Tongan

BLOOD CANCERS AND CONDITIONS

KO E KANISĀ ‘O E TOTÓ PEA MO E NGAAHI MAHAKI TOTO KEHEKEHE

A guide for patients and families

Ko e fakahinohino ma‘ae kau mahaki mo e fāmili

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 Tongan 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

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TALATEU

Ko e ki'i tohí ni na'e fa'u ia ke tokoni atu ke toe mahino ange kiate ko e mo ho fāmilí 'a e ngaahi kanisā 'o e totó pea mo e ngaahi mahaki pehē koe'uhi na'a 'oku 'ikai ke mahino lelei kiate koe 'a e lea 'Ingilisí.

Ko e tohí ni 'oku fokotu'utu'u atu 'i he lea 'Ingilisí 'i he to'ohemá pea faka-Tonga 'i he to'omata'ú. Ko e ngaahi fakamatalá ni na'e 'osi liliu mei he lea 'Ingilisí 'e he kau fakatonulea kuo nau 'osi lēsisita.

'Oku mahino pē foki 'oku ke hoha'a mo mo'utāfu'ua 'o kapau 'e fakahā atu kiate koe pe ko ha tokotaha 'oku ke tauhi, kuo mahino 'oku ke puke 'i he kanisā pe koha mahaki 'o e totó. Pea ko e me'a pe ia 'oku 'osi mahino 'a 'ene hokó. Mahalo na'a kuo 'osi kamata 'a hono faito'o koé pe 'oku mou lolotonga alea mo e kau tōketaá pea mo ho fāmilí pe ko e hā 'a e fa'ahinga faito'o 'e fiema'u ke faí. Neongo pe ko e hā 'a e me'a te mou iku ki aí, 'oku mau fakatauange ko e ngaahi fakamatala 'oku 'oatu 'i he tohí ni, 'e tokoni atu 'aupito ia ke tali ha'o ngaahi fehu'i pē ke fakamahino ha ngaahi me'a 'oku ke fie 'ilo ki ai. 'E ala 'ohake pe hū mai ai mo ha ngaahi me'a kehe pē fo'ou pea 'oku totonu ke ke fakahoko ia ke fai ha'a mou lau ki ai pea mo kinautolu 'oku nau tauhi koé.

Ko e tohí ni na'e fa'u ia ma'ae kakai kotoa pē kuo 'osi fakapapau'i mo mahino 'a e ngaahi mahaki kehekehe 'oku nau mo'ua aí. Pea 'i he 'ene peheé, 'oku 'i ai 'a e ngaahi fakamatala heni 'e 'ikai ha'a ne fekau'aki 'ana pea mo e mahaki 'oku ke mo'ua aí.

Na'e 'ikai ke fa'u 'a e tohi ni ke fokotu'u atu ha founga ke fai'aki hono faito'o koe. 'E fiema'u ia ke fakahā mo mou talanoa mo e toketā mo 'ene kau ngāué, ki he me'a 'oku hoko kiate koe 'i he taimi kotoa pe.

Fakatonulea

'Oku tu'utu'uni 'e he New Zealand Code of Health and Disability ko e tokotaha kotoa pē 'oku 'i ai 'ene totonu ke 'i ai ha fakatonulea 'i he fakahoko 'a 'ene 'apoinimeni faito'o. Kapau 'oku 'ikai ke lava 'a e mahaki pea mo e tokotaha 'oku totongi ke ne tauhi mo faito'o iá ke na femahino'aki 'i ha lea pē 'e taha, 'e lava ke tokoni atu ha taha 'o hano fāmili pe ko ha kaume'a. 'E lava 'e he falemahaki 'o kumi ha taha fakatonulea kuo 'osi ako'i.

DRY JULY FOUNDATION

Na'e lava 'a hono pulusi 'o e tohi ni 'i he tokoni mei he Dry July NZ.

Leukaemia & Blood Cancer New Zealand

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.

KO HONO FAKA'AONGA'I 'O E TOHI NI

Fakahinohino mahu'inga

'Oku lava ke ma'u ha tānaki mai ki he fakamatala ni mei he 'initaneti

'Oku lahi 'a e ngaahi fakamatala 'e ma'u mei he **leukaemia.org.nz** 'o hangē ko e ngaahi lau'itohi mo e tohi fakahinohino mo e alā me'a pehē. 'Oku 'i ai 'a e tohi 'oku ne fakamatala'i 'i he lea 'Ingilisi 'a e ngaahi mahaki mo e kanisā taautaha 'oku 'asi atu 'i he fakamatala ni. Kole ki ho'o LBC Support Services Coordinator ha tatau 'o e tohi 'oku ke fiema'u koe'uhi ke lau 'e ho fāmili pe ko hao kaungāme'a 'oku nau lava he lea 'Ingilisi mo lahi ange ai 'enau 'ilo.

CONTENTS

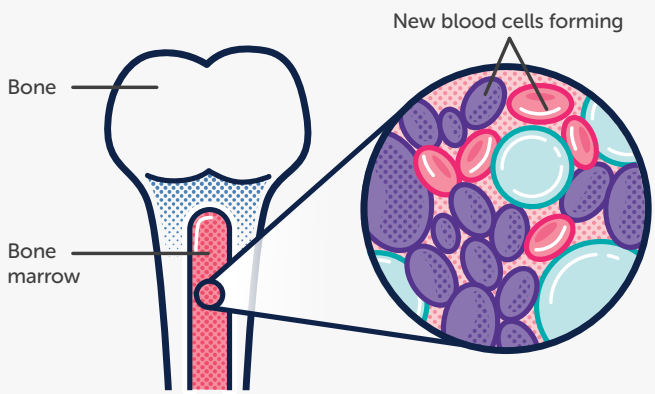
KAKANO

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

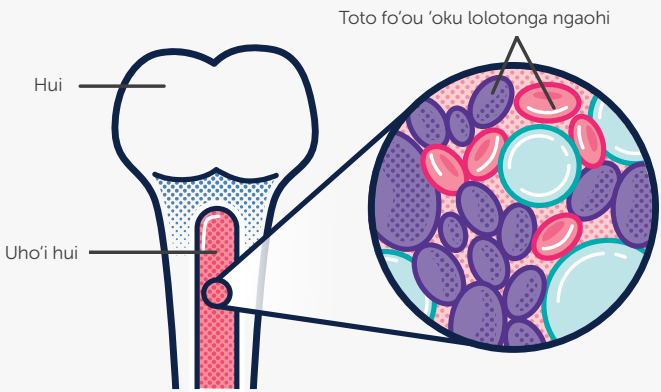


KO E UHO MOLŪ ‘O E HUI MO E SELA SITEMI ‘I HE TOTO

Ko e bone marrow ko e uho molū ia ‘o e hui (vakai ki he fakatātā fika 01).

Ko e kotoa ‘o ho toto ‘oku ngaohi ia mei he uho ‘o ho hui (bone marrow). Pea ‘oku ui ‘a e hono ngaohi ‘o e toto ko e hemopoiesi (haemopoiesis). ‘Oku 3 ‘a e fa’ahinga kehekehe ‘o e sela ‘o e toto: ko e sela toto kulokula, hinehina pea mo e peletileti (platelets).

Fakatātā fika
01
Uho‘i hui



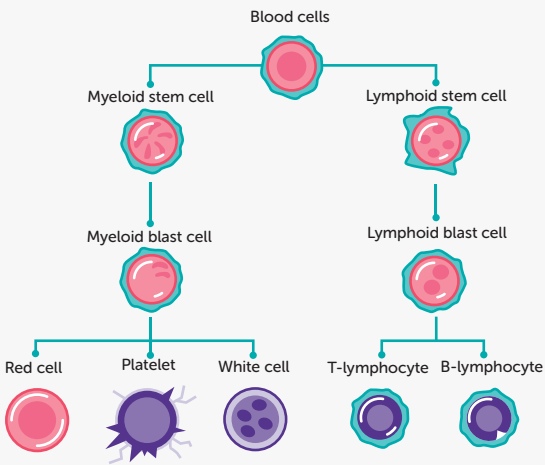
You might like to think of the bone marrow as the blood cell factory. The main workers of the factory are the blood stem cells. Blood stem cells create the new blood cells in your body. The two main functions of blood stem cells are to:

- 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



Ko hono fakalea 'e taha 'o e uho molū 'o e hui, ko e fale ngaohi'anga sela toto. Pea ko e kau ngāue 'i he ngaohi'anga ni ko e sela toto sitemi (blood stem cells). 'Oku ngaohi 'e he sela toto sitemi 'a e sela toto fo'ou 'i ho sino. Ko e fatongia mamafa 'e ua 'o e sela toto sitemi:

- ko 'ene toutou ngaohi ke lahi 'a e sela toto tatau tofu pe mo ia.
- ko 'e ne makonga ua 'iate ia pe, 'o ma'u ai 'a e fa'ahinga 'e 2 'o e sela sitemi: ko e myeloid pea mo e lymphoid.

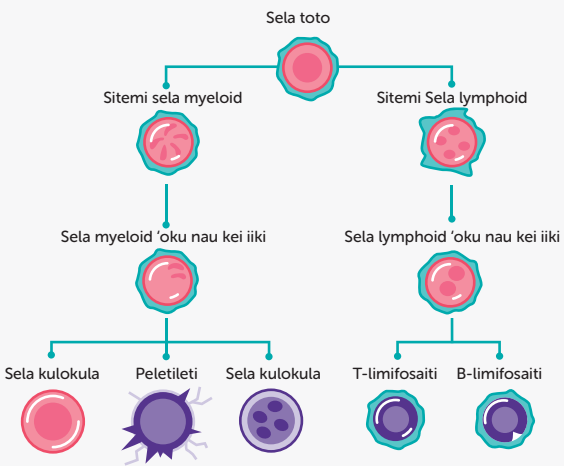
'Oku fa'u 'e he sela sitemi myeloid mo e sitemi lymphoid 'a e sela toto kotoa ma'a ho sino 'o kau ai 'a e sela toto hinehina (while blood cells), sela toto kulokula (red blood cells) pea mo e peletileti.

'I he fakatātā Fika 02 'oku 'asi ai 'a e matofiua 'a e sela toto sitemi 'o ma'u ai 'a e sela sitemi myeloid pea mo e sela sitemi lymphoid. Pea toe lava 'o sio ki he sela toto koia 'oku ngaohi 'e he kalasi sela takitaha

Fakatātā fika

02

Ko e sela na'e fa'u mei he sela sitema mei he 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.

KO HO TOTO

Ko e toto ‘oku fa‘u ‘aki ia ‘a e palasimā (plasma), sela toto kulokula, sela toto hinehina mo e peletileti.

Ko e Palasimā

Ko e huhu‘a lanu engeenga vaivai ia ‘oku tētē holo ai ‘a e ngaahi sela toto ‘one tufaki atu ia ki he konga kehekehe ‘o e sino.

Sela toto kulokula

‘Oku fa‘oloto ai ‘a e haemoglobin (Hb) pea ko ia ‘oku ne tufaki atu ‘a e ‘okisena (oxygen) mei he ma‘ama‘a ki he toenga ‘o e sino. Pea ‘oku toe fetuku fakafoki ‘e he haemoglobin ‘a e ‘ea kāponi taiokisaiti (carbon dioxide) ki he ma‘ama‘a ke toki mānava‘aki ki tu‘a. Ka si‘isi‘i ‘a e haemoglobin ‘i ho sino pea ‘oku ui ia ko e anaemia. ‘Oku toki ‘oatu ‘i lalo ‘a hono fakamatala‘i ‘o hono ngaahi faka‘ilonga ‘i he peesi 19.

Sela toto hinehina

Ko kinautolu ‘oku nau tau‘i ka hū mai ha mahaki. ‘O pehē ni; kapau ‘e hū mai ha siemu pakitelia ki he halanga toto ‘i ha‘o lavea, ‘e ‘ohofi ‘e he sela hinehina ‘o tamate‘i ‘a e sela pakitelia kimu‘a pea nau toki mātofitofi fakatokolahi ‘o mafola ki he sino. Kapau ‘e holo hifo pe si‘isi‘i ‘a e sela hinehina, ‘e lava ke faingofua ange ai ha‘o pihia ‘i ha mahaki pe puke.

Ko e hingoa eni ‘o e ngaahi sela hinehina kehekehe mo honau ngaahi fatongia takitaha.

- Neutrophils (new-tra-fils) pe niutafili ‘oku ne tamate‘i ‘a e pakitelia mo ha me‘amo‘ui ko e fangikai (fungi).
- Eosinophils (ee-o-sin-o-fils) ‘iosinofili ‘oku nau tamate‘i ha me‘amo‘ui kainikavea (parasite).
- Basophils (bay-so-fils) peisofili ‘oku na fakatou ngāue mo e niutafili (neutrophils) ke ta‘ofi ha hū mai ‘a ha mahaki.
- T-lymphocytes (T-lim-fo-sites) (T-cells) ko e ti-sela ‘oku nau tamate‘i ‘a e vailasi, me‘amo‘ui kainikavea mo e sela kanisā.
- B-lymphocytes (B-cells) ko e b-sela ‘oku nau ngaohi ‘a e antibodies, ke nau tamate‘i ‘a e fanga ki‘i siemu iiki (small germs).
- ‘Oku fakatupu ‘e he b-sela matu‘otu‘a ‘a e sela palasimā. ‘Oku nau fatongia‘aki ‘a hono poupou‘i ‘o e sino mei ha pihia ‘i ha mahaki pea ‘oku nau ngaohi ‘a e immunoglobulins pea ‘oku ‘iloa ia ko e antibodies
- Monocytes (mono-sites) ko e monosaiti ‘oku nau kau fakataha mo e niutafili mo e limifosaiti ke tau‘i ‘a e hū mai ha mahaki. ‘Oku nau tokoni ki hono ngaohi ‘o e antibodies ‘oku ne hanga ‘o fakama‘a ‘a e toto ‘aki ‘a hono to‘o ‘o ha ngaahi me‘a mate ‘oku ‘asi holo ai.
- Macrophages (mac-row-fages) makilofasi ko e monosaiti ‘oku nau hū ki he sino ‘o tau‘i ha hū mai ha siemu fakatupu mahaki.

