

# Warfarin (Marevan<sup>®</sup>) and INR

## What is warfarin?

Warfarin belongs to a group of medications called anticoagulants, sometimes known as “blood thinners”. It is only available with a doctor’s prescription and is taken by mouth.

## What is it for?

Warfarin is prescribed for two reasons:

- To treat a blood clot that has been found inside a blood vessel, to ensure that the clot does not increase in size or break off and move to another part of the body.
- To prevent a blood clot for a person who is at a higher risk of forming a blood clot.

The body has a clotting system which is made up of different clotting proteins that are produced in the liver. Vitamin K, which is made by bacteria in the lower intestinal tract and ingested from the diet, joins these clotting proteins together to create blood clots. Warfarin stops vitamin K from joining together with the clotting proteins, making those proteins weaker. Warfarin slows down the time it takes for our body to make new blood clots. Warfarin does not break down clots that have already formed.

Children who are prescribed warfarin usually have a mechanical heart valve, an existing clot (thrombus), Kawasaki Disease or are after Fontan Surgery.

## How to take this medication?

Warfarin only comes in tablet form and should be given as a whole tablet. Cutting warfarin tablets into halves or quarters are not accurate ways of giving warfarin as we can’t be sure how much of a dose we are giving.

There is no liquid form of warfarin. For smaller children or children with swallowing difficulties, you can crush the tablet using a mortar and pestle or a table crusher, put the tablet powder into a medicine cup and add a small amount of water or milk (NOT infant formula). Once mixed, warfarin can be given from the cup, a syringe or on a spoon. Warfarin can also be dissolved in a small amount of water inside a syringe. This is done by removing the syringe plunger, putting the tablet inside the syringe, putting the plunger back on, drawing up 5-10ml of water and letting it sit and dissolve. This is easier and safer than dissolving in a cup or spoon.

We recommend taking the medications at the same time every day and giving it at night in case the cardiologist wants to change the dose during the day after a blood test.

Using a medication dosette box with the days of the week and writing the dose in a logbook, will help remind you and your child to take the medications and keep track of dosage.



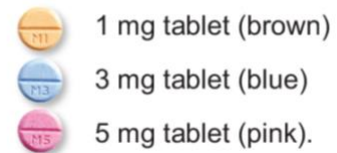
Most patients require three to five days of warfarin dosage before achieving a stable maintenance level.

Warfarin can be given with or without food but should be separated by an hour from enteral feeds such as nasogastric (NG) and percutaneous endoscopic gastrostomy (PEG) feeds.

## Dosage forms and strengths

At PCH we only use the **Marevan**<sup>®</sup> brand warfarin tablets. It is important to only use the Marevan<sup>®</sup> brand as the same strength tablets of other brands do not have the same effect.

### MAREVAN brand warfarin tablets:



Your child's cardiologist will prescribe their warfarin dose. If your child needs a half tablet dose, their cardiologist may prescribe alternate night dosing and administration to avoid breaking tablets.

## Storing the medication

It is important to keep warfarin locked away out of reach of children. Do not keep the tablets in the bathroom, near the kitchen sink or in other damp, warm places because this may make them less effective. Store warfarin tablets in a cool dry place where the temperature stays below 30°C.

Care should be taken to clearly identify the different strengths of tablets.

## Use of other medication

Do not give your child any other prescription or over the counter medicine, without first checking with their cardiologist or a PCH pharmacist.

It is very important for you to tell your child's doctors and pharmacists that he/she is taking warfarin. Many medications such as antibiotics and over-the-counter medications can affect warfarin.

Your child **SHOULD NOT** take aspirin, anti-inflammatory medications (e.g. Nurofen<sup>®</sup>) or herbal remedies unless told to by the PCH Cardiology team.

