

Iron Chelation Therapy



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What is iron overload?

Iron moves from one area to another bound to a protein, transferrin, which makes it safe. Transferrin is quickly fully bound with iron in thalassemia patients. This leaves the excess iron to move freely in the blood, which is harmful and damages major organs like liver, heart, pancreas, hormone glands, and bones. Thalassemia patients need regular red blood cell transfusions; these contain iron. Over time the iron builds up in the body. Patients not on transfusion regimen also get iron overload because of a significant increase in iron absorption following ineffective erythropoiesis. Regular blood tests and scans are required to monitor the function of the organs that iron overload damages. In children, growth and development are also monitored. This iron overload is managed by chelation therapy.

What is iron chelation therapy?

Iron chelation therapy is a treatment for iron overload, where a medicine (iron chelator) is given which goes through the body and grabs on to iron particles. The chelator and the iron it grabs are removed from the body through urine or stools.

The two goals of iron chelation therapy are:

1. Binding of toxic free iron in the blood
2. Removal of iron from the body

Complete removal of the excess iron may take several years once iron overload happens.

Who needs chelation?

Patients taking regular transfusions must have regular chelation to avoid iron overload and stay healthy. Chelation may also be needed for patients not on regular transfusions, especially when their hemoglobin is maintained at low levels and cause their bodies to over-produce red blood cells.

What are the iron chelators available?

There are three iron chelators available:

- Deferoxamine – is given subcutaneously (under the skin) usually with an infusion pump.
- Deferasirox – is given orally mixed with a glass of water or juice.
- Deferiprone – is given orally as a pill.

At times a combination therapy of deferoxamine and deferiprone is also given.

How is a chelator chosen?

A chelator is chosen after considering many things such as:

- Mode of administration
- Side effects
- Amount of iron accumulation
- Ability to follow the prescribed plan

Also some patients may change the chelator in the course of treatment.

When should chelation therapy begin?

Chelation therapy should typically begin after one or two years of regular transfusion.

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However, treatment may vary with each patient, so chelation therapy must be individually tailored.

How are iron overload and chelation therapy monitored?

Various tests are done to monitor the amount of iron overload, which helps determine the effect of chelation therapy.

The tests done are:

- Serum ferritin levels
- Biopsy for iron concentration in liver
- MRI for liver iron concentration and cardiac function