Kapau ‘e holo ‘o fu‘u si‘isi‘i ‘a e niutolofili ‘i he toto, ‘oku ui ia ko e niutolopenia (neutropenia). Kapau ‘e si‘i ‘a e niutolofili (holo ‘o si‘i hifo ‘i he 1.0 (1.0x19/L), ‘e tu‘olahi mo toutou pihia lahi ‘i ha ngaahi mahaki. ‘Oku fakahinohino atu ‘a e ngaahi faka‘ilonga ‘o e pihia ‘i ha mahaki ‘i lalo heni ‘i he peesi 19.

Ko e peletileti

‘Oku nau tokoni ke faingofua ange ‘a e mātu‘u ‘a e toto mo ta‘ofi ha‘a ne fānoa. Kapau ‘e maumau ha halanga toto (‘i ha lavea) ‘e fakatahataha atu ‘a e peletileti ‘i he feitu‘u ko ia ‘onau fepikipiki‘i ke hoko ko ha ‘umosi ke ta‘foi ‘aki ‘a e tafe ‘a e toto.

‘Oku ui ‘a e holo hifo pe si‘isi‘i ‘a e peletileti ko e tolomo-positō-penia (thrombocytopenia). Kapau ‘e tōlalo pe si‘i ‘a e peletileti ‘e lava ke fetoto‘i pe ‘ikai lava ke matu‘u e toto pea ke taka‘ulingofua.

Fānau iiki

‘Oku kehekehe foki ‘a e ngaahi me‘a ‘oku hā mai mei honau toto ‘o fakatatau pe ia ki honau ta‘u motu‘a. Kapau ‘e ‘asi ha kanisā toto ‘i ho‘o tama, ‘e lava ke ke ‘eke ki he toketā pē neesi ha tatau ‘o ‘enau sivi toto pea ‘e ha mai ai ‘a e tu‘unga totonu ‘oku ‘i ai ‘a e toto ‘o ha tamasi‘i pe ta‘ahine ‘oku na ta‘u tatau.

THE LYMPHATIC SYSTEM

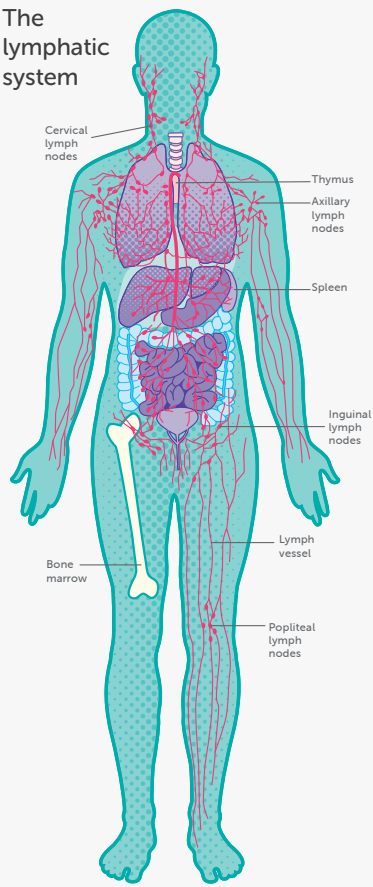
The lymphatic system is made up of a vast network of vessels, similar to blood vessels, that branch out into all the tissues of the body (see Figure 03).

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



KO E FA'UNGA LIMIFATI (LYMPHATIC SYSTEM)

Ko e fa'unga 'o e limifatí 'oku mangamanga 'o hangē ha kupenga 'o tatau mo e tafenga totó pea 'oku a'u foki ia ki he konga kehekehe 'o e sinó.(Vakai ki he fakatātā fika 03).

Ko e ngaahi tafengá ni 'oku fakatafe ai 'a e hu'a limifi (lymph), 'a ia ko e huhu'a lanu vai 'oku ne fetuku holo ai 'a e limifosaiti (lymphocytes) pe ko e ngaahi sela hinehina 'oku ne tau'i 'a e ngaahi siemu mahaki pipihi 'oku hū ki he sinó. 'Oku 2 'a e fa'ahinga 'o e limifosaiti (lymphocytes), ko e B–lymphocytes pea mo e T-lymphocytes (pea 'oku ui ia ko e sela B pea mo e sela T). Ko e ngaahi sela ko'eni 'oku nau malu'i ho tau sino 'aki 'a 'enau ngaohi ha me'amo'ui faka'auha ko e 'enitipoti (antibodies) ke nau faka'auha 'a e siemu fakatupu mahaki hangē ko e pakitēlia pea mo e vailasi. 'I he 'ene peheé, ko e fa'unga limifatí (lymphatic system) ko e konga ia 'o e naunau 'oku ne malu'i 'a hotau sinó mei he ngaahi mahaki mo ha fa'ahinga me'a 'e ala pihia mei ai.

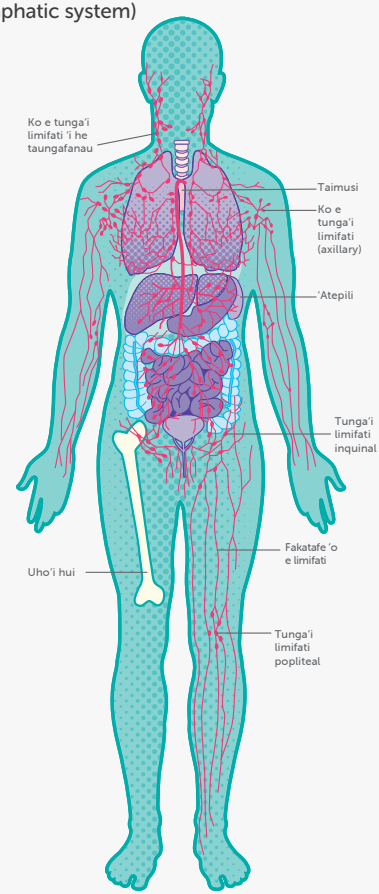
'Oku 'i he fa'unga 'o e ngaahi va'ava'a 'o e limifatí 'a e fanga ki'i fetengetenga'i 'oku 'oku ui ko e keleni (lymph glands) pe ko e lymph nodes. Ko e fanga ki'i fo'i keleni ko'ení 'oku fonu ai 'a e limifosaiti (lymphocytes) pea 'oku nau sivi'i mo fakama'a 'a e huhu'a limifi 'i he 'ene fou atu he ngaahi keleni. Pea ko e feitu'u eni 'oku to'o pe faka'auha ai 'a e ngaahi vailasi pe siemu fakatu'utāmaki ki he sinó. 'I ha'o puke 'i ha mahaki pe ko ha mamahi 'a ho fo'i mongá te ke fakatokanga'i 'a e fufula pea mo e mamahi 'a e ongo fo'i keleni he lalo kaungao 'a ia 'oku ui ia ko e ngalo'afu. 'Oku tupu 'a e ngalo'afu mei he 'ilo 'e he sela limifati 'a ia 'oku nau nofo 'i he keleni koiá, 'a e hū mai ha vailasi pe pakitēlia fakatupu mahaki pea te nau fanafanau fakatokolahi leva ke nau 'ohofi pe tau'i 'a e ngaahi siemu fakatupu mahaki ni.

Ko e 'ate pilí ('i he to'ohema 'o ho loto kete), pea mo e taimusi (thymus) 'a ia ko e keleni ia 'oku 'i he loto fatafata, ko e keleni 'i he fo'i monga 'oku ui ko e tonisili (tonsils) pea mo e atinoiti (adenoids) pea mo e kakano molū 'o e hui 'oku 'asi kotoa ai 'a e limifati pea 'i he 'ene peheé 'oku nau kau kotoa ki hono malu'i 'o e sinó (lymphatic system). 'Oku toe 'asi pē foki 'a e kakano limifati 'i he keté, ngākaú pea mo e kilí foki.

Fakatātā fika

03

Ko e fa'unga limifati (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.

KO E KANISĀ TOTO MO E NGAAHI MAHAKI KEHE

ʻOku ʻoatu heni ʻa e toʻo meʻa lalahi pē ʻo e kanisā toto mo e tūkunga ʻo e toto. ʻOku mahuʻinga ke fakatokangaʻi ko e ngaahi fakamatala fakalukufua eni ʻoku ʻoatú, pea ʻe ala kehekehe ia moe faʻahinga kanisā kuo fakamoʻoniʻi kuo maʻu ʻia koe pe ko ho fāmili, pea mo hono lahí foki.

Ko e Mahaki Lukīmia (Leukaemia)

Ko e mahaki lukīmiá ko e kalasi kanisā ʻoku ne uesia ʻa e toto moe uhoʻi hui. Ko e lukīmia kotoa pē ʻoku kamata ia ʻi he uho ʻo e hui, ʻa ia ʻoku ʻi ai e ngaahi sela toto kuo fehālaaki mo liliu ʻa ʻenau tupú (ʻo kanisā leva). ʻOku lava ke nau tupu fakatokolahi mo tāliunga ʻi he founga ia ʻoku ʻikai toe lava ke taʻotaʻofi, pea ne kāpui ai e uhoʻi hui ʻo uesia ai e ʻo e fakatupu angamaheni ʻa e ngaahi sela totó. ʻI he lahi ange ʻa e ngaahi sela mahamahaki ni (blast cells pe leukaemic blasts), ʻe faifai pē pea hake ki tuʻa mei he uho ʻo e hui ʻo mafola atu ki he toenga ʻo e sinó ʻi he ngaahi halanga toto. ʻI he taimi ʻe niʻihi ko e ngaahi sela mahamahaki ni te nau fakatahataha ʻi he ngaahi konga ʻo e sinó ʻo kau ai ʻa e keleni (lymph nodes), ʻate pili, ʻate, pea mo e ʻuto mo e filo siliva foki.

Kalasi kehekehe ʻo e lukīmia

Ko e lukīmia ʻoku vahevahe lalahi ʻo fakatatau ki he vave ʻa e tupu e mahakí, pea moe kalasi sela toto ʻoku ne uesia.

- Ko e faʻahinga mahaki acute leukaemia ʻoku vave ʻa ʻene tupu pea ʻe fiemaʻu ke faitoʻo fakavavevave.
- Ko e chronic leukaemia ʻoku ne tupu māmālie pea ʻoku ʻikai ke fiemaʻu ke fakahoko leva hano faitoʻo kaeʻoua leva ke lava ʻo toloi atu pea ʻe lava pē ia ke tukunoaʻi taʻe fai ha ngāue ki ai.
- Ko e myeloid leukaemia ʻoku tupu ia mei he sela sitema myeloid pea ʻoku hā ʻilonga ʻi heʻene tātānaki ha sela fakatupu kanisā ʻoku ʻiloa ko e myeloblasts.
- Ko e lymphoid leukaemia ʻoku tupu ia mei he sela sitema limifoiti (lymphoid) pea ʻoku mahino mei ai ʻa hono tātānaki ha ngaahi sela fakatupu kanisā ʻoku ʻiloa ko e lymphoblasts.

Ko e faʻahinga ʻe 4 ʻo e leukaemia ko e:

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

Ko e AML

Ko e AML ʻoku hā ai ʻa e fakatahataha'i ʻa e ngaahi sela myeloid kei iiki. Pea vave ʻenau fakatokolahi ʻi ha ki'i vahaʻa taimi nounou ʻo ui ai ko e ʻacute'. Ko ʻene hā mai pē ko ia, pea ʻe fakavave ʻa hono faitoʻo ke fakasiʻisiʻi mo tamateʻi ʻa e sela kanisā ko ia.

ʻOku tātaitaha ke ʻasi eni ʻi he fānaú ka ʻoku lahi ʻene hā mai mei he kakai lalahi.

Ko e ALL

Ko e ALL ʻoku hā ai ʻa e fakatahataha ʻa e sela lymphoid kei iiki ʻo vave ʻa ʻenau fakatokolahi ʻo hangē ko e AML. ʻOku lahi ange ʻene hā mai mei he fānau iiki ʻi he kakai lalahi, ka ʻe lava ke puke ai ʻa e toʻu kotoa pe.

Ko e CML

Ko e CML ʻoku hā ai ʻa e fakatahataha māmālie pē ʻa e sela myeloid. ʻOku māmālie pē ʻa ʻene tupu ʻo lau māhina pe laui taʻu. ʻOku ʻi ai ʻa e niʻihi ʻe ʻikai ʻasi ha fakaʻilonga mei ai ka ʻe toki ʻiloʻi pē ia kapau ʻe fai ha sivi 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
- Red or purple pinhead-sized skin spots (called petechiae)

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.

Ko e CML ʻe lava ke hoko pē ia ʻi ha taʻu ka ʻoku lahi ange ʻa ʻene hā mai he taʻu 40 pea lahilahi ʻa e kakai tangata. Ko e CML ʻe lava ke hoko atu ia ki he faʻahinga kanisā ʻoku fuʻu mālohi mo faingataʻa ange ke taʻofi ʻo hangē ia ha acute leukaemia.

