or the warfarin service caring for you in order to have your INR assessed.

**Diarrhoea:-** Warfarin can cause diarrhoea which generally only stops on discontinuing the medication. If this is the case there is an alternative blood thinning agent which may be discussed.

**Purple Toe Syndrome:-** A rare complication that may occur early during warfarin treatment (usually within 3 to 8 weeks). This condition is thought to result from small deposits of cholesterol breaking loose and flowing into the blood vessels in the skin of the feet, which causes a bluish-purple colour and may be painful. It is typically thought to affect the big toe, but it affects other parts of the feet as well, including the bottom of the foot. The occurrence of purple toe syndrome may require discontinuation of warfarin.

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