## What to do if a dose is missed or the child vomits shortly after taking?

If your child vomits within 15 minutes of taking a warfarin dose, only re-give the dose if the whole tablet/s can be seen in the vomitus. Do not give another dose if your child vomits more than 20 minutes after the dose was taken. Give the next dose when it is due the following day. If you are unsure, you should contact your local pharmacist or the PCH Medicines Information Service for advice. Please notify the Cardiology team of the missed dose during business hours.

Missed doses can be given so long as it is less than 4 hours since the dose was due. If it is more than 4 hours since the dose was due, then don't give the dose and restart at the

usual time the next day. Contact your treating team during business hours for further advice.

It is very important that you advise the Cardiology team if your child misses any doses, so their INR results can be interpreted correctly, and you are given appropriate dose advice.

### Possible side effects

Bleeding and bruising are the most common side effects of warfarin; however, it is not common to have these side effects if warfarin is taken correctly and the INR is within or under your target range.

Other common side effects, include:

- fever
- rash
- nausea
- vomiting
- diarrhoea
- hair loss.

Discuss with the Cardiology team if you are concerned about any of these.

Contact your child's doctor as soon as possible if any of the following occur:

- Bruises or tender swollen areas without clear cause.
- Blood in the urine, faeces, vomit or coughed up from the lungs.
- Nose bleeds that don't stop after 20 minutes despite local measures of pressure and ice.
- Severe headache or back pain.
- Prolonged bleeding:
  - from minor cuts
  - from the gums after brushing of teeth
  - from the nose
  - during menstruation.

### Other side effects

If your child is on warfarin for more than 12 months, a bone mineral density scan, a special type of an X-ray, will be requested to see how strong the bones are. This is because warfarin may be linked with children having "thinner" bones (i.e., osteoporosis). To prevent this problem, it is recommended eating and drinking calcium (i.e., dairy) rich foods, such as cheese, milk, and yoghurt, and doing weight-bearing exercises, if tolerated, can help in maintaining bone strength.

### What is International Normalised Ratio (INR)?

International Normalised Ratio (INR) is calculated from a blood test which measures how long it takes blood to clot. The INR result is used to adjust the warfarin dose. A person who does not take warfarin should have an INR of 1.0. Your child's cardiologist will give you a therapeutic INR range based on your child's condition, and it is important that you remember this and document it in a logbook.

When warfarin is commenced it can take more than one week for a child's INR to reach the therapeutic range and during this time their INR will need to be closely measured. Once the INR reaches the therapeutic range the frequency of INR checks will reduce.

The PCH Cardiology team will outline how frequently your child's INR must be checked and it is your responsibility to be compliant with the plan.

The PCH Cardiology team will advise to check your child's INR every two weeks once it is stable as children are growing and often get minor illnesses which can affect their INR level and warfarin dose.

## Important information about warfarin and INR

### Risk for bleeding and clots

It is uncommon to have bleeding problems when your child's INR is maintained in the correct range, when your child takes the correct warfarin dose at the right time, and you monitor their INR as instructed.

The risks of not testing and reporting INR and poor compliance/poor control can be severe. This can include the development of blood clots or bleeding resulting in stroke, valve dysfunction, and requirement for surgery and or hospitalisation.

If a blood clot travels to the brain, it can cause a stroke. Call 000 if your child displays any signs of a stroke including:

- numbness or weakness usually on one side of the body
- sudden confusion, trouble speaking, or difficulty understanding speech
- sudden trouble seeing in one or both eyes
- sudden trouble walking, dizziness, loss of balance, or lack of coordination
- sudden severe headache with no known cause.

Contact the Cardiology team if your child has any head injury caused by a fall or knock, even if there was no loss of consciousness or headache.

### What foods and drinks make warfarin less effective?

Some foods, infant formula and supplementary milk drinks (e.g. Ensure, Sustagen) contain high levels of Vitamin K which may decrease INR and make warfarin less effective in preventing blood clots. It is important to note that breast milk does not contain Vitamin K so a breastfed child can be more sensitive to warfarin.

