



**Managing Your
Warfarin Therapy:
A Patient's Guide**



A Message To You

The goal of anticoagulation therapy with **Warfarin** is to decrease the clotting ability of your blood so that blood clots are prevented. The most important aspect of Warfarin therapy is to keep your levels within a therapeutic range. If your level goes too low, you are at risk for blood clots. If it goes too high, you are at risk for bleeding. Many factors can affect your level. In order to provide you with the safest and most effective therapy, your healthcare provider needs you to act as a partner in your care. Your role is to gain the necessary knowledge about your Warfarin therapy and the factors that affect it, and then apply this knowledge to your daily activities. The purpose of this book is to empower you with that knowledge. If you have any questions or concerns about your Warfarin therapy after reading this booklet, please speak with your healthcare provider.



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What Is Warfarin?

Warfarin is an anticoagulant. *Anti* means against, and *coagulant* refers to blood clotting. Warfarin reduces the body's ability to make blood clots. Your healthcare provider wants you to take Warfarin because your body may make clots that you don't need. These clots can cause a serious medical problem. A clot can move to another part of your body. For example, if a clot moves to your brain, it can cause a stroke.

The most common reasons for taking Warfarin include:

- *Deep Vein Thrombosis (DVT)*: this is a blood clot that occurs in a deep vein. They most often occur in the legs, but can occur in other parts of your body as well.
- *Pulmonary Embolus (PE)*: this is a blood clot in the lung. Most often, the blood clot starts in the leg, breaks off, and travels to the lung.
- *Atrial Fibrillation* or *atrial flutter*: these are irregular heart rhythms that occur in the upper chambers of the heart (the atria). The atria do not empty all of the blood, which can cause the leftover blood to form clots. If a clot goes into your circulation, it can cause a stroke.
- *Mechanical heart valve replacement*: blood clots can form on the mechanical heart valve. If a clot forms on the valve, it can prevent the valve from functioning, or if the clot breaks off into your circulation, it can cause a stroke. People with mechanical heart valve replacements must be on Warfarin therapy for life.
- *Heart attack*: sometimes Warfarin is taken after a heart attack to lower the risk of death, lower the risk of another heart attack, and lower the risk of stroke.
- *Stroke*: if a stroke is caused by a blood clot going to the brain, Warfarin is used to prevent it from recurring.
- *Transient Ischemic Attack (TIA) or "mini stroke"*: Warfarin is given to prevent a stroke from occurring.
- *After certain surgical procedures*: some surgical procedures place a person at high risk for developing a blood clot (for example, major orthopedic surgery).

Warfarin is given temporarily after the surgery to prevent a clot from occurring. Warfarin is sometimes given for reasons other than those listed. If you have any questions or don't understand something in this booklet, ask your healthcare provider for more information.



Warfarin Background

Warfarin was first discovered in 1939 after numerous cattle bled to death in North Dakota and Canada after eating improperly cured feed made from common varieties of sweet clover. The causative compound was identified as dicumarol, a coumarin compound. Further investigation led to the discovery of compound 42 (warfarin sodium) which emerged as a rodenticide in the 1940's. Investigators began experimenting with warfarin in humans in the 1950's, but its widespread use did not occur until it was used to treat President Dwight D. Eisenhower after a heart attack in the mid 1950's. Subsequently, warfarin sodium (derived from the *Wisconsin Alumni Research Foundation* which held the original patent on Warfarin) rapidly became the major oral anticoagulant used in the United States and throughout North America. Warfarin is now the 14th largest selling prescription drug, with over two million people in the United States taking it.

How Does Warfarin Work?

Warfarin partially blocks the re-use of vitamin K in your liver. Vitamin K is needed to make clotting factors that help the blood to clot and prevent bleeding. Vitamin K is found naturally in certain foods, such as green leafy vegetables.

Warfarin reduces the body's ability to make blood clots. It can help stop harmful clots from forming and keeps clots from getting larger. Warfarin does not break up existing blood clots.

Warfarin begins to reduce blood-clotting within 24 hours after taking the drug. The full effect may take 72 to 96 hours to occur. The anti-clotting effects of a single dose of Warfarin last 2 to 5 days, but it is important for you to take your dose as prescribed by your healthcare provider.

How is Warfarin Monitored and What Dose Do I Take?

Warfarin is monitored by a blood test called an INR (International Normalized Ratio). Warfarin belongs to a category of drugs known as "narrow range of effectiveness" drugs. This means that there is a very narrow range where the drug is considered therapeutic. For most indications, the INR range is 2.0 to 3.0. For people with mechanical heart valve replacements and certain other conditions, the range is 2.5 to

3.5. These ranges are general recommendations. Your healthcare provider might prescribe a different range, depending on your particular condition.

