BLOOD CANCERS AND CONDITIONS

KANESA O LE TOTO MA ISI GASEGASE E FESOOTAI I AI

A guide for patients and families

Se taiala mo gasegase ma aiga

leukaemia & blood cancer NEW ZEALAND

Vision to Cure. Mission to Care.

INTRODUCTION

This booklet has been written to help you and your family understand more about blood cancers and conditions when English is not your first language.

This booklet is laid out with English content on the left-hand side of the page, and Samoan content on the right-hand side. The content has been translated from English by a certified translation service.

You may be feeling anxious or a little overwhelmed if you or someone you care for has been diagnosed with a blood cancer or blood condition. This is normal. Perhaps you have already started treatment or you are discussing different treatment options with your doctor and your family. Whatever point you are at, we hope that the information contained in this booklet is useful in answering some of your questions. It may raise other questions, which you should discuss with your health care team.

This booklet is a generic resource for people who have been diagnosed with a range of conditions. This means that not everything mentioned in this booklet will necessarily be relevant to you.

It is not the intention of this booklet to recommend any particular form of treatment to you. You need to discuss your circumstances at all times with your doctor and treatment team.

Interpreter service

New Zealand's Code of Health and Disability states that everyone has the right to have an interpreter present when they go to a medical appointment. If a patient and their health care professional do not speak the same language, a family member or friend may assist. The hospital can organise a trained interpreter if needed.

DRY JULY FOUNDATION

This publication was made possible through a grant from Dry July NZ.

FAATOMUAGA

Ua tusia lenei tusi ia fesoasoani ia te oe ma lou aiga, ia tele so tou malamalamaga e faatatau i le kanesa o le toto ma isi gasegase e fesootai i ai, pe afai e lē tele sou malamalama i le gagana Peretania.

O loo iai tusitusiga i le gagana Peretania i le itulau agavale o lenei tusi, ae o le itu taumatau o loo iai tusitusiga i le Gagana Samoa. Ua faaliliuina faamatalaga o i lenei tusi mai le gagana Peretania, e se auaunaga aloaia tau faaliliuga.

E te ono lagona le atuatuvale pe tau popole foi pe afai ua faamaonia mai e foma'i ua aafia oe poo se tasi e pele ia te oe, i le kanesa o le toto poo gasegase e fesootai ma le toto. O se mea masani lenei. Atonu o lena ua amata ou togafitiga pe o tou talanoaina pea ma lau foma'i ma lou aiga, nisi togafitiga eseese e faia ia te oe. Poo le ā lava le tulaga ua e iai nei, ae matou te faamoemoe, e aogā faamatalaga o loo i lenei tamai tusi mo le taliina o nisi o au fesili. Atonu e lāgā ai isi fesili, e tatau ona tou talanoaina faatasi ma le vaega o loo tausia lou soifua mālōlōina.

O lenei tamai tusi o se tuufaatasiga uma o faamatalaga a nisi, mo tagata ua faamaonia e foma'i ua gasegase i lenei ma'i, faatasi ai ma isi āuga eseese ua afaina ai. Lona uiga, e lē faapea o mea uma lava o loo ta'ua i lenei tamai tusi o le a tatau ona aogā ia te oe.

E lē o se faanaunauga o lenei tamai tusi ia faatonu oe i se togafitiga patino e tatau ona e faaaogā. E tatau ona tou talanoaina faatasi i taimi uma ma lau foma'i ma le vaega o loo faia ou tog afitiga, tulaga o loo e iai.

Auaunaga a le faamatalaupu

Ua ta'ua e le New Zealand's Code of Health and Disability, e iai le aiātatau a tagata taitoatasi e faaaogā ai se tasi e faamatalaupu mo latou pe a o e vaai le foma'i. Afai e lē tutusa gagana e tautatala ai le gasegase ma lana foma'i, e mafai e se tagata o le aiga poo se uo ona fesoasoani e faaliliu. E mafai e le falema'i ona faatulaga se faamatalaupu aloaia pe a moomia.

DRY JULY FOUNDATION

Na mafai ona tapenaina lenei lomiga e ala i se foai tupe mai le Dry July NZ.

HOW TO USE THIS BOOKLET

Important information

More information available online

There are many resources available at **leukaemia.org.nz** such as fact sheets, booklets and more. Separate disease-specific booklets are available in English about each of the cancers and conditions mentioned in this booklet. Ask your LBC Support Services Coordinator for a copy of the relevant booklet so that your family or friends who read English can learn more.

LE FAAAOGĀINA O LENEI TAMAI TUSI

Faamatalaga tāua

E tele isi faamatalaga o loo maua i luga o le initaneti

E tele punā'oa o loo maua i le **leukaemia.org.nz** e pei o pepa o faamatalaga, tamai tusi ma le tele o isi mea. E iai foi isi tamai tusi e patino lava i faama'i o loo maua i le gagana Peretania, e faatatau i kanesa taitasi ma isi gasegase e fesootai i ai o loo ta'ua i lenei tamai tusi. Talosaga atu i le tou LBC Support Services Coordinator mo se kopi o le tamai tusi ua maua ina ia mafai e lou aiga poo au uo e faitau i le gagana Peretania ona silafia atili nisi faamatalaga.

CONTENTS

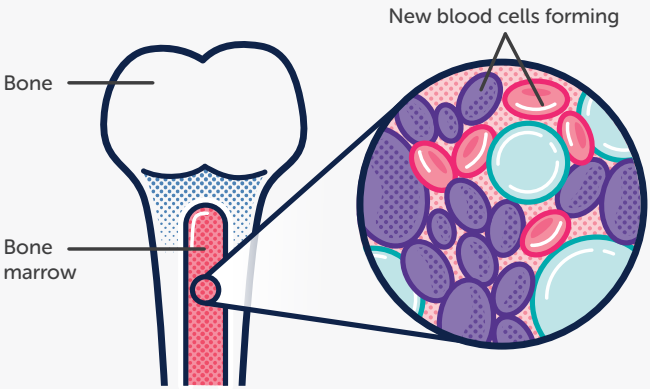
MATAUPU

BONE MARROW AND BLOOD STEM CELLS

Bone marrow is the spongy material inside your bones (see Figure 01).

All of your blood cells are made in your bone marrow. The process by which blood cells are made is called haemopoiesis. There are three main types of blood cells: red blood cells, white blood cells and platelets.

Figure 01
Bone marrow

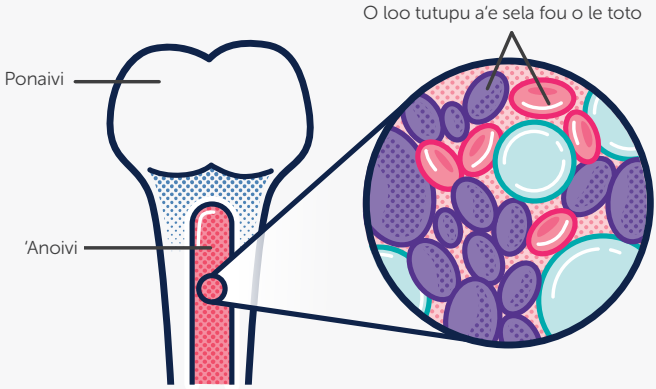


‘ANOIVI MA SELA AUTŪ O LE TOTO

O le ‘anoivi (bone marrow), o le mealololo galemulemu lea e i totonu o ou ponaivi (tagai i le Vaega 01).

O sela uma lava o lou toto e faia i totonu o ou ‘anoivi. O lea faagasologa e fai mai ai sela o le toto, e ta‘ua o le haemopoiesis. E tolu ituaiga autū o sela o le toto: sela mūmū (red blood cells), sela papa’e (white blood cells) ma sela faato‘a toto (platelets).

Vaega
01
‘Anoivi



You might like to think of the bone marrow as the blood cell factory. The main workers of the factory are the blood stem cells. Blood stem cells create the new blood cells in your body. The two main functions of blood stem cells are to:

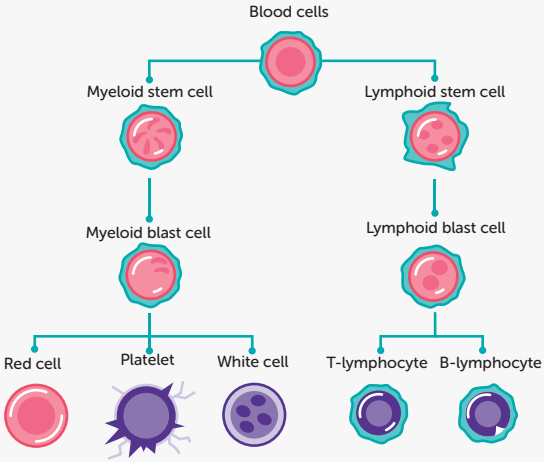
- Make exact copies of themselves.
- Divide and make two different cell groups: myeloid stem cells and lymphoid stem cells.

Myeloid and lymphoid stem cells create the blood cells for your body, including white blood cells, red blood cells and platelets.

In Figure 02 you can see that the blood stem cell has divided to create a myeloid stem cell and a lymphoid stem cell. You can also see the blood cells that each of these cell groups create.

Figure 02

The cells created from blood stem cells



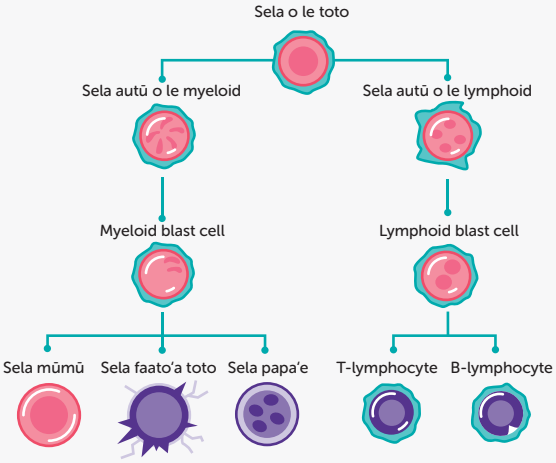
E te ono faatusaina le 'anoivi e pei o se falegaosimea e gaosia sela o le toto. O le aufaigaluega autū i lea falegaosimea, o sela autū o le toto. O sela autū o le toto latou te fofoaina sela fou o le toto i totonu o lou tino. E lua galuega tāua a sela autū o le toto ina ia:

- Fai nisi sela autū o le toto e tutusapau.
- Vaevae ma fai ni vaega eseese se lua o sela: sela autū o le myeloid ma sela autū o le lymphoid.

O sela autū o le myeloid ma le lymphoid e fofoaina sela o le toto mo lou tino, e aofia ai sela papa'e, sela mūmū ma sela faato'a toto.

I le Vaega 02, e te silasila ai i le vaevaeina o le sela autū o le toto ina ia fofoaina ai se sela autu o le myeloid ma se sela autū o le lymphoid. E te silasila ai foi i sela o le toto e fofoaina mai e nei vaega taitasi o sela.

Vaega
02
O sela na fofoa mai sela autū o le toto



YOUR BLOOD

Blood is made up of plasma, red blood cells, white blood cells and platelets.

Plasma

Plasma is the light-yellow coloured fluid in which blood cells travel around your body.

Red blood cells

Red blood cells contain haemoglobin (Hb), which transports oxygen from the lungs to all parts of the body. Haemoglobin also carries carbon dioxide to the lungs where it is breathed out. A low level of haemoglobin in your body is called anaemia. Symptoms of anaemia are explained further on page 18.

White blood cells

White blood cells fight infection. For example, if bacteria entered your bloodstream through a cut, the white blood cells would attack and kill the bacteria cells before they divide and spread. If your white blood cell count is low, you are more at risk of getting an infection.

Following is a list with the names of different types of white blood cells and what they do.

- Neutrophils (new-tra-fils) kill bacteria and fungi.
- Eosinophils (ee-o-sin-o-fils) kill parasites.
- Basophils (bay-so-fils) work with neutrophils to fight infection.
- T-lymphocytes (T-lim-fo-sites) (T-cells) kill viruses, parasites and cancer cells.
- B-lymphocytes (B-cells) make antibodies, which target harmful microorganisms (small germs).
- Plasma cells develop from mature B-lymphocytes. They play an important role in protecting the body against infection by producing immunoglobulins, which are also known as antibodies.
- Monocytes (mono-sites) work with neutrophils and lymphocytes to fight infection. They also help to produce antibodies that act as scavengers (cleaners) to remove dead tissue.
- Macrophages (mac-row-fages) monocytes are known as macrophages when they move to body tissue to help fight infection there.

Neutropenia is the term given to describe a lower than normal neutrophil count. If you have a neutrophil count of less than 1.0 ($1.0x10^9$/L), you are considered to be neutropenic and at risk of developing frequent and sometimes severe infections. Symptoms of infection are explained further on page 18.

Platelets

Platelets help your blood clot and prevent bleeding. If a blood vessel is damaged (for example by a cut), the platelets gather at the site of injury, stick together and form a plug to help stop the bleeding.

Thrombocytopenia (throm-bo-sy-toe-pee-nee-a) is the term used to describe a reduction in the normal platelet count. If your platelet count is low, you are at a higher risk of bleeding and tend to bruise easily.

Children

In children, normal blood cell counts vary with age. If your child has been diagnosed with a blood cancer or condition, you can ask your doctor or nurse for a copy of their blood results, which should include the normal ranges for each blood cell test for a male or female child of the same age.

LOU TOTO

O le toto e faia a'e i le plasma, sela mūmū, sela papa'e ma sela faato'a toto.

Plasma

O le plasma o se mea faasuavaia lanu samasama vaivai lea e fetafea'i solo ai sela o le toto i totonu o lou tino.

Sela mūmū o le toto

O sela mūmū o le toto o loo iai i totonu 'alumūmū (haemoglobin - Hb), e momolia le okesene mai māmā ma faaoo atu i vaega uma o le tino. O le 'alumūmū foi na te momolia atu le ea kaponi (carbon dioxide) i māmā ina ia mafai ona mānava ese mai i fafo. Pe a itiiti le fua o le haemoglobin i lou tino, e ta'ua lena o le totovaivai (anaemia). O le a faamatala atili atu mulimuli ane āuga o le totovaivai i le itulau e 19.

Sela papa'e o le toto

O sela papa'e o le toto e tetee atu i siama. Mo se faataitaiga, afai e lavea (cut) se vaega o lou tino ma ulu atu ai se paketeri (bacteria) i totonu o lou ālātoto, o le a osofaia ma tapē e sela papa'e ia sela paketeri a'o lei oo ina ta'ape ma salalau solo. Afai ua itiiti sela papa'e o lou toto, ua iai oe i se lamatiaga o le ono aafia i se siama.

O le lisi lenei o igoa o ituaiga eseese o sela papa'e o le toto ma galuega latou te fai.

- Neutrophils (new-tra-fils) e tapēina paketeri ma lega (fungi).
- Eosinophils (ee-o-sin-o-fils) e tapēina anufe mātau (parasite.
- Basophils (bay-so-fils) e galulue faatasi ma neutrophils e teteeina siama.
- T-lymphocytes (T-lim-fo-sites) (T-cells) e tapēina vairusi, anufe mātau ma sela kanesa.
- B-lymphocytes (B-cells) e faia sela puipui poo vaifaalanu (antibodies), lea e taulai e tapē sela ninii (siama ninii) matautia.
- O sela plasma e tutupu mai B-lymphocytes ua malolosi (mature). E tāua le latou matafaioi o loo fai i le puipuia o le tino mai siama, e ala i lo latou gaosia o immunoglobulins, lea foi e ta'ua o sela puipui.
- Monocytes (mono-sites) e galulue faatasi ma neutrophils ma lymphocytes e teteeina siama. E fesoasoani foi e gaosia sela puipui ia e galulue e pei se 'au samusamu (scavengers) e kiligi esea ma aveese tisu poo alavalava ua mamate (dead tissue).
- Macrophages (mac-row-fages) monocytes e ta'u foi o macrophages pe a agai atu i tisu o le tino e fesoasoani e tetee atu i siama iinā.

O le neutropenia o le ta'u e faamatala ai le itiiti ifo o le aofai o neutrophil nai lo le aofaiga masani. Afai ua itiiti ifo i le 1.0 (1.0 x 109/L) le aofaiga o ou neutrophil, lona uiga ua e neutropenic ma ua oo ia te oe le lamatiaga o le aafia gofie i siama o faama'i ma o nisi foi taimi e matuā tigaina lava. O le a faamatala atili atu mulimuli ane āuga o siama e oo i ai i le itulau e 19.

Sela faato'a toto

E fesoasoani nei sela e faato'a lou toto ina ia puipui mai le piliki pe alu le palapala. Afai ua faatama'ia se ālātoto (o se faataitaiga pe a lavea se mea o le tino), e potopoto ane sela faato'a toto i autafa o le mea lea e iai le manu'a, ona pipii faatasi lea ma faufau a'e se palaka (plug) e taofi ai le piliki.

O le thrombocytopenia (throm-bo-sy-toe-pee-nee-a) o le ta'u e faamatala ai le faaitiitia o le aofaiga masani o sela faato'a toto. Afai ua itiiti le aofai o ou sela faato'a toto, ua telē se lamatiaga o le oo ina e piliki, ma faigofie ai ona uno'oa lou tino.

Tamaiti

E eseese le aofaiga masani o sela o le toto i tamaiti, e fua lava i lo latou matutua. Afai ua faamaonia mai e foma'i ua aafia lau tama i le kanesa o le toto, poo isi gasegase e fesootai i ai, e mafai ona e fesili i le tou foma'i poo le tausi soifua mo se kopi o iuga o ona toto na sue, lea e tatau ona aofia ai aofaiga masani mo suesuega taitasi na faia i sela o le toto mo se tamaitiiti poo se teineitiiti e tutusa tausaga.

THE LYMPHATIC SYSTEM

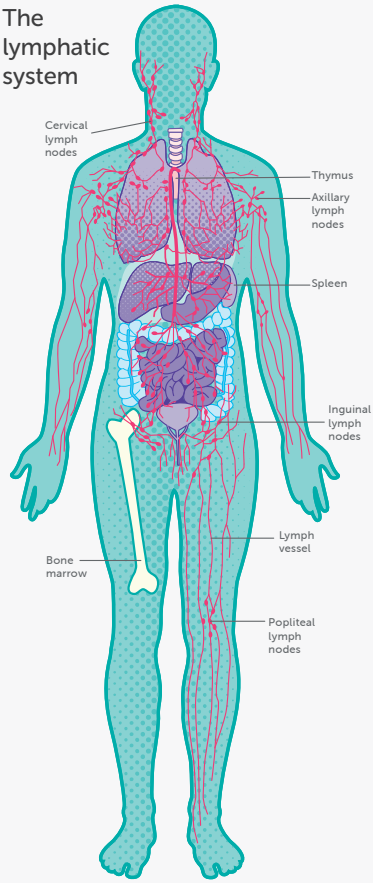
The lymphatic system is made up of a vast network of vessels, similar to blood vessels, that branch out into all the tissues of the body (see Figure 03).

