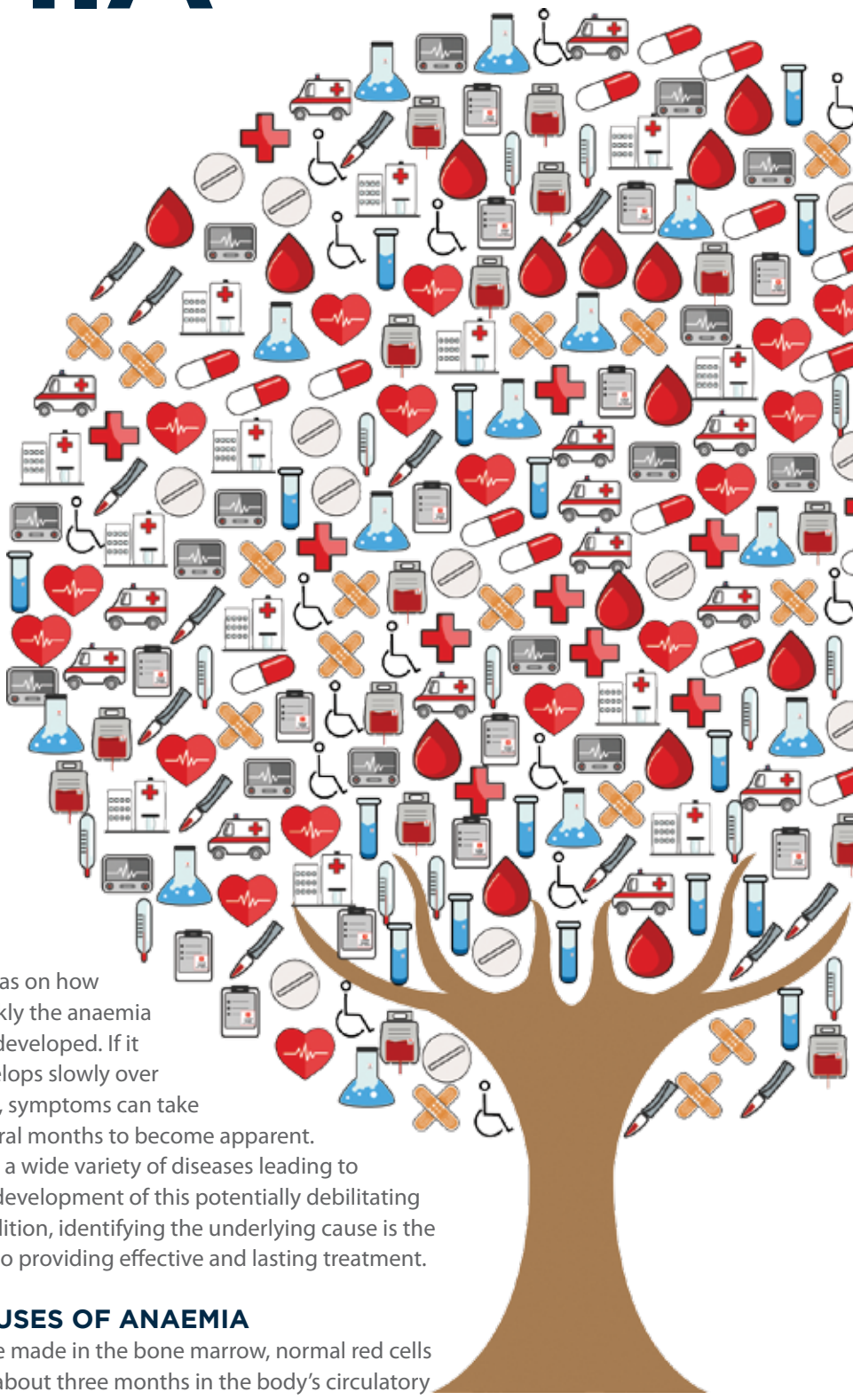
Netcare Waterfall City Hospital

ANAEMIA

By Dr Philippa Ashmore, Physician and Clinical Haematologist at Netcare Waterfall City Hospital



The importance of blood is underlined by the South African National Blood Service's on-going efforts to encourage the public to donate blood: "Your Blood Saves Lives". But for many people, donation is not possible because they themselves are low on this life-saving commodity – a condition known as anaemia.