High amounts of Vitamin K are found in foods including green leafy vegetables (lettuce and spinach), broccoli, brussels sprouts, turnip-greens, chickpeas, cabbage, liver, or soybean-containing food such as mayonnaise, or soy milk.

Moderate amounts of Vitamin K are present in asparagus, avocado, cauliflower, cheese, coffee, and peas.

Small amounts of Vitamin K are found in bacon, beef, bread, butter, carrots, celery, chicken, corn, eggs, green beans, onions, peanuts, peppers, potatoes, pork, pumpkin, rice, and tomatoes.

Moreover, drinking juices such as cranberry, grapefruit and mango can make the warfarin work too effectively and increase risk of bleeding.

Your child should continue to eat these foods and drinks as part of a healthy diet; however, it is important that your child eats them consistently. For infants who switch between breastmilk and formula, it is important you remain as consistent as possible with their feeding regime. Consult with the PCH Cardiology dietician if you have questions about warfarin and diet.

### When your child is sick

**Illness can affect how your child's body responds to warfarin. If your child becomes so unwell that their diet is affected or if they have vomiting or diarrhoea lasting greater than 24hrs you need to inform the PCH Cardiology team. You should also notify the Cardiology team if your child commences on antibiotics, including the type and duration of the treatment. Your child may require extra INR tests whilst on antibiotic treatment.**

### Bone density

Long term warfarin can lead to thinner and weaker bones (osteoporosis). It is recommended that your child eat the recommended daily intake of dairy products (cheese, milk and yogurt) to prevent this risk.

### Sport and activity

Warfarin increases your child's risk of bleeding and therefore, contact sports with a high risk of injury should be avoided, i.e. football, rugby, martial arts, etc. Your child should wear a helmet when participating in an activity where falling is possible i.e. bike riding, rollerblading, ice skating, etc. Your child should be encouraged to participate in weight bearing exercises as this will help strengthen their growing bones. Consult with the PCH Cardiology team about your child's activities.

It may be beneficial to request a letter from the PCH Cardiology department to your child's day-care/school/sports group to explain their condition, potential for risk and action plan if they become injured.

### When your child is an adolescent

It is appropriate for adolescent aged children to begin to take on more responsibility for the management of their health. However, warfarin is high risk medication, and your adolescent should have an appropriate understanding of this.

We encourage adolescents to self-test and report their INR under the guidance of their parent as they move into their teenage years, in preparation for self-management in adulthood. The Cardiology nursing team will support this process as required.

Alcohol can make an INR increase very rapidly, making the risk of bleeding problems bigger. The PCH Cardiology team does not condone underage drinking; however, it is important that if your teenage child has started consuming alcohol, you or your child should make the PCH Cardiology team aware to make a safe plan together.

Warfarin can cause birth defects if it is taken during the first three months of pregnancy. Sexually active adolescent girls should use reliable contraception to avoid pregnancy. If a woman falls pregnant or is planning on falling pregnant whilst on warfarin, they need to contact their cardiologist as soon as possible.

Warfarin is affected by oestrogen and progesterone. Speak to your cardiologist about the increased risks associated with some types of contraception and the recommended contraception to use.

### Dental or medical procedures

It is very important that you tell your child's dentist, doctors and other health professionals (e.g. physiotherapists, chiropractors, pharmacists, etc.) prior to and at the beginning of each visit that he/she are taking warfarin. Request that your child's dentist or doctor contact PCH Cardiology before any procedures takes place.

### Medication management at home

Do not use medications after the expiration date on the package. Return expired medications to a pharmacy for disposal.

If you have any concerns contact your child's doctor or PCH Pharmacy Department:

- **Pharmacy Dispensary:** 6456 0190 – select option 2
- **Paediatric Medicines Information Service:** 6456 0190 – select option 1

**In the case of overdose or poisoning,  
contact the Poisons Information Centre on 13 11 26**



Government of **Western Australia**  
Child and Adolescent Health Service



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