

# Iron Deficiency in Pregnancy & Postpartum; Therapy Approaches

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The prevalence of iron deficiency anemia in different regions of the world ranges from 12 to 43%. The increased iron requirement in pregnancy and the puerperium lead to an increased susceptibility to iron deficiency and iron deficiency anemia and perioperative or peripartur blood transfusion.

Daily iron requirement in pregnancy cannot be met even by increased intestinal absorption from an optimal diet. This leads to an inevitably negative iron balance in every pregnancy. Furthermore this can result in iron depletion which has an impact on erythropoiesis. Prevention and correction of iron deficiency anemia presuppose reliable laboratory parameters and thorough understanding of the mechanisms of iron therapy.

The first important steps for diagnosing anemia in a pregnant woman is a complete check of her medical history and medical examination. Furthermore is to distinguish the physiological anemia of pregnancy due to the normal plasma volume increase during pregnancy, from “real anemia” with various pathophysiological causes.

When defining the hemoglobin cutoff value for anemia in pregnancy, the extent of the plasma volume changes with respect to the gestational age must be taken into consideration. It has been found that hemoglobin values  $< 11.0$  g/dL in the first and third trimesters and  $< 10.5$  g/dL in the second trimester may point to an anemic situation which should be clarified.

The current gold standard to detect iron deficiency remains the serum ferritin value besides the haemoglobin level.

The hemoglobin concentration alone is insufficient to guide management. A complete work-up (ferritin, transferrin saturation) is essential, preferably with hematological indices such as hypochromic and microcytic red cells and reticulocytes, classified by degree of maturity, in particular before parenteral therapy is given. Since ferritin acts as both an iron storage and acute-phase protein, it cannot be used to evaluate iron status in the presence of inflammation. A high ferritin level thus requires the presence of an inflammatory process to be eliminated before it can be taken at face value. If the C-reactive protein level is also raised, the soluble transferrin receptor concentration can be used, since it is unaffected by inflammation.

Traditional therapy, which is based on either oral administration of iron or blood transfusion, or both, has had drawbacks: the efficacy of orally administered high-dose iron was limited by the high incidence of side effects and thus noncompliance, whereas blood transfusion remains a last resort because of patient choice and the risks of infection, immunologic impact, and transfusion reactions.

Modern alternative strategies call for parenteral administration of new, well-tolerated iron preparations, (eg, iron sucrose), which has been used successfully in the treatment of postpartum anemia and increasingly during the 2nd and 3rd trimester of pregnancy.

Intravenous iron sucrose has several advantages because it has low allergenic properties with an extremely low incidence of severe side effects such as anaphylactic reactions.

After correct diagnosis, major emphasis should be put on safe and effective treatment of anemia which again depends on severity of anemia, time for replenishing the iron stores and patients characteristics.

Today, effective alternatives, to oral iron only or blood transfusion, such as parenteral iron sucrose and in selected cases also recombinant erythropoietin have been investigated. These show promising results concerning effective treatment of anemia during pregnancy and postpartum. Our departmental data, collected over 10 years and backed by postmarketing experience in 25 countries, indicate that iron sucrose therapy is a valid first line option for the safe and rapid reversal of iron deficiency anemia.