What is Anemia?

- Anemia means *NOT ENOUGH RED BLOOD CELLS* or *LOWHEMOGLOBIN* amount in the blood.
- Hemoglobin is a PIGMENT (a colored agent) present inside the *RED BLOOD CELLS* which is responsible for carrying the Oxygen we breath.
- If the *red blood cells* automatically, you’ll have *low hemoglobin*.
- This means that the blood will not able to carry enough oxygen to the body parts.
- What happens to me if I have anemia?

You may get:

- Weakness and faintness
- Nausea
- Yellow eye and skin (especially in the creases of the palms, under the fingernails and in the lining of the eye)
- Shortness of breath
- Loss of appetite
- Increased heart beat
- Dizziness
- Headaches
- Bleeding
- Confusion and dementia
- Sore tongue
- Severe cases have signs of heart failure
How dose the doctor tell if I have Anemia?

- Doctor will do physical exam to check for any outside Signs such as paleness of skin, sore tongue, bleeding gums Etc. which give the doctor a clue for what you may have.

- Other tests include:
  - BLOOD Tests (to look at the shape and size of the RED BLOOD CELLS)
  - Bone Marrow (to check if the bone marrow is properly Making the RED BLOOD CELLS or whether it is Something happening outside of the bone marrow)

HOW is Anemia treated?

- Since the causes of Anemia are so many, the treatments also are different.

- See the treatments for each of the Anemias separately.

How can I prevent Anemia?
FOLIC ACID
(folate, folacin)

RDA for Adults

- Non-pregnant adults: 400mcg; During pregnancy: 800 mcg
- Adult Maintenance- Therapeutic Range
  - 400-1,000

Major Sources

- Green leafy vegetables, organ meats (liver), lean beef, wheat, eggs, fish, dry beans, lentils, cow peas, asparagus, broccoli, collards, yeast, Synthesized by intestinal bacteria.

Non-Therapeutic Importance

Appears essential for biosynthesis of nucleic acids; essential for Normal maturation of red blood cells; functions as the Coenzyme, tetrahydrofolic acid.

Deficiency Symptoms

- Confusion
- Depression
- Diarrhea
- Fatigue
- Megaloblastic anemia

Increased Risk for Deficiency

- Alcoholism
- Anorexia
- Anticonvulsant drugs

- Maligancies
- Oral contraceptive agents
- Pregnancy and lactation
- Vitamin B-12 deficiency

Possible Therapeutic Applications.

CONSULT WITH A HEALTH PROFESSIONAL FIRST:
Folic acid works with vitamin B-12 in reducing homocysteine, a risk factor for heart disease. Supplementation may prevent, correct deficiencies caused by, or be helpful with, the following conditions:

- Aging
- Cancer
- Crohn’s disease
- Heart disease (atherosclerosis & hypercholesterolemia)
- Immunodepression (including AIDS & CFIDS)
- Memory loss (including Alzheimer’s disease)
- Osteoporosis
- Periodontal disease
The booklets in this series are intended to provide general information about the diseases they describe.

In many cases the treatment of individual patients will differ from that described in the booklets.

At all times patients should rely on the advice of their specialist Who is the only person with full information about their diagnosis and medical history.

What is Aplastic Anaemia?

Patients with aplastic anaemia have a complete failure of production of all types of blood cells. As a result, the bone marrow contains large numbers of fat cells instead of the blood producing cells which would normally be present. This is called marrow hypoplasia or aplasia.

The disease in most cases is acquired, that is it is not inherited and is not present from birth. There is a rare inherited form of the disease called Fanconi Anaemia. There is a separate leukaemia Research fund leaflet on this condition.

A plastic anaemia is an inevitable consequence of use of high dose drugs and Radiotherapy in treatment of cancer but this type of bone marrow failure differs from acquired aplastic anaemia in that prompt recovery is expected. When drug the drug or radiation treatment is stopped.

The disease may affect people of any age but there are peaks of incidence in young adults and in people over the age of 60 years.
CAUSES

It is that in most cases of acquired aplastic anaemia the damage to bone Marrow stem cells is caused by an auto immune reaction. This happens when The body’s immune cells become confused and start to attack body tissues. In About three quarters of all cases of aplastic anaemia this autoimmune reaction has no clear underlying cause. This is called idiopathic aplastic anaemia.