Ko e CLL

Ko e CLL ko e kanisā ʻoku māmālie ʻa ʻene tupu pea ʻoku ne uesia ʻa e vaʻavaʻa ʻo e sela toto lymphoid ʻOku maʻu ia ʻi he kakai tokolahi neongo ʻoku ʻikai ke ʻasi ha fakaʻilonga pea ʻe ʻikai fiemaʻu ke fai ha faitoʻo fakavave ki ai. Ko e kau puke ʻi he CLL ʻe vakaiʻi maʻu pe ia ʻaki e sivi toto mo ha sio ki he toketā.

Ko e tokolahi ʻo kinautolu ʻoku puke ʻi he CLL ʻoku taʻu 60 pe lahi ange ai, ka ʻe lava ke ʻasi mai ʻi he taʻu 40.

Tupuʻanga

ʻI he taimi lahi, ko e tupuʻanga ʻo e lukīmia ʻoku ʻikai lava ke ʻilo, ka ʻoku ʻi ai pe ha ngaahi makatuʻunga te nau ala tupu ai.

Tatau mo e ngaahi kanisā kotoa, ko e lukīmia ʻe ala hoko ia mei ha liliu ʻe taha pe to e lahi ange ai ʻo e naunau ʻoku faʻu mo faʻo ai ʻa e kamataʻanga ʻo e moʻui (genes) ʻoku ne tokangaʻi ʻa e tupu moe moʻui lelei ʻo e ngaahi sela toto.

Ko e ngaahi meʻa eni ʻoku ne lava ke fakatupu ʻa e leukaemia:

- ko ha ivi radiation ʻoku matuʻaki mālohi
- ngaahi kemikale ʻe niʻihi
- ko ha faitoʻo kimo kuo ʻosi fai ʻaki ha faitoʻo ʻo ha kanisā kimuʻa atu
- ko e tukufakaholo ʻo ha maumau kuo ʻosi hoko ki he sela ʻo e sino

Ko ha niʻihi kuo ʻosi uesia pē honau totó ʻi ha meʻa kehe ʻe ala ke nau puke ai he leukaemia. Fakatātā ʻaki ʻa e MDS mo e CML – ʻo hoko atu ia ko e lukimia lahi kapau ʻe ʻikai ke fai ha ngāue ki ai.

Ko e fakaʻilonga ʻo e mahaki

Ko e ngaahi fakaʻilonga pau ʻo e lukīmia ko e tupu mei he fuʻu siʻisiʻi ʻo e sela moʻui lelei ʻi he toto.

Ka ʻikai lahi feʻunga e sela kulokula ʻi he toto, ʻe ʻasi mai ʻa e ngaahi fakaʻilonga ni:

- tāvaivaia
- ongoʻi helaʻia he taimi kotoa pe
- ninimo
- nounou e mānava
- tetea ʻa e kili mo e fōtunga

Ka siʻisiʻi ʻa e peletileti (thrombocytopenia) ʻe ala hoko ai ʻa e ngaahi fakaʻilonga ni:

- takaʻulingofua
- toutou fekefekea
- ʻau lahi ʻi he fakamāhina ʻa e kakai fefine
- fetotoʻi ʻo hangē ko e fetotoʻi ʻa e teʻenifo
- ʻasi pulepule fōiiki lanu kulokula mo vāleti ʻi he kili (petechiae)

Ko e fakahinohino mahuʻinga

Kapau ʻoku holo hifo pe siʻisiʻi ʻa e sela toto hinehiná, ʻe lava ai ke ke pihiangofua ʻi ha ngaahi mahaki pipihi fakatuʻutāmaki. Ko ha kiʻi mataʻipala ʻi he kili, ʻe tupu ia ko ha fuʻu hangatāmaki lahi ʻo hoko ai ha mate koeʻuhi kuo ʻikai ke kei ngāue lelei ʻa e ngaahi naunau maluʻi (immune system) ʻo e sinó. ʻOku mahuʻinga ke fetuʻutaki ki he falemahaki kapau ʻoku ke ongoʻi puke pe ʻoku ke mofi lahi. Fetuʻutaki ki hoʻo toketā toto (haematologist) pe ko e neesi ke fakahinohino atu ʻa e founga totonu ki hono ngāueʻaki ʻo e meʻafua mofi pe ko e māfana ʻo e sino pea mo hono ʻiloʻi ʻa e aʻu ki he ʻmofi lahi'. ʻOku nau faʻa kamata ʻa e faitoʻo ki ai ʻaki ha huhu ʻenipaiotiki pea mo sivi fakavavevave ʻa e totó.

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.

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

Ka siʻisiʻi ʻa e sela hinehina, pe ko e niutolopenia (neutropenia), ʻe tupu ai ʻa e ngaahi fakaʻilonga:

- mofi
- toutou puke ʻi ha mahaki pipihi

Faitoʻo

Ko hono faitoʻó ʻe tefito ia mei faʻahinga ʻo e lukīmia ʻoku maʻu ʻe ha taha, hono taʻu motuʻá, pea mo e tuʻunga ʻo ʻene moʻui leleí pea mo e lahi ʻo hono puke.

Ko e faitoʻo angamaheni ʻo e kanisā ko e kimo (chemotherapy). ʻOku fai eni ke ne fakaʻauha e ngaahi sela mahamahakí kae fakaʻatā ai ʻa e uho ʻo e hui ke fai ʻe ne ngāue. Ko e founga angamaheni ko hono ngāueʻaki ʻa e faitoʻo kimo kehekehe ke nau ngāue fakataha ʻo tamateʻi ʻa e sela lukīmia.

ʻOku fakaikiiki atu ʻa e ngaahi founga kehekehe ʻi he peesi 39.

Mahaki Limifoma (Lymphoma)

Ko e limifoma ko e kanisā ia ʻo e faʻunga limifatí (lymphatic system). Ko e mahaki ni ʻoku tupu ʻi ha liliu ʻo mahamahaki ʻa e sela limifosati (faʻahinga ʻo e sela hinehina ʻi he toto) pea toki fanafanau lahi ʻa e sela ni ia ʻo ʻikai toe lava ke mapuleʻi. ʻOku hoko heni ha fakapotanga ʻa e ngaahi sela hinehina mahamahaki ni (lymphoma cells) ʻi he fanga kiʻi keleni (glands pe lymph nodes) ʻo kamata ke nau fakafuofuolahi.

Ko e kalasi kehekehe ʻo e lymphoma

ʻOku lahi ʻa e faʻahinga kehekehe ʻo e limifoma. Ko e faʻahinga ʻe 5 ʻoku ui ia ko e Hodgkin lymphoma. Ko e toenga ʻoku ui fakatahaʻi kinautolu ko e non-Hodgkin lymphoma.

Ko e Limifoma Non-Hodgkin

Ko e limifoma non-Hodgkin ʻoku kau ki ai ʻa e faʻahinga kehekehe ʻo e limifoma. ʻOku mākehekehe ʻa honau ngaahi fakaʻilonga takitaha ʻi he taimi ʻoku fakaʻaongaʻi ai ʻa e faitoʻo pea ʻe kehe ai pe foki mo hono vakaiʻi takitaha kinautolu. Pea ʻikai ko ia pe, ka ʻe lava foki ke fakatupu ʻa e limifoma ʻe he B-lymphocyte (ʻa ia ko e lahi taha ia ʻe ne hoko) pe ko ha t-lymphocyte. ʻE lava ke fakafaʻahinga ʻa e limifoma non-Hodgkin ke 2 – ʻa ia ko e limifoma māmālie (indolent lymphoma) pea mo e limifoma fakatoʻotoʻo (aggressive lymphoma).

Ko e limifoma māmālie ʻoku tupu māmālie. Ka ʻe ʻikai lahi hono ngaahi fakaʻilonga, ʻe ʻikai fiemaʻu ia ke fai leva ha ngāue fakavavevave ki ai. Ko e limifoma follicular ʻoku kau ia ʻi he faʻahinga limifoma māmālie. Ko e fika 2 ia ʻi he limifoma ʻoku lahi taha ʻa ʻene ʻasi mai.

Ko e limifoma fakatoʻotoʻo (aggressive) ʻoku vave ʻa ʻene tupu pea ʻoku totonu ke faitoʻo leva ia ʻi hono ʻilo. Koeʻuhi ko e limifoma ʻoku vave ʻe ne tupú, ʻoku hā mai ʻoku ʻaonga ange ʻa hono faitoʻoʻaki ia ʻa e kimó mo e ivi radiotherapy. Ko limifoma ʻoku lahi taha ʻa ʻene ʻasí, ko e diffuse large B-cell lymphoma.

Limofoma Hodgkin

ʻOku fakaofiofi ʻaupito ʻa e faʻahinga limifoma koʻeni ki limifoma diffuse large B-cell pea ʻoku tatau pe ʻa hono faitoʻo. ʻOku 5 ʻa hono fakafaʻahinga. ʻOku kehe leva ʻa hono huʻi ʻo e faitoʻo kimo ke ngāueʻaki mei he ngaahi faitoʻo kimo ki he limifoma fakatoʻotoʻo kehé, pea ko ia ai ʻe fiemaʻu ke tonu ʻa hono sivi mo ʻilo ʻa hono kamataʻanga.

Tupuʻanga

ʻOku fakaʻau pē ke toe lahi ange ʻa kakai ʻoku maʻu kinautolu ʻe he kanisā lymphoma. ʻI he taimi lahi ʻoku ʻikai ke mau ʻilo hono ʻuhingá, ka ʻoku ʻi ai pē ngaahi fakamahamahalo ki he ʻuhinga ʻoku hoko aí. Tatau mo e kanisā kotoa, ko e lymphoma ʻe ala tupu ia ʻi ha liliu ʻoku hoko ʻi he naunau ʻoku faʻu mo faʻo ai ʻa e kamataʻanga ʻo e moʻui (genes) ʻoku ne tokangaʻi e tupu moe moʻui lelei ʻo e sela totó. ʻOku mau ʻilo ko e kakai kuo vaivai ho nau faʻunga maluʻi mei he mahaki (tupu mei ha mahaki fakaholoki ivi pē ko ha faitoʻo ʻoku ne taʻofi e ngāue lelei e faʻunga fakafepaki mahaki) ʻoku faingofua ange hono maʻu kinautolu ʻe he kanisā lymphoma. ʻOku ʻi ai mo e ngaahi mahaki pipihi te ne lava ʻo fakatupu ʻa e kanisā ni, tautefito ki he kakai ʻoku vaivai honau faʻunga maluʻi mo fakafepakiʻi e mahaki (immune system) mahakí (immune system).

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.

Ko e Ngaahi Faka'ilonga

Ko e limifoma ʻoku lahi ʻe ne ʻasi mai ko e foʻi fufula ʻo ha keleni ka ʻoku ʻikai ke langa ʻi he kiá, faa'ifine mo e funga vaha'ava'e (groin) foki. Ko e limifoma ʻe ala tupu ʻi he keleni ʻi he feitu'u kehekehe ʻo e sino ʻo hangē ko e kete (ʻo tupu ai e futengia mo e fōlahi ʻa e keté pe ʻi he fatafata (ʻo ne fakatupu tale, mamahi e fatafatá pea mo faingata'a e mānava).

ʻOku kau mai ki ai mo e ngaahi faka'ilonga ni:

- toutou mofi
- pupuha'ia lahi ʻi he poʻuli
- ta'e'amanekina ʻa e holo e sino
- ongoʻi ʻoku ʻikai ha ivi he taimi kotoa pe
- velia
- ʻasi foʻou ha fakakulokula ʻo e kili
- tāvaivaia
- taletale ʻo ʻikai mahino ʻa hono tupu'anga
- fufula ʻa e kete mo langa

ʻE lava ke feto'oaki ʻa e ngaahi faka'ilonga ʻo e limifoma mo ha faka'ilonga ʻo ha ngaahi mahaki kehe mo siʻisiʻi ange.

Faito'o

Ko hono faitoʻó ʻe tefito ia mei he kalasi ʻo e limifoma, mo e vave ʻene tupú ʻo uesia ai ha ngaahi palopalema ki he sinó pea ʻe ala kau foki mo e lahi e mofele ʻo e mahaki he sino, ta'u motu'a mo e moʻui lelei ʻo e taha ko iá.

Ko e limifoma ʻe niʻihi ʻoku tupu māmālie pea ʻikai ha fu'u faingata'a'ia faingata'a'ia, pea ʻoku ʻikai ke fiema'u ke faitoʻo fakavavevave. Ko e niʻihi ia ʻoku tupu vave ange pea ʻoku fiema'u ke faitoʻo fakavavevave leva. Ko e faitoʻo ʻe ala ngāue'aki ko e kimo (chemotherapy), ivi fakaletiō pe radiotherapy mo e fakaivia ʻo e sino ke ne lava pe ʻo malu'i pe ia (immunotherapy). ʻI he taimi ʻe niʻihi, ʻe lava ʻo toʻo ha sela sitema mei ha taha ʻoku ʻikai ke puke ʻo tō pe fakafetongi moʻui pē ia (transplant) ʻi he mahakí, ʻo tautefito ki ha fa'ahinga kuo toe foki mai ki ai ʻa e kanisā pē ʻe ala foki mai ki ai hili ʻa hono faitoʻó.

ʻOku ʻi ai e ngaahi fakahinohino fekau'aki mo e faitoʻo ko eni ʻi he peesi 39.