These vessels contain lymph, a colourless watery fluid that carries lymphocytes, which are specialised white blood cells that fight infection. There are two types of lymphocytes, B-lymphocytes and T-lymphocytes (also called B cells and T cells). These cells protect us by making antibodies and destroying harmful microorganisms such as bacteria and viruses. The lymphatic system forms part of the immune system, which protects our bodies against disease and infection.

Clusters of small bean-shaped organs called lymph nodes (also known as lymph glands) are found at various points throughout the lymphatic system. The lymph nodes, which are filled with lymphocytes, act as important filtering stations, cleaning the lymph fluid as it passes through them. Here, bacteria, viruses and other harmful substances are removed and destroyed. When you have an infection, for example a sore throat, you may notice that the lymph nodes under your jawbone become swollen and tender. This is because the lymphocytes that live there become activated and multiply in response to the virus or bacteria causing the infection.

The spleen (an organ on the left side of the abdomen), thymus (a gland found behind the breastbone), tonsils and adenoids (glands in the throat) and bone marrow (spongy material inside bones) all contain lymphatic tissue and are therefore considered to be part of the lymphatic system. Lymphatic tissue is also found in the stomach, gut and skin.

Figure 03
The lymphatic system



LE LYMPHATIC SYSTEM

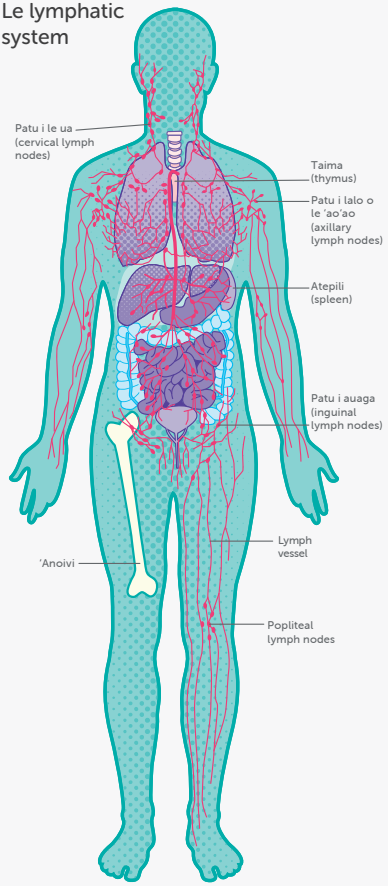
O le lymphatic system e faia a'e i se fesootaiga tele o veni (vessels), e tai tutusa i veni poo ālatoto lea e fesootai solo atu i tisu uma o le tino (tagai i le Vaega 03).

O nei veni o loo iai se suavai e leai sona lanu (lymph) o loo feavea'ia lymphocytes, poo sela papa'e o le toto e faapitoa lava a latou galuega i le teteeina o siama. E lua ituaiga o lymphocytes, o B-lymphocytes ma T-lymphocytes (e ta'u foi o B-cells ma T-cells). O sela nei e puipuia i tatou e ala i lo latou faatupuina o antibodies, ma faatama'ia siama leaga ninii e pei o paketeri ma vairusi. E fafau a'e e le lymphatic system se vaega o le immune system, lea e puipuia o tatou tino mai faama'i ma siama.

O faaputuga o tamai totoga e pei ni fatupī ua ta'ua o lymph nodes (e ta'ua foi o fatupuipui poo lymph glands) e maua solo i vaega eseese o le lymphatic system. O patu, ia ua faatumulia i lymphocytes, e gaoioi e pei o ni nofoaga tāua e vaimamā ai mea, o loo latou faamamāina le sua (lymph fluid) lea e tafe faasolo atu. O inei o loo aveese ma faatama'ia ai paketeri, vairusi ma isi suavai leaga. A oo ina e aafia i se siama, mo se faataitaiga o le tigā o lou faa'ī, e te ono mātauina ua amata ona fulafula ma galemulemu patu na e i lalo ifo o lou avaealalo. E mafua ona o lymphocytes na e nonofo ai, ua amata ona lagalagā ma faapunafanau, talu ai le vairusi poo le paketeri lea ua faapogaia le siama (infection).

O le atepili (spleen - se totoga e pipii i le itu agavale o le laualo), o le taima (thymus - se fatupuipui e maua i tua o le ivifatafata), o fatufaa'ī ma fatupuipui faaifoaluga (tonsils ma adenoids - o fatupuipui i le faa'ī) ma le 'anoivi (bone marrow - le mea lololo galemulemu i totonu o ponaivi) o loo iai uma lava i totonu o na mea le lymphatic tissue, o le ala lea ua ta'ua ai o se vaega o le lymphatic system. E maua foi le lymphatic tissue i totonu o le puta, manava ma pa'u o le tino.

Vaega
03
Le lymphatic system



BLOOD CANCERS AND CONDITIONS

In this section we provide a brief overview of blood cancers and blood conditions. It is important to note that the information provided here is of a general nature and may not necessarily apply to the specific type or severity of disease that you or your family member have been diagnosed with.

Leukaemia

Leukaemia is a group of cancers that affect the blood and bone marrow. Leukaemia always starts in the bone marrow where developing blood cells undergo a malignant (cancerous) change. This means that they multiply in an uncontrolled way, crowding the bone marrow and interfering with normal blood cell production. Increasing numbers of abnormal cells (called blast cells or leukaemic blasts) eventually spill out of the bone marrow and travel around the body in the bloodstream. In some cases, these abnormal cells accumulate in various organs including the lymph nodes, spleen, liver and central nervous system (brain and spinal cord).

Types of leukaemia

The different types of leukaemia are classified by how quickly the disease develops, and by the type of blood cell involved.

- Acute leukaemia develops quickly and needs to be treated urgently.
- Chronic leukaemia develops more slowly and may not need to be treated for some time after diagnosis, if at all.
- Myeloid leukaemia arises from myeloid cells and are characterised by the accumulation of cancerous cells called myeloblasts.
- Lymphoid leukaemia arises from lymphoid stem cells and are categorised by the accumulation of cancerous cells called lymphoblasts.

The four main types of leukaemia are:

- Acute myeloid leukaemia (AML)
- Acute lymphoblastic leukaemia (ALL)
- Chronic myeloid leukaemia (CML)
- Chronic lymphocytic leukaemia (CLL)

Acute myeloid leukaemia (AML)

Acute myeloid leukaemia is characterised by an accumulation of abnormal immature myeloid cells. It develops and progresses very quickly, which is why it is called 'acute'. Once AML is diagnosed, treatment starts very quickly to reduce symptoms and kill the leukaemic cells.

Acute myeloid leukaemia is rare in children and more common in adults.

Acute lymphoblastic leukaemia (ALL)

ALL is characterised by abnormal immature lymphoid cells and also develops very quickly like AML. ALL is more common in children than adults but can affect people of all ages.

Chronic myeloid leukaemia (CML)

CML is characterised by the slow accumulation of abnormal myeloid cells. The onset is gradual and progression is generally over months and years. Many people may have no symptoms when they are diagnosed and only found out about their condition by coincidence from a routine blood test.

KANESA O LE TOTO MA ISI GASEGASE E FESOOTAI I AI

Ua matou saunia i lenei vaega, se aotelega puupuu o kanesa o le toto ma isi gasegase e fesootai i ai. E tāua ona mātau mai, o faamatalaga ua ta'ua iinei o loo fua lava i le tulaga lautele, ma atonu o le a lē talafeagai i se gasegase patino, pe e lē o fetaui foi i le matuiā lena ua oo i ai le gasegase o oe poo se tasi o lou aiga.

Lukimi

O le lukimi, o se vaega o kanesa e aafia ai le toto ma 'anoivi. O le lukimi e masani lava e amata atu i 'anoivi, o iinā lea ua amata ona iai suiga ua matuā faama'ia ai sela o le kanesā. Lona uiga ua amata ona lē matāofiofia le faapunafanau, ua āfaina ai 'anoivi poo mea lololo o ponaivi ma ua faalavelave i le faatupuina o sela masani o le toto. O le faatuputupulaia pea o nei sela ua faaletonu (ua ta'ua o blast cells poo leukaemic blasts) e iu ai lava ina pā ese i fafo mai le 'anoivi, ma fetafeai solo atu i totonu o ālātoto ma soo ai le tino. O nisi taimi, e iu ina faapunafanau a'e nei sela e lei masani ai i nisi o totoga e aofia ai patu, atepili, ate ma vaega o loo taulai atu i ai neura o le tino (le fai'ai ma le tuasivi).

Ituaiga o lukimi

Ua faavasegaina ituaiga eseese o lukimi, e fua i le vave o loo tupu ai le ma'i, ma le ituaiga o sela o le toto o loo aafia ai.

- O le lukimi ogaoga e vave le sosolo, ma e moomia ona fai faanatinati i ai se togafitiga.
- O le lukimi faaumiumi e telegese le sosolo ma atonu e lē manaomia ona vave togafitia i le taimi e iloa ai, pe afai foi lena e manaomia ona togafitia.
- O le lukimi myeloid e tupu mai sela myeloid ma e mātaulia i le faapunafanau o sela kanesa e ta'ua o myeloblasts.
- O le lukimi lymphoid e tupu mai sela lymphoid ma e mataulia i le faapunafanau o sela kanesa e ta'ua o lymphoblasts.

E fā ituaiga autū o lukimi poo kanesa o le toto:

- Acute myeloid leukaemia (AML)
- Acute lymphoblastic leukaemia (ALL)
- Chronic myeloid leukaemia (CML)
- Chronic lymphocytic leukaemia (CLL)

Acute myeloid leukaemia (AML)

O le lukimi ogaoga lea ua ta'ua o le acute myeloid leukaemia ua mataulia i le faapunafanau o sela myeloid ua faaletonu ma e lei malolosi. E tuputupu a'e ma vave le sosolo, o le ala lena ua ta'ua ai e ogaoga (acute). O le taimi lava e faamaonia ai ua aafia se tasi i le AML, ua tatau loa ona amata vave togafitiga ina ia faaitiitia ai āuga ma tapē ai sela o le lukimi.

E seāseā maua tamaiti i le ituaiga o lukimi lea (acute myeloid leukaemia), ae tele i tagata matutua.

Acute lymphoblastic leukaemia (ALL)

O le ALL ua mataulia i sela lymphoid ua faaletonu ma lei malolosi ma vave foi le tuputupu a'e e pei o le AML. E taatele la le ALL i tamaiti nai lo tagata matutua, ae mafai ona aafia ai tagata o soo se matua.

Chronic myeloid leukaemia (CML)

O le CML ua mātaulia i le faasolosolo mālie le faapunafanau a'e o sela myeloid ua faaletonu. E faifai mālie mai i le amataga ma faasolosolo ai lava mo ni masina ma tausaga. E toatele tagata atonu e lē iloa lava ni āuga i le taimi e faamaonia ai ua aafia, ae atonu faato'ā iloa lava ua aafia mai se taimi na agai ai e sue lona toto.

CML can occur at any age but it is more common in adults over age 40 and slightly more common in men. Over time CML may progress to a more aggressive type of disease resembling acute leukaemia.

Chronic lymphocytic leukaemia (CLL)

CLL is a slow-growing type of leukaemia that effects the lymphoid blood cell line. Many people are diagnosed without experiencing any symptoms and may not immediately start treatment. Some people with CLL may just be monitored through regular blood tests and appointments with their doctor.

The majority of people with CLL are over the age of 60 but it can be diagnosed in younger people around the age of 40 years.

Cause

The cause of leukaemia is usually unknown and there are likely to be a number of factors involved.

Like all cancers, leukaemia may result from a change in one or more of the genes that normally control the growth and development of blood cells.

Some risk factors for leukaemia are:

- High levels of radiation
- Exposure to chemicals
- Previous chemotherapy for another cancer
- Inherited genetic disorder

Pre-existing blood conditions may have a higher chance of developing leukaemia. For example, MDS and CML can develop into acute leukaemia if unmanaged.

Signs and symptoms

The main symptoms of leukaemia are caused by lack of normal blood cells.

Low red blood cells (anaemia) may cause the following symptoms:

- Lack of energy
- Feeling tired all the time
- Dizziness
- Shortness of breath
- Pale skin

Low platelets (thrombocytopenia) may cause the following symptoms:

- Bruising easily
- Frequent and severe nosebleeds
- Unusually heavy periods in women
- Bleeding, e.g. bleeding gums

Important information

If you have a low white blood cell count, you are at risk of getting potentially serious infections. The body's immune system that usually fights infection doesn't work so a small skin infection can quickly get worse and become fatal. It is important to call the hospital if you are feeling unwell or have a high temperature. Check with your haematologist or nurse about how to check your temperature properly with a thermometer, and what is considered to be a 'high temperature'. They will usually want to start intravenous (IV) antibiotics and take blood tests as soon as possible.

E mafai ona aafia i le CML i soo se matua lava o le soifua, ae e mafuli le taatele i tagata matutua ua silia ma le 40 tausaga le matutua ma e tau mātele tēisi atu i le itupa o alii. A'o faagasolo taimi, e ono faasolosolo atu le CML i se isi ituaiga o ma'i ua sili atu ona ogaoga lea e tai pei o le acute leukaemia.

Chronic lymphocytic leukaemia (CLL)

O le CLL o se ituaiga o lukimi e gese lava lona tuputupu a'e lea e afaina ai le faasologa o sela lymphoid o le toto. E toatele tagata e faamaonia ua maua ai e aunoa ma le lagonaina o ni āuga, ma atonu e lē vave amata faia ai ni togafitiga. O nisi tagata ua maua i le CLL atonu e na'o le mata'itū lava o le gasologa o le ma'i e ala i le faifai pea ona sue le toto (blood tests) ma faatulaga taimi e vaai ai le foma'i.

O le toatele o tagata ua aafia i le CLL o i latou ua silia ma le 60 tausaga le matutua, ae mafai foi ona aafia ai tagata talavou ua oo i le 40 tausaga le matutua.

Mafuaaga

E tele lava ina lē iloa tonu le mafuaaga o le lukimi, ae foliga mai e iai ni vala e fesootai atu i ai.

E pei lava le lukimi o isi uma kanesa, e ono mafua mai se suiga i se kenera (genes) e tasi pe sili atu, lea e masani ona puleaina le ola ane ma le tuputupu a'e o sela o le toto.

Nisi o vala matautia e ono mafua ai le lukimi:

- Malolosi aave o uila (radiation)
- Faaaogā ni vailaau (chemicals)
- Sa fai muamua se chemotherapy mo se isi kanesa
- O se faaletonu e tuufaasolo mai le toto o le aiga

E telē se avanoa e ono maua ai i le lukimi pe afai sa aafia muamua i nisi gasegase e fesootai ma le toto. Mo se faataitaiga, e mafai i le MDS ma le CML ona tupu a'e ai le lukimi pe afai e lē lelei ona vaaia.

Faailoilo ma āuga

O āuga autū lava o le lukimi e faapogai mai le lē lava o sela masani o le toto.

O le lē lava o sela mūmū o le toto (totovaivai) e mafai ona mafua ai āuga nei:

- Leai se malosi
- Lē lavā i taimi uma
- Niniva
- Tau lē lava le mānava
- Sesega le tino

O le lē lava o sela faato'a toto (thrombocytopenia) e mafai ona mafua ai āuga nei:

- Uno'oa gofie le tino
- E fai ma piliki malosi mai le isu
- Malosi le alu o le ma'i masina o tamaitai sa lei masani ai
- Piliki, e.g. piliki mai gao

Faamatalaga tāua

Afai e lē o lava le aofai o ou sela papa'e, ua lamatia la oe i le ono aafia i ni siama matautia. Ua lē o toe galue le immune system poo le vaega o le tino lea e masani ona tetee atu i siama, lona uiga e oo lava i na'o sina tama'i afaina o le pa'u o le tino, ae mafai ona vave oo ina matuā leaga ma e ono iu ai lava i le oti. Afai ua e ma'i po ua maualuga lou fiva, e tāua ona vili loa le falema'i. Fesili i lau haematologist (foma'i e suesueina le toto) poo se tausi soifua i le auala e faaaogā ai le fuafiva e siaki lelei ai lou fiva, ma pe faape'ī le mea e ta'u o le 'maualuga o le fiva'. E masani lava o le a latou mananao ia vave loa ona tui atu le vailaau puipui (IV) ia te oe ma sue lou toto.

- Red or purple pinhead-sized skin spots (called petechiae)

Low white blood cells, specifically low neutrophils (neutropenia), may cause the following symptoms:

- Fever
- Reoccurring infections

Treatment

Treatment varies depending on the exact type of leukaemia you have and other factors like age, general health and severity of the disease.

The main treatment for leukaemia is chemotherapy. This is given to destroy the leukaemia cells and allow the bone marrow to function normally again. Usually people are given a combination of chemotherapy treatments that work together to kill the leukaemia cells.

The different treatment options are explained in more detail on page 38.

Lymphoma

Lymphoma is cancer of the lymphatic system. Lymphoma arises when developing lymphocytes (a type of white blood cell) undergo malignant (cancerous) change and multiply in an uncontrolled way. Increasing numbers of abnormal lymphocytes (called lymphoma cells) accumulate and form collections of cancer cells (also called malignant tumours) in lymph nodes and other parts of the body.

Types of lymphoma

There are many different subtypes of lymphoma. Five of these subtypes belong to a group of diseases called Hodgkin lymphoma. All other subtypes are commonly grouped together and called non-Hodgkin lymphoma.

Non-Hodgkin lymphoma

Non-Hodgkin lymphoma actually represents many different subtypes of lymphoma. Each subtype can act differently and their treatment and monitoring is likely to be different as well. In addition, lymphoma can arise from a B-lymphocyte (most common) or a T-lymphocyte. Non-Hodgkin lymphoma can be broadly divided into two groups, indolent lymphoma or aggressive lymphoma.

Indolent (low grade) lymphoma is a type of lymphoma that grows slowly. It may cause few symptoms and may not need to be treated urgently. Follicular lymphoma is one type of indolent lymphoma. It is the second most common type of lymphoma.

Aggressive (high grade) lymphoma is a type of lymphoma that grows quickly and treatment is needed at the time of diagnosis. Because these lymphomas grow quickly, they tend to respond well to chemotherapy and radiotherapy. Diffuse large B-cell lymphoma is the most common type of lymphoma.

