# Warfarin (Coumadin)

Warfarin is considered a high alert medication because of the life-threatening side effects that can harm the patient. Patients have prolonged clotting time because of the suppression of clotting factors II, VII, IX, X. Patients need to be continuously monitored for bleeding, and thorough education needs to be done with every patient about the risks of taking this medication.<br />

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## Mechanism of Action

**Inhibits Clotting Factors**
Inhibiting-chains on Clog Factory
Warfarin (Coumadin) inhibits clotting factors II (prothrombin), VII, IX, X. This is accomplished by suppressing vitamin K in the clotting cascade. Vitamin K is used in the clotting cascade to activate certain clotting factors.

## Indications

**Atrial Fibrillation**
Atria-heart Alarm-clock
Atrial fibrillation results when there is ineffective atrial contractions. This leads to blood stasis in the atria, which can result in thrombus formation, increasing the risk of stroke and other embolic events. Warfarin prevents clot formation.

**Venous Thrombosis**
Vines Trombone
Thrombosis is a blood clot that forms in the blood vessel that can partially or fully obstruct the blood flow. Thrombosis typically happens in a deep vein, which is known as a Deep Vein Thrombosis (DVT). These clots can break off and travel to vital organs resulting in restricted blood flow. Warfarin prevents further development of the thrombosis.

**Pulmonary Embolism**
Lungs Elmo
Pulmonary embolism is a life-threatening event where a thrombus becomes lodged in a pulmonary artery blocking the circulation. An emboli typically evolves from a thrombosis. Patients with high risk or past events of a PE are often placed on Warfarin.

## Assessment

**PT/INR Levels**
PT-hourglass at International-building
Prothrombin time (PT) and international normalized ratio (INR) levels will be routinely checked on patients taking Warfarin. Educate the patient on the importance of these routine appointments as their dosage will change depending on their blood levels. Therapeutic levels for the INR depend on the provider and diagnosis, but can range between 2.5-3.5. These values are frequently followed at the beginning of treatment and are tapered off to every 2-4 weeks once stable.

**Observe for Bleeding**
Observatory with Blood
Bleeding gums while brushing teeth or prolong bleeding when a laceration is present can indicate that the INR is elevated. Gastrointestinal bleeding may occur with patients that are taking Warfarin. Educating the patient to monitor stool color can help inform the patient when to seek medical attention.

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## Contraindications

### Pregnancy

Caution-tape Pregnant-woman

Warfarin is contraindicated in pregnancy as it is a teratogen, an agent that causes birth defects. Patients should be educated about the importance of notifying their physician if they are pregnant or trying to become pregnant, so that an alternative medication can be prescribed, such as heparin instead of warfarin. Warfarin crosses the placenta as well as enters breast milk.

## Nursing Considerations

### Vitamin K and Fresh Frozen Plasma

Viking King with FFP Frozen Plasma-tv

Vitamin K (phytonadione) is the antidote for warfarin. A typical dose is 10mg in 50cc IV bag that boluses over 15 minutes. Fresh Frozen Plasma (FFP) can also be given depending on the INR level.

### Prolonged Therapeutic Onset

Long On-switch

Warfarin has a prolonged time to reach therapeutic levels which usually takes 2-3 days. Remember that patients are still at risk for thrombotic events during this time and are usually administered heparin alongside warfarin until therapeutic levels are reached.

### Maintain Same Diet

Same-types of Food

Educate the patient to maintain a consistent diet and to notify their provider of any dietary changes. Changes in consumption of foods high in vitamin K like green leafy vegetables may alter plasma levels of vitamin K.

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