Mahaki Maieloma (Myeloma)

Ko e myeloma (ʻoku toe ʻiloa ko e multiple myeloma) ko e kanisā ʻo e sela pelesimā (plasma). Ko e ngaahi sela pelesimā koe B-lymphocytes matu'otu'a ʻoku lahi nofo pē ki he uhoʻi hui ʻo fa'u ʻa e ngaahi naunau ko e ʻenitipoti (antibodies) ʻoku tokoni ki he fakafepaki'i ha mahaki e hū mai. ʻI he kanisā myeloma, ʻoku mahamahaki ai ʻa e sela pelesimā ʻo liunga lahi ʻa ʻene tupú ʻo ʻikai lava ke mapule'i pea hoko ai ʻa e ngaahi faingata'a'ia ia he konga kehekehe ʻo e sinó. Ko e lahi ʻo e ngaahi sela pelesimā mahamahakí, ʻa ia ʻoku ui ko e sela myeloma, ʻoku nau fakatahataha ʻi he uhoʻi hui ʻo ala uesia ai ʻa e faʻu foʻou ʻo e sela totó mo maumau'i e ngaahi hui ofi atu ki ai ʻo fakatupu felāngaaki. Ko e sela myeloma ʻoku ne fakatupu ha ʻenitipoti (antibody) mahamahaki ʻa ia ʻoku ʻiloa ko e paraprotein pea ʻoku fa'a ma'u hake ʻi hono sivi'i ʻo e totó pe tu'uofí.

Ko e lahi ʻo hono ma'ú ʻi he ta'u kotoa ʻi Nu'usilá ni ko e toko 400 ʻoku ʻilo kuo nau puke ʻi he kanisā myeloma. Ko e tokolahi ʻo e fa'ahingá ni ʻoku nau motu'a ange ʻi he ta'u 50.

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.

Ngaahi tupuʻanga ʻo e myeloma

ʻI he taimi lahi, ko e tupuʻanga ʻo e myeloma ʻoku ʻikai ʻilo, ka ʻoku ʻi ai pē ʻa e ngaahi fakaataata ki he ngaahi meʻa ʻoku tupu mei aí. Tatau moe kanisā kotoa, ko e myeloma ʻe malava ke tupu ʻi ha liliu ʻo ha taha pe toe lahi ange ʻo e naunau ʻoku faʻu mo faʻo ai ʻa e kamataʻanga ʻo e moʻui (genes) ʻoku ne puleʻi ʻa e moʻui lelei ʻo e sela toto. ʻI he ngaahi kanisā siʻisiʻi pē, ʻoku ala tupu ia mei ha uesia ʻi hono lahi fau ʻa e hū ki he sino ʻa e faʻahinga ivi ko e radiation pe ko e ngaahi kemikale kehekehe he ngāueʻangá pea ʻi he ʻātakai foki.

Ngaahi fakaʻilonga

Ko e ngaahi fakaʻilonga angamaheni ʻo e myeloma ko e:

- **Langa e hui mo e/pe ko e lahi e fasi**
  Taimi lahi ʻoku hanga ʻe he sela myeloma ʻo taʻofi hono fakalelei'i ʻe he hui haʻa ne ngaahi maumau ʻo tupu ai ʻa e avaava pe matalatala ʻa e hui ʻe niʻihi. ʻE tupu ai ha mafesifesi pe fasingofua ʻa e hui.
- **Helaʻia**
  Ko e ngaahi fakaʻilonga e niʻihi ʻo e myeloma ko e ongoʻi helaʻia mo tāvaivaia maʻu pē. Ko e ngaahi fakaʻilongá ni ʻoku makatuʻunga pē ia ʻi he fuoloa pea mo e tuʻunga kuo aʻu ki ai ʻa e mahakí.
- **Toutou pihia ʻi ha mahaki**
  Lahi ange ʻa e mahamahaki koeʻuhi ko hono faitoʻo ʻo e myeloma ʻoku ne fakavaivaiʻi ai ʻa e lava ʻe he sino ʻo maluʻi ia mei ha ngaahi mahaki pipihi.
- **Tetea**
  ʻOku hoko eni kapau ʻoku siʻi ʻa e sela toto kulokula – ʻo tupu ia mei he myeloma pe ko hono faitoʻo.
- **Hypercalcaemia (ko e lahi ʻo e kalasiume pe calcium)**
  Ko e lahi ange ʻa e kalasiume ʻi he toto ʻoku tupu ia mei he maumau ʻoku hoko ki he hui ʻo mafola atu ai ki he halanga toto. Ko e fakaʻilonga ʻo e hypercalcaemia ko e fieinua, tokakovi, lua, mole ʻa e fakakaukau mo e/pe ko e siʻisiʻi ʻa e tuʻumamaʻo pe tuʻufefeka (constipation).
- **Maumau ʻa e kofuua**
  ʻOku fakatupu ʻe he myeloma ʻa e poloteine ko e paraprotein pea ʻoku ne lava ʻo maumauʻi ʻa e kofuua.
- **Maumauʻi ʻa e ngaahi neave ʻo e nima mo e/pe vaʻe pe ko e peripheral neuropathy**
  ʻOku lava pē ke fakatupu eni ʻe he myeloma pe ko ha ola tamaki ia ʻo e ngaahi faitoʻo ʻo e mahaki ni. Ko e ngaahi neave ʻoku uesia heni ʻoku nau fakatupu ʻa e mofisifisi pe ko ha ongo kehekehe pea mo e langa.

ʻOku mahuʻinga ke manatuʻi ʻe ʻikai ke hoko e ngaahi fakaʻilonga ni kotoa ki he tokotaha kotoa pē.

Ko Hono Faitoʻo

Ko e faitoʻo angamaheni mo lahi taha hono fakaʻongaʻi ko e kimo (chemotherapy), ʻo fakakau atu ki ai mo e ngaahi faitoʻo (drugs) kehe. ʻOku fakaʻaongaʻi ʻa e sitēloiti (steroids) mo e ngaahi faitoʻo ʻoku ne tauʻi ʻa e maieloma (myeloma) fakataha mo e kimo ʻo nau fengāueʻaki lelei.

Ko hono faitoʻo ʻo e kau mahaki kei taʻu siʻí ka ʻoku nau kaukaua, ʻoku ngāueʻaki ha kimo (chemotherapy) lahi ʻaupito pea toki fakafoki ki hono toto ha sela sitema naʻe fuofua toʻo ia mei he sino ʻo e mahaki ʻo tauhi ʻi tuʻa ke toki fakaʻaongaʻi.

Ko e faitoʻo ʻoku ʻiloa ko e bisphosphonates ʻoku tokoni ia toe toe mālohi mo fakafefekaʻi ange ʻa e hui kuo uesia ʻe he maieloma.

Ko e founga faitoʻo radiotherapy ʻoku faʻa ngāueʻaki ia kapau ʻe hoko ha maumau ki he hui.

ʻOku ʻoatu ʻa e tānaki ki he ngaahi fakahinohino faitoʻo ni ʻi he peesi 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).

Ko e faʻahinga mahaki ko e (Myelodysplastic syndrome)

Ko e myelodysplastic syndrome (MDS) ko e ngaahi mahaki ia ʻoku hā mei ai ʻa hono uesia ʻo hono ngaohi pe faʻu lelei ʻo e ngaahi sela ʻo e totó ʻi he uhoʻi huí. ʻI he mahaki MDS, ʻoku siʻisiʻI ange ʻa hono ngaohi ʻe he uhoʻi huí ʻa e sela kulokulá, hinehiná pea mo e peletileti (platelets) ka e fuʻu lahi ange ʻa e ngaahi sela kei valevale pea ʻoku ui kinautolu ko e blast cells.

ʻOku lahi e ngaahi faʻahinga ʻo e MDS. ʻE kehekehe ʻa e lahi pe mālohi ʻo e mahakí pea mo e lahi ʻa ʻene maumauʻi ʻo e fakatupu sela toto leleí. ʻE ʻi ai ʻa e niʻihi ʻe ʻikai lahi ha ʻasi mai ha fakaʻilonga ia (ʻo hangē ko ha tetea ʻa e kili) pea niʻihi ʻe siʻisiʻi ʻa e ngaahi sela toto pea tupu mei ai ʻa e pihiangofua he ngaahi mahaki pipihi, takataka'uli mo volu e sinó mo ha fuʻu tetea ʻaupito.

Ko e pēseti ʻe 30 ʻo kinautolu kuo maʻu ʻe he mahakí ni, ʻe fakaiku pē ʻo moʻua ʻi ha faʻahinga ʻo e kanisā ʻa ia ko e lukīmia ʻoku ui ko e AML (acute myeloid leukaemia). Neongo ʻe ala puke ʻi he MDS ha faʻahinga taʻu motuʻa pē, ko e tokolahi tahá ʻoku nau puke hili ʻa ʻenau taʻu 60 tupu.

Ko hono Tupuʻanga

ʻOku tupu ʻa e MDS mei ha liliu ʻoku hoko ʻi he taha ʻo e ngaahi naunau ʻoku faʻu mo faʻo ai ʻa e kamataʻanga ʻo e moʻui (genes) ʻoku ne puleʻi ʻa e hono faʻu mo ngaohi ʻo e ngaahi sela ʻi he totó. Ko e ʻuhinga totonu ʻoku hoko ai e liliu ni ʻoku teʻeki ke fai ha ʻilo pau ki ai ka ʻoku lahi e ngaahi meʻa ʻe ala kau mai ki hono fakatupungá. Ko e fakaʻau ke tau motuʻa angé ko e lahi ange ia ʻa e ala puke ʻi he mahaki MDS. Ko e lahi ʻa e ofi ki he ivi radiation pea mo e ngaahi kemikale niʻihi ʻoku fakaʻaongaʻi ʻi he ngāueʻanga pea mo e ʻātakai ʻoku nau ala ke fakatupu ʻa e MDS.

Ko e kakai naʻe ʻosi faitoʻo kanisā pea mo ha mahaki naʻe ʻosi faitoʻo ʻaki ʻa e kimo (cytotoxic chemotherapy) ʻe ala faingofua pe vave ange haʻa nau puke ʻi he MDS koeʻuhi ko e faitoʻo naʻe ʻosi faí.

Ngaahi Fakaʻilonga

ʻI he fakakātoá, ko e ngaahi fakaʻilonga ʻo e mahakí ni ʻoku fakatefito pē ia mei hono fuʻu lahi pe mālohí pea mo e faʻahinga sela toto ʻoku uesia lahi taha.

ʻI he taimi lahi, ʻoku tupu māmālie pe ʻa e MDS pea ʻoku ʻikai hā ha ngaahi fakaʻilonga ka ʻe toki ʻilo pē ʻi ha sivi ʻo e taha koia.

Ko e ngaahi fakaʻilonga angamahení ʻoku hangē ko e fakaʻilonga ʻo e siʻisiʻi ʻa e sela kulokula ʻi he toto. Ko e ngaahi fakaʻilonga ni ʻoku kau ai ʻa e:

- helaʻia mo e tāvaivaia
- ninimo
- tetea
- nounou e mānava ʻi hano fai ha ngāue

Ko e ngaahi fakaʻilonga niʻihi ʻoku kau ai ʻa e pihiangofua, tuai ke sai, fetotoʻi taʻeʻamanekina, takataka'uli mo e volu.

Faitoʻo

Ko e founga ki hono faitoʻo ʻo e MDS ʻe makatuʻunga ia he ngaahi meʻa kehekehe ʻo kau ai ʻa e lahi ʻo e mahakí.

Ko e kakai tokolahi, tautefito ki he taimi kamakamata ai e MDS, ʻe ʻikai ʻasi ha fakaʻilonga pea ʻe ʻikai ke fiemaʻu ia ke faitoʻo. ʻI he hoko ʻa e meʻa ni, ʻe faleʻi pē ʻe he toketā ke toutou sivi toto mo vakaiʻi maʻu pē pe ʻoku nau kei moʻui lelei mo e tuʻunga ʻo e toto.

Kapau kuo fuʻu lahi ange ʻa e mahakí, ʻe ala ngāueʻaki ʻa e kimó (chemotherapy) ke fakasiʻisiʻI ʻaki ʻa e tupu mo e liunga lahi ʻa e faʻahinga sela (blast cells) mahamahakí, koeʻuhi kae moʻui mai ʻa e uho ʻo e hui ke ne faʻu mo ngaohi fakalelei ʻa e toto leleí. ʻOku fai ʻaki ia ʻa e kimo vaivai pe ʻa ia ko e foʻiʻakau pe ʻoku folo pe ko hono ngāueʻaki ha faitoʻo mālohi ange ʻaki ha fakataha'i ha ngaahi faitoʻo ʻoku huhuʻi (hangē ko hono huhu ʻo e ʻinisulini).

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).

Ko e founga tauhi ʻoku lahi taha ʻa hono faka'aonga'i ki he kau mahaki MDS ko hono fakafiemālie'i pe fakanonga pē kinautolu. ʻOku fai'aki ia ʻa e faitoʻo ʻenipaiotiki (antibiotics) ki ha mahaki na'e pihia ai pea kapau ʻe fiema'u, ʻe fai ha huhu toto ke fakalahi ki ai ʻa e sela kulokula ʻi he toto pea mo e paletileti. ʻE ʻi ai ʻa e fa'ahinga ni'ihi ʻe fiema'u ha ʻgrowth factors' ʻa ia ʻoku faka'aonga'i ia ke fakavave'i ange ʻa hono ngaohi ʻe he uho'i hui ʻa e sela toto.

ʻE lava ke fakafetongi mo tōmoʻui (transplant) ha sela sitemi ʻi he kau mahaki kei taʻu siʻi mo kei moʻui lelei. Ko e fa'ahinga faitoʻo pehē ni ʻe ala ma'u ai ha faingamālie ke sai mei he mahaki.

