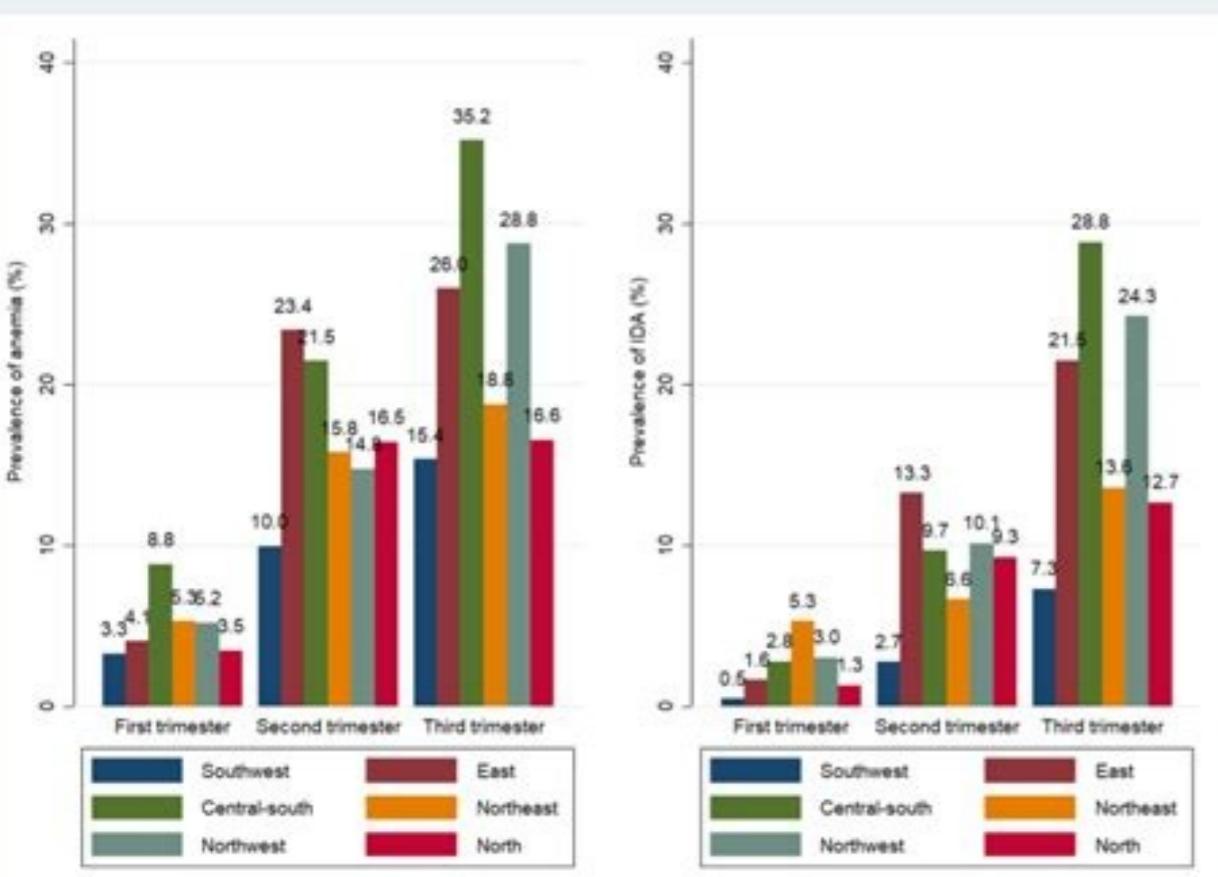


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## CARDIAC COMPLICATIONS IN THALASSEMIA MAJOR

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### Abstract

Thalassemia major is characterized by chronic ineffective erythropoiesis and anemia as its primary problems. These, in turn, produce physiologic adaptations in the cardiovascular system as well as pathologic/hatrogenic processes such as iron overload, splenectomy, nutritional deficiencies, chronic oxidative stress, and lung disease. This article discusses the pathophysiology of thalassemia as it relates to the cardiovascular system, the mechanisms and monitoring of iron cardiomyopathy, pulmonary hypertension, and vascular aging in thalassemia patients.

### Keywords

Thalassemia; Heart complications; Iron cardiomyopathy; Pulmonary hypertension

## THALASSEMIA AND THE CARDIOVASCULAR SYSTEM

### Chronic Anemia

Patients with chronic anemia increase their cardiac output to maintain oxygen delivery, resulting in increased cardiac dimensions and heart rate. Anemic patients have larger hearts on CXR, echo, and MRI measurements than patients with normal hemoglobin levels, even without any other pathology. Thus, normative data generated from non-anemic patients is inappropriate for patients with hemoglobinopathies (1). The larger cardiac dimensions, stroke volumes, and heart rates carry metabolic cost; chronically anemic patients have higher resting oxygen consumption and decreased reserves. Increased resting metabolism is also a source of increased oxidative stress, independent of the free-radical effects of iron.