Hodgkin lymphoma

In terms of presentation and treatment, this lymphoma is most similar to diffuse large B-cell lymphoma. It has five different subtypes. The chemotherapy combination is different to that of other aggressive lymphomas so the correct histologic diagnosis is important in distinguishing lymphoma types.

- Ua nii solo mea mūmū pe viole i le tino (e ta'ua o petechiae)

O le lē lava o sela papa'e o le toto, aemaise pe a lē lava neutrophils (neutropenia), e mafai ona mafua ai āuga nei:

- Fiva
- Toe aliali mai aafiaga o siama

Togafitiga

E eseese lava togafitiga e fuafua i le ituaiga tonu o lukimi ua e aafia ai, ma isi vala e pei o le matua o lou soifua, le tulaga lautele o lou soifua mālōlōina ma le tugā ua iai le ma'i.

O le togafitiga autū lava o le lukimi, o le chemotherapy. E faia ina ia tapē ai sela o le lukimi ma mafai ai ona toe faagasolo lelei galuega a le 'anoivi. E masani ona faia i tagata se tuufaatasiga o togafitiga o le chemotherapy lea e aogā pe a faatino faatasi ina ia tapē ai sela lukimi.

O loo auiliili ona faamatalatala atu isi ituaiga o togafitiga e mafai ona fai i le itulau e 19.

Limifoma

O le limifoma (lymphoma) o le kanesa o le vaega o le tino o loo feavea'ia sela papa'e (lymphatic system) lea e teteeina faama'i. E alia'e le limifoma pe a amata ona iai ni suiga ua leaga po ua kanesā ia lymphocytes (se ituaiga o sela papa'e), ma ua lē mataofiofia le faapunafanau. O le aofai faatupula'ia o lymphocytes ua faaletonu (e ta'ua o sela limifoma), e faapunafanau ma maua ai ni faaputuga o sela kanesa (ua ta'ua foi o tuma leaga) i totonu o patu ma isi vaega o le tino.

Ituaiga o limifoma

E tele vaega lona lua (subtypes) eseese o limifoma. O le lima o nei vaega lona lua e iai i le kulupu o faama'i ua ta'ua o le Hodgkin limifoma. O isi uma vaega lona lua e masani ona aofia uma i le kulupu ua ta'ua o le non-Hodgkin limifoma.

Non-Hodgkin limifoma

Non-Hodgkin limifoma ua fai ma sui o le tele o vaega lona lua o le limifoma. E mafai ona eseese gaioiga a vaega lona lua taitasi ma e foliga ai foi e eseese togafitiga e faia i ai faapea le mata'itūina. E lē gata i lea, e mafai ona amata mai le limifoma mai se B-lymphocyte (ituaiga e sili ona taatele) poo se T-lymphocyte. E mafai ona vaevaeina le non-Hodgkin limifoma i ni kulupu se lua, limifoma feololo (indolent lymphoma) poo le limifoma ogaoga (aggressive lymphoma).

O le limifoma feololo o se ituaiga o limifoma e tuai lava lona sosolo. Atonu e itiiiti lava ni āuga e alia'e mai ma atonu e lē moomia ona vave togafitia. O le follicular limifoma o se ituaiga o limifoma feololo. E lona lua i ituaiga limifoma e sili ona taatele.

O le limifoma ogaoga o se ituaiga o limifoma e vave tele le sosolo ma e manaomia ona togafitia i le taimi lava e faamaonia ai. Talu ai le vave o le sosolo o lenei limifoma, e mātele foi ina aogā i ai le togafitiga o le chemotherapy ma le radiotherapy. O le diffuse large B-cell limifoma o le ituaiga sili lea ona taatele o limifoma.

Hodgkin limifoma

E toetoe lava tutusa lelei le limifoma lenei ma le diffuse large B-cell limifoma, i le tulaga o le aliali mai ma togafitiga e faia i ai. E lima ona vaega lona lua eseese. E ese le tuufaatasiga o chemotherapy e fai i limifoma nei nai lo isi limifoma ogaoga, o lea e tāua tele ai ona sa'o lelei le faamaoniga ina ia ma'oti le eseesega o ituaiga o limifoma.

Cause

The incidence of lymphoma is increasing every year. In most cases we don't know why but there are likely to be a number of factors involved. Like all cancers, lymphoma may result from a change in one or more of the genes that normally control the growth and development of blood cells. We know that people with a weakened immune system (either due to an immune-deficiency disease or drugs that supress the function of the immune system) are at an increased risk of developing lymphoma. Certain types of viral infections may also play a role, especially in people with a weakened immune system.

Signs and symptoms

Lymphoma commonly presents as a firm painless swelling of a lymph node (swollen glad), usually in the neck, under the arms or in the groin. Lymphoma may develop in the lymph nodes in deeper parts of the body like those found in the abdomen (causing swelling and pain), or in the chest (causing coughing, discomfort in the chest and difficulty breathing).

Other symptoms may include:

- Recurrent fever
- Excessive sweating at night
- Unintentional weight loss
- Persistent lack of energy
- Generalised itching
- New skin rashes
- Fatigue
- Unexplained and/or persistent cough
- Abdominal swelling and pain

The signs and symptoms of lymphoma can often be mistaken for other less-serious illnesses.

Treatment

Treatment will vary depending on the type of lymphoma diagnosed, how fast it is likely to grow and cause problems in the body, as well as the person's age and general health.

Some types of lymphoma grow slowly and cause few troubling symptoms, and may not need to be treated urgently. Others grow more quickly and need to be treated as soon as they are diagnosed. Treatment can involve chemotherapy, radiotherapy and immunotherapy. Occasionally, a stem cell transplant is used to treat lymphoma that has relapsed (come back), or where there is a high likelihood that the lymphoma will relapse in the future.

There is more information about these treatments on page 38.

Myeloma

Myeloma (also known as multiple myeloma) is a cancer of the plasma cells. Plasma cells are mature B-lymphocytes that live predominantly in the bone marrow and normally produce antibodies to help fight infection. In myeloma, plasma cells undergo a malignant (cancerous) change and multiply in an uncontrolled way, causing problems in different parts of the body. Large numbers of abnormal plasma cells, called myeloma cells, collect in the bone marrow and may interfere with blood cell production, and damage adjacent bones, causing pain. Myeloma cells produce an abnormal type of antibody called a paraprotein that can usually be detected in blood and/or urine.

Each year in New Zealand approximately 400 people are diagnosed with myeloma. The majority of those diagnosed are over the age of 50 years.

Mafuaaga

O loo faatupulaia i tausaga taitasi le aafia o tagata i le kanesa o le limifoma. E tele lava ina tatou lē iloa tonu le mafuaaga, ae foliga mai e iai ni vala e fesootai atu i ai ni ona aafiaga. E pei lava le limifoma o isi uma kanesa, e mafua mai se suiga i se kenera e tasi pe sili atu, lea e masani ona puleaina le ola ma le tuputupu a'e o sela o le toto. Ua tatou iloa, o tagata e vaivai o latou immune system (pe ona o se faama'i ua faaletonu ai le immune system poo ni fualaau malolosi ua taofia ai galuega a le immune system) e telē se lamatiaga i le ono aafia i le limifoma. E iai foi nisi ituaiga o siama vairusi atonu e mafua ai, aemaise lava i tagata e vaivai o latou immune system.

Faailoilo ma āuga

E tele ina aliali mai le limifoma o se vaega malō e lē tiga o se patu (fatupuipui ua fulafula), e masani lava ona tupu i le ua, i lalo o 'ao'ao pe i le auaga. O le limifoma e ono tupu i patu e oso i vaega loloto i totonu o le tino e pei o ni fula e maua i totonu o le manava (faapogai ai ona fula ma tiga), pe i totonu o le fatafata (faapogai ai ona tale, tiga le fatafata ma lē faigofie ona mānava).

O isi āuga e ono aofia ai:

- Oso soo le fiva
- Matuā afu i le po
- Ua fāi atu le tino
- Ua faasolo lava ia leai se malosi
- Ua mageso solo le tino
- Ua fai ma pata soo le tino
- Matuā ivā
- Ua te'i lava ua faalausosoo le tale
- Ua fula ma tiga le manava

O faailoilo ma āuga o le limifoma e masani ona fesea'i ma isi ma'i e lē tigaina tele.

Togafitiga

E eseese lava togafitiga e fuafua lava i le ituaiga tonu o limifoma ua aafia ai, o le ā le vave e ono sosolo ai le ma'i ma faapogaia ai faafitauli i le tino, faapea ma le matua o le soifua o le tagata ma le tulaga lautele o lona soifua mālōlōina.

O nisi limifoma e tuai lava le sosolo ma lē tele foi ni āuga lē lelei e tulai mai ai, ma ono lē moomia vave ai ona faia i ai se togafitiga. A'o isi limifoma e vave tele le sosolo ma moomia loa ona vave togafitia i le taimi e iloa ai. O togafitiga e mafai ona faaaogā, o le chemotherapy, radiotherapy ma le immunotherapy. Mai lea taimi i lea taimi, e faia se taotoga e sui ai sela autū, e togafiti ai se ma'i ua toe tupu, poo se tulaga foi e mautinoa, e ono toe tupu lea ma'i i se taimi o i luma.

O loo iai nisi faamatalaga o nei togafitiga i le itulau e 39.

Meloma

O le meloma (e ta'u foi o le multiple meloma) e faasino i le kanesa o sela i vaega faasuavaia o le toto (plasma). O sela o vaega faasuavaia o le toto, e faasino atu i B-lymphocytes ua malolosi (mature) ma ua ola faasāolo solo i totonu o le 'anoivi ma e masani ona tutupu a'e ai vaifaalanu poo sela puipui (antibodies) e aogā i le teteeina o siama. O le meloma, e oo ai ni suiga leaga (ua kanesa) i sela o vaega faasuavaia o le toto, ona matuā faapunafanau ai lea ma faapogaia ai faafitauli i vaega eseese o le tino. O se aofaiga tele o sela ua faaletonu o vaega faasuavaia o le toto, e ta'ua o sela meloma, e putuputu atu i le 'anoivi ma e ono faalavelave ai foi i le gaosiaina o sela o le toto, ma faatama'ia ai ponaivi o lata ane, lea e mafua ai ona tiga. O sela meloma latou te faatupuina se ituaiga o sela puipui ua faaletonu e ta'ua o le paraprotein, lea e masani ona iloa i le toto ma/poo le fe'aulata.

I tausaga taitasi i Niu Sila, e tusa ma le 400 ua faamaonia mai e foma'i ua aafia i le meloma. O le toatele o i latou ua aafia o le vaega ua silia ma le 50 tausaga le matutua.

Cause

In most cases, the cause of myeloma remains unknown, but there are likely to be a number of factors involved. Like all cancers, myeloma may result from a change in one or more of the genes that normally control the growth and development of blood cells. In a small number of cases, exposure to high doses of radiation and ongoing exposure to certain industrial or environmental chemicals may be involved.

Signs and symptoms

The most common symptoms of myeloma are:

- **Bone pain and/or fractures**
  Often myeloma cells can interfere with the normal bone maintenance process and cause holes, or lesions in some bones. This can make the bones more fragile and at risk of getting fractures.
- **Fatigue**
  Persistent fatigue or an overwhelming tiredness is common in myeloma. It might be caused by the disease itself or from myeloma treatment.
- **Recurring infection**
  Infections can be more common because myeloma and its treatments lower the immune system, making you at higher risk of getting infections.
- **Anaemia**
  Anaemia is when you have a low number of red blood cells, which can happen with myeloma or as a side effect of treatment.
- **Hypercalcaemia (high calcium levels)**
  High levels of calcium in the blood can occur as a result of bone damage, which releases too much calcium into the bloodstream. Symptoms of hypercalcaemia can include thirst, nausea, vomiting, confusion and/or constipation.
- **Kidney damage**
  Myeloma produces an abnormal protein (called paraprotein) that can damage the kidneys.
- **Peripheral neuropathy (damage to nerves in hands and/or feet)**
  Peripheral neuropathy can be caused by myeloma itself or as a side effect to some common treatments used for myeloma. The nerves that are affected can cause tingling, altered sensation and pain.

It is important to remember that not everyone will experience all of these signs and symptoms.

Treatment

The main form of treatment is chemotherapy, usually in combination with other drugs. Steroids and other types of anti-myeloma drugs are often used in combination with chemotherapy, which work effectively together.

High-dose chemotherapy followed by an autologous stem cell transplant is also used for younger patients who are fit enough and would benefit from this type of treatment.

Drugs called bisphosphonates are a standard part of therapy used to strengthen bones affected by myeloma.

Radiotherapy may also be used to prevent and treat problems caused by bone damage.

There is more information about these treatments on page 38.

Mafuaaga

O loo tele lava ina lē o iloa tonu le mafuaaga o le meloma, ae foliga mai e iai ni vala e fesootai atu i ai ni aafiaga. E pei le meloma o isi uma kanesa, atonu e mafua mai se suiga i se kenare e tasi pe sili atu, lea e masani ona puleaina le ola ma le tuputupu a'e o sela o le toto. E iai isi tulaga e lē tele nauā, e mafai ona pogai ai le meloma pe afai e malolosi uila o le radiation na sulugia ai se tasi, pe na te faaaogā soo vailaau ia e faaaogā i falegaosimea poo le siosiomaga.

Faailoilo ma āuga

O āuga sili ona taatele o le meloma o le:

- Tiga ponaivi
  E masani ona faalavelave sela o le meloma i le faagasologa masani o le tausiga o ponaivi ma faapogai ai loa ona iai pūpū pe faaleagaina nisi ponaivi. E oo ai ina iai i se tulaga ua faigofie ona gaui pe ta'ei ponaivi o le tino.
- Matuā ivā
  O āuga taatele lava i le meloma o le matuā ivā ma lē lavā faalausosoo. Atonu e mafua mai ona o le ma'i, pe mafua foi i togafitiga o le meloma.
- Toe aafia i siama
  E taatele i lenei ma'i le toe aafia i siama talu ai o le meloma ma ona togafitiga e iu ai ina vaivai le immune system, ma telē ai le lamatiaga o le aafia gofie i siama o faama'i.
- Totovaivai
  E mafua le totovaivai pe afai ua itiiti sela mūmū o lou toto, lea e mafai ona tupu i le meloma pe o se āuga lē lelei o le togafitiga.
- Hypercalcaemia (ua tele le calcium)
  E oo ina tele le calcium i le toto pe afai ua faaleagaina se ponaivi, ma sao ese mai ai i fafo i ālatoto le tele o le calcium. O āuga o le hypercalcaemia e aofia ai le fiainu, faafaufau, faasuati, ua nunumi le mafaufau ma/pe mamau le manava.
- Leaga fatuga'o
  E faatupu a'e e le meloma se polotini ua faaletonu (e ta'ua o le paraprotein) e mafai ona faaleagaina ai fatuga'o.
- Peripheral neuropathy (faaleagaina neura i lima ma/poo vae)
  O le peripheral neuropathy e mafai lava ona faapogaia e le meloma, pe mafua mai se āuga lē lelei o nisi o togafitiga sa faaaogā e togafiti ai le meloma. O neura ia ua afaina e lagona ai le matenatena, e suia ai faalogona ma lagona le tiga.

E tāua ona manatua, e lē o tagata uma o le a oo i ai nei faailoilo ma āuga.

Togafitiga

O le togafitiga autū lava o le chemotherapy, lea e masani ona faia faatasi ma isi fualaau malolosi. O steroids ma isi fualaau malolosi faapitoa e pulea lelei ai le meloma e masani ona faaaogā faatasi ma le chemotherapy, lea e aogā pe a faaaogā faatasi.

O se fua malosi o vailaau mo le chemotherapy, sosoo atu ai ma le tuiina o sela autū i totonu o le toto, e faaaogā foi mo gasegase o ni fanau talavou, pe afai o loo lava lo latou malosi e tatalia ai ia togafitiga, ma o le a aogā ia latou.

O fualaau malolosi faapitoa e ta'ua o bisphosphonate, o se vaega masani o togafitiga ua faaaogā e faamalolosi ai ponaivi ua aafia ona o le meloma.

E mafai foi ona faaaogā le radiotherapy e taofia ai ma togafitia ni faafitauli e faapogai mai le faaleagaina o ponaivi.

O loo iai nisi faamatalaga o nei togafitiga i le itulau e 39.

Myelodysplastic syndrome

Myelodysplastic syndrome (MDS) is a condition that affects normal blood cell production in the bone marrow. In MDS, the bone marrow does not produce enough red blood cells, white blood cells and/or platelets, and can produce an excess of immature blood cells known as blast cells.

There are several different types of MDS. The disease can vary in its severity and the extent to which blood cell production is disrupted. Some people may have few symptoms, (for example anaemia), while others might have very low numbers of blood cells causing increased risk of infection, bruising and bleeding, and severe anaemia.

In up to 30 per cent of people with MDS, it can progress to a type of leukaemia called acute myeloid leukaemia (AML). While MDS can occur at any age, the majority of cases develop over the age of 60 years.

Cause

MDS occurs as a result of a change (or mutation) in one or more of the genes that normally control the growth and development of blood cells. The exact reason for this change remains unclear but there are likely to be a number of factors involved. Increasing age remains the greatest risk factor for developing MDS. Exposure to high doses of radiation and ongoing exposure to certain industrial or environmental chemicals may be linked to the development of MDS.

People who have been previously treated for cancer or other conditions with cytotoxic chemotherapy are at an increased risk of developing what is called secondary or treatment-related MDS.

Signs and symptoms

In general, the types of symptoms you might experience depend on the severity of your disease, and the type of blood cell that is affected.

In many cases, MDS develops slowly and may be picked up with a routine blood test if you have no symptoms.

The most common symptoms are those caused by anaemia (low red blood cells). These symptoms include:

- Persistent tiredness or fatigue
- Dizziness
- Paleness
- Shortness of breath when physically active

Other symptoms may include frequent or repeated infections and slow healing, and increased or unexplained bleeding or bruising.

Treatment

Treatment for MDS will vary depending on several factors, including the severity of disease.

Many people, particularly in the early stages of MDS, don't have any symptoms and don't need to be treated. In these cases, the doctor may simply recommend regular blood tests to carefully monitor health and blood levels.

In more severe or progressive disease, chemotherapy may be used to control a rising blast cell count, and allow the bone marrow to resume normal blood cell production. This may involve low-dose chemotherapy given in tablet form, or more intensive treatment using a combination of drugs given subcutaneously (injected under the skin like an insulin injection).