ʻOku lava ke tānaki atu ki he ngaahi founga faitoʻo ni ʻi he peesi 39.

Mahaki ʻo e toto ko e (Myeloproliferative neoplasms)

Ko e fa'ahinga mahaki ko e myeloproliferative (MPN) ko e mahaki ʻoku ne uesia ʻa e tupu moʻui lelei ʻa hono fa'u ʻe he uho'i hui ʻa e totó. ʻI he mahaki myeloproliferative, ʻoku fu'u tōtu'a ʻa hono ngaohi pe fa'u ʻe he hui ʻa e ngaahi sela kehekehe ʻo e totó (sela kulokula, hinehina pea mo e peletileti foki). ʻI he ʻenau fu'u lahi pehe., ʻe ʻikai lava ʻe he ngaahi selá ke fai lelei honau fatongiá pea ʻe kamata ai ha ngaahi palopalema ki he sinó.

ʻOku 4 ʻa e kalasi kehekehe ʻa e ngaahi mahaki myeloproliferative neoplasms:

- Ko e mahaki ko e (essential thrombocythemia) ʻoku fakatefito ia ʻi he tupu ʻo fu'u lahi fau ʻa e peletileti (platelets).
  Ko e fu'u lahi mo tōtu'a ʻa hono fa'u ʻo e peletileti.
- Polycythaemia vera (PV)
  Ko e mahaki polycythemia vera ko e taimi ia ʻoku fu'u lahi ai ʻa hono fakatupu e sela kulokulá, pea mo e peletileti (platelets) pea mo e sela hinehiná.
- Primary myelofibrosis (MF)
  Ka fu'u lahi ʻa hono ngaohi ʻo e sela toto ʻe hoko ai ʻa e maumau ki he uho ʻo e hui (bone marrow) ʻo kehe ange ai ʻa hono kakano.
- Chronic myeloid leukaemia (CML).

Ko e fa'ahinga kanisā eni ʻo e toto ʻoku māmālie pe ʻa ʻene tupu pea faka'au pe ʻo toe kovi ange hili ha ngaahi taʻu lahi. ʻI he ni'ihi, ʻe faka'au pe ke hoko ia ko e mahaki kanisā myeloid leukaemia (AML).

Ko e lahi ʻo e mahaki MPN ʻoku hoko ia ʻi ha fa'ahinga taʻu pe, ka ko e lahi taha ʻene hoko ʻi he taʻu 40 ki he 60. ʻOku tātaitaha ke ʻasi ia ʻi ha kakai taʻu siʻi hifo he taʻu 20 pe ʻi he fānau iiki.

Tupu'anga

Ko e kamata'anga totonu e myeloproliferative (MPN) ʻoku ʻikai ha ʻilo ki ai, ka ʻoku ngalingali ke lahi e ngaahi me'a kehekehe ʻe ala tupu ai, ʻo kau ai ʻ e fehāalaaki ʻi he tupu pe ko ha liliu ha taha pe lahi ange ʻo e naunau ʻoku fa'u mo fa'o ai ʻa e kamata'anga ʻo e moʻui (genes) pea ʻoku ne tokanga'i e tupu moe moʻui lelei ʻo e sela totó.

Ngaahi faka'ilonga

Ko e ngaahi faka'ilonga ʻo e mahakí ni ʻe tefito ia ʻi he fa'ahinga myeloproliferative ʻoku puke aí. Ko e faka'ilonga ʻoku lahi ʻe ne ʻasi ko e fufula ʻa e ʻate pilí pe ko e splenomegaly ʻo kau ai ʻa e ongoʻi faingata'a'ia, langa pe ongoʻi fatufā'ia ʻa e tafa'aki toʻohema mo ʻolunga hake ʻi he keté. Ko e fu'u lahi ʻa e toto ʻoku tafe holo he ngaahi kalava ʻe ala faingofua ai e takataka'uli mo e toe matu'u (blood clotting) pe ʻa e toto.

Faitoʻo

ʻE fakatefito ʻa e faitoʻo ke faí mei he fa'ahinga ʻo e mahakí (myeloproliferative) pea mo hono lahi, ta'u motu'a ʻo e tokotaha puké pea mo e tu'unga ʻoku ʻi ai ʻenau moʻui leleí. Ko e taumu'a ʻo e faitoʻo ke faí ko hono fakasi'isi'i ʻo e ngaahi sela ʻoku ʻave holo ʻi he toto pea mo ta'ofi pe faitoʻo ʻa e ngaahi faka'ilonga mo ha toe maumau na'e fakatupu ʻe he mahakí. ʻE kau ki ai ʻa e faitoʻo folo foʻi'akau kimo (oral chemotherapy) pe ko e faitoʻo interferon, aspirin pe anagrelide.

ʻI he taimi ni'ihi ʻe fiema'u ke toutou toʻo ha toto mei he sinó ʻaki ʻa e founga ko e venesection (ʻoku tatau eni mo e toʻo toto ki he foaki totó ka ʻoku fai ia ʻi falemahaki).

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.

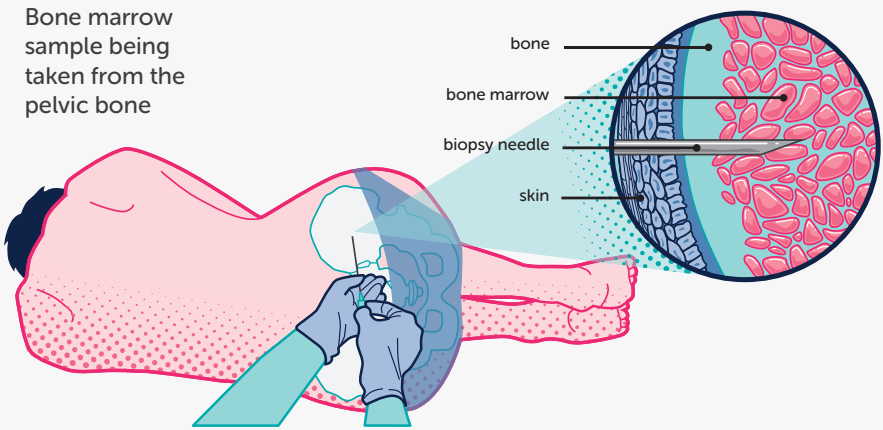
The doctor might also ask to test your blood chemistry, which may include your levels of calcium, creatinine or different proteins important for detecting some blood cancers. Very specialised genetic testing can be done to confirm the diagnosis of certain blood cancers (i.e. MPNs).

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



KO E NGAAHI SIVI MO E FAKATOTOLO

'Oku 'i ai 'a e ngaahi sivi angamaheni 'e fiema'u 'e he toketā ke fai ke tokoni ke nau 'ilo ai 'a e faito'o ke fai.

Ko e ngaahi sivi eni:

- Sivi toto
- To'o ha konga mei he uho 'o e hui ke sivi
- Faka'ata mo ha ngaahi sivi 'imisi ta.

Sivi Toto

Ko e sivi toto ke vakai'i 'aki 'a e kanisā 'oku ui ia ko e sivi toto fakalautelau (Full Blood Count – FBC) pe ko e sivi toto fakakātoa (Complete Blood Count – CBC). 'Oku to'o ha toto mei ho sino 'o 'ave ki he fai'anga sivi toto 'o vakai'i 'aki ha me'afaka'ata lahi.

'E lava ke kole 'e he toketā ke toe vakai'i 'a e ngaahi kemikale 'i ho toto 'o kau ai 'a e lahi 'o e kalasiume (calcium), kuletini (creatinine) pe ko e poloteini kehekehe 'oku lava ke 'ilo'i ai 'a e fa'ahinga kanisā 'e ni'ihi. 'Oku 'i ai 'a e sivi makehe ia 'o e naunau 'oku fa'u mo fa'o ai 'a e kamata'anga 'o e mo'ui (genetic testing) ke fakapapau'i 'aki 'a e fa'ahinga kanisā toto ni'ihi 'o hangē ko e MPN.

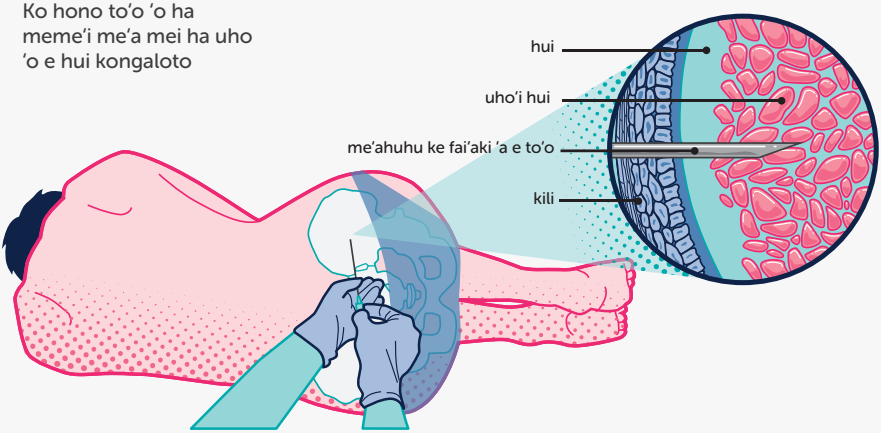
Sivi'i 'a e uho'i hui

Ko e sivi eni 'oku to'o ai 'e he toketā ha me'i uho mei ho hui 'o 'ave ki he fai'anga sivi (laboratory) 'o vakai'i 'aki ha me'afaka'ata lahi. 'Oku to'o eni mei mui 'i he hui 'o ho kongaloto (iliac crest) (fakatātā fika 04).

Fakatātā fika

04

Ko hono to'o 'o ha meme'i me'a mei ha uho 'o e hui kongaloto



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.

'Oku hanga 'e he toketā 'o ngāue'aki 'a e me'ahuhu loloa 'o huhu'i ia 'i ho kili (kuo 'osi fakaongonoa) e a'u ki loto ki ho hui mo hono uho. Ko e uho'i hui 'oku 'i ai 'a hono huhu'a mo e konga 'oku fefeka. Pea 'oku to'o mei ai 'a e me'i huhu'a si'isi'i pe. 'Oku ui eni ko e bone marrow aspirate. 'Oku toe to'o mo ha me'i uho fefeka. 'Oku ui ia ko e bone marrow trephine (tre-fine).

Na'e pehē 'e he ni'ihi kuo 'osi to'o ha me'i uho mei honau hui na'e mamahi pea pehē 'e he ni'ihi ia ko e ki'i faingata'a si'i pe ia. 'Oku kehekehe foki 'a e tokotaha kotoa pe. 'Oku mau fale'i atu ke ke ha'u mo ha taha kehe ke hoko ko hao poupou pe fe'ao 'i ho'o ha'u ke fai 'a to'o ha uho mei ho hui. Kapau 'e fai ha fakaongonoa te ke ongo'i tulemohe hili 'a hono fai eni. 'E tokoni 'a e tokotaha te ke ha'u mo ia ke 'ave lelei koe ki 'api.

Hili 'a e to'o 'o e uho'i hui, 'e palasitaa'i 'e he toketā pe ko e neesi 'a e feitu'u na'e fai ai 'a hono to'o. 'E ala ke 'oatu ha fo'i'akai palasetamolo (paracetamol) ke fakanonga 'aki ha'o ongo'i faingata'a'ia. 'E tokoni atu 'a e neesi pe ko ho'o toketā ke fakamatala'i atu ia.

Ko e Faka'ata mo e ngaahi sivi 'imisi kehekehe

Ko e tokolahi 'e fiema'u ke fai hanau faka'ata pe ko e sivi faka'imisi kehekehe pea ko e konga pe ia 'o hono vakai'i 'a e mahaki kanisā toto pea mo hono toutou vakai'i. 'E lava ke kau ai 'a e:

- Faka'ata 'o e fatafata ke 'ilo pe 'oku 'i ai ha mahaki pe ko ha me'a 'oku 'asi ngali kehe.
- Sivi'i 'a e mafu (electorcrdiogram) ke vakai'i pe 'oku ngāue lelei pe.
- Faka'ata (CT scan) pe ko e faka'ata fakaongo (ultrasound) kapau 'oku 'i ai ha hoha'a pe 'oku 'osi hoko ha maumau ki ha konga 'o e sino mei he mahaki.
- 'E lava ke faka'aonga'i 'a e faka'ata faka-makinito (MRA scan) ke sivi mo toutou vakai'i 'aki pe 'oku fēfē 'a e mahaki.
- 'E lava ke faka'ata fakalukufua 'a e sino ke vakai'i pe 'oku hoko ha maumau ki he hui. 'Oku fa'a faka'ata 'a e fo'i 'ulu, huitu'a, palalulu, kongaloto, va'e mo e uma.
- Sivi 'aki 'a e me'angāue PTE (positron emission tomography scan) 'oku faka'aonga'i 'a e huhu'a 'oku huhu ki he kālava fakataha mo hono ngāue'aki 'o e CT scan ke vakai'i pe 'oku 'asi ha fa'ahinga tō'onga kehe mei he kakano koe'uhi ko e mahaki. 'Oku 'ikai ke fa'a ngāue'aki 'a e PET scan 'i Nu'usila ka 'e lava ke fiema'u ia ke ngāue'aki 'e he toketā sivi toto.

'E fakahā atu 'e he toketā toto (haematologist) 'a e fa'ahinga sivi 'oku fiema'u pea mo hono 'uhinga. 'Oku kehe 'a e tokotaha kotoa pe ko ia ai 'e ala kehekehe 'a e sivi 'o e tokotaha kotoa pe.