Patients with thalassemia have low or normal blood pressures, despite their increased cardiac output, because they have lower vascular resistance. Lower tonic vascular tone partially compensates for the increased chamber dimensions, but it leaves patients vulnerable to the endothelial toxicity of iron overload as well as making them less tolerant and responsive to the effects of afterload-reducing agents.

### Splenectomy

Hypersplenism is relatively common in the thalassemias and may necessitate spleen removal. Splenectomy may also be performed to lower blood transfusion requirements. However, the spleen plays a critically important role in removing hematologic debris from the cardiovascular system. Phosphatidylserine positive platelets, platelet fragments, and red

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CORRESPONDENCE

### Pulmonary Function Tests in Sickle Cell Disease: Correspondence

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To the Editor: Prospective studies indicate that children with sickle cell disease (SCD) have progressive deterioration of lung function with increasing age [1]. We read with interest the article titled "Pulmonary function tests in sickle cell disease" published online first in Indian Journal of Pediatrics [2], as it is the first such report from India and has

the following points:

The authors conclude by stating that "pulmonary functions of Indian SCD children are statistically significantly reduced as compared to those of similar age, however this difference is not clinically significant" on the basis of the finding that pulmonary function test (PFT) parameters were not significantly different in children with or without history of acute chest syndrome. But the clinical presentation of acute chest syndrome (e.g., cough, breathlessness on exertion, respiratory rate etc.) or exercise capacity [3] were not compared between the study and the control group.

Those children with acute respiratory illness were excluded, the past history of respiratory diseases (e.g., pneumonia, wheezing apart from acute chest syndrome and family history of asthma), which are known to affect the PFT parameters [4] were not mentioned.

The authors postulate that the children with SCD may have early restrictive pattern in PFT on the basis of a lower forced expiratory volume (FEV<sub>1</sub>) and forced vital capacity (FVC) compared to controls. But the spirograms were within normal limits in both groups which may be seen in milder cases of chronic lung disease, whereas forced expiratory flow between 25% and 75% of vital capacity (FEF25-75) would have been a more sensitive marker [5].

It would have been worthwhile to look at the spirometry parameters in light of the sickle cell disease parameters (frequency of transfusions, current hemoglobin, HbF level, use of medication for increasing HbF) of these children [6].

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The purpose of comparing the hemoglobin levels of SCD children with that of the healthy controls is not very clear as these children are expected to be anemic. Furthermore, performing a hemoglobin estimation of healthy children of this age group only for the purpose also cannot be supported.

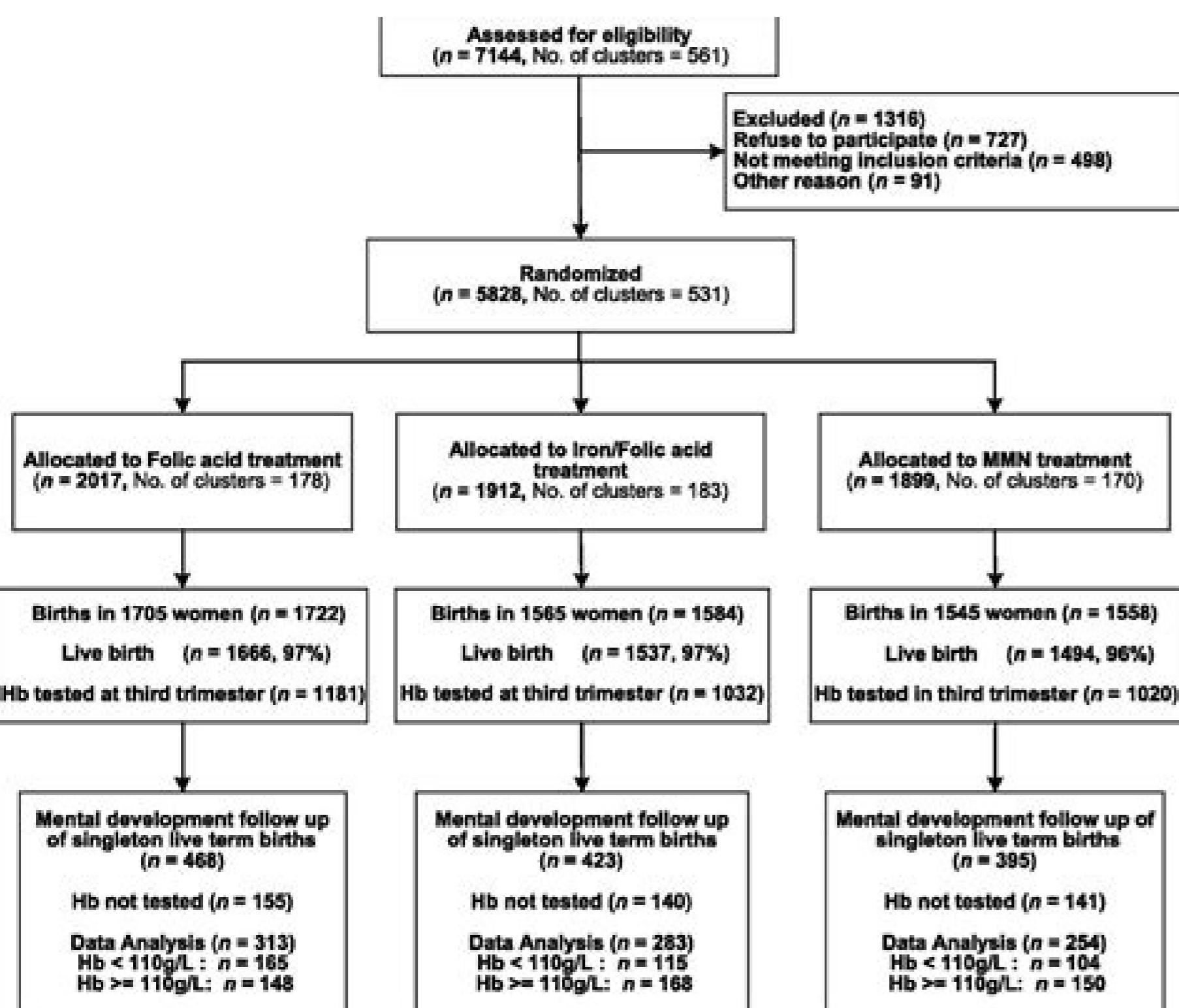
Anirban Mandal<sup>1</sup> and Purnet Kaur Saini<sup>2</sup>