In the remaining cases there is evidence of exposure to some factor which is Known to cause damage to bone marrow stem cells. Examples include drug Treatment, some chemicals and certain diseases and infections. Some factors Such as benzene and drugs may damage the stem cells directly, others such as Infections probably trigger off auto immune damage. A plastic anaemia may Occue in pregnancy, but this is extremely rare. These cases usually resolve With the end of the pregnancy.

Drugs which may, rarely, cause plastic anaemia include:

- anti-cancer drugs
- immunosuppressants
- drugs used to treat rheumatoid arthritis
- some antibiotics.

Whenever a patient is given drugs known to carry a risk of aplastic anaemia they must have regular blood counts.

Certain diseases may, rarely, lead to aplastic anaemia.

These include.

- viral hepatitis
- other viral infections
- disorders of the immune syste

Occasionally a patient who has a disease of the bone marrow may develop comp/ Marrow failure and the diagnosis will then become aplastic anaemia.
Cell in plastic anemia do not show chromosome abnormalities. In conditions, such as leukaemia and myeloma. Which may also lead to very low blood counts, the bone marrow contains very large numbers of Abnormal cells. The cells in these conditions nearly always have very typical chromosome abnormalities.

In the diseases of the bone marrow, which most resemble plastic Anaemia such as myelodysplasia, or myelofibrosis the number of Blood producing cells are considerably reduced. The cells, which are Present in the bone marrow in these diseases, are very abnormal under The microscope.

This may be done on the cells from the blood, the bone marrow or both In Conditions which may resemble plastic anaemia there are changes to the Chromosomes in the marrow cells. In plastic anaemia these types of Changes are not seen, except in Fanconi anaemia when the chromosome show multiple breaks.

The initial diagnosis will probably be done at a local hospital but the Patient may well be referred to a specialist centre for treatment.
Treatment

Plastic anaemia can be classified as mild or severe based on the results of the laboratory tests. The condition is classed as severe if two out of three of the following are present:

- absolute neutrophil count less than 500* 10^9/1
- platelet count less than 20*10^9/1
- reticulocytes (immature red cells) less than 1%

and

- the patient has a bone marrow with markedly reduced numbers of blood producing cells.

Very severe disease is considered to be present in those who have Neutrophils less than 200*10^9/1

Severe plastic anaemia is a life threatening condition. Studies have shown that mortality one year after diagnosis is more than 80% for patients with severe disease which is not treated aggressively. Non-severe disease has a better prognosis.

The outlook in plastic anaemia has been greatly improved because of the introduction of better support measures, the appropriate use of bone marrow transplantation, and the introduction of immunosuppressive therapy.

Supportive therapy

Recovery from a plastic anaemia may take many months or even years and during this time the patient needs to be supported with transfusions of red blood cells and platelets. Patients with severe disease need to be shown precautions to take against acquiring infections and in all patients infections have to be treated promptly with antibiotics. Red Blood cell transfusion are usually required about one a month, the Frequency of platelet transfusions depends upon the presence or absence of bleeding symptoms and signs. Patients are usually transfused with Blood products from which the white blood cells have been removed so that the patient does not become sensitized to transfusions. In General, it is advisable to keep to a minimum transfusions for patients who are going to have bone marrow transplantation.

Immunosuppressive Therapy

Drug which suppress the immune system are used in patients with severe Plastic anaemia who are not able to have a bone marrow transplant. This is effective in those cases where the damage to the marrow stem cells has been caused by the immune system. Special antibodies called ATG (anti-thymocyte globulin) and ALG (anti-lymphocyte globulin) are used in treatment of a plastic anaemia. These antibodies reduce the activity of the lymphocytes which are attacking bone marrow stem cells.
A drug called cyclosporine may be used instead of, or alongside, ATG or ALG. This drug affects T-lymphocytes quite specifically. Common side-effects of cyclosporine include high blood pressure, swelling of the gums and tremors. Rarer but more serious side-effects are seizures, renal failure and infection. The serious side-effects are avoided by careful monitoring or the chemistry of the blood and by the use of appropriate antibiotics. Cyclosporin can be used for many years without serious complications.