Myelodysplastic syndrome

O le myelodysplastic syndrome (MDS), o se gasegase e aafia ai le gaosiga masani o sela o le toto i le 'anoivi. I le MDS, e lē lava ai sela mūmū, sela papa'e ma/poo sela faato'a toto e gaosi mai e 'anoivi, ma mafai ai ona tutupu a'e le anoanoai o sela e lei malolosi o le toto (immature blood cells) lea e ta'ua o blast cells.

E tele ituaiga eseese o MDS. E mafai ona eseese le ogaoga o le ma'i ma le lautele e oo i ai le faalavelavea o le faatupuina o sela o le toto. O nisi tagata e iai ni āuga latou te fetaia'i, (mo se faataitaiga o le totovaivai), a'o isi atonu ua matuā itiiti lava le aofaiga o sela o le toto, ma telē ai le avanoa e ono aafia ai i siama, uno'oa le tino ma piliki mai, ma le matuā vaivai o le toto.

E oo atu i le 30 pasene o tagata e maua i le MDS e mafai ona faasolosolo atu lava i le isi ituaiga o lukimi e ta'ua o le acute myeloid leukaemia (AML). E ui o le MDS e aafia ai soo se matua, ae o le tele lava o MDS e aafia ai i latou ua silia ma le 60 tausaga le matutua.

Mafuaaga

E mafua le MDS, mai se suiga (poo se fetuunaiga) i se kenera e tasi pe sili atu, lea e masani ona puleaina le ola ma le tuputupu a'e o sela o le toto. E lei manino mai lava mafuaaga tonu o lenei suiga ae foliga mai e iai ni vala e fesootai atu i ai ni aafiaga. O le vala e sili lava ona ogaoga e oo ai aafiaga tuusa'o o le MDS, o le faasolo ina matua tausaga. O le isi vala e ono tupu ai foi le MDS, pe afai o loo tele ina mānavaina nisi o vailaau oona o loo faaaogā i falegaosimea ma le siosiomaga.

O tagata foi na togafitia muamua i le kanesa poo isi gasegase e faaaogā ai le togafitiga o le cytotoxic chemotherapy, e matuā lamatia foi i le ono aafia i le MDS ua mafua ona o ni togafitiga.

Faailoilo ma āuga

I le tulaga lautele, o āuga e te ono aafia ai e faalagolago lava i le matuiā o lou ma'i, ma le ituaiga o sela o le toto lea ua afaina.

I le tele o tulaga, e tuputupu lemu lava le MDS, ma afai e lē iloa atu ni āuga, atonu e faato'ā iloa le ma'i i le taimi e masani ai ona e alu e sue lou toto (blood test).

O āuga pito sili ona taatele e faapogaia mai le totovaivai (itiiti le aofai o sela mūmū o le toto). O āuga nei e aofia ai:

- Faalausosoo ona lē lavā pe matuā ivā
- Niniva
- Sesega le tino
- Tau lē lava le mānava pe a fai ni mea e faagaioi ai le tino

O isi āuga e ono aofia ai le aafia soo pe toe aafia foi i siama ma tuai ona malosi, ma ua faatetele ona piliki pe uno'oa le tino e aunoa ma se mafuaaga tatau.

Togafitiga

E eseese lava togafitiga e fai i le MDS e fuafua lava i vala eseese, e aofia ai le tugā o le ma'i.

E toatele tagata, e leai ni āuga e aliali mai aemaise i le tau amatamataga o o latou MDS, ma lē manaomia ai foi ona togafitia. I na tulaga, atonu na pau lava le fautuaga a le foma'i, o le fai ma ave le toto e sue ina ia mata'itūina lelei ai le tulaga o iai o latou toto.

I ma'i ua sili ona ogaoga ma vave le sosolo, atonu e fai le chemotherapy e tau taofiofi ai le vave o le faatuputupulaia o sela, ae ia mafai ai e le 'anoivi ona toe faatupuina sela masani o le toto. Atonu e lē malosi tele le fua o le chemotherapy e faaaogā i lenei tulaga e faaaogā i ai fualaau e inu, poo se togafitiga e sili ona malosi lea e tuufaatasia ai ni vailaau faapitoa (ma tui atu i se faaga'au i se uaua o le tino e pei o se tui o le insulin).

The main treatment for the majority of people with MDS is supportive care. This involves the use of antibiotics to treat infection and (where necessary) blood transfusions to replenish vital numbers of red blood cells and platelets. Some people might need growth factors that are used to promote normal blood cell production in the bone marrow.

A stem cell transplant may be used in younger patients who have good general health. This type of intensive treatment may increase the chance of a cure.

There is more information about these treatments on page 38.

Myeloproliferative neoplasms (MPN)

MPNs are a group of diseases that affect normal blood cell production in the bone marrow. The bone marrow produces too many blood cells (either red blood cells, white blood cells or platelets). When present in large numbers, these cells cannot function properly and cause various problems in the body.

There are four main types of chronic myeloproliferative neoplasms:

- Essential thrombocythaemia (ET)
  An overproduction of platelets.
- Polycythaemia vera (PV)
  An overproduction of red blood cells as well as platelets and white blood cells.
- Primary myelofibrosis (MF)
  Excessive blood cell production damages bone marrow tissue and is gradually replaced with abnormal fibrous tissue.
- Chronic myeloid leukaemia (CML).

In most cases, these blood cancers develop slowly and get worse gradually over many years. In some people it can progress to acute myeloid leukaemia (AML).

While MPNs can occur at any age, the majority of cases occur between the ages of 40 and 60 years. They are uncommon under the age of 20 years and rarely occur in children.

Cause

The exact cause of MPNs remains unknown but there are likely to be a number of factors involved, including a mutation in one or more of the genes that normally control the growth and development of blood cells.

Signs and symptoms

Symptoms vary depending on the particular type of MPN involved. Symptoms of an enlarged spleen (splenomegaly) are common, which include feelings of discomfort, pain or fullness in the upper left side of the abdomen. Excess circulating blood cells can cause easy bruising and bleeding, or blood clotting problems.

Treatment

Treatment will vary depending on the type of MPN you have, the severity of your symptoms, your age and general health. Treatment is generally aimed at reducing excess numbers of blood cells in the bloodstream and preventing and/or treating any symptoms and complications of the disease. It may include the use of oral chemotherapy drugs or other agents such as interferon, aspirin or anagrelide.

Sometimes people may also need to have a procedure called venesection, which is the removal of blood (a very similar pr ocedure to donating blood).

O le togafitiga autū lava mo le toatele o tagata ua aafia i le MDS, o le lagolagosua ma fesoasoani ia i latou. E aofia ai le faaaogā o antibiotics e togafiti ai siama ma (afai e talafeagai) o se tuigatoto e toe faatumu ai le aofaiga tāua e tatau ona iai i sela mūmū ma sela faato'a toto. O nisi tagata latou te faaaogā growth factors e toe unai ai le gaosiga masani o sela o le toto i le 'anoivi.

Mo ni ma'i talavou e lelei lava le tulaga lautele o lo latou soifua mālōlōina, atonu e fai se taotoga e suia ai o latou sela autū (stem cell transplant). O le ituaiga o togafitiga lenei e sili ona malosi e ono telē se avanoa e toe malolosi ai.

O loo iai nisi faamatalaga o nei togafitiga i le itulau e 39.

Myeloproliferative neoplasms (MPN)

O le MPN e faasino atu i se kulupu o ni gasegase ua aafia ai le faagasologa masani o le gaosiaina o sela o le toto i totonu o le 'anoivi. Ua ova atu ma le aofaiga talafeagai, le tele o sela o se ituaiga e tasi pe sili atu o sela o le toto (sela mūmū, sela papa'e poo sela faato'a toto), ua gaosia mai e 'anoivi. Afai la ua ova le tele o nei sela, o le a lē mafai foi ona galulue lelei ma faapogaia ai le tele o ni faafitauli i totonu o le tino.

E fā ituaiga autū o chronic myeloproliferative neoplasms:

- Essential thrombocythaemia (ET)
  Ua ova gaosi le tele o sela faato'a toto.
- Polycythaemia vera (PV)
  Ua ova gaosi le tele o sela mūmū faapea ma sela faato'a toto ma sela papa'e.
- Primary myelofibrosis (MF)
  O le matuā ova o le tele o sela o le toto ua gaosia e faaleagaina ai tisu o le 'anoivi ma e faifai mālie ona oo ina suia e avea ma tisu ua faaletonu.
- Chronic myeloid leukaemia (CML).

O le tele o taimi, o ituaiga o kanesa nei o le toto e tuputupu lemu ane lava seia oo ina faifai tetele a'o faasolo le tele o tausaga. Mo nisi tagata e faasolosolo lava seia oo ina avea ma acute myeloid leukaemia (AML).

E ui o le MPN e mafai ona aafia ai tagata uma i soo se matua, peitai e mātele ia i latou i le va o le 40 ma le 60 tausaga le matutua. E lē taatele ia i latou e i lalo ifo o le 20 tausaga le matutua, ma e seāseā lava aafia ai fanauiti.

Mafuaaga

E lē o iloa lava le mafuaaga tonu o le MPN, ae foliga mai e iai ni vala e fesootai atu i ai ni aafiaga, e aofia ai se suiga i se kenera e tasi pe sili atu, lea e masani ona puleaina le ola ma le tuputupu a'e o sela o le toto.

Faailoilo ma āuga

E eseese lava āuga e fuafua i le ituaiga patino o MPN o loo aafia ai. O āuga masani lava o le oo ina fefete le atepili (splenomegaly), ma iai ma lagona lē toafimalie, e tiga pe lagona e pei e tumu le itu agavale i luga o le manava poo le laualo. O le ova atu o le aofaiga o sela o le toto o loo fegasoloai e faigofie ai lava ona uno'oa le tino ma piliki, pe piliki mai 'alu'alutoto.

Togafitiga

E eseese lava togafitiga e fuafua i le ituaiga o MPN o loo e maua ai, le matuiā o āuga ua e aafia ai, le matua o lou soifua ma le tulaga lautele o lou soifua mālōlōina. E masani ona taulai togafitiga i le faaitiitia o le aofaiga tele o sela o le toto o loo fegasoloai i ālatoto, ma taofia ma togafiti soo se āuga ma nisi toatugā o le ma'i. E ono aofia ai le inu o fualaau faapitoa o le chemotherapy, poo isi fualaau faapena e pei o le interferon, aspirin poo anagrelide.

O nisi taimi e moomia ai ona fai i tagata se togafitiga e ta'ua o le venesection, poo le aveesea mai o le toto (o se togafitiga e tai tutusa lava ma le foai atu o le toto).

TESTS AND INVESTIGATIONS

There are several common tests your doctor will ask you to have that will help them make a diagnosis.

These tests are:

- Blood tests
- Bone marrow biopsy
- X-rays and other imaging tests

Blood tests

The main blood test used to diagnose blood cancers is called a full blood count (FBC) or complete blood count (CBC). Blood is taken from a vein in your arm and sent to a laboratory where it is looked at under a microscope.

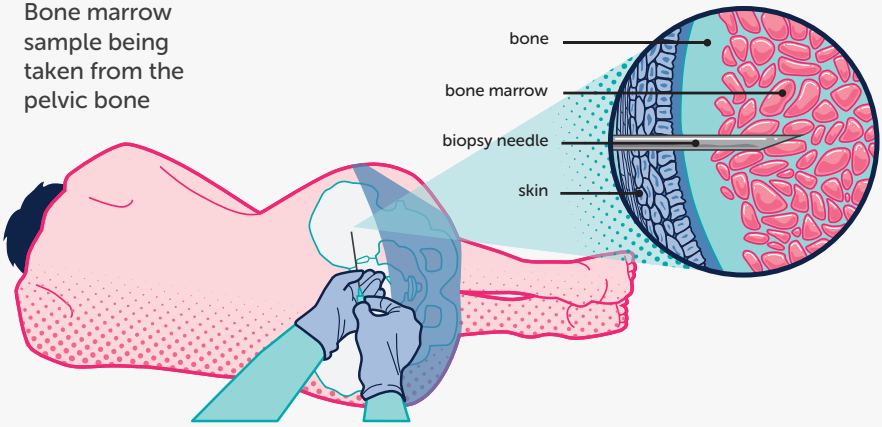
The doctor might also ask to test your blood chemistry, which may include your levels of calcium, creatinine or different proteins important for detecting some blood cancers. Very specialised genetic testing can be done to confirm the diagnosis of certain blood cancers (i.e. MPNs).

Bone marrow biopsy

A bone marrow biopsy is a test where a doctor takes samples of your bone marrow and sends them to a laboratory to be looked at under a microscope. A sample of bone marrow is usually taken from the back of your hip bone (the iliac crest) (see Figure 04).

Figure 04

Bone marrow sample being taken from the pelvic bone



SUESUEGA MA SAILIILIGA

E tele suesuega masani o le a tāpā oe e lau foma'i e fai ina ia mafai ai ona latou faamaonia le ma'i ua aafia ai.

O suesuega nei:

- Sue le toto
- Sue le 'anoivi
- Fā'ata ma isi suesuega e tapue ai ata

Sue le toto (Blood tests)

O le suesuega autū o le toto e faamaonia ai kanesa o le toto, e ta'ua o le full blood count (FBC) poo le complete blood count (CBC) poo le faitauga atoa o le toto. E aveese mai se toto mai se veni i lou ogalima ma avatu i le falesuetoto lea e tilofa'ia ai i lalo o se microscope.

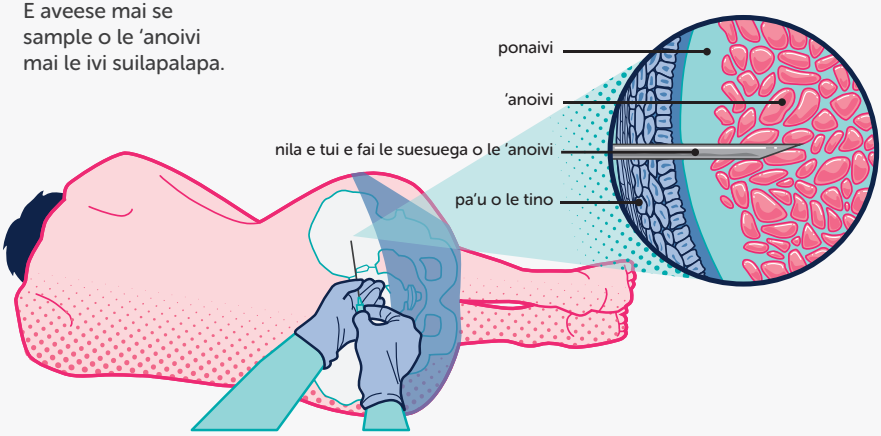
E ono fesili atu foi le foma'i ina ia sue lou blood chemistry, lea e aofia ai le tele o le calcium, creatinine poo polotini eseese e tāua mo le iiteina pe ua aafia i nisi o kanesa o le toto. E iai foi se suesuega faapatino i kenera tuufaasolo mai tupuaga (generic testing) e mafai ona fai e faamautū ai le faamaoniga o ni kanesa patino o le toto ua aafia ai (i.e. MPNs).

Sue le 'anoivi (Bone marrow biopsy)

O lenei suesuega o le 'anoivi o le a ave ai e le foma'i se sample o lou 'anoivi ma avatu i le falesuetoto lea e tilofa'ia ai i lalo o se microscope. O lena sample o le 'anoivi e masani ona aumai i le pito i tua o le ponaivi o lou suilapalapa (the iliac crest) (tagai i le Vaega 04).

Vaega
04

E aveese mai se sample o le 'anoivi mai le ivi suilapalapa.



To do a bone marrow biopsy, the doctor puts a long needle through your numbed skin into the bone and then into the bone marrow. Bone marrow has liquid and solid parts. A small sample of your bone marrow liquid is taken out. This is called a bone marrow aspirate. A sample of the solid part of the bone marrow is also taken. This is called a bone marrow trephine (tre-fine).

Some people who have had a bone marrow biopsy say that it was painful and other people describe it as uncomfortable. Everybody is different. We recommend that you bring a support person with you when you have a bone marrow biopsy. If you have a sedative, you will still feel a bit drowsy afterwards. Your support person can make sure you get home safely.

After the biopsy, your doctor or nurse will put a plaster or small dressing over the biopsy site. You may need paracetamol to help ease some discomfort in the area afterwards. Your doctor or nurse will talk to you about this.

X-rays and other imaging tests

Many people require x-rays or other imaging tests as part of being diagnosed with a blood cancer and also for ongoing monitoring. These might include:

- Chest x-ray to detect a chest infection or any other abnormalities.
- Electrocardiogram (ECG) and echocardiogram (ECHO) to see how well your heart is working.
- CT scan (computer-assisted tomography scan) or ultrasound may be used if there is concern about specific localised involvement or damage caused by the disease.
- MRI scan (magnetic resonance imaging scan) may be used in diagnosis and monitoring.
- A full-body x-ray or skeletal survey may be done to check for any evidence of bone damage. X-rays are usually taken of your skull, spine (backbone), ribs, pelvis (hips), legs and arms.
- PET scan (positron emission tomography scan) uses a specialised type of intravenous (IV) contrast and CT scan technique to look for areas where there may be increased tissue activity due to disease involvement. PET scan is less commonly used in New Zealand but may be requested by your haematologist.

Your haematologist will inform you of what tests they recommend you have and why. Everyone is different so tests may vary from person to person.

Ina ia fai le suesuega o le ‘anoivi, e faagase le pa’u o lou tino ona tui lea e le foma’i se tui umī i totonu o le ponaivi ma oo atu i le aano lololo (marrow) i totonu o le ponaivi. O le ‘anoivi e iai vaega faasuavaia ma vaega malō. E aveese mai sina sample itiiti o le vaega faasuavaia o lou ‘anoivi. E ta’ua lena o se ‘anoivi aspirate (bone marrow aspirate). E aveese mai foi se sample o le vaega malō o le ‘anoivi. E ta’ua lena o se ‘anoivi trephine (bone marrow trephine).

Fai mai nisi tagata sa faia ni suesuega i o latou ‘anoivi sa lagona le tiga, ae faamatala e isi tagata e pei ua lē lelei ai o latou faalogona. E eseese uma tagata. Matou te fautuaina e lelei le lua omai ma se isi tagata e te lua toalua ma fesoasoani ia te oe a’o sue lou ‘anoivi. Afai sa avatu ia te oe se vaimoe, o le a e lagona pea lou faaniniva pe a uma le suesuega. O le aogā lena o le tagata na lua omai e na te faamautinoa ua lua toe taliu ma le saogalemu i le aiga.