When your INR falls within your range (for example, between 2.0 and 3.0), this means that your level is “therapeutic”. When your INR level goes below the range (for example, 1.5) this means your blood is “too thick”, and places you at risk for blood clots. In this situation, your healthcare provider will prescribe a higher dose of Warfarin for you to take. If your INR goes above your range (for example, 4.5) this means your blood is “too thin”, and places you at risk for bleeding. In this situation, your healthcare provider will prescribe a lower dose of Warfarin for you to take.

Because Warfarin affects each person differently, some people will be on small doses of Warfarin and some will be on very large doses. Some people will achieve their appropriate INR quickly and others more slowly. *The dose of Warfarin you need is the one that keeps the INR in the therapeutic range for your condition.* Many factors can affect your INR level including a change in diet, a change in medications, the onset of a new illness, or having to stop your Warfarin for a procedure.

When a person first starts taking Warfarin the INR level tends to fluctuate up and down until the correct dose of Warfarin is found that keeps your INR level stable. It is therefore *very important* to get your INR level checked frequently. In general, when you first start Warfarin you will need to get your INR level checked 2 to 3 times a week for the first two weeks, then one to two times a week for two weeks, then every other week, then once a month. This may vary, depending on how your INR levels are. If the INR level becomes stable quickly, you will go for INR blood tests less often, if the INR level does not become stable, you will need to go for INR blood tests more often.

When your INR level is too high or too low, you often will not feel any symptoms. This is why it is *so important* to get your INR blood tests done regularly!

Warfarin and Drug Interactions

Warfarin interacts with *hundreds* of drugs including prescription and non-prescription (over-the-counter) drugs. Drug interactions can cause your INR to go too high (placing you at risk for bleeding) or cause your INR to go too low (placing you at risk for blood clots). Examples of some drugs that interact with Warfarin are given below. The list is by no means all inclusive. It is just to give you an idea of some of the more common drugs that interact with Warfarin. It is *very important* for you to check with your healthcare provider before starting, changing, or stopping any drug, whether it be prescription or over-the-counter. If you need to be on a medicine that is known to interact with Warfarin, take it. You will need to have your INR monitored for about 3 to 4 days after starting the new medicine.

Prescription Drugs (by class)

- Antibiotics
 - Bactrim® (Sulfamethoxazole/trimethoprim or SMX-TMP)
 - Flagyl® (Metronidazole)
 - Cipro® (Ciprofloxacin)
 - Avelox® (Moxifloxacin)
 - Factive® (Gemifloxacin)
 - Biaxin® (Clarithromycin)
- Analgesic/anti-inflammatory
 - Indocin® (Indomethacin)
 - Voltaren® (Diclofenac)
 - Lodine® (Etodolac)
 - Toradol® (Ketorolac)
 - Ultram® (Tramadol)
- Antiarrhythmics
 - Coradone® (Amiodarone)
- Anticonvulsants
 - Dilantin® (Phenytoin)
 - Tegretol® (Carbamazepine)
- Antidepressants®
 - Prozac® (Fluoxetine)
 - Paxil® (Paroxetine)

- Antifungal
 - Diflucan® (Fluconazole)
 - Nizoral® (Ketoconazole)
- Antiplatelet drugs
 - Plavix® (Clopidogrel)
 - Ticlid® (Ticlopidine)
- Antithyroid drugs
 - Propylthiourical
 - Tapazole® (Methimazole)
- Diabetic drugs
 - Amaryl® (Glimepiride)
 - Glucotrol® (Glipizide)
- Gastrointestinal drugs
 - Prilosec® (Omeprazole)
 - Nexium® (Esomeprazole)
 - Prevacid® (Lansoprazole)
- Gout treatment drugs
 - Aloprim® (Allopurinol)
 - Indocin® (Indomethacin)
- Cholesterol lowering drugs
 - Mevacor® (Lovastatin)
 - Lescol® (Fluvastatin)
 - Questrian® (Cholestyramine)
 - Zocor® (Simvastatin)
- Steroids
 - Deltasone® (Prednisone)

Non-prescription Drugs You May Not Take

Actron®	Excedrin®
Advil®	Ibuprofen
Aleve®	Ketoprofen
Ascriptan®	Motrin®
Aspirin	Nuprin®
Bayer®	Pepto-Bismol®



Drug Interactions With Herbal Medicines

Herbal medicines can also cause dangerous drug interactions with Warfarin. Keep in mind that just because an herbal product is advertised to be “*all natural*” does not necessarily mean it is *safe*. Below is a list of herbal products known to interact with Warfarin. The list is not all inclusive. If you want to take an herbal supplement, *it is very important* that you contact your healthcare provider before taking it.