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

KO HAI ‘A E KAU NGĀUE TAUHI MAHAKI TEU FE’ILOAKI MO IA HILI ‘A HONO MA’U ‘O ‘EKU SIVI?

Te ke fe’iloaki mo e kau ngāue kehekehe kuo ‘osi teu‘i mo ako‘i pea ko kinautolu te nau tauhi koe.

Ko kinautolu takitaha ‘oku ‘i ai ‘a ‘enau ‘ilo, taukei pea tu’ukimu’a foki ‘i he mahaki kanisā pea mo hono tauhi ‘o e mahaki. Te nau ngāue fakataha ke ‘oatu ma’au pea mo ho fāmili ‘a e tauhi mo e poupou lelei taha ke ke mo’ui hili hono ‘ilo ‘oku ke puke ‘i he kanisā ‘o e toto.

Ko e fakahokohoko atu eni ‘o kinautolu te mou fe’iloaki:

- Charge Nurse – Ko e neesi eni ‘oku ne pule‘i ‘a e feitu’u ‘oku ha’u ki ai ‘a e kau mahaki ‘oku tauhi pe ki tua’ā (outpatient) pe ‘oku nau tokanga‘i ‘a e uoti ‘i falemahaki.
- Clinical nurse specialist (CNS) – Ko e neesi ‘oku mahulu atu ‘a ‘ene poto‘i ngāue ‘i he tapa ‘o e tauhi mahaki kanisā. ‘E fengāue’aki vāofi ‘a e neesi ni mo koe pea mo ho fāmili ke tokoni atu ki hono tokanga‘i ‘a e ‘asi mai ha ngaahi faka’ilonga pea mo ha uesia tamaki ‘e ‘asi mai mei he mahaki pea mo hano faito‘o.
- Dietitian – Ko e tokotaha eni te ne fale‘i ‘a ho‘o me’akai mo e me‘ainu ke fakasi‘isi‘i ange ai ‘a e ngaahi uesia tamaki ta‘e‘amanekina ‘i he fai ‘o ho faito‘o. ‘E lava ke ne fakangofua ke ‘oatu fafanga ke fakapapau‘i ‘oku ke ma’u kotoa ‘a e me’akai ‘oku tonu ke ma’u ‘e ho sino.
- General practitioner (GP) – Ko ho‘o toketā fakafāmili pe ko e toketā ‘a e komiunitī ‘e kau mai pe kuo ‘osi kau mai ki hono vakai‘i ‘o e kanisā ‘o ho toto. ‘E fakahā ke ne ‘ilo ‘a e ngaahi me‘a kotoa pe ‘i hono sivi koe, pea ‘e fengāue’aki mo kinautolu te nau fai ho faito‘o ke tokoni‘i koe ‘i ‘api, ‘i he komiunitī pea ‘i he hili ‘a ho faito‘o.
- Haematologist – Ko e toketā ‘oku nofotaha ki hono faito‘o ‘o e kanisā ‘o e toto mo e ngaahi mahaki ‘o e toto. Ko e toketā eni ‘e pule ‘i hono tokanga‘i ‘o hono faito‘o koe pea mo hono vakai‘i hili ‘a hono fai ho faito‘o.
- Occupational therapist – ‘E tokoni ki hono fakaangaanga koe ki he ngaahi ouau faka’aho ‘i ho‘o fakaakeake puke.
- Outpatient clinic nurse – Ko e neesi ‘oku ne fai ho faito‘o ‘i ho‘o ha’u ki falemahaki, hili ho‘o ‘atā pea ‘oku ngāue fakataha mo e toketā ‘i he kiliniki.
- Pharmacist – Ko ia ‘oku ne tokanga‘i ‘a e ngaahi faito‘o ‘e faka’aonga‘i. Te ne fakahinohino atu ‘a e faito‘o ke faka’aonga‘i pea mo ha ala uesia tamaki koe ‘e he faito‘o ko ia.
- Physiotherapist – Ko ia ‘oku ne tokanga‘i mo tauhi ke longomo‘ui mo tupulekina ‘a e lava ‘o ho sino ‘o ngaungaue lelei. Te ne lava foki ‘o tokoni atu ke mo‘ui tau‘atāina ange mo mālohi ‘a ho sino.
- Psychologist – Te ne tokoni atu ‘i ha‘o ongo‘i loto faingata‘a‘ia koe‘uhi ko e mahino ‘oku ke puke ‘i he kanisā toto ‘o hangē ko e ongo‘i mafasia, mo‘utāfu‘ua mo ha‘iha‘isia.
- Registrar – Ko e toketā eni ‘oku akoako ke hoko ko ha toketā faito‘o e ngaahi mahaki ‘o e toto (haematologist). ‘E lahi ‘a ho‘o toutou sio ‘oku ‘asi holo ‘a e tokotaha ni ‘i he uooti pea mo e kiliniki. Pea ‘e fengāue’aki vāofi ‘aupito ‘a e toketā akoako pea mo e toketā ‘oku pule ‘i he fai ‘o ho faito‘o (haematologist).
- Social worker – Ko e tokotaha ngāue eni ‘oku tokoni ki hono fokotu‘u e ngaahi tokoni mo hono poupou‘i koe hili ‘a e mahino ‘oku ke puke ‘i he kanisā toto, ‘o hangē ko hono fale‘i koe ki he ngaahi me‘a ke fai ‘i ‘api, ho‘o ngāue pe ko e ako.
- Ward nurse – Ko e neesi ia te ne tokanga‘i koe lolotonga ‘a hono fakatokoto koe ‘i falemahaki.

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.

Ko e ni‘ihi kehe eni ‘e ala lava ke mou fe‘iloaki:

- **Palliative care team** – Ko e kau toketā, neesi mo e kau ngāue ‘oku nau tauhi e kau mahaki pea ko honau fatongia ke faito‘o ‘a e ngaahi faka‘ilonga ‘o e kanisā toto, tokoni ke fakafiemālie ‘a tūkunga ‘o e mo‘ui pea ke tokanga‘i ‘a e kakai mahaki ‘i he teu ‘o ‘enau pekia.
- **Spiritual care and cultural support** – ko e ni‘ihi eni ‘oku nau poupou mo tokoni ‘o tuha mo e ngaahi tō‘onga ‘a e tupu‘anga fakafonua mo e ngaahi ouau fakalaumalie mo fakalotu foki.
- **Non-Governmental organisation (NGO)** – Ko e ngaahi kautaha eni ‘oku ‘ikai pule‘i ‘e he pule‘anga pea ‘oku nau tokoni mo poupou taautaha ‘i he ngaahi fiema‘u fakafo‘ituitui ‘a e kakai ‘oku puke ‘i he kanisā ‘o hangē ko e Leukemia & Blood Cancer New Zealand.
- **Leukaemia & Blood Cancer New Zealand Support Services Coordinator** – Ko e tokotaha eni kuo ‘osi teuteu‘i ia ke ne fai e ngaahi tokoni mo e fale‘i fakahinohino mo ha poupou fakanonga. 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.

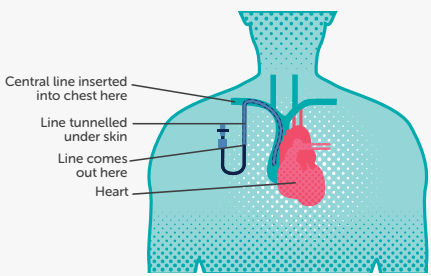
Chemotherapy is often given in several cycles (or courses) with a rest period of a few weeks in between each cycle. This is to allow the body to recover from the side effects of chemotherapy.

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.

KO E NGAAHI FOUNGA FAITO'O

'I he konga ko'eni 'e 'oatu ai ha fakamatala fakalulufua ki he ngaahi faito'o kehekehe ki he kanisā 'o e totó mo e ngaahi me'a pehé. 'Oku mahu'inga ke fakatokanga'i ko e ngaahi fakamatalá ni ko e to'o me'a lalahi pē, pea 'e ala kehekehe 'a e me'a 'oku 'oatu heni pea mo e fa'ahinga mahaki 'oku ke puke aí kae'uma'a foki 'a e tu'unga 'oku 'i ai 'a e mahakí.

Faito'o kimo (Chemotherapy)

Ko hono 'uhinga 'o e lea chemotherapy ko e faito'o pe tauhi 'oku fai 'aki 'a e ngaahi kemikale. 'Oku lahi 'a e ngaahi faito'o kimo 'oku toe ui ko e cytotoxics pe ko e kona ki he ngaahi sela, he 'oku nau tamate'i 'a e sela, tautefito ki he ngaahi sela koia 'oku lahi mo fu'u vave 'a 'ene tupu 'o hangē ko e sela kanisā.

Ko e faito'o kimó ko hono ngāue'aki fakataha 'a e ngaahi kemikale kehekehe (combination chemotherapy). Ko hono fakahingoa 'o e ngaahi faito'o 'oku fakatahataha'i ke fai 'aki 'a e faito'ó ni, 'oku ma'u ia mei he 'uluaki mata'itohi 'o e hingoa 'o e ngaahi faito'o takitaha 'oku ngāue'akí.

Ko hono fakahoko 'o e faito'o kimó 'oku toutou fai fakahokohoko (cycles or courses) mo ha ki'I fakavaha lau uike. 'Oku fai ia ke ma'u ha mālōlō 'a e sinó mei he ngaahi uesia tamaki 'o e faito'o kimó (chemotherapy).

Ko hono fai 'o e faito'o kimo.

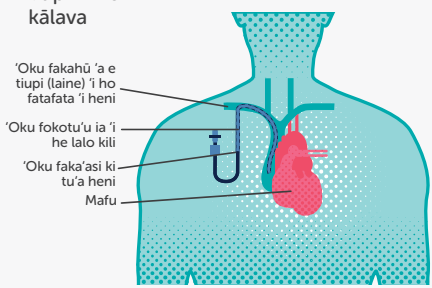
'Oku lahi 'a e founga ke fai 'akí. 'E lava ke fakahū ia ki he sinó 'o fakafou 'i ha fo'i kālava (IV or intravenously) 'i he nimá pe umá pe ko ha folo fo'i'akau.

Kapau 'e toutou faito'o tu'o lahi, 'e ala fiema'u 'e he tōketā toto (haematologist) ke fokotu'u ha fo'i tiupi fakatafe (central line) ki he kālava ke lava ai 'o fakahū hangatonu ai 'a e faito'ó (vakai ki he fakatātā fika 05). Ko e fakatafé ni 'oku fakahū ia 'i he lalo kilí ki he taha 'o e ngaahi kālava lalahi 'o e sinó 'i he umá, kia pe ko e fatafatá. 'I he 'osi 'a hono fokotu'ú 'e lava ai 'o fakahū ki he sinó 'a e ngaahi faito'o kimo pea mo ha ngaahi faito'o kehe pē. 'E lava foki 'o fai 'a e to'o totó mei he fakatafé ni 'o 'ikai ke toutou huhu. 'Oku kehekehe pē 'a e ngaahi fakatafe 'e ala fokotu'ú. Ko e ni'ihi 'oku fokotu'u taimi nounou pē pea ni'ihi 'e fokotu'u ia ke ngāue'aki 'i ha lau māhina pe laui ta'u.

Fakatātā fika

05

Ko hono fokotu'u ha tiupi ki he kālava



'I he taimi lahi 'e 'ikai fiema'u ke ke tokoto 'i falemahaki kae fai ho faito'o kimo 'i falemahaki pea ke foki pe 'o nofo 'i 'api. 'I he taimi ni'ihi, 'e fiema'u ke ke ha'u 'o tokoto 'i falemahaki ha ki'i taimi nounou pē.

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

Ko e uesia tamaki (side effects) 'o e kimo

Ko e kimo ko hono tāmate'i 'o e ngaahi sela oku fu'u vave mo lahi 'a 'enau tupú 'o hangē ko e sela kanisā. Ka 'oku ne toe uesia mo maumau'i ai 'a e ngaahi sela mo'ui leleí 'o kau ai 'a e sela ki he lou'ulú, sela 'i ho loto ngutú, keté pea mo e uho 'o e huí. Ko e uesia tamaki 'o e kimó 'oku hoko ia koe'uhi ko e ngaahi maumau ko ia.

Ko hono lahi 'o e ngaahi uesia tamaki ni 'oku tefito mo ia 'i he tokotaha 'oku faito'ó pea mo e fa'ahinga kimo 'oku fai 'aki 'a hono faito'ó pea mo 'ene lava 'o matatalí. 'Oku mo'oni ko e ngaahi ola tamaki ni 'oku tupu ai 'a e ngaahi faingata'a'iá ka 'oku tonu ke manatu'i ko e taimi lahi 'e 'osi pē pea mahu'i atu 'o foki ki he tūkunga na'e tomu'a 'i ai. 'Oku mahu'inga ke ke fakahoko ki he tōketaá pe neesí 'a e ngaahi ola kehe 'oku hoko kiate koé koe'uhi he 'e lava ke nau 'oatu ha faito'o ki ai ke 'oua na'a ke fu'u faingata'a'ia.

