

Treatment of hemangiomas with Propranolol (Hemangiol®)

Information for parents and caregivers

What is propranolol?

Propranolol is a beta blocker that has been routinely used for the treatment of high blood pressure and cardiac arrhythmias in children and adults for the past 40 years. The first article describing the positive effect of propranolol on the development of hemangiomas was published in 2008 in the New England Journal of Medicine, a leading journal in the medical field. Propranolol has since then been used to treat hemangiomas. It slows down the growth of hemangiomas and causes them to shrink in size (i.e. go into regression). Propranolol has since then also been registered for use in children with hemangiomas (**Hemangiol® liquid formulation**).

Which hemangiomas are treated with Hemangiol®?

- Hemangiomas that lead to a **disruption of the normal development of the body or body function** (e.g. hemangiomas around the eyes that could lead to problems with eyesight).
- Hemangiomas with **wounds or ulcerations**.
- Hemangiomas that may cause **severe and permanent cosmetic damage**.

Which children cannot be treated with Hemangiol®?

Children with:

- Cardiac problems (including: low blood pressure, a slow pulse (i.e. sinus bradycardia), abnormalities in the electrical conduction of the heart (i.e. heart block) and heart failure)
- Asthma
- Diabetes mellitus
- Poor kidney (i.e. renal) function
- Severe food allergies (requiring an epipen)
- Metabolic disorders (low blood sugar or dietary restrictions)
- (Hyper)sensitivity to propranolol

What does starting treatment with Hemangiol® entail?

Your child will first be seen by a pediatrician to determine whether your child may receive Hemangiol® treatment. This includes at least:

- Physical examination
- Measuring your child's pulse (i.e. heart rate) and blood pressure
- Weighing your child

If everything is fine, the treatment can be started. You can do this at home.

Which children need to be admitted to hospital for the initiation of Hemangiol® treatment?

- Children younger than 1 month of age
- Preterm children younger than 2 months of age (counted from the original due date)
- Children with hemangiomas that form an acute threat to vital functions (e.g. airway obstruction)
- Children at risk for developing hypoglycemia (e.g. during concurrent use of prednisone)
- Children at risk for cardiac side effects (e.g. children with bradycardia or hypotension)
- Children with a complex medical history
- Children with a relative contra-indication for beta blockers
- Children with severe pain due to ulceration of the hemangioma despite a maximal dose of paracetamol.

How much Hemangiol® will your child receive?

Hemangiol® must be given twice a day, with at least 9 hours passing between administrations. For example, the first administration could take place during the morning feed and the second during the evening (note: not night-time) feed. Your doctor will calculate how many milligrams (mg) you need to administer per dose according to your child's weight. The liquid formulation of Hemangiol® comes with a syringe with lines indicating the amount of milligrams (mg). Using the lines on the syringe, you can easily draw up the appropriate amount of medication. Do not shake the bottle before administration.

The dose will be increased slowly, as shown below:

- On **days 1, 2 and 3:** 0.5 mg per kg (of your child's weight) twice a day
- From **day 4 onward:** 1.2 mg per kg (of your child's weight) twice a day

Starting on day 4 you will administer 1.2 mg per kg (mg/kg) of Hemangiol® twice a day. This dose will be continued until further notice. Sometimes your doctor may increase the dose to **1.5 mg/kg**.

Since the weight of your child will slowly increase, you will need to increase the dose of Hemangiol® accordingly. We advise you to weigh your child as follows: once a month until the age of 5 months and thereafter once every 2 months (e.g. during your appointments at the GGD/municipal health center). You can use the following equation to calculate the new dose:

Your child's weight in kilograms X 1.2 = **amount of Hemangiol® in mg**

Examples

1. Your child weighs 5.3 kg.
This equates to $5.3 \times 1.2 = 6.36$ mg of Hemangiol® (rounded to 6.5 mg)
2. Your child weighs 6.1 kg.
This equates to $6.1 \times 1.2 = 7.32$ mg of Hemangiol® (rounded to 7.5 mg)

You may need to round up or round down:

1.6 mg	➡	1.5 mg (round down)
1.7 mg	➡	1.5 mg (round down)
1.8 mg	➡	2 mg (round up)
1.9 mg	➡	2 mg (round up)

When should you administer the Hemangiol®?

- Hemangiol® should always be administered during the day. This should be done twice a day, and at least 9 hours should pass between administrations.
- Hemangiol® should be administered **during or shortly after feeding** using the accompanying syringe.
- If your child refuses the Hemangiol®, you may mix it with 30 cc of milk in a separate bottle. After this you can feed your child (the rest) of their usual portion. From a certain age, the Hemangiol® may be given with apple juice or with porridge.

What side effects can occur during Hemangiol® treatment?

- A slower heart rate or a lower blood pressure (generally asymptomatic)
- Cold hands and feet
- Your child may sleep restlessly or have nightmares
- Difficulties passing stool
- Diarrhea
- Shortness of breath, rapid breathing or coughing*
- Sweating, paleness, irritability or decreased/loss of consciousness due to low blood sugar**

* These symptoms are not a problem if your child is healthy (even if they are very active). However, if your child has a history of lung disease that causes narrowing of the airways (such as asthma or frequent colds that require inhalation medication), your child may experience an increase of lung-related symptoms. Should asthmatic symptoms occur (wheezing or shortness of breath), stop treatment and contact your general practitioner (GP/huisarts) as soon as possible.

** Hemangiol® can influence your child's blood sugar levels. This is the most important side effect of Hemangiol®. Your child needs to be fed frequently during treatment. Should your child start eating less than normally (e.g. during illness) or start frequently vomiting or have diarrhea, stop the treatment until your child is eating regularly again or until the symptoms have passed. When their diet has returned to normal you can resume treatment (using the same dose of Hemangiol® as before). If your child seems less alert, give them something sweet (such as juice

or lemonade), stop treatment and contact your GP (huisarts) immediately. Your child's blood sugar may be too low (ie. they may be hypoglycemic).

You may also contact your GP if your child experiences any other side effects (such as a decreased appetite, sleepiness or asthmatic symptoms) or if you have any other concerns.

How long does your child have to continue using Hemangiol®?

Usually until they are 12 months of age. However, treatment duration may be shorter or longer depending on their individual situation.

It is important to stop Hemangiol® treatment gradually. When treatment is discontinued, you need to continue administering half of the usual dose twice a day for 2 more weeks. After these two weeks, you may stop administering the Hemangiol® completely.

What should you do if the pharmacy gives your propranolol 1mg/ml (in the liquid formulation) instead of Hemangiol®?

Do not accept the propranolol. It is important that you receive the Hemangiol® liquid formulation and not "regular" propranolol in liquid formulation. Since the concentration of Hemangiol® and the regular propranolol (liquid formulation) differ, the doses written above do not apply to the regular propranolol formulation. You will also need the syringe that comes with the Hemangiol® formulation, since it is labeled using milligrams (mg) instead of milliliters (ml).

Please contact your child's physician if you have any further questions.