Immunosuppressive treatments, by their very nature, increase the risk of infection in people already susceptible to it. For this reason, ATG and ALG are always given to patients in an isolation.

Alternative names:
Anemia- sickle cell

Definition:
An inherited, chronic blood disease in which the red blood cells become crescent shaped and function abnormally.
3.2.1 Thalassaemia Major?

Thalassaemia major is sometimes known as Cooleys Anaemia, Homozygous, Bete Thalassaemia or Mediterranean Anaemia. Is a serious inherited Childhood anaemia. Childern with thalassaemia Major cannot make enough haemoglobin. Because of This, bone marrow cannot produce enough red Blood cells. The red blood cells that are produced are Nearly empty. (Thalassaemia newsletter Sep1988 page1)

3.2.2 Thalassemia Minor?

People with Thalassaemia Minor, sometimes known as Trait, carry Thalassaemia but they are not ill. They are Completely healthy and normal but some of them have Slight anaemia. Most people with Thalassaemia Minor So not even know that they have it. It is only Discovered if the person has a special blood test or if they Have a child with Thalassaemia Major. It is important to know if you have thalassaemia Minor later in life. The reason for this is that it may cause some problems if the person and their partner wants to start a family. Thalassaemia minors red blood cell are also different From normal blood cells (Thalassaemia Newsletter July 1988 page 1)

3.3 Carriers of Thalassaemia

3.3.1. Number of people who are carriers of Thalassaemia around the Word, Australia and Victoria

There are 100,000 children born in the world with Thalassaemia major. In Australia there are about 300 people. There may also be 60,000 people to 100,000 people in Victoria who carry Thalassaemia Minor but Don’t even know it. (Hall 1994).

3.3.2. Who is likely to carry Thalassaemia?

People who are likely to carry the gene of thalassaemia Are people with Mediterranean descent, for example Cyprus, Egypt, Greece, India, Italy, Lebanon, Malta, Middle East, Turkey and some parts of South East Asia.
3.3.3. Can Thalasaemia major patients also carry other illnesses?

Thalassaemia major patients can also carry other illnesses Such as Sickle Cells, Diabetes, liver dis.-infunction, and OOther illness that non Thalassaemia people can get for Example Cancer.

3.4. What known cause for thalassamia?

There is not a known cause for thalassaemia except that is Inherited through the genes.

3.5. What are the symptoms? Are they detected early in Childhood?

Children with Thalassaemia major are normal at birth But become anaemic between the ages of three months And eighteen months. They become pale, do not sleep well, do not want to eat, and may vomit their feeds. If children with thalassaemia major are not treated, They have miserable lives. They usually die between One and eight years old.

3.6. What is the “quality of life” for a Thalassaemic?

A chronic illness always causes some limitation of quality of life, especially when it requires frequent and complex Treatment, as Thalassaemia does. The treatment should Not interfere with a thalassamic’s life. In particular Doctors and hospitals should make the effort to arrange Out patient visits and visits for transfusions so they interfere As little as possible with normal life. Treatment should not Interrupt schooling or work. (Thalassaemia newsletter Dec1991 page2)
How long can a person with Thalassamia major Live?

These days most Thalassaemics grow up to become adults, and earn their own living. Most also find a partner and get married. Now a number of Thalassaemia major Patients have their own children.

It is very hard to know the answer for Thalassaemics who are well at present. The disorder and its influence are changing almost from day to day, because of advances in Treatment. Thalassaemic patients are now living longer. Today it is reasonable to think that people with Thalassaemic major, who have been well treated from the Beginning, may live as long as people without Thalassemia. Only time will tell. Even so, Thalassaemics live with more risk than non Thalassaemic, because of the Amount of medication and treatment they receive. But all Medical treatments include some risk. (Thalassaemia news letter Dec.1991 page 2)

3.6.2. Can people with Thalassaemia major and minor Have healthy children?

People with Thalassaemia major can have babies only if their partner does not carry any sort of Thalassamia. But all Thalassamia major patients children will carry Thalassaemia minor.

If a Thalassamia major partner does not carry any Thalassamia gene none of the children would have Thalassamia major. (Thalassmia newsletter June 1993 page 2).