<u>Potential Increase in Risk of Bleeding</u>		
Agrimony	Chamomile	Mistletoe
Alfalfa	Clove	Nettle
Aloe gel	Fenugreek	Onion
Angelica Root	Feverfew	Papaya
Anise	Fucus	Passionflower Herb
Arnica Flower	Garlic	Poplar
Asafoetida	German Sarsaparilla	Quassia
Black Cohosh	Ginger	Red Clover
Black Haw	Goldenseal	Rue
Bogbean	Horsechestnut	Sweet Clover
Borage Seed Oil	Horseradish	Tumeric
Bolda	Licorice Root	Willow Bark
Capsicum	Lovage Root	
Cassia	Meadowsweet	

Documented Reports of Possible Increase (↑) in Coumadin®	Documented Reports of Possible Decrease (↓) in Coumadin®
Danshen	Chlorella
Devil’s Claw	Coenzyme Q10
Dong Quai	Garnica
Fish Oil	Ginseng
Melatonin	Green Tea (excessive amount is necessary for this to occur)
Papain	St. John’s Wort
Vitamin E	Soy



Diet and Warfarin Therapy

Warfarin interacts with vitamin K in your diet. Vitamin K is necessary in the blood clotting process. Food sources with the highest amount of vitamin K include dark green leafy vegetables. *This does not mean that you need to cut green leafy vegetables out of your diet.* These foods are heart healthy, they are high in lutein, which improves vision, and high in fiber, which is good for the gastrointestinal tract. The recommendation is to keep your diet *consistent*. This means that you should eat the same amount of vegetables from week to week. Do not eat a lot of dark green leafy vegetables one week, then none the following week. As long as you maintain a consistent amount of vitamin K in your diet, the Warfarin will balance with it. If your vitamin K intake fluctuates, your INR level will fluctuate. Remember, just because a vegetable is green does not mean it is high in vitamin K. It is only the green leafy vegetables that are high in vitamin K.

Examples of vegetables *high* in vitamin K:

Cabbage
Broccoli
Spinach
Escarole
Greens (collard greens, turnip greens, mustard greens)
Lettuce (except iceberg lettuce which is low in vitamin K)
Brussels sprouts
Endive
Kale
Cauliflower (although it is white, it is in the same family as broccoli)

Examples of vegetables *low* in vitamin K:

Green beans
Peas
Carrots
Potatoes
Celery
Corn
Cucumber
Eggplant
Tomato
Pepper
Zucchini



Other Dietary Considerations

Dietary Supplements. Many dietary supplements contain vitamin K. Examples of these products include Ensure, Boost, and Carnation Instant Breakfast. The fact that these products contain vitamin K does not mean you should not use them. As with diet, keep your vitamin K intake consistent. If you have never used these products but would like to start, contact your healthcare provider. You will need to get your INR level monitored more closely when you start them.

Vitamins: What vitamins are safe to take when you are taking Warfarin? Below is a list of some of the most common vitamins and their effect on the INR level:

- B vitamins: no effect on the INR level
- Vitamin C: up to 500 mg per day will have no effect on the INR. Doses greater than 500 mg may lower the INR level
- Vitamin E: up to 400 IU per day will have no effect on the INR. Doses above 400 IU may increase the INR level.
- Multivitamins: most multivitamins contain small amounts of vitamin K. It is okay to take them, but as goes with diet, be consistent in taking them every day to prevent your vitamin K intake from fluctuating. If you are not using multivitamins but would like to start, contact your healthcare provider. You will need to get your INR level monitored more closely when you start them.

Alcohol: Alcohol in moderation (up to 2 drinks per day) will have little effect on the INR level. Excess alcohol intake will elevate the INR level because both the alcohol and the Warfarin are metabolized through the liver. If you have a problem with excessive alcohol intake and are taking Warfarin, please speak with your healthcare provider. This lethal combination may place you at serious risk of a bleeding event.

Side Effects of Warfarin

The most serious side effect of Warfarin is bleeding. To lower the risk of bleeding, be sure to get your INR level monitored regularly. Monitor yourself for:

- Nosebleeds
- Bleeding of gums when you brush your teeth
- Vomiting blood
- Blood in your urine
- Bowel movements that look red or black
- Unusual bruising
- Cuts that do not stop bleeding
- Excessive bleeding when you get your menstrual period or unexpected bleeding from the vagina
- Headache, dizziness, or weakness
- Unusual pain or swelling

If you develop *minor* bleeding (for example, a nosebleed or bleeding from the gums that stops within a few minutes) contact your healthcare provider. You will need to get your INR level checked.

If you develop *major* bleeding (for example, vomiting blood or a nosebleed that won't stop) **go to the nearest emergency room**. This could be a sign of a serious problem.