Pe a uma le suesuega, o le a faapipii e lau foma’i poo se tausi soifua se mea faapipii (plaster) poo sina tamai fusiga e fai i le vaega o lou tino na tui mo le suesuega. Atonu e moomia ona inu sau paracetamol e tau faate’a mālie ese ai lagona lē lelei pe a uma le suesuega. O le a talanoa atu lau foma’i poo le tausi foifua e uiga i lea itu.

Fā’ata ma isi suesuega e tapue ai ata

E toatele tagata e moomia le faia o ni fā’ata poo isi suesuega e tapue ai ata ina ia faamaonia lelei ai po ua aafia i le kanesa o le toto aemaise foi mo le faaauau ona mata’itūina. E aofia ai:

- Fā’ata o le fatafata e siaki pe o iai se siama i le fatafata poo nisi faaletonu (abnormalities).
- Electrocardiogram (ECG) ma le echocardiogram (ECHO) e vaai poo le ā le lelei o loo gaioi ai lou fatu.
- E ono faaaogā le CT scan (computer-assisted tomography scan) poo le ultrasound pe afai o iai se atugaluga i se mea patino o tau aafia poo se mea ua faaleagaina ona o le ma’i.
- E ono faaaogā le MRI scan (magnetic resonance imaging scan) a’o taumafai e faamaonia pe ua aafia ma le mata’itūina.
- E ono fai se fā’ata atoa o le tino (full-body x-ray) poo se sailiiliga i le auivi (skeletal survey) pe iai ni faamaoniga o le faaleagaina o ponaivi. E masani lava ona fai le fā’ata o lou atigipoo, ivitu (spine), ivi’aso’aso (ribs), ivi suilapalapa (pelvis), ogavae ma ogalima.
- E faaaogā i le PET scan (positron emission tomography scan) se ituaiga patino o IV (intravenous) e eseese ma le faiga o le CT scan, ina ia tilofa’ia ai ni vaega atonu ua faateleina ai tisu ona o le aafiaga o le ma’i. E tau lē faaaogāina tele le PET scan i totonu o Niu Sila, ae atonu e faatalosagaina le faia e lau haematologist.

O le a muai faailoa atu e lau haematologist ia te oe poo ā suesuega latou te fautuaina le fai ia te oe ma le mafuaaga e fai ai. E eseese tulaga o tagata uma, atonu foi e eseese ai suesuega e fai i tagata taitoatasi.

WHAT HEALTH PROFESSIONALS WILL I MEET AFTER MY DIAGNOSIS?

You will meet a range of health professionals who are part of your health care team.

Each health professional has a different area of expertise in cancer and cancer care. Working as a team, these health professionals will give you and your family the best treatment and support so that you can live as well as possible following a blood cancer diagnosis.

Some of the health professionals you will meet are, in alphabetical order:

- **Charge nurse** – A senior nurse in charge in the outpatient department or on the hospital ward.
- **Clinical nurse specialist (CNS)** – A nurse with advanced skills in a specific area of cancer care. This person works closely with you and members of your health care team to help you manage the symptoms and side effects of your blood cancer and treatment.
- **Dietitian** – A dietitian will advise on what to eat and drink to minimise symptoms or side effects from your treatment. A dietitian may prescribe supplements to make sure you are getting the calories and nutrients you need.
- **General practitioner (GP)** – A family and community doctor might already be involved with your blood cancer diagnosis. They will be informed throughout your diagnosis and will work together with other health professionals to support you at home, in the community and after treatment.
- **Haematologist** – A doctor who specialises in the treatment of blood cancers or blood conditions. A haematologist will be in charge of overseeing your treatment and follow-up.
- **Occupational therapist** – Helps you manage everyday activities and achieve activities you want or need to do.
- **Outpatient clinic nurse** – A nurse who gives you treatment as an outpatient or who works alongside a doctor in the clinic.
- **Pharmacist** – Prepares and checks your medications. A pharmacist can advise you on how to take your medicine and the possible side effects.
- **Physiotherapist** – Specialises in maintaining and improving body movement and mobility. A physiotherapist (or physio) can help you regain independence and fitness.
- **Psychologist** – Specialises in helping you manage the emotional challenges of a blood cancer diagnosis, such as stress, anxiety and depression.
- **Registrar** – A doctor who is training to become a haematologist. You will often see your registrar on the ward and in the clinic. Your registrar works very closely with your haematologist.
- **Social worker** – Helps you manage the practical and emotional impact of having a diagnosis of a blood cancer, such as advice about managing at home, employment or school.

O AI FOMA'I O LE A MATOU FEILOAI PE A FAAMAONIA MAI LO'U MA'I?

E tele ni foma'i eseese o le a tou feiloai, o i latou nei o le a iai i le vaega e tausia lou soifua mālōlōina.

E tofu lava le foma'i ma lona tomai faapitoa i le togafitia o le kanesa ma le tausiga foi e faatino ai. O le a galulue faatasi nei foma'i, ina ia avatu ia te oe ma lou aiga se tausiga ma se fesoasoani e sili ona lelei, ina ia mafai ona toe maua lou malosi pe afai ua faamaonia ua e gasegase i le kanesa o le toto.

O le a faasolosolo atu i le alafapeta faa-Peretania igoa o nisi o foma'i o le a outou feiloai:

- Charge nurse – O se tausi soifua sinia o loo taitaia le vaega mo gasegase tausāvali poo se ward i le falema'i.
- Clinical nurse specialist (CNS)– O se tausi soifua ua iai tomai faaopoopo i se vaega patino o le tausiga o gasegase kanesa. E galulue vavalalata le tagata lenei ma oe ma sui o le vaega o loo tausia lou soifua mālōlōina, ina ia fesoasoani i le onosaia o isi āuga lē lelei o lou kanesa o le toto ma togafitiga.
- Dietitian – O le tagata e na te iloa meaai tatau mo le soifua mālōlōina, ma o le a ia ta'u atu poo ā meaai ma meainu e tatau ona e 'ai ma inu ai, ina ia faaitiitia āuga lē lelei a'o fai ou togafitiga. O ia foi lea (dietitian) e ono faatonuina atu ni fualaau (supplements) e te inua ina ia faamautinoa o loo lava le calories ma nutrients e te manaomia.
- General practitioner (GP) – O se foma'i faaleaiga ma galue mo le lautele atonu sa aofia i le faamaoniaina o lou aafia i le kanesa o le toto. O le a logoina i latou a'o faagasolo le suesuega e faamaonia ai lou gasegase, ma o le a galulue faatasi ma isi foma'i e avatu le fesoasoani ia te oe i lou fale, i le afioaga ma pe a mae'a ou togafitiga.
- Haematologist – O se foma'i e faapitoa i le togafitia o kanesa o le toto ma isi gasegase e fesootai ma le toto. O le haematologist o ia o le a taitaia le vaaiga o ou togafitiga ma isi siaki e toe fai mulimuli ane.
- Occupational therapist – E fesoasoani ia te oe ina ia mafai ona faatino mea e tatau ona e faia i aso tasitasi ma ia ausia le faiga o meafai e te manaomia ona fai.
- Outpatient clinic nurse – O se tausi soifua e na te togafitia oe o se gasegase tausavali, pe galulue faatasi ma se foma'i i se falema'i laitiiti (clinic).
- Pharmacist – Na te tuufaatasia ma siaki po ua sa'o au talavai. E mafai e le pharmacist ona fautuaina oe i le auala e inu ai au fualaau/vailaau ma faailoa atu āuga lē lelei e ono alia'e.
- Physiotherapist – E tomai faapitoa i le tausia ma le faaleleia o gaioiga ma fegasoloaiga a le tino. E mafai e se physiotherapist (poo se physio) ona fesoasoani atu ina ia toe maua le malosi o lou tino ma toe maua lou saolotoga e gaioi ai e aunoa ma le tau faalagolago i se isi.
- Psychologist – E tomai faapitoa i le fesoasoani ia te oe e onosaia lu'itau tau faalogona pe a faamaonia mai ua e maua i le kanesa o le toto, e pei o le vevesi le mafaufau, atuatuvale ma mafatia.
- Registrar – O se foma'i ua a'oa'oina e avea ma haematologist. O le a tele ina e vaaia lau foma'i lenei (registrar) i le ward ma i se falema'i laitiiti. E galulue vavalalata lau registrar ma lau haematologist.
- Social worker – E fesoasoani atu ina ia mafai ona faafoeina gaioiga faatino ma aafiaga tau faalogona pe a faamaonia ua aafia i le kanesa o le toto, e pei o le fautua atu i le auala e faafoe ai mea i le fale, le galuega poo le aoga.

- **Ward nurse** – A nurse who looks after you during your stay in hospital.

Other people you might hear about or meet are:

- **Palliative care team** – Doctors, nurses and other health care professionals whose roles include managing symptoms of blood cancers, helping improve quality of life and supporting people at the end of life.
- **Spiritual care and cultural support** – People who can support your individual cultural, spiritual or religious needs.
- **Non-Governmental organisation (NGO)** – Gives emotional and practical support for those affected by cancer, e.g. Leukaemia & Blood Cancer New Zealand.
- **Leukaemia & Blood Cancer New Zealand Support Services Coordinator** – A professional who provides education as well as practical and emotional support. Phone 0800 15 10 15.

- **Ward nurse** – O se tausi soifua na te vaaia oe a'o e taoto i le falema'i.

O isi tagata atonu e te faalogo foi i ai pe feiloai i ai o:

- **Palliative care team** – O foma'i, tausi soifua ma isi tagata ua tomai faapitoa i le faatinoina o le tausiga faasoifua mālōlōina, ma o a latou matafaioi o le tausia o āuga o kanesa o le toto, fesoasoani ia toe faaleleia pea le tulaga anagatā o le soifua ma fesoasoani atu pea i tagata seia oo ina muta lo latou soifua.
- **Tausiga faaleagaga ma fesoasoani faaleaganuu** – O tagata e mafai ona fesoasoani atu i ou manaoga faaleaganuu, faaleagaga pe faaletapuaiga.
- **Non-Governmental organisation (NGO)** – E faia fesoasoani tau faalogona ma i galuega faatino mo i latou ua aafia i le kanesa, e.g. Leukaemia & Blood Cancer New Zealand.
- **Leukaemia & Blood Cancer New Zealand Support Services Coordinator** – O se tagata ua iai agavaa faapitoa e saunia ai a'oa'oga ma fesoasoani i galuega faatino ma fesoasoani tau i faalogona. Telefoni 0800 15 10 15.

TREATMENTS

In this section we provide a brief overview of treatments for blood cancers and blood conditions. It is important to note that the information provided here is of a general nature and may not necessarily apply to the specific type or severity of disease that you or your family member might have been diagnosed with.

Chemotherapy

Chemotherapy literally means therapy with chemicals. Many chemotherapy drugs are also called cytotoxic (cell toxic) drugs because they kill cells, especially ones that multiply quickly such as cancer cells.

Chemotherapy usually involves a combination of drugs (combination chemotherapy). The names of different combinations of drugs are commonly derived from the first letters of each of the drugs used.

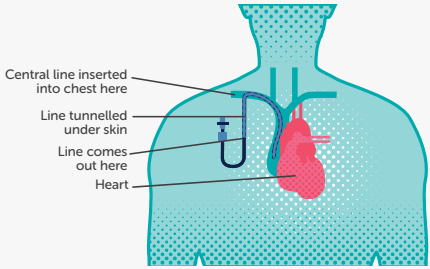
Chemotherapy is often given in several cycles (or courses) with a rest period of a few weeks in between each cycle. This is to allow the body to recover from the side effects of chemotherapy.

How is chemotherapy given?

There are many ways of giving chemotherapy. It can be given through a vein (intravenously or IV), usually in your arm or hand, under the skin (subcutaneously) or in a tablet form (orally).

If you are having several cycles of chemotherapy, your haematologist may recommend that you have a central venous catheter (also called a central line) or portacath inserted (see Figure 05). A central venous catheter is a special line inserted through the skin into a large vein in your arm, neck or chest. Once it's in place, chemotherapy and any other IV drugs can be given through the line and blood tests can also usually be taken from the line, without needing frequent needle pricks. There are several different kinds of central lines used, some are intended for short-term use while others remain in place for months and even years.

Figure 05
Central line placement



Most people don't need to be admitted to hospital for IV chemotherapy, instead it is usually given in the outpatient department of the hospital. Sometimes, however, you may need to be admitted to the ward for a short while.

TOGAFITIGA

I lenei vaega, o loo matou saunia atu ai se aotelega puupuu o togafitiga mo le kanesa o le toto ma isi gasegase e fesootai i ai. E tāua ona mātau mai, o faamatalaga ua ta'ua iinei o loo fua lava i le tulaga lautele, ma atonu o le a lē talafeagai i se gasegase patino, pe e lē o fetaui foi i le matuiā lena ua oo i ai le gasegase o oe poo se tasi o lou aiga.

Chemotherapy

O le chemotherapy o lona uiga moni lava o le togafitiga e faaaogā ai vailaau (chemicals). O le tele o vailaau malolosi faapitoa mo le chemotherapy e ta'ua foi o cytotoxics (cell toxic) auā e latou te tapēina sela, aemaise lava sela o loo vave le faapunafanau e pei o sela kanesa.

O le chemotherapy e masani ona aofia ai le tuufaatasiga o vailaau malolosi faapitoa (combination chemotherapy). O igoa o tuufaatasiga eseese o fualaau ma vailaau malolosi faapitoa e masani lava ona maua mai uluai mataitusi o igoa o nei fualaau poo vailaau taitasi ia o loo faaaogā.

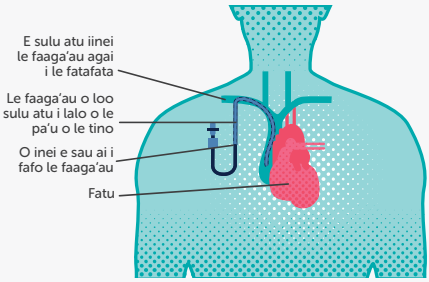
E masani ona tele taimi e faagasolo ai le faiga o le chemotherapy, ma e fai ma tovā na faagasologa taitasi i ni nai vaiaso e faamālōlō ai. O inā o le a maua ai e le tino se taimi se'i tau toe malosi ai mai āuga lē lelei o le chemotherapy.

E faapefea ona fai le chemotherapy?

E tele auala e fai le chemotherapy. E mafai ona faaui atu i se uaua (tui sa'o i le uaua - intravenous, IV) i lou ogalima poo le lima, poo se fualaau e inu.

Afai e tele taimi e faagasolo ai lau chemotherapy, e ono fautuaina e lau haematologist le sulu atu o se central venous catheter (e ta'u foi o le central line) poo le portacath (tagai i le Vaega 05). O le central venous catheter, o se faaga'au faapitoa e sulu i totonu o le pa'u o le tino, agai i se uaua lapoa i lou ogalima, le ua, poo lou fatafata. E taatia lelei loa lena faaga'au, ona amata loa lea ona faasolo atu le chemotherapy ma isi vailaau malolosi faapitoa o le IV, ma e mafai lava foi ona sue ai ma le toto i lena faiga, e aunoa ma le tui soo o le uaua i le nila. E tele ituaiga eseese o faaga'au nei (central lines) e faaaogā, o nisi e faaaogā mo ni taimi pupuu, ae o isi e tuu ai lava i totonu mo le tele o ni masina poo ni tausaga foi.

Vaega
05
Faataatiaga o le faaga'au (central line)



I le tele o tulaga, e lē moomia ona taofia oe i le falema'i mo le faiga o lau IV chemotherapy, ae tele lava ina fai i le vaega o le falema'i e gasolo mai ai gasegase tausāvali. Peitai e iai taimi, e ono moomia ai ona taofia oe mo sina taimi i le falema'i.

Side effects of chemotherapy

Chemotherapy kills cells that multiply quickly, such as cancer cells. It also causes damage to fast-growing normal cells including hair cells and cells in your mouth, gut and bone marrow. The side effects of chemotherapy occur as a result of this damage.

The types of side effects and their severity vary from person to person depending on the type of chemotherapy given and how you respond to it. There is no doubt that side effects can be very unpleasant at times but it is good to remember that most of them are temporary and reversible. It is important that you report any side effects that you are experiencing to your nurse or doctor because many of them can be treated successfully, reducing any unnecessary discomfort for you.

Effects on the bone marrow

Chemotherapy temporarily affects the bone marrow's ability to produce adequate numbers of white blood cells, platelets and red blood cells. As a result, your blood counts will generally fall within a couple of weeks of treatment. The length of time it takes for your bone marrow and blood counts to recover mainly depends on the type of chemotherapy given. The three main complications of low blood counts are:

- Increased risk of infection
- Bruising and bleeding
- Anaemia

Infection

Your white blood cell count is at its lowest usually between 10 to 14 days after having your chemotherapy, during which time you will be at a higher risk of developing an infection. A blood test will sometimes be arranged for you during this time to check your blood count. At this stage you will also be neutropenic, which means that your neutrophil count is low. Neutrophils are important white blood cells that help us to fight infection. While your white blood cell count is low you should take sensible precautions to help prevent infection, which include the following:

- Being around other people
  Stay away from crowds of people and avoid people with infections that are contagious (for example head cold, flu, chicken pox).
- Preparing and eating food
  Your haematologist or nurse will tell you what foods to avoid if your white blood cell count is low. They may suggest you have a 'neutropenic' diet or 'clean' diet. This type of diet protects you from germs found in some food and drinks.
  It is important to be very careful when preparing and cooking food. You need to:
  - Always wash your hands before preparing or eating food.
  - Tell your family to wash their hands when preparing food.
  - Prepare food in a clean place.
  - Wash fruit and vegetables well.
  - Make sure reheated food is very hot.
  - Do not reheat food more than once.
  - Eat food before its best before/ use-by date.
  - Prepare raw meat on a separate chopping board and make sure it is then cooked properly.

More information available online

Āuga lē lelei o le chemotherapy

O le chemotherapy e tapē ai sela o loo vave lo latou faapunafanau, e pei o sela kanesa. E mafai foi ona faatama'ia ai sela masani ia e vave lo latou tutupu a'e e aofia ai sela o lauulu, ma sela i totonu o lou gutu, manava (gut) ma 'anoivi. E alia'e mai āuga lē lelei o le chemotherapy ona o mea nei ua faatama'ia.