Ko e ngaahi me'a 'e hoko ki he uho 'o e hui

'E uesia fakataimi 'e he kimó 'a e lava 'e he uho'i hui 'o ngaohi pe fa'u 'a e sela hinehiná, kulokulá pea mo e peletileti foki. Pea ko hono olá ko e holo hifo 'a e ngaahi me'á ni 'i ho toto 'i he 'osi pē ha uike 'e 2 nai 'o ho faito'ó. Ko hono fuoloa 'o e taimi ke toe foki hake ai 'a e uho 'o e huí mo ho totó ki he tu'unga angamaheni 'e fakafalala pe ia ki he fa'ahinga faito'o kimo 'oku fai 'aki 'a e faito'ó. 'Oku 3 'a e ngaahi me'a 'e hoko 'i he holo hifo 'a e sela hinehina, kulokula mo e peletileti:

- Ko e pihiangofua 'i ha mahaki
- Takataka'uli mo fānoa e toto
- Tetea e kili pea ongo'i vaivaia

Pihiangofua

'Oku fa'a hoko eni he 'osi 'a e 'aho 'e 10 ki he 14 hili 'a hono fai 'o e kimó pea 'i he taimi ko iá, 'e ala lava ai ke ke pihia pe puke 'i ha fa'ahinga mahaki pipihi. 'Oku fa'a fakahoko ha sivi ho totó he taimi koení ke vakai'i 'a e lahi 'o e ngaahi sela kotoa 'i ho totó. Pea lolotonga iá 'e toe holo hifo foki 'a e tu'unga 'o e neutrophil 'i he totó pea 'oku ui ia ko e neutropenic. Ko e neutrophils ko e ngaahi sela toto hinehina ia 'oku tokoni ke ne tau'i 'a e ngaahi mahaki 'e ala fai ai ha pihiá. 'I he lolotonga 'a e holo hifo ki lalo pe si'isi'i 'a e sela toto hinehiná, 'oku totonu ke ke faka'ehi'ehi ke 'oua na'a ke pihia 'i ha fa'ahinga mahaki kehe:

- Fakamama'o

  Ko e ngaahi faka'ehi'ehí ni 'oku kau ai 'a ho'o fakamama'o mei ha feitu'u 'oku tokolahi, 'atā mei ha kakai 'oku nau puke 'i ha ngaahi mahaki pipihi 'o hangē ko e fofonu, fulū mo e huhunu.
- Tokanga'i 'a ho'o kai

  'E fakahinohino atu 'e he neesí pe tōketaá 'a e ngaahi me'akai ke 'oua te ke kai kapau 'oku tōlalo 'a e sela hinehina 'i he totó. Pea 'e lava ke nau fokotu'u atu ha founga kai 'neutropenic' 'oku kai pe 'a e me'akai ma'a. Ko e fa'ahinga kai eni 'oku ne malu'i ai koe mei he ngaahi siemu 'oku ma'u 'i he me'akai mo e me'ainu. 'Oku mahu'inga ke matu'aki tokanga ki he ngaohi 'o e me'akai. 'E fiema'u ke:
  - Tomu'a fanofano ma'u pe kimu'a pea ke toki ngaohi kai pe ko ho'o kai.
  - Tala ki he fāmili ke nau fanofano kimu'a pea nau toki ngaohi kai.
  - Ngaohi e me'akai 'i ha feitu'u 'oku ma'a.
  - Fufulu 'a e fua'i'akau mo e vesitapolo.
  - Kapau 'oku fakamafana pea fakapapau'i ke matu'aki mafana 'aupito.
  - 'Oua na'a fakamafana tu'o ua ha me'akai.
  - Faka'aonga'i 'a e me'akai kimu'a he 'aho kuo tuhu'i mai ke 'osi faka'onga'i ai.
  - Ngaohi 'a e kakano'i manu 'i ha tofi'anga me'akai makehe pea fakapapau'i 'oku moho 'aupito.

'Oku lava ke ma'u ha ngaahi fakahinohino 'i he 'initaneti ke tānaki atu ki heni

- 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.

- Tauhi koe ke ke ma'a
  'I he si'isi'i 'a e sela hinehina 'i he totó, te ke pihiangofua 'i ha mahaki mei he ngaahi siemu 'i ho sino. 'E fiema'u ke ke:
  - Saoa pe kaukau 'i he 'aho kotoa pe.
  - Faka'aonga'i ha tauveli ma'a.
  - Fanofano ma'u pe hili 'a ho'o ngaue'aki 'a e falemalōlō pea kole ki he fāmili ke nau fai e me'a tatau.
  - Fufulu nifo ma'u pe 'o ngāue'aki ha polosi 'oku molū.
  - Kapau 'oku 'osi fakatiupi 'a ho kālava ki he faito'o, fakapapau'i 'oku tauhi ke ma'a pea vakai'i na'a 'asi ai ha fakakulokula, fufula, pela pe langa.
- Ngaahi ngoue
  'E lava ke ma'u ha mahaki 'e kinautolu 'oku tōlalo 'a e sela hinehina 'i honau totó, mei he kelekele 'oku fai'aki 'a e ngaahi ngoue. 'E fiema'u ke:
  - Tui ha kofunima, he 'e lava ke nofo e siemu fakatupu mahaki 'i he kelekele mo e kili'i'akau.
  - Fufulu ke ma'a ha ngaahi lavea tupu mei he ngaahi ngoué.
  - Tui ha 'ufi'ufi mānava ke 'oua na'a ke mānava'aki ki loto ha me'a.
- Monumanu Fakalalata
  'I he tōlalo 'a e sela hinehiná, 'e lava ke ke pihia 'i ha mahaki mei he fanga monumanu fakalalata. 'E fiema'u ke:
  - Fanofano ma'u pe hili ha'o ala ki he fanga monumanu.
  - 'Oua 'e tuku ke 'emo 'e he monumanu 'a ho mata
  - Tauhi ke ma'a 'a e fanga monumanu pea faito'o 'a e kutua mo e ponua.
  - 'Oua na'a ke ala ki he laulau 'oku fai ai 'e nau tu'umama'o pe ko e tu'umama'o 'a e kuli.

'E fakahinohino atu 'e he neesi pe ko e toketā toto 'a e founga ke fakasi'isi'i ai ha'o pihia 'i ha mahaki lolotonga 'a e tōlalo 'a e sela hinehina 'o e toto.

Kapau te ke pihia 'i ha mahaki, 'e lava ke hā mai ko ha mofi mo e tauta'a 'o 'ikai ke kei lava 'o ta'ota'ofi ha tete 'o ho sino. 'I ha'o pihia 'i ha mahaki lolotonga 'a e tōlalo 'a e sela hinehiná ko e me'a ke fu'u tokanga'i 'aupito na'a fakalalahi pea ke faito'o 'aki ha 'enipaiotiki (antibiotics) 'i he vave tahá.

Ko e fakahinohino mahu'inga

'Oku mahu'inga ke fai ha fetu'utaki mo ho'o tōketaá (haematologist) pe ko e falemahakí 'i he vave tahá (tatau pe ko e 'aho pe po'uli) kapau 'oku ke ongo'i puke pe 'oku 'asi 'a e ngaahi faka'ilongá ni:

- ko e 'afu'ia mo e vela 'o ho sino 'o a'u ki he tikili 38C pe ko ha'o ongo'i tete.
- fetoto'i pe ko ha taka'uli pe ko ha 'asi ha toto 'i ho'o tu'uofí, tu'umama'ó, fula mei ho mongá, toto 'a e te'enifo pe ko e toutou fekefekea.
- tokakovi pe lua 'o 'ikai lava ai ke ke kai pe inu pe folo 'a e fo'i'akaú pe faito'ó.
- fakalele, langa kete pe ko e 'ikai lava 'o tu'umama'o.
- tae pe ko e nounou 'a e mānavá.
- ka 'asi fo'ou ha fakakulokula pe ko ha veli.
- langa'ulu ta'e motu.
- ko ha langa pe mamahi fo'ou 'i ha konga 'o e sino.
- kapau 'e mahifi pe ko ha lavea 'i ha konga 'o ho sino.
- fakatokanga'i ha langa, fufula, fakakulokula pe ko ha pela 'i ha konga 'o ho sinó.

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.

Hair loss

Alopecia (or hair loss) is a very common side effect of some types of chemotherapy drugs.

Takataka'uli mo volu pea mo e/pe ko ha fetoto'i

'E lava foki ke uesia heni 'a e lahi 'o e peletileti 'i ho totó pea 'oku ui ia ko e thrombocytopenic ('a ia ko e holo hifo ia 'o si'isi'i 'a e peletileti). 'I he holo 'o si'isi'i ange 'a e peletileti, 'e ala faingofua 'a ho'o takataka'uli pe ko ha'o lavea pe fetoto'i 'i ha'o lavea. Lolotonga 'a 'ene Peheé, faka'ehi'ehi mei he ngaahi me'a māsila ke 'oua na'a hū ki ho loto ngutú 'o hangē ko e me'akai fefeka mo pangungungungu hangē ko e potato chips hē 'e ala lavea ai 'a ho te'enifó. Ngāue'aki ha polosi fulunifo 'oku molū ke ne malu'i 'a ho te'enifó. 'I ha'a ne fu'u tōtu'a, 'e huhu fakafoki ki ho sinó ha peletileti kae'oua kuo toe lahi mai 'a 'ene 'asi mei ho toto ke 'oua na'a hoko ai ha'o fetoto'i.

Ko e fōtunga tetea mo tāvaivaia (anaemic)

Kapau 'e fu'u tō lalo 'a e sela toto kulokulá pea mo e haemoglobin 'e vai ho toto pea ke tetea (anaemic). Pea kapau ko ia, 'e lahi ange 'a ho'o ongo'i hela'ia mo tāvaivaiá. Ko e ngaahi faka'ilonga 'o e tetea mo e tāvaivaia (anaemia) ko e ninimo, nounou 'a e mānava 'i he taimi fakamalohisino.

Kapau 'oku fu'u tōlalo 'aupito 'a e haemoglobin 'i ho totó 'e ala tu'utu'uni 'e he tōketaā ke fai hao huhu toto.

Tokakovi pea mo e lua

'Oku fa'a hoko 'a e tokakovi mo e lua 'i hono fai 'o e faito'o kimo (chemotherapy). 'E 'oatu ha ngaahi faito'o (antiemetics) ke fakasi'isi'i'aki 'a e hoko ha me'a pehé kimu'a ia pea fai 'a e faito'o kimo pea mo ha ngaahi 'aho si'i hili 'a e faito'o. Manatu'i ke fakahā ki he kau neesi pe tōketā kapau 'oku ke ongo'i 'oku 'ikai ke sai 'a e ngaahi antiemetics kiate koe pea 'oku ke kei lua mo tokakovi pē. 'Oku lahi 'a e fa'ahinga kehekehe 'o e faito'ó ni ke 'ahi'ahi'i mo filifili mei ai. 'E lava ke 'oatu ha faito'o fakanonga (sedative) ke fakasi'isi'i ai 'a ho'o faingata'a'iá. 'E ala ma'u ai ha nonga ka 'e fakatupu fiemohea.

'Oku 'i ai e ni'ihi 'e sai ange kia kinautolu ke nau ki'i kai si'isi'i pē mo toutou kai 'i ha fu'u kai lahi faka'angataha he 'aho. 'Oku ala tokoni foki 'o kapau 'oku ke tokakovi ke inu ha vai kuo 'osi fakakasa (soda water mo e ginger ale). 'E toe sai foki kapau 'e ma'u ha 'ea fo'ou mo namu lelei pea mo ngāue'aki 'a e faito'o kuo 'osi tu'utu'uni atu 'e he neesí mo e tōketaá.

Ko e ulufia 'o e sino

Ko e ulufia 'o e 'aofi loto 'o e ngutú pea mo e mongá pea mo e ngākau 'o kamata pe mei he ngutu 'o a'u ki he ngata'anga 'o e ngākau. Pea 'oku lava leva ke pala 'a e 'aofi loto ko ia. 'Oku lahi ange 'a 'ene 'asi mai 'i he ngutu pea mo e fo'i monga 'o fakatupu mamahi'ia, pala mo hafu 'a e fāvai.

Ko e ulufia ko eni 'e lava ke fu'u mamahi 'o fiema'u ke faito'o 'aki ha faito'o fakaongonoa. 'E toe 'aonga foki mo hono ngāue'aki 'o e me'a fufulu ngutu pe pūpū (mouthwashes/rinses). Kātaki 'o 'eke ki he neesí 'a e fa'ahinga pūpū 'oku tonu ke ngāue'akí he 'oku 'i ai 'a e ngaahi pūpū 'i he falekoloá 'oku 'ikai tonu ke ngāue'aki.

Ngaahi liliu 'e hoko ki ho loto 'i keté mo e ngākaú

'E lava ke hoko ha maumau ki he kili loto pe 'aofi 'o ho loto'i keté pea mo e toenga 'o ho ngākaú 'o hoko ai ha langakete pea mo e fakalele. Ka hoko ha me'a pehé ni pea manatu'I ke fakahā ke 'ilo 'e he kau neesí pea mo e kau tōketaá. 'Oku mahu'inga 'aupito ke tala ki he neesi pe tōketā kapau 'oku faingata'a pe 'oku mamahi 'a ho'o feinga tu'umama'ó. 'Oku fa'a fakatupu 'e he faito'o ni'ihi ha tu'osi'i 'a e tu'umama'ó ka 'oku 'i ai 'a e faito'o ke tokoni ki ai. 'Oku matu'aki mahu'inga ke inu e vai ke lahi ma'u pe.

Ngangana 'a e lou'ulu

'Oku lahi 'a e ngangana 'a e lou'ulú 'i hono ngāue'aki 'o e faito'o kimo kehekehe. 'Oku 'i ai 'a e ngaahi faito'o kimo 'oku lahi ai 'a e ngangana 'a e lou'ulú, ka ko e ngangana fakataimi pē ia pea toe tupu mai. 'E lava ke ngangana kotoa ai 'a e fulufulu 'o e sino 'o kau ai 'a e kemo, lau'imata mo e fulu.

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.

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

Ko e ngaahi me'a eni ke ke fai ke tokoni atu ke ke toe fiemālie ange kapau 'oku ngangana ho lou'ulú.