If you are involved in any kind of **traumatic accident** (for example, a car accident or falling down and hitting your head on the pavement) **go to the nearest emergency room**. You will need to get checked for internal bleeding.

Other side effects:

- Hair loss: hair loss is an infrequent side effect of Warfarin therapy and is reversible.
- Rash: if you develop a rash after starting Warfarin therapy notify your healthcare provider.



Other considerations:

- Pregnancy: if you become pregnant or are planning to become pregnant, notify your healthcare provider. Warfarin is dangerous to the unborn baby and should not be taken during pregnancy.
- Avoid any activity or sport that may result in a traumatic injury.

You may find that if you get a cut or scratch it may bleed longer than when you were not taking Warfarin. Just apply pressure to the area. It should stop within a few minutes.

You may find that you bruise easier than when you were not on Warfarin. Try to be careful!

Commonly Asked Questions About Warfarin Therapy

- **What is the best time to take Warfarin?**

The most important thing to do is to take it at the same time each day. Ideally you should take it in the evening, but choose a time of day that you will remember to take it. On the days you are getting your INR level checked, do not take the Warfarin before the blood test in case a change in your dosage needs to be made.

- **Should I take Warfarin with food or on an empty stomach?**

Warfarin should be taken on an empty stomach, either one half hour before or one hour after a meal. Food impairs the absorption of the drug. It is okay to take it after a light snack, but don't take it after a full meal.

- **How long will I need to be on Warfarin?**

It is up to your healthcare provider to determine how long you will need to be on Warfarin. Warfarin is used to treat many different conditions. For some, you will only need to be on it temporarily, for others you may need to be on it for life.

- **What do I do if I travel?**

If necessary, your healthcare provider can make arrangements for you to have your INR level monitored while you are away. Remember to try to keep your diet consistent and to avoid excessive alcohol intake while you are away.

- **What happens if I need surgery, dental work, or some type of invasive procedure?**

Any time you are to have any type of procedure done that could place you at risk of bleeding, notify your healthcare provider. Depending on the procedure, the Warfarin may need to be temporarily stopped, or you may need an alternative method of anticoagulation. Always check with the healthcare provider who is managing your Warfarin therapy before stopping it for any reason.

- **How much Warfarin is too much?**

There is no limit on the dosage of Warfarin. You will need to take whatever dose keeps your INR level in the therapeutic range. For some people, it may be a very small dose, for others, it may be a large dose. If you hear from your friends or neighbors that they are taking a lower dose than you, don't let it upset you. Warfarin dosage is individualized to each particular patient.

In Summary: The Do's and Don'ts of Warfarin Therapy

Do's:

- **Do** strictly adhere to the Warfarin dosage prescribed by your healthcare provider.
- **Do** get your INR level monitored on a regular basis.
- **Do** eat a normal, balanced diet maintaining a consistent amount of vitamin K.
- **Do** tell your healthcare provider about any other medicines you are taking (prescription and over-the-counter) as well as herbal/nutritional supplements. Also, talk to your healthcare provider before you change, start, or stop taking any other medicines.
- **Do** monitor yourself for any signs of bleeding.
- **Do** tell anyone giving you medical or dental care that you are taking Coumadin®.
- **Do** wear a medic alert bracelet to identify yourself as being on Coumadin®.
- **Do** refill your prescriptions according to your healthcare provider's orders.
- **Do** notify your healthcare provider immediately if you experience any signs of bleeding or unusual symptoms.
- **Do** take your Warfarin at the same time each day, on an empty stomach.
- **Do** speak to your healthcare provider about any concerns you may have about taking Warfarin.



Don'ts:

- **Don't** take a double dose of Warfarin the following day if you find you missed a dose on the previous day. Notify your healthcare provider if you miss any doses.
- **Don't** change your Warfarin dosage without speaking to your healthcare provider.
- **Don't** change, start, or stop any medications or nutritional supplements without speaking to your healthcare provider.
- **Don't** make any drastic changes in your diet without speaking to your healthcare provider.
- **Don't** participate in any activity or sport that may cause a traumatic injury.
- **Don't** drink excessive alcohol.
- **Don't** take Warfarin during pregnancy.



Additional Resources

National Stroke Association
1-800-STROKES *or* www.stroke.org

American Heart Association Stroke Connection “warmline”
1-800-553-6321 *or* www.americanheart.org

National Institute of Neurological Disorders and Stroke
1-800-352-9424 *or* www.ninds.nih.gov

Research Center for Stroke & Heart Disease
1-716-859-3900 *or* www.strokeheart.org

<http://warfarinfo.com>
Provides consumers with information on oral anticoagulants.

<http://www.dvt.org/dvt/>
An Internet resource for deep vein thrombosis and pulmonary embolism