E eseese uma tagata ma ituaiga o āuga lē lelei ma le ogaoga e oo i ai, e fuafua lava i le ituaiga o chemotherapy sa faaaogā, ma le tali atu o lou tino i lenei togafitiga. E mautinoa lava o na āuga lē lelei, e matuā lē lelei lava mo oe i nisi taimi, ae lelei ona manatua, o le tele o na āuga e mo na o sina taimi lē tumau ma e mafai ona toe suia. E tāua lou ta'u atu i lau foma'i poo lau tausi soifua soo se āuga lē lelei e te lagonaina, auā o le tele o na aafiaga e mafai ona togafitia, ma faaitiitia ai nisi faaletonu e lē manaomia fua ona e safa atili ai.

Aafiaga i 'anoivi

E mafai e le chemotherapy ona iai ni aafiaga mo sina taimi lē tumau i le malosiaga o 'anoivi e toe fofoa mai ai le aofaiga talafeagai o sela papa'e, sela faato'a toto ma sela mūmū. O le iuga, o le a faasolo ina pa'ū ifo le tele o lou toto i totonu o ni vaiaso o loo faagasolo ai ou togafitiga. O le umi o le taimi e toe sologa lelei ai le malosi o ou 'anoivi ma lou toto, e faalagolago tele lava i le ituaiga o chemotherapy o loo faaaogā. O to'atugā autū e tolu o le itiiti o sela o le toto o le:

- Telē le lamatiaga o le aafia i siama
- Uno'oa le tino ma piliki
- Totovaivai

Aafia i siama

Ua matuā pa'ū faaitiitia le aofaiga o sela papa'e o lou toto, e masani ona faatalitalia le tupu o lena mea i le 10 i le 14 aso talu ona mae'a lau chemotherapy, o le taimi foi lena e telē ai lava se lamatiaga o le tupu a'e o se siama. O nisi taimi o le a faatulaga ai le sueina o lou toto (blood test) i lena taimi e siaki ai le malosi o sela eseese o lou toto. I lena taimi, o le a oo ia te oe le mea e ta'ua o le neutropenic, lona uiga ua itiiti ou neutrophils. O neutrophils o ni sela papa'e o le toto e tāua tele mo le teteeina o siama. A'o itiiti le aofai o sela papa'e o lou toto, e tatau ona e faaeteete e puipui lelei ina ia alofia le aafia i ni siama, e aofia ai mea nei:

- **A'o iai faatasi ma isi tagata**
  Alofia mea o loo tumutumu ai tagata, aua le sōsō i tagata o loo aafia i ni siama pipisi (e pei o le oso le faamaalili, fulū, tanesusu).
- **Sauniunia ma le taumafaina o meaai**
  O le a ta'u atu e lau haematologist poo se tausi soifua ia te oe, meaai e lē tatau ona e toe taumafa ai pe afai o loo itiiti le aofai o sela papa'e o lou toto. Latou te ono fautuaina le fai o sau 'neutropenic' diet poo se 'clean' diet. O le ituaiga diet lenei e puipuia ai oe mai siama o loo maua i nisi o meaai ma vaiinu. E tāua le matuā faaeteete i le taimi e sauniuni ai ma kukaina taumafa. E moomia ona:
  - Fufulu i taimi uma ou lima a'o lei sauniunia pe taumafaina meaai.
  - Ta'u atu i lou aiga ina ia fufulu o latou lima pe a sauniunia meaai.
  - Tatau ona mamā le nofoaga o loo sauniunia ai meaai.
  - Matuā fufulu mamā fualaau'aina suamalie ma fualaau faisua.
  - Faamautinoa ua matuā vevela lelei meaai e toe faavevela.
  - Aua ne'i faavevelaina faalua se meaai.
  - 'Ai se meaai a'o lei oo i le aso e muta ai le lelei ona toe faaaogā.
  - Ia ese lava se laupapa e tipitipi ai luga aanomata o manufasi ma ia faamautinoa e matuā faavela lelei.

Tele isi faamatalaga o loo maua i luga o le initaneti

- Keeping yourself clean
  When you have a low white blood cell count, you are more likely to get an infection from germs on your body. You need to:
  - Have a shower or bath every day.
  - Use a clean towel.
  - Wash your hands after using the toilet and ask family members to do the same.
  - Clean your teeth regularly with a soft brush.
  - If you have a central IV line, make sure it stays clean and check for signs of infection such as redness, swelling, pus or pain.
- Gardening
  Garden soil can cause infections in people with a low white blood cell count. You need to:
  - Wear gloves, as soil and potting mix can have harmful germs in it.
  - Wash any cuts you get from gardening very thoroughly.
  - Wear a mask to avoid breathing in particles.
- Pets
  When you have a low white blood cell count, you may get an infection from pets. You need to:
  - Always wash your hands after touching animals.
  - Do not let a pet lick your face.
  - Keep pets clean and treat them for worms and fleas.
  - Don't touch the litter tray or dog poo.

Your haematologist and nurse will advise you on how to reduce your risk of infection while your white blood cell count is low.

If you do develop an infection you may experience a fever (high temperature), which could be accompanied by an episode of rigor, where you shiver uncontrollably. Infections while you are neutropenic can be quite serious and need to be treated with antibiotics as soon as possible.

Important information

It is important that you contact your haematologist or the hospital for advice immediately (at any time of the day or night) if you are feeling very unwell, or if you experience any of the following:

- A temperature of 38°C or over and/or an episode of shivering.
- Bleeding or bruising, for example blood in your urine, faeces or sputum, bleeding gums or a persistent nosebleed.
- Nausea or vomiting that prevents you from eating or drinking or taking your normal medications.
- Diarrhoea, stomach cramps or constipation.
- Coughing or shortness of breath.
- The presence of a new rash, reddening of the skin, itching.
- A persistent headache.
- New pain or soreness anywhere.
- If you cut or otherwise injure yourself.
- If you notice pain, swelling, redness or pus anywhere on your body.

- **Ia tausi mamā lou tino i taimi uma**
  Pe a itiiti le aofai o ou sela papa'e, e mautinoa o le a e aafia i se siama ua aafia ai lou tino. E moomia ona:
  - Ia e ta'ele i aso uma.
  - Faaaogā se solo mamā.
  - Ia fufulu ou lima pe a faato'ā uma ona faaaogā le faleese ma faamanatu i isi tagata o lou aiga ina ia faia foi faapea.
  - Faaaogā se pulumu e vaivai nifo e fufulu ai e lē aunoa ou nifo.
  - Afai o iai se vaega o lou lima o tui ai le IV, ia faamautinoa o loo mamā i taimi uma lena vaega, ma siaki mo ni faailoilo o se siama ua aafia ai, e pei o le mūmū mai, ua fula, ua pa mai ai se alou pe tiga.
- **Faiga togalaau**
  E mafai e le palapala mai le togalaau ona faapogaia ni siama i tagata e itiiti le aofai o sela papa'e o latou toto. E moomia ona:
  - Fai ni ou totigilima, ona e mafai ona iai ni siama i totonu o le palapala ma palapala o loo palu faatasi e totō ai laau ona afaina ai.
  - Ia matuā fufulu mamā soo se vaega o lou tino e lavea mai au faiga togalaau.
  - Faamaulu sau puni fofoga ina ia aua ne'i e mānavaina ni mea oona ninii.
- **Fagafao**
  Afai e itiiti le aofai o sela papa'e o lou toto, e te ono afaina i ni siama mai fagafao. E moomia ona:
  - Fufulu i taimi uma ou lima pe afai sa e loteina ni meaola.
  - Aua ne'i etoetoina e se fagafao ou foliga.
  - Ia faamamā i taimi uma tino o fagafao ma togafiti pe tapē ni anufe ma 'utufiti e maua ai.
  - Aua ne'i e tago e lote le ipu e faatitipa i ai le taifau poo ana feau mamao.

O le a fautuaina oe e lau haematologist ma lau tausi soifua i le auala e faaitiitia ai lou ono aafia i ni siama a'o itiiti sela papa'e o lou toto.

Afai e aafia oe i ni siama, e ono e fiva (ua ova le fua o lou vevela), ma e ono sau faatasi ma se faasologa o ni āuga faama'i malosi, e oo ina lē matāofiofia le tetete o lou tino. E fai lava sina matuiā pe afai e te aafia i ni siama a'o itiiti sela papa'e o lou toto, ma e manaomia lava ona vave togafiti i ni antibiotics.

Faamatalaga tāua

E tāua le vave ona e faafesootai atu i lau haematologist poo le falema'i (i soo se taimi o le ao poo le pō) pe afai ua e matuā lagona lou lē malosi, pe oo ia te oe soo se āuga nei:

- Ua oo le fiva i le 38°C pe sili atu ma/poo se faasologa o le tetete o le tino.
- Piliki pe uno'oa le tino, mo se faataitaiga e toto mai lau fe'aulata, fe'aumamao, lau tale, piliki ou gao pe pāpātoto soo lou isu.
- Faafaufau pe faasuati, ma lē mafai ai ona sao lelei lau 'ai poo lau inu, poo le inuina foi o au fualaau masani.
- Manava tatā, manava tiga pe manava mamau.
- Tale pe tau puni le mānava.
- Faafuasei ona fotu le lālāvevela, ua pata le tino, mageso.
- Tiga faalausosoo le ulu.
- Lagona nisi tiga fou i soo se vaega o le tino.
- Pe afai ua lavea pe iai se manu'a i lou tino.
- Pe afai e te mātauina se tiga, fulafula, mūmū pe pā solo mai ni alou i soo se vega o lou tino.

Bruising and/or bleeding

Your platelet count may also be affected and you could become thrombocytopenic (a low number of platelets circulating in the blood). When your platelet count is very low you can bruise and bleed more easily. During this time, it is helpful to avoid sharp objects in your mouth such as potato chips as these can cut your gums. Using a soft toothbrush also helps protect your gums. In some severe cases, a transfusion of platelets is given to reduce the risk of bleeding until the platelet count recovers.

Anaemia

If your red blood cell count and haemoglobin levels drop you may become anaemic. When you are anaemic you feel more tired and lethargic than usual. Other symptoms of anaemia include weakness, dizziness, pale skin and feeling short of breath when exercising.

If your haemoglobin level is very low, your doctor may prescribe a blood transfusion.

Nausea and vomiting

Nausea and vomiting are often associated with chemotherapy. You will be given anti-sickness drugs (otherwise known as antiemetics) before and for a few days after your chemotherapy treatment. Be sure to tell your haematologist if you think the antiemetics are not working for you and you still feel sick. There are many different types if antiemetics that can be tried. A mild sedative may also be used to help stop you feeling sick. This will help you relax but it might make you a little sleepy.

Some people find that eating smaller meals more frequently during the day, rather than a few large meals, helps to reduce nausea and vomiting. Drinking ginger ale or soda water and eating dry toast may also help if you are feeling sick. Getting plenty of fresh air, avoiding strong or offensive smells and taking the prescribed anti-sickness drugs as recommended by the nurse and doctor should also help.

Mucositis

Mucositis occurs when chemotherapy breaks down the rapidly divided epithelial cells lining the gastrointestinal tract (which goes from the mouth to the anus). This leaves the mucosal tissue (mucous membrane) open to ulceration and infection. More commonly the mouth and throat are affected and can cause pain, ulcers and increased saliva.

Mucositis can be quite painful and may require you to take pain relief medications. Mouthwashes/rinses are also helpful. Please ask your nurse for the hospital's recommended mouthwash guidelines as some products that you can buy at the supermarket might not be suitable.

Bowel changes

Chemotherapy can cause damage to the lining of your bowels, which can cause cramping and diarrhoea. Be sure to tell your health care team if you are experiencing these symptoms. It is also important to tell them if you are experiencing constipation, discomfort or tenderness when you are going to the toilet. Some treatment can cause constipation but there are medications to help prevent or fix this. It's important to drink plenty of water to stay well hydrated.

Uno'oa le tino ma/pe piliki

Atonu ua aafia foi le tele o ou sela faato'a toto ma ua e oo ai i le tulaga ua faaitiitia le aofai o sela faato'a toto o loo fegasoloai i le toto (thrombocytopenic). Pe a oo ina matuā itiiti le aofai o ou sela faato'a toto, e uno'oa lou tino ma faigofie ona e piliki. O taimi faapena, e lelei pe a alofia le iai o ni mea e maamaai pito i totonu o lou gutu, e pei o potato chips, ona e ono seleia ai ou gao. E fesoasoani foi pe a e faaaogā se pulumu fulunifo vaivai e fufulu ai ou nifo ina ia puipui ai ou gao. I nisi tulaga e ogaoga atu, e tui atu ai ni sela faato'a toto ina ia faaitiitia le lamatiaga o le piliki se'i oo ina toe tulaga lelei le aofaiga o na sela faato'a toto.

Totovaivai

Afai e pa'ū le aofai o sela mūmū ma 'alumūmū o lou toto, e oo ina e maua i le totovaivai. A oo ina e totovaivai, e te lagona ua ova lou lē lavā ma e matuā vaivai lava nai lo le tulaga masani. O isi āuga o le totovaivai e aofia ai le vaivai, e faaniniva, e sesega le tino ma tau lē lava le mānava pe a fai ni faamalositino.

Afai ua matuā itiiti lava le aofai o ou 'alumūmū, e ono faatonuina e lau foma'i le faia o se tuigatoto.

Faafaufau ma faasuati

E masani ona iai aafiaga o le faafaufau ma faasuati pe a fai le chemotherapy. A'o lei faia lau chemotherapy, e avatu ia te oe ni fualaau e taofi ai faalogona ma'i (anti-sickness drugs, e ta'u foi o antiemetics) e inu, pe avatu foi ina ua mavae ni nai aso talu ona uma lau chemotherapy. Ia mautinoa e ta'u i lau haematologist pe afai e te manatu e lē o aogā ia te oe antiemetics ma o loo ia te oe pea faalogona ma'i. E tele ituaiga eseese o antiemetics e mafai ona faataitai. E iai foi se fualaau e lē malosi tele (sedative) e mafai ona faaaogā e taofi ai na lagona ma'i. O le a aogā lea e faanofofilemu ai ou faalogona ae atonu e te tau lagona ai sou fia moe.

O nisi tagata ua latou iloa, e faaitiitia le faafaufau ma le faasuati, pe afai e taumafa soo ni nai 'aiga laiti a'o faagasolo le aso, nai lo le soona taumafa i se taumafataga telē. E aogā foi pe a inu sau ginger ale poo se vai (soda water) ma 'ai se falaoa faapa'u e lē faapatā, pe a oo ane faalogona ma'i. E aogā foi le lava lelei o le ea fou e te mānavaina, ia alofia ni manogi malolosi, ma ia inu sa'o fualaau malolosi faapitoa e taofi ai faalogona ma'i (anti-sickness drugs) e pei ona faatonu atu e le tausi soifua ma le foma'i.

Sau le vavale i le gutu

E sau le piapia poo le vavale i le gutu (mucositis) pe a faapogaia e le chemotherapy le tā'ape ai o sela (epithelial cells) ia ua vave le mavaevae seia oo ina faasolo e avea ma otaotavale (lea e sau mai le gutu agai i le ālafe'au). Ona maua ai lea o 'afuvavale (mucous membrane) ma oo ina papala ma siamā. O le aafiaga taatele o le aafia o le gutu ma le faa'ī ma lagona ai le tiga, e iu ina papala ma tumu ai le gutu i fāua.

E mafai ona matuā tiga lava lea āuga ma ono manaomia ai ona e inu ni fualaau e faate'a ai le tiga. E aogā foi le faaaogā o vailaau ia e pūpū ma faamanogi ai gutu. Fesili i lau tausi soifua mo le fua talafeagai a le falema'i i vailaau ia e pūpū ai gutu, ona o nisi vailaau ia e faatau i supamaketi atonu e masani ona lē talafeagai.

Suiga i le gaau

E mafai e le chemotherapy ona faaleagaina ai le faataatiaga o ou gaau (bowels), lea e faapogaia ai le uaua migi ma le manavatatā. Ia mautinoa e te ta'u atu i le vaega o loo tausia lou soifua mālōlōina pe a oo ia te oe na āuga. E tāua foi le ta'u ia i latou pe afai o mamau lou manava, pe lē o alu lelei au fe'aumamao i le taimi e te alu ai i le faleese. E faapogaia e nisi togafitiga le manava mamau ae iai fualaau e inu e fesoasoani e taofia pe faaleleia ai lenei tulaga. E tāua le toaga e inu le vai ina ia lava lelei le vai i totonu o lou tino.

Hair loss

Alopecia (or hair loss) is a very common side effect of some types of chemotherapy drugs. It is usually temporary and your hair will start growing back after you stop chemotherapy. You may lose hair all over your body including eyebrows, eyelashes and pubic hair.

There are several things you can do to make yourself more comfortable if you lose your hair, which include:

- Wear a warm hat or beanie outside or overnight to keep your head warm.
- Wear a sunhat and apply sunscreen when you are outside as your skin will be sensitive to the sun and can burn easily.

Fatigue

Most people experience some degree of tiredness following chemotherapy. Extreme tiredness and fatigue is one of the most common symptoms and can be distressing and hard to manage. Fatigue is not relieved by rest and affects you physically, psychologically and socially. It may improve when treatment is finished but for some people it may last for months or years.

It is important to eat well, drink plenty of water and remain active by doing gentle exercise. It is important to talk to your nurse and doctors about your symptoms of fatigue and how you are coping.

More information available online

Radiotherapy

Radiotherapy (also known as radiation therapy) uses high-energy x-rays to kill cancer cells and shrink tumours. Radiotherapy is generally regarded as local therapy because it only destroys cancer cells in the treated area.

The radiation field is the area of the body that is being treated. Common radiation fields include the mantle field (neck, chest and armpit), the upper abdominal field (abdomen and sometimes the spleen) and the pelvic field (hips and groin). Due to improvements in technology, the radiation field can often be individualised to maximise treatment and reduce side effects. This is termed 'involved field' or 'involved site' radiation therapy.

What is involved in radiotherapy?

Before you start radiotherapy, a radiation specialist (a doctor who specialises in treating people with radiotherapy) will carefully calculate the correct dose of radiation therapy for you. The areas of your body that need to be treated will be marked with tiny ink dots on your skin. Sometimes a mould will need to be made, which helps hold you in place during the radiotherapy session.

Radiotherapy is usually given in small doses (also known as fractions) each weekday (Monday to Friday) over a few weeks in the radiotherapy department of the hospital. You do not usually have to be admitted to hospital for this treatment, but if you live far away you may need to organise some accommodation for this time. The social worker or nurses can assist you with his.

To'ulu le lauulu

O le alopecia (poo le to'ulu o le lauulu) o se aafiaga masani lava lea o nisi vailaau malolosi mo le faiga o le chemotherapy. E tupu mo se taimi lē tumau ma o le a toe tutupu lou lauulu pe a ua faauma le chemotherapy. E ono to'ulu uma lauulu ma fulufulu o lou tino e aofia ai ou fulufulumata, laumata ma fulufulu i autafa o totogasā.