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#### NURSE-MIDWIFERY MANAGEMENT OF IRON-DEFICIENCY ANEMIA DURING PREGNANCY

Janet L. Engstrom, CNM, PhD, and Claudia P. Sittler, CNM, MS

##### ABSTRACT

Anemia is a common complication of pregnancy and is associated with preterm birth, low birth-weight infants, and increased perinatal mortality. Anemia during pregnancy is associated with increased risk of preeclampsia, gestational diabetes, hypertension, preterm birth, and increased perinatal mortality (1). Because anemia is associated with complications such as low birth weight and preterm birth, it is important to identify and manage anemia during pregnancy, and other care providers should be knowledgeable about the pathophysiology, diagnosis, and management of anemia during pregnancy.

Although there are many causes of anemia, iron deficiency is the most common cause of anemia during pregnancy (2). Because anemia is a common cause of anemia during pregnancy, and because anemia can have serious consequences for the fetus, pathophysiology, diagnosis, and management of iron deficiency anemia during pregnancy. To facilitate nurse-midwives' understanding of the pathophysiology, diagnosis, and management of anemia during pregnancy, this article also discusses the pathophysiology, diagnosis, and management of anemia during pregnancy.

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Particularly for pregnant women who have problems with small red blood cell anemia due to prominent iron deficiency, they must also take an iron pill in combination with folic acid. Similarly, caffeine also inhibits the absorption of iron from food; therefore, do not drink coffee, coke or carbonated soft drinks during meals but only drink 2 hours after eating. This means more iron and vitamins are needed to make more red blood cells. Besides, children of mothers with anemia during pregnancy will have an increased risk of cardiovascular diseases than other children later in life. Others must be taken several times each day. However, anemia in pregnant women will adversely affect not only the mother but also the fetus. Treatment will depend on your symptoms, age, and general health. XEM THÁAM: Therefore, maintaining hemoglobin within physiological limits is very important in the general population. Anemia during pregnancy will adversely affect not only the mother but also the fetus. Fish A ASHELLFISH, including (fully cooked) clams, mussels, and oysters are good. Iron is observed to be abundant in foods with dark red and dark green colors, such as red meat (beef, pork, lamb...). Besides, the supply of iron will be limited if the mother accidentally takes it with substances that inhibit iron absorption. So are Ásardines and anchovies. If you have A extra red blood cells stored in Ayour bone marrow before Ayour body can use those stores during pregnancy. Limit white (albacore) tuna to 6 ounces per week. The absorption of iron will become more effective if pregnant women also consume foods rich in vitamin C after meals. Therefore, women who are malnourished before pregnancy with poor nutrition and lack of proper rest will cause anemia even more. Leafy greens of the cabbage family A These include broccoli, kale, turnip greens, and collards. Eggs of chickens, ducks or poultry in general are a rich of iron as well as other nutrients such as protein, calcium, phosphorus, minerals and many vitamins that are useful for the development of the fetus and the health of the fetus. To control anemia, the child uses red blood cells for growth and development, especially in the last 3 months of pregnancy. Know what to expect if you do not take the drug or have the test or procedure. Ematocritus. Symptoms may include: Pallyd skin, lips, nails, palms of the hands, or undersurface of the eyelids. Feel tired, sensation of spinning (vertigo) or dizziness Abbott breathing Quick heart beat (tachycardia). Concentration problems Anemia symptoms can be like other health conditions. At the same time, pregnant women should focus more on iron-rich food sources. Before your visit, write the questions you want to answer. Ch Ádjv dung dong vui trá vó c Áng quan trúng s i v i m Vietnamese bá Nutrition is always the first concern of pregnant mothers, but when pregnant women with anemia have to eat what to eat, they need specific instructions. Treatment for iron deficiency anemia includes taking iron supplements. Always see your health care provider for a diagnosis. At this time, anemia is further promoted. Medical review: Irina Burd MD PhD Medical Reviewer: Donna