Multiple Births
Naissances multiples
C A N A D A

IRON SUPPLEMENTATION

Iron Supplementation in Multiple Pregnancy

Written by Dr. Jon Barrett

Iron, "the metal of heaven," is listed in the Egyptian pharmacopoeia of the ebers papyrus dated 1500 BC. The ancient Hindus in 500 BC used iron, as did Hippocrates for conditions including acne, gout and kidney inflammation. In 1640, Lazarus described ten major manifestations of a disease complex called *sclerosis*, which we now know as *anemia*. In 1884, it was finally clarified that a fall in the level of blood pigment was commonly associated with pregnancy.

Initial studies all confirmed that anemia during pregnancy was due to poor nutrition. This belief—put forward back in 1893—is one that still holds true today. One cannot overemphasize the importance of good nutrition during pregnancy. While this is true for singleton pregnancies, it is obviously more important for moms with multiple pregnancies, in whom the demand for iron is higher.

Most modern diets have "non-haem" iron as the main source of elemental iron. This type of iron is found in green leafy vegetables and in fortified foods such as flour and cereals. The other type of iron is called "haem-iron"; this is iron that is found in red meat. While it is only responsible for approximately 6% of the normal total iron intake, "haem-iron" is very well absorbed, accounting for 30% of the total iron absorbed per meal.

The increased iron requirements of pregnancy result from a demand for iron from both the fetus and the mother's red blood cells. Most studies suggest that an average baby contains about 400-600 mg of iron, and that the increase in the mother's red blood cells account for approximately 560 mg of iron over the pregnancy (this demand starts early at approximately 20 weeks gestation). The normal total iron requirement for a singleton pregnancy is approximately 800 mg; for a multiple pregnancy, it is estimated to be approximately double this. In addition to the increased demand for iron during pregnancy, the rapidly expanding maternal blood volume requires the extra supply of other vitamins that are needed in hemoglobin synthesis. This includes folic acid, vitamin B12 and some of the other B-group vitamins.

While these vitamins are important for the synthesis of red blood cells and hemoglobin, they have also been shown to be important in the growth and normal development of the placenta and the formation of certain parts of the baby, such as the spinal cord and front of the abdominal wall.

Nature, in its wonderful way, acts to aid a pregnant woman in this task of adapting to increased iron demands during pregnancy. Studies have shown that a pregnant woman will increase the amount of iron she absorbs from her food in an effort to cope with this increased demand. For a non-pregnant woman, approximately 10-15% of all the iron that is eaten is absorbed, while towards the end of a pregnancy, about 70% of the iron will be absorbed from food.

It is always important to realize that iron absorption is affected not only by the type of food eaten, but also by the mixture of food that is consumed. For example, there are powerful inhibitors of iron absorption present in milk and tea, and if these are consumed together with an iron source, most of the iron in the meal will be unavailable.

In some singleton mothers, the increased demand for iron may be met simply from diet and the increased absorption that may occur during pregnancy. In mothers with multiple pregnancies, this is very unlikely to be the case.

Therefore, in order to allow optimal expansion of the mother's red blood cell mass and to provide enough iron for the fetus and placenta, additional iron supplementation is necessary during a multiple pregnancy. It is not only essential to take additional iron, but the balance of multi-vitamins taken concurrently with the iron is also of prime importance.

Many iron supplements also contain inhibitors of iron absorption (such as calcium) in the same tablet. This limits the availability of the iron—although, unfortunately, not the side effects.

Side effects from iron absorption are significant in pregnancy, and include nausea, diarrhea and/or constipation. It is probably more important to avoid iron supplementation in early pregnancy if these side effects are significant. This will allow a mother to eat properly or to select an iron supplement in which the iron load is adjusted to decrease the side effects—perhaps by appropriately combining it with other vitamins that might enhance iron absorption, such as vitamin C.

Certainly, however, by the middle of the second trimester in a multiple pregnancy—at which time the nausea should have dissipated somewhat—daily iron must be taken with folic acid.

The amount of folic acid required for a singleton pregnancy has been calculated to be approximately 0.4 mg per day. Because of the increased volume of the placenta and the fact that there are at least two infants, it is logical that more folic acid is required for a multiple pregnancy. This could be started as soon as possible—even before conception—as it does not cause any intestinal side effects.

A pregnant mother with multiples should have her hemoglobin level checked in early pregnancy and routinely evaluated throughout her pregnancy to ensure that the routine supplementation is effective. Should her level of hemoglobin fall, therapeutic iron administration might become necessary. Rarely, a mother may have a condition of failure to absorb oral iron; in this case, intravenous iron might be recommended.

Following delivery, the mother is usually in a position of having to restore some of the blood loss that occurs during birth. The extra demands of breastfeeding two or more babies also require iron and vitamin supplementation.

Usually, the preparation that was suitable during pregnancy can simply be continued for the duration of breastfeeding.

Dr. Jon Barrett, MBBch, MD, MRCOG, FRCS(C), is the Director, Multiple Pregnancy, Obstetrics and Gynaecology at the Sunnybrook Health Sciences Centre in Toronto and is Associate Professor at University of Toronto. Dr. Barrett is the principal investigator in the MIRU Twin Birth Study, a multi-centre, randomized, clinical trial that includes over 140 centres in 30 countries. The study will eventually enroll 2,800 women over four to five years, with a two-year follow-up (http://www.utoronto.ca/miru/tbs/). Dr. Barrett has coordinated and published the first Canadian Consensus on the Management of Multiple Pregnancies, pioneered Canada's first specialized Multiples Clinic, and is a valued member of Multiple Births Canada's Advisory Board.

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