E iai nisi mea e mafai ona e faia ina ia lelei ai pea ou faalogona pe a to'ulu ou lauulu, e aofia ai:

- Fai sou pulou mafanafana poo se beanie pe a e alu i fafo mai le fale pe e te moe foi ma oe e faamafanafana ai lou ulu.
- Fai sou pulou o le lā ma u'u lou tino i se kulimi sunscreen pe a e alu i fafo mai le fale, talu ai o le a ilitata lou tino i le lā ma faigofie ai ona mū.

Matuā ivā

O le toatele o tagata e oo ina matuā vaivai lava pe a uma ona faia le chemotherapy. O le matuā vaivai pe matuā ivā o se tasi o āuga sili ona taatele ma e mafai ona faatiga mafaufau ma faigata ona pulea lelei. O le matuā ivā e lē foia pe a e mālōlō ma e aafia ai lou tino, lou mafaufau ma lou vafealoai ma isi. Atonu e toe feoloolo ane pe a uma togafitiga ae mo nisi tagata, atonu e tele masina poo tausaga o iai lava nei aafiaga.

E tāua ona lelei le tausami, ia toaga e inu le vai ma faagaioi pea le tino e ala i le fai o nai faamalositino māmā. E tāua ona e talanoa i lau tausi soifua ma au foma'i e faatatau i āuga o loo e fesaga'ia o le matuā ivā ma le auala o loo e onosaia ai.

Tele isi faamatalaga o loo maua i luga o le initaneti

Radiotherapy

O le radiotherapy (e ta'ua foi o le radiation therapy) e faaaogā ai fā'ata uila malolosi e tapē ai sela kanesa ma toe faamimigi ai tuma. O le radiotherapy e manatu i ai le lautele o se togafitiga pumoomoo (local therapy) auā e na te faatama'ia pe tapēina na'o sela kanesa i vaega o le tino lea e togafitia.

O le radiation field, e faasino atu i le vaega o le tino o loo togafitia. O radiation fields ua masani ai, e aofia ai le mantle field (patu i le ua, fatafata ma 'ao'ao), le upper abdominal field (patu i le manava ma nisi taimi o le atepili) ma le pelvic field (patu i suilapalapa ma auaga). Ona o le agaigai i luma o le atamai faatekonolosi, ua masani ona auauai le faiga o le radiation ina ia faavāvā ai le faatinoga o le togafitiga ma faaitiitia ai ni āuga lē lelei e ono iai. E ta'ua lena togafitiga o le radiation o le 'involved field' poo le 'involved site'.

O le ā e aofia i le faiga o le radiotherapy?

A'o lei amata lau radiotherapy, o le a fua ma le faaeteete e le radiation specialist (se foma'i ua faapitoa i le togafitia o tagata o loo faia i ai le radiotherapy) ina ia mautinoa e sa'o lelei le malosi o le fua o le uila e togafitia ai oe. O le a togitogi ai ni maka ninii e faailoga ai vaega o lou tino lea e moomia ona togafitia. O nisi taimi o le a moomia ona fai se mea (mould) e fesoasoani e taofi lelei ai oe a'o faagasolo le togafitiga i le radiation.

O le radiotherapy e masani ona auauai le faiga i ni vaega laiti i aso taitasi o le vaiaso (Aso Gafua i le Aso Faraile) mo ni vaiaso i le vaega o le falema'i o loo faia ai lea togafitiga. E lē manaomia ona taofia oe i le falema'i mo le faiga o lenei togafitiga, ae afai e mamao le mea e te alaala ai, atonu la e moomia ona faatulaga se nofoaga latalata mo oe i le taimi o lou togafitiga. E mafai ona fesoasoani atu le social worker poo tausi soifua ia te oe i lea itu.

When you are having radiotherapy you usually lie on a table underneath the radiotherapy machine, which delivers the planned dose of radiation. Important structures such as your heart and lungs are shielded as much as possible to ensure that they are not affected by the treatment given. Radiotherapy is painless – in fact, you do not see or feel anything during the actual treatment. You will need to stay very still for a few minutes while the treatment is taking place. You might like to bring along some music to help you relax.

Side effects of radiotherapy

Radiotherapy can cause similar side effects to those caused by chemotherapy including nausea and vomiting, hair loss and fatigue. These are described in the previous section on page 40.

Skin reactions

Radiotherapy can cause a reddening of the skin that may also flake and become itchy. The staff at the radiotherapy department will advise you on how to care for your skin while you are having treatment. Gentle washing (avoiding perfumed products like scented soaps) and drying (patting rather than rubbing) is often recommended. You should also avoid any creams or moisturisers that contain traces of metals. Check with the radiotherapy department staff if you are unsure.

It is best to avoid direct sunlight on any area of skin that has received radiotherapy, even after the therapy has finished. This is because radiotherapy makes your skin more vulnerable to the damaging effects of the sun (i.e. sunburn and skin cancers).

Stem Cell Transplant

High doses of chemotherapy and radiotherapy destroy stem cells and your body cannot recover on its own. If you have a stem cell transplant, you are given high-dose chemotherapy followed by stem cells through a drip to replace the ones that were destroyed. The stem cells you are given may come from someone else (a donor) or may be your own stem cells that were frozen before the high-dose chemotherapy.

A stem cell transplant may also be called a bone marrow transplant or a peripheral blood stem cell transplant.

There are two types of stem cell transplant:

- **An autologous transplant** involves collecting your own stem cells, usually from your bloodstream, storing them and then returning them after you have received high doses of chemotherapy.
- **An allogeneic transplant** is where the stem cells are donated by another person, usually a sibling or unrelated matched donor. These donated stem cells replace your immune system with the immune system of the donor.

Having a stem cell transplant is a high-risk treatment option and a lot of things are taken into consideration before it is offered by your haematologist.

Palliative Care

The palliative care team is made up of doctors, nurses and other health care professionals who specialise in managing symptoms of blood cancers. They aim to improve quality of life through support and services as you face a life-limiting illness.

Pe a fai lau radiotherapy, e masani ona e taoto i luga o se laulau i lalo ifo o se masini lea na te kiliva maia le tele o le uila ua faatulaga mo le togafitia o oe. E tatau ona matuā puipuimalu ou totoga tāua nei e pei o lou fatu ma ou māmā ina ia mautinoa e lē o afaina ane i le faiga o lou togafitiga. E lē tiga le radiotherapy – e matuā leai lava se mea e te iloa pe te lagonaina i le taimi o loo fai ai ou togafitiga. E manaomia ona aua e te minoi solo mo ni nai minute a'o faagasolo le togafitiga. E manaia foi pe a aumai sau musika e tātā e faanofofilemu ai ou faalogona a'o fai lou togafitiga.

Āuga lē lelei o le radiotherapy

O āuga lē lelei o le radiotherapy e tai tutusa lava ma āuga pe a fai le chemotherapy, e pei o le faafaufau ma le faasuati, to'ulu lauulu ma matuā ivā. O loo faamatalaina nei āuga i le vaega ua tuanai atu i le i le itulau e 41.

Āuga i le pa'u o le tino

O le radiotherapy e mafai ona pata ai le pa'u o le tino ma e ono mafugafuga foi ma amata ona mageso. O le a faailoa atu ia te oe e le aufaigaluega o loo faia le radiotherapy le auala e te tausia ai le pa'u o lou tino a'o faia ou togafitiga. E masani ona fautuaina, afai e te faamālū (aua le faaaogāina ni mea manogi e pei o fasimoli ma fagu ta'ele manogi), a faamago lou tino (tootoo mālie i le solo nai lo le olo o le solo) i lou tino. E tatau foi ona alofia lou toe faaaogāina o soo se kulimi poo u'u faamomosi o loo iai ni mea ninii mai u'amea (metals). Afai e te lē o mautinoa, fesili muamua i le vaega o loo faia le radiotherapy.

E sili ona lelei pe a aua ne'i toe aliali sa'o i le lā soo se vaega o le pa'u o lou tino lena o loo faia i ai le radiotherapy, e tusa lava pe ua mae'a lou togafitiga. Talu ai o le radiotherapy e faigofie ona leaga ai le pa'u o lou tino pe a soona lāina (e pei o le mū o le pa'u ma le kanesa o le pa'u).

Taotoga e Suia Sela Autū

O vailaau malolosi o le chemotherapy ma le radiotherapy e faatama'iaina ai sela autū ma lē mafai ai e lou tino ona toe galue e toe faafoi lona malosi. Afai sa fai sou taotoga e suia ai ou sela autū, lona uiga na tuiina ia te oe ni vailaau malolosi o le chemotherapy ona sosoo lea ma le tui i totonu (e faatulutulu) o sela autū e suia ai sela autū ia ua faatama'ia. O sela autū nei ua tuuina atu ia te oe atonu e aumai mai se isi tagata (na foai mai) pe o ou lava sela autū sa faafulisa a'o lei tuiina vailaau malolosi o le chemotherapy ia te oe.

O le taotoga e suia le sela autū e mafai foi ona ta'ua o le taotoga e suia le 'anoivi poo se taotoga e suia sela autū (peripheral blood stem cell transplant).

E lua ituaiga o taotoga e suia ai le sela autū:

- **O le autologous transplant** e aofia ai le aoina mai o ou lava sela autū, mai le fetafea'iga o lou toto, ona teu lea se'i mae'a ona tui atu vailaau malolosi o le chemotherapy ia te oe, ona toe faafoi atu lea o na sela autū.
- **O le allogeneic transplant** e faaaogā ai sela autū e foai mai e se isi tagata, ma e masani lava o se uso/tuagane/tuafafine o lē o loo gasegase, poo se tagata e leai se lua sootaga ae tutusa lua toto. O nei sela autū na foai mai ua suia ai lou immune system (vaega e puipuia lou tino mai faama'i) i le immune system o le tagata lea na aumai ai sela autū.

O le faia o se taotoga e suia ai le sela autū o se togafitiga e telē lava le lamatiaga, ma e tele mea e tatau ona talanoaina a'o lei ofo mai e lau haematologist le faia o lea togafitiga.

Palliative Care

O le vaega mo le palliative care (tausiga faatoomaga) e faia a'e i foma'i, tausi soifua ma isi tagata ua tomai faapitoa i le faatinoina o le tausiga faasoifua mālōlōina, ma ua iai tomai faapitoa i le faafoeina o āuga o le kanesa o le toto. Latou te taulai ina ia toe faaleleia le tulaga anagatā o le soifua e ala i fesoasoani ma

The palliative care team may be involved in providing you with supportive care.

Many people associate the word 'palliative' with end-of-life care. The palliative care team supports all people with blood cancers, including end-of-life care.

Complementary Therapy

Complementary therapies are not considered standard medical treatment, however many people find that they are helpful in coping with their treatment and recovery from disease. There are many different types of complementary therapies. Examples include:

- Yoga
- Exercise
- Meditation
- Prayer
- Acupuncture
- Relaxation
- Massage
- Homeopathy
- Visualisation
- Aromatherapy
- Reiki
- Art therapy
- Music therapy
- Tai chi

Complementary therapies should 'complement' or assist with recommended medical treatment. They are not recommended as an alternative to medical treatment. It is important to realise that no complementary or alternative treatment has been proven to be effective against blood cancers and conditions. It is also important to let your haematologist know if you are using any complementary or alternative therapies in case they interfere with the effectiveness of chemotherapy or other treatments you may be having.

auaunaga e faatino a'o e fesaga'ia se gasegase ua faatapulaa mai ai le umi o lou soifua. O le vaega foi mo le palliative care atonu e aofia i le saunia o le tausiga lagolagosua.

O le toatele o tagata latou te faafesootaia le upu 'palliative' ma le tausiga faaiu o le soifua. O le vaega mo le palliative care latou te lagolagosua i tagata uma ua aafia i le kanesa o le toto, e aofia ai ma le tausiga faaiu o le soifua.

Togafitiga Faaopoopo

O togafitiga faaopoopo, e lē o manatu i ai o ni togafitiga ua faatulagaina e le falema'i, peitai ua iloa e le toatele le aogā e mapu i ai a'o faia o latou togafitiga ma le faasolosolo mai seia toe malolosi. E tele ituaiga eseese o togafitiga faaopoopo. Mo se faataitaiga e aofia ai le:

- Yoga
- Faamalositino
- Mafaufau loloto
- Tatalo
- Acupuncture
- Relaxation
- Fofō
- Homeopathy
- Visualisation
- Aromatherapy
- Reiki
- Art therapy
- Music therapy
- Tai chi

O togafitiga faaopoopo e tatau ona faatino e 'faaatoa' pe fesoasoani atili e faapaleni ai se togafitiga faafoma'i ua fautuaina. E lē o fautuaina le faaaogā o nei togafitiga faapea e sui i ai le togafitiga faafoma'i. E tāua ona silafia, e leai se togafitiga faaopoopo faapena ua faamaonia faapea e lava na togafitiga e mafai ai ona toe malosi se tasi mai āuga ua iai ona o le kanesa o le toto. E tāua foi ona e faailoa i lau haematologist pe afai o loo e faaaogā na togafitiga faaopoopo, ina ne'i faalavelavea ai le aogā o le chemotherapy poo isi togafitiga faafoma'i o loo faia ia te oe.

MAKING TREATMENT DECISIONS

Many people are overwhelmed when they are diagnosed with a blood cancer or blood condition.

In addition to this, waiting for test results and then having to make decisions about proceeding with the recommended treatment can be very stressful. Some people do not feel that they have enough information to make such decisions, while others feel overwhelmed by the amount of information they are given. It is important that you feel you have enough information about your illness and all of the treatment options available, so that you can make your own decisions about which treatment to have.

Second opinion

You can ask for a second opinion. A second opinion is when you see a different haematologist about your diagnosis and/or treatment. You can ask any member of your health care team, including your current haematologist, about getting a second opinion.

Questions to ask your health care team

Before going to see your haematologist, make a list of the questions you want to ask. It may be useful to keep a notebook or some paper and a pen handy so you can write down questions as they come to mind.

Bring a support person

Sometimes it is hard to remember everything the doctor has said. It may help to bring a family member or friend along who can write down the answers to your questions or prompt you to ask others, be an extra set of ears or simply be there to support you.

Being in a clinical trial

Your doctor might ask if you would like to take part in a clinical trial (also called research studies). Clinical trials help find out if a new treatment or different ways of giving treatment are better than treatments that are already available.

Taking part in a clinical trial is voluntary, which means that you do not have to take part if you do not want to. If you do not want to be part of a clinical trial, your decision will be respected. You do not have to give any reason why you don't want to be part of the trial and there will be no change in the way you are treated by the hospital or health care team.

Make sure you understand the reasons for the trial and what is involved. You need to give informed consent for a clinical trial. Take time to talk through the trial with your haematologist and other members of the health care team before signing the consent form.

More information available online

FAIGA O FAAIUGA MO TOGAFITIGA

E toatele tagata e matuā mafatia lava pe afai ua faamaonia ua aafia i le kanesa o le toto poo nisi ma'i o le toto.

E oo foi i le taimi o loo faatalitali ai mo iuga o le suesuega sa fai, seia oo ina o le a filifili pe tatau ona faia ni togafitiga, e matuā mafatia ai lava le mafaufau. O manatu o nisi tagata, e lei lava faamatalaga ua latou maua e fua i ai na filifiliga, ae manatu isi ua tele nauā faamatalaga, ua faigata ai ona faatulaga lelei a latou filifiliga e fai. E tāua ona e lagona o loo lava faamatalaga ua e maua e uiga i lou gasegase ma togafitiga uma o loo avanoa mo oe, ina ia fai ai au lava filifiliga poo lē fea le togafitiga e fai mo oe.

Se isi manatu

E mafai ona e fesili mo se isi manatu. E te maua se isi manatu pe a e alu e vaai se isi haematologist e uiga i le ma'i ua e maua ai ma/poo togafitiga. E mafai ona e maua se isi manatu pe a e fesili atu i soo se tasi o le vaega o loo tausia lou soifua mālōlōina, e aofia ai lau haematologist o loo iai i le taimi nei.

Fesili e te fesiligia ai le vaega o loo tausia lou soifua mālōlōina

A'o e lei agai e vaai lau haematologist, tusi muamua sau lisi o fesili uma e te manao e fesili atu ai. Atonu e aogā le faataatia o se api poo se pepa ma se peni i se mea e faigofie ona e tapa atu i ai, ina ia e tusi ai i lalo au fesili pe a oso ane i lou mafaufau.

Aumai se tagata lua te toalua

O nisi taimi e faigata ona manatua mea uma na ta'u atu e le foma'i. E aogā pe a lua o mai ma se isi tagata o lou aiga poo sau uo foi, e na te tusia i lalo tali o au fesili, pe faamanatu ia te oe e fai isi fesili, e fesoasoani na te faalogoina nisi mea o ta'ua, pe tau lava foi o le sau e te lua toalua.

Auai i se faataitaiga faafoma'i

E ono fesiligia oe e lau foma'i pe e te fia auai i se faataitaiga faafoma'i (e ta'ua foi o suesuega tau sailiiliga). E aogā nei faataitaiga faafoma'i e iloa ai pe o se togafitiga fou ua iai poo nisi auala e ese mai ua faatino ai togafitiga, e sili atu ona lelei nai lo togafitiga ua leva ona iai.

E lē faamalosia le auai i le faataitaiga faafoma'i, lona uiga e te lē auai pe afai e te lē manao ai. Afai e te lē fia auai i le faataitaiga faafoma'i, o le a faaaloalogia lau faaiuga. E te lē tau faailoa mai se mafuaaga o lou lē fia auai, ma o le a lē suia ai fua le auala e togafitia ai oe e le falema'i poo le vaega o loo tausia lou soifua mālōlōina.

Ia faamautinoa o loo e malamalama i mafuaaga mo le faataitaiga ma mea o loo aofia ai. E moomia ona aumai sau maliega manino mo se faataitaiga faafoma'i. Faaalu se taimi e te talanoaina ai le faataitaiga faatasi ma lau haematologist ma isi sui o le vaega o loo tausia lou soifua mālōlōina a'o lei sainia le pepa o le maliega.

Tele isi faamatalaga o loo maua i luga o le initaneti

RELATIONSHIPS

A diagnosis of a blood cancer can have a positive and negative impact on relationships with family and friends.

Good communication is essential to supporting your relationships with your partner, children or friends.

Talking to your children

Helping children understand your diagnosis and how this will affect them can help them to cope with the changes and challenges.

Counselling or psychological support is available if you are concerned about how your child or children are coping. Ask your health care team or LBC Support Services Coordinator for more information.