Freeborn PhD CNAI FNP Medical Reviewer: Heather M Trevino BSN RNC © 2000-2021 La StayWell Company, LLC. Know why a test or procedure is recommended and what could mean. Taking antacids can make it harder for your body to absorb iron. If you need a remote health advice with our you can book a consultation HERE. This is the part of blood that carries oxygen from the lungs to tissues in the body. Good nutrition before A Getting pregnant is important to help build up these stores. Folic acid helps cut the risk of having a baby with certain birth defects of the brain and spinal cord if it's taken before getting pregnant and in early pregnancy. This is the most common type of anemia in pregnancy. This is the result of the body not being supplied with enough iron needed to make hemoglobin, a protein-based component responsible for the main function of red blood cells. This is an automatically translated article. This should be maintained regularly from the time the pregnancy is discovered until at least one month postpartum, because the newborn is still at risk of iron-deficiency anemia when the mother's milk supply is not guaranteed. Download the exclusive MyVimtec to make appointments faster and be able to track your orders. Therefore, the simplest source of nutrition that doctors often recommend is that every week pregnant women should eat three to four eggs to both increase the mother's physical strength and provide nutrients for the fetus. They may also cause constipation. Like normal people, to determine whether or not anemia is required by testing the hemoglobin (Hb) level in the blood. Your healthcare provider will check for anemia during Ayour A prenatal exams. Ask if your condition can be treated in other ways. This measures the portion of red blood cells found in a certain amount of blood. Some forms are time-released. For the fetus, chronic fetal distress due to malnutrition is common. Good nutrition before pregnancy not only helps prevent anemia, but it also helps build other nutritional stores in your body. The cause varies based on the type. At the visit, write down the name of a new diagnosis and any new medicines, treatments, or tests. Iron supplements may cause nausea and cause to become dark greenish or black in color. Folate is the form of folic acid found in food. A Good sources are: Leafy, dark green vegetables Dried beans and peas Citrus fruits and juices and most berries Fortified breakfast cereals Enriched grain products Key points about anemia in pregnancy Anemia is a condition of too few red blood cells. Good nutrition is the best way to prevent anemia during pregnancy, mussels (scallops, snails, mussels...), liver, egg yolks, beans and other vegetables (watercress, broccoli, spinach, linden...). Legumes. A Lima beans and green peas; dry beans and peas, such as pinto beans, black-eyed peas, and canned baked beans. Women of reproductive age are inherently subject to a very high risk of anemia, during pregnancy, the need for iron increases many times to supply the fetus. For pregnant women. Therefore, in normal people, anemia will make the body weak, tired, reduce the ability to exercise, poor concentration. Taking iron with a citrus juice, such as orange, can help Ayour body absorb it better. Should eat whole fruit instead of squeezing to get juice, because fruit also provides quantity High in fiber, helping pregnant women to defecate easily, preventing constipation. IfA You have anemia during pregnancy, A Ayour baby may not grow to a healthy weight, may arrive early (preterm birth), or have a low birth weight. A A also being very tired A May keep you from recovering as quickly after birth. Yeast-leavened whole-wheat bread and rolls Iron-enriched white bread, pasta, rice, and cereals Experts recommend all women of childbearing age and all women who are pregnant take vitamin supplements with at least 400 micrograms of folic acid. If you have a follow-up appointment, write down the date, time, and purpose for that visit. For women, miscarriage is likely to happen in the first trimester or stillbirth or premature rupture of membranes, placental abruption, premature birth in the last erasue "Aup ,orref azatsabba iah non E .ednamod eteva es erotref orsov li erattnoc etetop emoc etappaS ,onagro'd irac erla e otagef ,ollenga ,eliam ,oznam id eracC ,inrac condonulin orref id obic id innoe usrof issor ilubog ihcp ipport ah eugnas li opmet otagnulrop ,atcisan al apod oretti ,arutamep atcisan ,atcisan id ossep ossab noc itan inimbmB ,ossab otion. 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