Anaemia is a reduction in the number, or function, of red cells in the blood. It is the most common condition in the world, affecting 1,6 billion people worldwide, according to a World Health Organization estimate.

Anaemia is also extremely common in South Africa, both in the outpatient and inpatient settings. Symptoms are often non-specific and may include tiredness, increasing difficulty in carrying out daily tasks, shortness of breath (especially on exertion), dizziness and palpitations.

If untreated, anaemia may progress to place a life-threatening strain on the heart and other organ systems. The severity of the symptoms depends on the degree of anaemia present, as well as on how quickly the anaemia has developed. If it develops slowly over time, symptoms can take several months to become apparent. With a wide variety of diseases leading to the development of this potentially debilitating condition, identifying the underlying cause is the key to providing effective and lasting treatment.

CAUSES OF ANAEMIA

Once made in the bone marrow, normal red cells last about three months in the body's circulatory

system. Red cell production is a process that requires:

- Normal blue prints (genetics);
- Normal absorption and trafficking of raw materials (vitamin B12, folate and iron, among others) from the gastrointestinal tract to the bone marrow, which can change depending on the demands of normal life and diseases that may bring about change;
- Normal assembly and production in the bone marrow, tailored to demand;
- Control of red cell losses - red cells are naturally broken down in the liver and spleen, producing bile pigment, but can also be lost earlier through bleeding or early destruction/haemolysis.

As the above list shows, there can be many and vastly different reasons for red cell production and maintenance to go wrong, which can lead to anaemia. Sometimes there can be several problems all contributing at once, so all possible factors must be considered systematically and logically, even if a clear problem in one area is identified.

The most common cause of anaemia is iron deficiency, which in itself may have a multitude of causes, but is most often related to long-term and ongoing blood loss. This is followed by anaemia as a result of chronic disorders, where long-term inflammation causes the release of chemicals in the body which block iron absorption, trap iron in its body stores, and reduce red cell production in the bone marrow itself. Other less common causes include failure of bone marrow production (e.g. aplastic anaemia or leukaemia), ineffective bone marrow production (e.g. myelodysplastic syndromes), and genetic disorders such as thalassaemia, sickle cell anaemia, spherocytosis and G-6-PD deficiency.

APPROACH TO DIAGNOSIS AND MANAGEMENT

The road to diagnosis begins with the doctor taking a careful history and examining the patient thoroughly. This helps to direct investigations so that they are more specific to the individual – one size definitely does not fit all in the diagnosis of anaemia.

Having said that, all patients require a full blood count (FBC) to confirm the presence of anaemia, which is then followed by more directed tests based on this result and the clinical assessment. Some patients may be sent for more specific blood tests, which might include the following:

- Nutritional tests (iron, vitamin B12 and folate profiles);
- Indicators of increased blood breakdown and/or loss (lactate dehydrogenase, haptoglobin);
- Indicators of blood production (reticulocyte production index), which can be increased or decreased;
- Tests for genetic problems (involving the red cell membrane, red cell enzymes, or red cell haemoglobin types).

In certain cases, patients may also require more invasive testing, such a scope of the stomach and colon, or even a bone marrow investigation if a problem with red cell production is suspected.

Treatment choices for discussion between the doctor and patient are based firstly on the urgency to correct the anaemia. In life-threatening anaemia cases, for example, a blood transfusion may be needed to stabilise a patient before the underlying cause is addressed.

Alternative treatments, such as growth factor injections to boost blood production, may be used for patients who are unable to receive transfusions for medical or religious reasons, although these do not work as quickly as transfusions. Synthetic blood products are not commercially available as yet, but there is a lot of active research in this field.

Once a patient is stable, treating the underlying cause or causes of the condition will form the basis of the longer-term management plan.

CONCLUSION

Anaemia is a very common and sometimes complicated disorder. However, a holistic and tailored approach to the diagnosis and treatment can provide solutions to the vast majority of patients with anaemia and/or diseases that have led to their anaemia, which is extremely satisfying for us as haematologists.