For preschool or school-age children, it is a good idea to speak with their teachers and let them know about your diagnosis and how this is affecting family routines and relationships.

More information available online

Sexual relationships

You cannot give cancer to another person when you have sex with them.

People who have a blood cancer diagnosis and treatment can experience changes in their sex life. The reasons for this include:

- Extreme tiredness (fatigue)
- Side effects of treatment, e.g. nausea
- Changes in mood, e.g. anxiety
- Changes to your body image due to hair loss, weight change
- Changes to your libido
- Vaginal dryness or difficulty getting an erection

After your treatment, your sex life should start to return to how it was before your diagnosis.

It is important to talk to your partner about sex and how your diagnosis and treatment are making you feel. If you are having problems with sex and it is affecting your relationship, or you are worried about starting a new relationship, speak with someone in your health care team. They can give you more information or refer you to someone who can help.

Contraception

If you are having treatment for a blood cancer, you should always use a condom when having sex.

Even if you are beyond child-bearing age or no longer need birth control, it is still important to use a condom. The two main reasons for this are:

1. To protect yourself from getting an infection. Your low white blood cell count puts you at a higher risk of infection.
2. To protect your sexual partner while you are having chemotherapy. Chemotherapy drugs are secreted (come out) from your body via your urine, your bowel motions and other body secretions such

FAIĀ

O le maua o se tasi i le kanesa o le toto e oo ai ni aafiaga lelei pe lē lelei i ana faiā ma lona aiga ma ana uō.

E moomia tele fesootaiga lelei ina ia fesoasoani i au faiā ma lau paaga, lau fanau poo au uō.

Talanoa i lau fanau

Taumafai ia malamalama si au fanau i le ma'i ua e maua ai, ma o le auala o le a aafia ai i latou i lenei mea e mafai ai ona latou onosaia suiga ma lu'itau o le a tulai mai.

O loo maua fautuaga ma fesoasoani tau le mafaufau pe afai o loo e atugalu pe o le a faapefea ona onosaia e lau tama poo lau fanau. Fesili atu i le vaega o loo tausia lou soifua mālōlōina poo le LBC Support Services Coordinator mo nisi faamatalaga.

Mo fanau laiti (o loo i aoga amata ma aoga tulagalua), o se mea lelei le talanoa atu i o latou faiaoga ma faailoa i ai lou gasegase ma le aafiaga ua iai ia outou faasologa masani ma tou faiā o se aiga.

Tele isi faamatalaga o loo maua i luga o le initaneti

Faiā tau feusua'iga

E lē mafai ona e pasia atu le kanesa i le isi tagata pe a fai lua feusua'iga.

E mafai ona iloa e tagata ua aafia ma togafitia i le kanesa o le toto ni suiga i le faiga o ana feusua'iga. O le mafuaaga mo lenei suiga e aofia ai:

- Matuā lē lavā (vaivai)
- Isi āuga lē lelei o togafitiga, e pei o le faafaufau
- Suiga i faalogona, e pei o le
- Suiga i lou fuaitino ona ua to'ulu lou lauulu, ua sui lou mamafa
- Suiga i ou faanaunauga tau feusua'iga
- Ua mātūtū le sua mai lou totogasā pe ua faigata ona faaosofia lagona fia feusua'i

Pe a mae'a ou togafitiga, ua tatau ona toe foi ou lagona mo feusua'iga e pei o le tulaga sa iai a'o e lei aafia i le ma'i.

E tāua lou talanoa i lau paaga e uiga i feusua'iga ma ou faalogona ua iai ona o le ma'i ma ou togafitiga. Afai ua tulai ni faafitauli i au feusua'iga ma ua afaina ai le lua faiā poo le lua mafutaga, poo e popole i le amataina o se faiā fou, talanoa atu i se tasi o le vaega o loo tausia lou soifua mālōlōina. E mafai ona latou avatu ia te oe nisi faamatalaga pe faasino oe i se tasi e mafai ona fesoasoani atu.

Puipuiga ina ia lē ma'itaga

Afai o loo fai ni ou togafitiga mo le kanesa o le toto, e tatau lava ona e faaaogāina se pa'u faiusuga pe a fai feusua'iga.

E tusa lava pe ua e pasia tausaga o le soifua e ono maua ai se tamaitiiti pe ua lē o toe moomia foi ona tau puipuia mai le oo ina ma'itaga, ae tāua pea ona faaaogā se pa'u faiusuga. O mafuaaga autū e lua mo lenei faiga:

1. Ina ia puipuia mai oe mai le aafia i se siama. Ona o loo itiiti le aofaiga o sela papa'e o lou toto e matuā lamatia ai oe i le aafia i se siama.
2. Ina ia puipuia ai lau paaga o loo lua feusua'i a'o fai ou togafitiga i le chemotherapy. E mafai ona sao ese mai lou tino vailaau o loo fai ai lou chemotherapy, e ala mai lau fe'aulata (urine), o fe'aumamao ma isi sua e alu ese mai le tino e pei o le sua ola o le tane (sperm) ma sua pa'epa'e e alu ese mai le totogasā o le fafine (virginal secretions). O sina sua itiiti e sao ese mai o le chemotherapy e mafai ona afaina (e pata pe mageso) ai le pa'u o le tino o lau paaga.

as sperm and vaginal secretions. The small amounts of chemotherapy can cause irritation (a rash or itching) to your partner's skin.

If you are having sex and also receiving treatment for a blood cancer then there is a high risk of damage to an unborn child, so the appropriate contraception is essential.

Sex when you have a low platelet count

Speak with your doctor or nurse about sex if your platelet count is low as you may need to be careful due to the risk of bleeding. It is often a good idea for women to use a lubricating jelly ('lube') such as KY Jelly.

KEEPING IN GOOD HEALTH AFTER YOUR DIAGNOSIS

After a diagnosis of a blood cancer, it is important to look after your health. When you feel well enough, regular exercise and eating healthy food are very important.

So that you do not have complications from your treatment or long-term side effects, the following health changes should be made immediately:

- Stop smoking
- Protect your skin from the sun
- Stop drinking alcohol (or cut down)

Ask your doctor or nurse about support to help you stop smoking and to reduce or stop drinking alcohol.

Your health care team can advise you on how to keep well. The physiotherapist can advise you about the exercise that is right for you. The dietitian can advise you about eating well, especially if your treatment is making you feel sick or you have taste changes.

Contact your LBC Support Services Coordinator if you would like more information about exercise options in your area.

Afai e fai au feusua'iga i le taimi o loo fai ai foi ou togafitiga mo se kanesa o le toto, e telē lava se lamatiaga o le ono faatama'ia ai o se pepe e lei fanau mai, lea la e matuā manaomia ai ona fai ni puipuiga talafeagai ina ia lē maua i le ma'itaga.

Feusua'iga a'o itiiti le aofai o ou sela faato'a toto

Talanoa atu i lau foma'i poo se tausi soifua e faatatau i feusua'iga pe afai o loo itiiti le aofai o ou sela faato'a toto (platelet count) talu ai e tatau ona e faaeteete i lou ono piliki. E masani ona lelei le faaaogā e fafine o se kulimi (lubricating jelly – lube) e pei o le KY Jelly.

TAUSIA PEA LOU SOIFUA MĀLŌLŌINA LELEI INA UA FAAMAONIA UA E AAFIA I SE MA'I

Pe afai ua faamaonia le aafia i le kanesa o le toto, e tāua lava le tausi lelei o lou soifua mālōlōina. Afai ua malosi lelei lau faalogo, e tāua tele le fai e lē aunoa au faamalositino ma tausami i meaai tatau.

Ina ia aua ne'i iai ni aafiaga tugā mai ou togafitiga poo nisi aafiaga faaumiumi e lei faatalitalia, o suiga nei ua tatau loa ona fai mo lou soifua mālōlōina:

- Tuu loa le ulaula tapaa
- Puipui lou tino mai le lā
- Taofi (pe faaitiitia) le 'ava malosi

Talosaga atu i lau foma'i poo se tausi soifua e faatatau i fesoasoani e tuu ai lau ulaula pe faaitiitia pe tuu motu ai foi lau 'ava malosi.

E mafai e le vaega o loo tausia lou soifua mālōlōina ona fautuaina oe i le auala e tumau ai lou malosi. E mafai e le tagata o loo faia au faamalositino (physiotherapist) ona fautuaina oe i faamalositino e tatau ona e faia. E mafai e le tagata o loo fuaina au meaai tatau (dietitian) ona fautuaina oe i meaai e tatau ona e tausami ai, aemaise lava pe afai ua faama'ia ou faalogona ona o ou togafitiga pe ua sui ai foi lau tofo i mea.

Faafesootai lau LBC Support Coordinator pe a e fia silafia nisi faamatalaga i ni auala e fai ai faamalositino i lou vaipanoa.

THE FUTURE

A diagnosis of a blood cancer can affect many areas of your life such as work or school, your emotions, relationships and finances.

For some people, a diagnosis of a blood cancer can mark a turning point in their life. For other people a diagnosis means they feel their life has been put 'on hold'. The length of time it may take to recover emotionally and physically from a diagnosis or treatment is different for everyone.

Getting back to your previous routine of work, school or childcare, for example, may be a goal or may not be what you want anymore. You may need to make a few adjustments to your life.

Once your treatment has finished, you will have regular check-ups with your haematologist and health care team. You will also be encouraged to go back to see your general practitioner (GP). Your health care team will send regular letters to your GP to tell them about your progress and what needs to be followed up, e.g. blood tests and vaccinations. If your GP has any questions, they are able to contact your haematologist for advice.

Your health care team and LBC Support Services Coordinator can help you manage:

- Day-to-day practical problems including work, travel and travel insurance.
- Relationships and communication with family, friends and colleagues.
- Emotional effects from your disease and treatment, including fear of relapse and feeling uncertain about the future.

There is a lot of support available to help you and your family cope.

LE LUMANAI

O le aafia i le kanesa o le toto e mafai ona aafia ai le tele o vaega o lou olaga e pei o lau galuega poo lau aoga, ou faalogona ootia, au faiā ma isi ma au tupe.

Mo nisi tagata, o le faamaonia mai e le foma'i ua aafia i le kenesa o le toto e mafai ona avea o se taililiu ua suia atoa ai o latou olaga. Mo nisi tagata, o se faamaoniga mai faapena e le foma'i e latou te lagona ai e peiseai ua 'faapafala' o latou olaga. E eseese uma lava mo tagata taitoatasi le umi o le taimi faato'ā toe sologa lelei aafiga i faalogona ma aafiaga i le tino ona o le ma'i ua aafia ai poo togafitiga ua fai.

O se faataitaiga, o lou toe foi i le faasologa masani o au galuega sa fai, o le aoga poo le tausia o tamaiti, atonu o se sini o loo e taulai i ai pe atonu o se mea e te lē o toe manao ai. Atonu ua e manaomia ona fai ni fetuutuuna'iga i lou olaga.

Pe a mae'a uma ou togafitiga, o le a fai ma toe siaki oe e lau haematologist ma le vaega o loo tausia lou soifua mālōlōina. O le a fautuaina foi oe e te toe foi e vaai lau foma'i masani (GP). O le a fai ma lafo atu e le vaega o loo tausia lou soifua mālōlōina, tusi i lau GP e faailoa i ai le tulaga ua oo i ai oe ma isi mea e moomia ona siaki, e pei o le sueina o le toto ma le faiga o tuipuipui. Afai e iai ni fesili a lau GP, e mafai ona ia faafesootaia lau haematologist mo ni fautuaga.

E mafai e le vaega o loo tausia lou soifua mālōlōina ma le LBC Support Services Coordinator ona fesoasoani atu ina ia e gafatia:

- Lu'itau masani mai lea aso i lea aso e aofia ai le galuega, faigamalaga ma le inisiua mo faigamalaga.
- Faiā ma fesootaiga ma aiga, uo, ma aumea i galuega poo aoga.
- O aafiaga i le itu i faalogona ona o lou ma'i ma togafitiga, e aofia ai lagona fefe ne'i meaane ua toe foi mai le ma'i ma lagona lē mautinoa mo le lumanai.

E tele le lagolagosua o loo maua e fesoasoani ia te oe ma lou aiga ina ia tou onosaia.

ACKNOWLEDGEMENTS

Leukaemia & Blood Cancer (LBC) New Zealand would like to thank everybody who has helped in the development of this booklet: those who have experienced a blood cancer, their personal supporters, health care team members and LBC staff.

Leukaemia & Blood Cancer New Zealand

Leukaemia & Blood Cancer New Zealand (LBC) is the leading organisation in New Zealand dedicated to supporting patients and their families living with leukaemia, lymphoma, myeloma and related blood conditions.

Since 1977, our work has been made possible through our fundraising events and the generous support we receive from individuals, companies, trusts and grants. We do not receive government funding.

LBC is committed to improving the quality of life for patients and their families living with these blood cancers and conditions by providing patient support services, investing and supporting research, providing information, raising awareness and advocating on behalf of patients and their families.

FAAFETAI

E fia momoli atu le faafetai tele a le Leukaemia & Blood Cancer (LBC) New Zealand ia i latou uma sa fesoasoani i le tapenaina o lenei tamai tusi: i latou ua aafia i le kanesa o le toto, o a latou tagata lagolago, o sui o le vaega o loo tausia le soifua mālōlōina ma le aufaigaluega a le LBC.

Leukaemia & Blood Cancer New Zealand

O le Leukaemia & Blood Cancer New Zealand (LBC) o le faalapotopotoga lea o loo taulamua i totonu o Niu Sila i galuega e lagolago atu ai i gasegase ma o latou aiga o loo aafia i le lukimi, limifoma, meloma ma isi gasegase e fesootai ma le toto.

Talu mai le 1977, ua mafai ona faatino a matou galuega e ala i ni sailiga tupe sa fai, ma le sasaa mai o le aao foai o tagata taitoatasi, kamupani, faalapotopotoga ma isi seleni faameaalofa. E matou te lē o mauaina se seleni mai le malo.

Ua galulue punoua'i le LBC ina ia toe faaleleia le tulaga anagatā o le soifua o gasegase ma o latou aiga o loo aafia i tulaga o le kanesa o le toto, e ala i le saunia o auaunaga fesoasoani mo gasegase, faatupeina ma lagolago i suesuega o loo fai, saunia o faamatalaga, uunaia le nofo silafia ma lagolago e fai ma sui o gasegase ma o latou aiga.

HAEMATOLOGY CENTRES IN NZ

Centre	Address	Phone
Whangarei Hospital	Hospital Road, Whangarei	(09) 430 4100
North Shore Hospital	Shakespeare Road, Takapuna	(09) 486 8900
Auckland City Hospital	Park Road, Grafton	(09) 367 0000
Starship Hospital	Park Road, Grafton	(09) 367 0000
Middlemore Hospital	Hospital Road, Otahuhu	(09) 276 0044
Waikato Hospital	Pembroke Street, Hamilton	(07) 839 8899
Thames Hospital	Mackay Street, Thames	(07) 868 0040
Tauranga Hospital	Cameron Road, Tauranga	(07) 579 8000
Rotorua Hospital	Pukeroa Street, Rotorua	(07) 348 1199
Hastings Hospital	Omahu Road, Hastings	(06) 878 8109
Whakatane Hospital	Stewart Street, Whakatane	(07) 306 0999
Palmerston North Hospital	Ruahine Street, Palmerston North	(06) 356 9169
Wellington Hospital	Riddiford Street, Newtown	(04) 385 5999
Nelson Hospital	Tipahi Street, Nelson	(03) 546 1800
Christchurch Hospital	Riccarton Avenue, Christchurch	(03) 364 0640
Dunedin Hospital	Great King Street, Dunedin	(03) 474 0999
Invercargill Hospital	Kew Road, Invercargill	(03) 218 1949

HAEMATOLOGY CENTRES I NZ

Nofoaga autū	Tuatusi	Telefoni
Whangarei Hospital	Hospital Road, Whangarei	(09) 430 4100
North Shore Hospital	Shakespeare Road, Takapuna	(09) 486 8900
Auckland City Hospital	Park Road, Grafton	(09) 367 0000
Starship Hospital	Park Road, Grafton	(09) 367 0000
Middlemore Hospital	Hospital Road, Otahuhu	(09) 276 0044
Waikato Hospital	Pembroke Street, Hamilton	(07) 839 8899
Thames Hospital	Mackay Street, Thames	(07) 868 0040
Tauranga Hospital	Cameron Road, Tauranga	(07) 579 8000
Rotorua Hospital	Pukeroa Street, Rotorua	(07) 348 1199
Hastings Hospital	Omahu Road, Hastings	(06) 878 8109
Whakatane Hospital	Stewart Street, Whakatane	(07) 306 0999
Palmerston North Hospital	Ruahine Street, Palmerston North	(06) 356 9169
Wellington Hospital	Riddiford Street, Newtown	(04) 385 5999
Nelson Hospital	Tipahi Street, Nelson	(03) 546 1800
Christchurch Hospital	Riccarton Avenue, Christchurch	(03) 364 0640
Dunedin Hospital	Great King Street, Dunedin	(03) 474 0999
Invercargill Hospital	Kew Road, Invercargill	(03) 218 1949

Contacting us

Leukaemia & Blood Cancer New Zealand provides services and support throughout New Zealand. Every person's experience of living with a blood cancer or condition is different. Living with leukaemia, lymphoma, myeloma or a related blood condition is not easy, and our Support Services Coordinators are here to help.

Freephone 0800 15 10 15
Telephone 09 638 3556
Facsimile 09 638 3557
Email info@leukaemia.org.nz

National Office

6 Claude Road, Epsom 1023
PO Box 99182, Newmarket 1149
Auckland, New Zealand

Faafesootai mai matou

E saunia e le Leukaemia & Blood Cancer New Zealand auaunaga ma le fesoasoani i vaega uma o Niu Sila. E eseese uma tulaga ma mea e oo i tagata taitoatasi ua aafia i le kanesa o le toto poo isi gasegase e fesootai ma le toto. E lē faigofie le ola ma ni aafiaga o le lukimi, limifoma, meloma poo se isi gasegase e fesootai ma le toto, ma ua nofo sauni a matou Support Services Coordinators e fesoasoani atu.

Telefoni vilifua 0800 15 10 15
Telefoni 09 638 3556
Facsimile 09 638 3557
Imeli info@leukaemia.org.nz

National Office

6 Claude Road, Epsom 1023
PO Box 99182, Newmarket 1149
Auckland, New Zealand

leukaemia.org.nz

OD - 9148 - 2018
Charities Commission no. CC24498

leukaemia & blood cancer NEW ZEALAND

Vision to Cure. Mission to Care.