

## Industry Focus: Haematology Provided by the Sunshine Coast



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I'm often met with puzzled looks when I explain that I am a clinical haematologist to friends, family and people I meet in my everyday life outside of work. Most common questions include "do you look at blood?", "do you deal with leukaemias?", "is it all just anaemia then?", "do you know Lance Armstrong?", and most commonly of all "what do you actually DO?".

The answers to these questions are, in order: not anymore but I am trained to, yes, no, I'm not that sort of haematologist and for the last question I'll try and illustrate it by describing a typical working day for you:

My day begins when my alarm interrupts sleep at 5.20am following which I'll either go for a bike ride or procrastinate if it's not looking too great outside. Either way, it's not relevant for this article. I begin the working day by performing bone marrow examinations at a local pathology collection centre. This is a procedure during which patients' bone marrow is sampled and further analysed for disease. The body produces three main types of blood cell: the red cell, white cell and platelets. Their respective jobs are to carry oxygen and carbon dioxide, perform immune tasks and form plugs to aid blood clotting. Bone marrow examinations (or bone marrow aspiration and trephine examinations to give the correct name) are most commonly performed for patients with low blood counts (cytopenias), raised blood counts and to see whether they contain a specific disease, for example lymphoma.

I greet the patient and ensure I have their relevant medical history as to why they are having the procedure. I'm assisted by an anaesthetist who administers some light sedation and lighter humour whilst I take the samples. They are usually taken from the posterior superior iliac crest which is the bony part at the back of your hip bone, above and

to the right of your sacrum. I take 2 types of sample using a needle that is built for purpose. The first is an aspiration taken through a 10ml syringe, which looks very similar to blood. It is then spread rapidly onto microscope slides for review later. The second is a small, matchstick-sized piece of bone. The whole procedure takes in the order of 10 to 15 minutes and mostly my patient's only memories of the events is my anaesthetist talking about Elvis Presley trivia and a small bruise that settles in a day or two.

The samples are then sent to the central laboratory where they are stained and prepared for analysis under the microscope. Pleasingly, this is still a vital part of the diagnostic process in haematology and is undertaken by experienced haematologists who are specially trained in diagnostic laboratory work. We are incredibly fortunate to have a whole range of supplementary tests at our disposal and tests such as cell surface markers (to identify specific cells), cytogenetics (to analyse the chromosomes in the abnormal cells) and molecular tests (to look at specific genetic defects in cells) are now performed to a greater or lesser extent depending on the specific disorder that is being looked for.

Haematology training in Australia is split into 2 parts: clinical and laboratory haematology. Whilst trained and qualified in both, I have settled on practising clinical haematology although many of my colleagues choose to stay active in both. My clinical haematology duties begin usually after a quick coffee and substantial lunch (drilling needles into hips generates a surprising appetite).

My first patient is a 61 year old retired lady who first found out she had myeloma when she fractured 3 vertebrae by just picking up her 3 month-old grandson. She had been unable to walk without the aid of a 4-wheel walker and a great deal of pain. Myeloma is a form of "blood cancer" where

*Haematology Article continued.....*

plasma cells secrete an abnormal protein that can cause devastating damage to kidneys and bones amongst other things. She is undergoing chemotherapy, the myeloma is responding and she is now able to walk unassisted and without pain. Next month, she will undergo an autologous stem cell transplant in which her own stem cells which have been harvested from her bone marrow will be returned to her following a large dose of chemotherapy. This intensive therapy is aimed at increasing the length of time she will be in "remission" and leading as normal a life as possible.

My second patient is a remarkable 99 year old lady who has had recurrent nose bleeds. These are often so severe that she has required blood transfusion. She has a bone marrow disorder called myelodysplasia whereby her marrow produces poor-quality cells giving rise to a low platelet count and poorly functioning ones at that. This has been diagnosed by seeing characteristic cells on a blood film examined under light microscopy. We chat about what she enjoys doing during the day (playing cards and having a whisky each night with her daughter) and come up with a management plan that involves giving her tablet therapy to improve the quality of the blood clots and checking her blood counts periodically to preempt any transfusions that may be required.

The third patient has already seen several doctors including his own GP, a gastroenterologist and a nephrologist before arriving, somewhat weary of doctors, to my rooms with an unexplained anaemia. An 82 year old retired civil pilot with Maltese ancestry, his anaemia is due to several different conditions including thalassaemia (an inherited abnormality of haemoglobin), kidney disease and iron deficiency.

The fourth patient, a 72 year old lady, is again anaemic but the reason is very different: she has a condition called autoimmune haemolytic anaemia in which her own body is mistaking her red blood cells as foreign and destroying them faster than she is able to produce them. She'd known something was wrong when she could no longer walk up a flight of stairs without feeling dizzy. Her haemoglobin had dropped to 55. A course of steroids has boosted her blood counts to acceptable levels but now that they have been withdrawn, her old symptoms have returned and we're having a diffi-

cult discussion about whether a splenectomy is now required.

The fifth patient is a 52 year old property manager who has just been diagnosed with chronic myeloid leukaemia after consulting his GP for gout. A blood test has revealed a white cell count of 50 (normal being up to 10) and this has prompted highly sophisticated genetic tests which have revealed the specific molecular defect associated with this disease. Up until 10-15 years ago, this was uniformly fatal and the only hope of cure was to undergo bone marrow transplantation. With our greater understanding of the molecular defects that cause this disease, he will now be treated as an outpatient and have a realistic chance of cure by taking a simple tablet each day with very few side effects.

In the late afternoon, I catch up with some of the inpatients at the hospital: a young man who has an unexplained deep vein thrombosis who may have an inherited thrombotic disorder; a lady who is 8 months pregnant who has a bleeding disorder but will require a C-section and an elderly man whose massive spleen has been detected on a pre-operative examination before a hernia repair.

I finish the day by telephoning the central laboratory to liaise with my colleagues about some test results I'm not familiar with – diagnostic haematology is an ever-changing field and knowing how a test is performed is vital to being able to interpret and treat the conditions it tests for. I then return home in the evening vowing to tackle the steadily building pile of recent journal articles that I've marked as important over the recent week. Our most influential journal is not surprisingly called "Blood".

The field of haematology has progressed enormously in the last 25 years and we now know more about these fascinating and sometimes elusive diseases than we ever did. This has had a slow but definite improvement on patient outcomes but we have a huge task ahead still. Clinical haematology continues to grow as a specialty and with the advent of newer technologies both for diagnosing and treating blood disorders, is one of the most fascinating specialties that I count myself lucky to be involved in.

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