- Tui hao tatā 'i tu'a pe 'i he po'uli ke māfana ho 'ulu.
- 'Oku tonu ke tui ha tātā 'i ho'o 'i tu'á he 'e uesia 'e he kimó 'a e kilí pea lava ke ke fohia.

Tāvaivaia mo e ongo'i hela'ia

Ko e kau mahaki tokolahi te nau ongo'i hela'ia mo vaivaia he 'osi 'a e kimó. Ko e lahi 'o e kau mahaki te nau 'ongo'i matu'aki hela'ia mo tāvaivaia lahi pea 'e lava ke faingata'a 'a hono tauhi. Pea 'oku 'ikai lava ke 'osi 'a e tāvaivaia ia 'aki ha mālōlō pea 'oku hoko ai 'a e uesia fakasino, 'atamai mo e sōsiale foki. 'E lava ke sai 'i he 'osi 'a e faito'o kimo ka 'e 'i ai 'a e ni'ihi te nau kei ongo'i pe eni 'o lau māhina pe laui ta'u.

'Oku mahu'inga ke ke kai lelei, inu vai ke lahi mo ha'o ki'i fakamālohisino fakafuofua. 'Oku mahu'inga ke fakahā ki he neesi mo e kau toketā 'a e ngaahi faka'ilonga 'o ho'o tāvaivaia pea mo ho'o me'a 'oku fai ki ai.

'Oku lava ke tānaki atu ki he fakamatala ni mei he 'initaneti.

Ko e founga faito'o 'oku ngāue'aki 'a e ivi radiation (radiotherapy)

Ko e radiotherapy pe ko e radiation therapy ko hono ngāue'aki ia 'o e fa'ahinga ivi radiation 'a ia 'oku ngāue'aki 'i he faka'atá (x-rays) ke faka'auha'aki 'a e sela mahamahakí pea ke fakamingi'i hifo 'a e ngaahi fo'i ngungu (tumours). Ko e fa'ahinga faito'ó ni 'oku fai pe ia 'i he feitu'u pe konga 'o e sino 'oku tu'u ai 'a e sela kanisā.

Ko e ngaahi konga 'o e sinó 'oku lava ke fakahoko ai 'a e faito'ó, 'oku ui ia ko e radiation field. 'Oku kehekehe 'a e ngaahi konga 'o e sinó 'oku fai ai 'a e faito'o radiotherapy 'a ia ko e mantle – 'o kau ai 'a e kiá, fatafatá pea mo e faa'ifiné, ko e upper abdominal field pe ko e konga 'o e kete ki 'olunga pea taimi e ni'ihi 'oku kau mai ki ai mo e 'atepili pea mo e funga (pelvic field) 'a ia ko e kongaloto mo e tefito'i alanga. Kuo lava 'e he tekinolosia 'o e onopooni ke fakamavahevahe'i 'a e ngaahi konga kehekehe 'o e sino ke fai ai 'a e faito'o koe'uhi ke toe lava ai 'o fakalahi ange 'a e faito'o mo fakasi'isi'i 'a e uesia tamaki. Pea 'oku ui ia ko e 'involved field' pe 'involved site' radiation therapy.

Ko e hā 'a e me'a 'oku fai 'e he radiotherapy?

Kimu'a pea toki fai 'a e faito'ó ni, 'oku fai 'e he tōketā 'oku ne fai 'a e faito'o hulu radiation ha fakafuofua'i fakapotopoto 'o hono lahi 'o e ivi radiation ke fai 'aki 'a ho faito'o. 'E faka'ilonga'i leva 'i ho kili 'aki ha peni 'a e ngaahi konga 'e fai ai 'a e faito'o. Taimi ni'ihi te nau faka'esia (mould) 'a e feitu'u ko iá pea te ke pukepuke ia lolotonga 'a hono hulu'i 'o e ivi radiation.

Ko ho faito'o radiotherapy 'oku fai fakafuofua'i pe ia 'i he 'aho kotoa mei he Monite ki he Falaite pea fai ia he laui uike 'i he va'a ngāue 'oku nau fai 'a e faito'ó ni 'i falemahaki. 'E 'ikai fiema'u ke fakatokoto koe 'i falemahaki ke fai 'a e faito'ó ni ka 'okapau 'oku ke ha'u mama'o, 'e fiema'u ke kumi ha feitu'u ke ke nofo ai lolotonga 'a hono fai ho faito'ó. 'E tokoni atu 'a e neesí pe ko e kau ngāue tokoni (social worker) ke lava 'o ma'u ha feitu'u ke ke nofo ai.

'I he fai ho faito'ó, 'e fakatokoto koe 'i he funga tēpile 'i lalo 'i he mīsini 'oku ne fai 'a e faito'ó. 'Oku malu'i foki 'a e ngaahi konga pelepelengesi mo mahu'inga 'i ho sino 'o hangē ko e mafú mo e ma'ama'á ke 'oua na'a uesia. Ko e faito'ó ni 'oku 'ikai hoko ai ha mamahi'ia – pea 'e 'ikai te ke ongo'i 'e koe hā me'a lolotonga 'a hono faí. 'E fiema'u ke ke tokotoma'u 'aupito lolotonga 'a hono fai. 'E lava ke ke ha'u mo ha me'a tāfasi ke ke fanongo hiva ai mo hanganoa kae fai 'a e faito'ó.

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. 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

Ko e ngaahi uesia tamaki (side effects) 'o e radiotherapy

Ko e ngaahi uesia tamaki 'i he faito'o radiotherapy 'e tatau pē ia mo e ngaahi nunu'a kehe 'i he faito'o kimó 'o hangē ko e tokakovi mo e lua, ngangana 'a e lou'ulú pea mo e tāvaivaia foki. 'Oku 'osi fakamatala'i atu ia 'i 'olunga 'i he peesi 41.

Ko hono uesia 'o e kilí

'E lava ke fakatupu 'e he faito'o radiotherapy ha fakakulokula 'o e kilí 'o lahelahea mo mafohifohi pea veli. 'E fakahinohino atu 'e he kau ngāue radiotherapy 'a e founga ke tauhi mo faito'o 'aki ho kilí lototonga 'a e fai ho faito'ó. Fufulu fakaalaala ho kili ('o 'oua 'e ngāue'aki ha koa kuo 'osi fakanamulelei) pea pōpō 'o 'oua 'e holoholo'i ke mātu'u. Faka'ehi'ehi mei ha fa'ahinga kilimi kuo ngaohi fakahū ai ha fa'ahinga ukamea (traces of metals). 'Eke ke fakahinohino atu 'e he kau ngāue 'o kapau 'oku ke veiveiua.

'E fakapotopoto ke 'oua na'a fakala'ala'ā 'a e konga 'o ho kilí na'e fai ai 'a e faito'ó neongo kuo 'osi 'a hono fai ho faito'ó. Ko hono 'uhingá he 'oku hanga 'e he radiotherapy 'o uesia 'a e kili ke faingofua ai ke fohia pe 'e toe kanisā e kilí koe'uhi ko e la'á.

Ko hono fakafetongi mo'ui (transplant) 'o e sela sitema

Kapau 'e fu'u lahi 'a hono ngāue'aki 'o e radiotherapy pea mo kimo, te ne tamate'i ai 'a e sela sitema 'i he sino pea 'e 'ikai lava ke ake lelei mei ai ho sino. Kapau 'e fakafetongi mo'ui 'a e sela sitemi, 'e 'uluaki faka'aonga'i ha kimo mālohi mo lahi 'aupito pea toki fakahū atu ha sela sitema ki ho sino ke fetongi 'aki 'a e sela kuo 'auha. Ko e sela sitema ia na'e 'osi to'o mei ha taha kehe pe ko ho sela sitema pe 'o'ou na'e 'osi to'o kimu'a atu 'o tuku 'aisi ke fakatolonga kimu'a pea toki fai ho kimo.

Ko e fetongi mo'ui 'o e sela sitema, 'oku ui ia ko e fakafetongi mo'ui 'o e uho'i hui (bone marrow transplant) pe ko e peripheral blood stem cell transplant.

'Oku 2 'a e founga ke fai 'aki 'a e fakafetongi mo'uí (transplant):

- **Ko e autologous transplant** Ko e founga 'e taha ko hono to'o 'a e sela sitema mei ho sinó, pea 'oku to'o ia mei ho totó 'o tauhi pea toki fakafoki atu ki ho sinó he 'osi 'a hono fai ho faito'o kimó.
- **Ko e allogeneic transplant** Ko e founga 'e taha ko hono fakafoki ki he sino 'o e mahakí ha sela sitema na'e 'osi to'o ia mei ha taha kehe, 'o hangē ko hano tehina pe fāmili ofi. 'Oku fakafalala 'a e foungá ni ki hono lava 'e he sino 'o e mahakí 'o tali lelei 'a e fakafetongí pea ke ta'ofi ai ha toe mo'ui pe tupu hake 'a e kanisā.'E kei fiema'u pe foki ke fai ha faito'o kimo ia kimu'a.

Ko e fakafetongi mo'ui 'o e sela sitema ko e founga matu'aki pelepelengesi mo mohu fakatu'utāmaki pea 'oku fuofua vakai'i fakalelei ia kimu'a pea toki fakangofua 'e he toketā toto (haematologist) ke fai ia.

Ko e Tauhi Fakanonga

Ko e kau ngāue 'oku nau fai 'a e fatongia ni ko e kau toketā, neesi mo e kau tauhi mahaki taukei 'i hono faito'o 'o e ngaahi faka'ilonga 'o e kanisā toto. Ko 'enau taumu'a ke tauhi koe 'aki ha poupou mo ha tokoni lolotonga 'a ho'o fe'ao mo ha mahaki 'oku ne fakatupu ha to'o atu 'a ho'o mo'ui. 'E lava ke kau atu 'a e kau ngāue ni ki hono tauhi koe ke ke nonga.

'Oku faka'uhinga'i 'e he ni'ihi 'a e tauhi fakanonga (palliative care) pea mo hono tauhi mo teuteu'i koe 'i he ngaahi 'aho faka'osi 'a ho'o mo'ui. 'Oku poupou'i mo tokoni'i 'e he kau ngāue ni 'a hono kotoa 'o e kau mahaki kanisā toto 'o kau ai 'a hono tauhi kinautolu he ngaahi 'aho faka'osi 'o 'enau mo'ui.

Ko e ngaahi founga faito'o 'oku ui ko e (Complementary Therapy)

Ko e founga faito'o eni 'oku 'ikai ke fakakau ia 'i he ngaahi founga faito'o kanisā angamaheni ka 'oku pehē 'e he ni'ihi 'oku lava ke tokoni ia kia kinautolu lolotonga 'a 'enau faingata'a'ia he fakaakeake mei he kanisā. 'Oku lahi 'a e ngaahi founga ni. Pea ko e fakatātā eni ki ai:

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.

- Yoga - fakamālohisino faofao
- Exercise.- fakamālohisino
- Meditation.– fakalaulauloto mo mālōlō
- Prayer - lotu
- Acupuncture – faito'o hokohoka hui
- Relaxation – mālōlō mo fakanonga
- Massage- fotofota
- Homeopathy – faito'o homio
- Visualisation – sioloto mo fakamālohisino
- Aromatherapy – faito'o namu kakala
- Reiki – faito'o hilifaki nima
- Art therapy - tāvalivali
- Music therapy – hiva pe tāme'alea
- Tai chi – fakamalohisino tai-si

Ko e ngaahi founga tauhi mahaki ko eni 'oku totonu ke fakafenāpasi lelei ia mo e ngaahi faito'o 'oku tui 'a e kau tōketā 'oku totonu ke fakahokó. 'Oku 'ikai totonu ke fai 'a e ngaahi foungá ni kae tuku pe ta'ofi 'a e ngaahi faito'o fakatōketāá. 'Oku totonu ke mahino kuo te'eki ai ha founga tauhi mahaki pehē ni kuo 'osi fakapapau'i ai kuo ne lava 'o faito'o 'iate ia pe 'o sai ai 'a e kanisā totó pe ko e ngaahi mahaki peheé. 'Oku matu'aki mahu'inga ke fakahā ke 'ilo 'e he tōketa totó 'oku ke ngāue'aki ha founga tauhi pehē ni, na'a 'oku fepaki kovi ia mo hono 'aonga 'o e kimó pea mo ha fa'ahinga faito'o kehe 'oku lolotonga fai ma'au.

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

KO HONO FAKAKAUKAU'I E FOUNGA FAITO'O KE FAKAHOKO

Ko e tokolahi 'o e kakai, 'oku nau matu'aki puputu'u mo ha'iha'isia 'i hono fakahā ange 'oku nau puke 'i he kanisā toto pe ko ha mahaki 'o e toto.

Pea hiliō ai 'a e nofo tali ki he ola 'o e ngaahi sivi pea mo hono vakai'i pe ko e hā 'a e founga faito'o ke fakahoko. 'E ongo'i 'e he ni'ihi 'oku si'isi'i 'enau 'ilo ke lava ai 'o fakakaukau'i lelei e me'a ke fai, pea ni'ihi ia 'oku nau faingata'a'ia 'i he fu'u lahi fau e ngaahi fakamatala 'oku 'oange. 'Oku mahu'inga leva ke ke ongo'i hifo 'oku lahi lelei 'a ho'o 'ilo ki ho mahakí pea mo e kotoa 'o e ngaahi founga faito'o 'e lava ke ke fili mei ai koe'uhi kae lava ai ke fai ha'o fili.

Ko ha toe faka'uto'uta kehe ange

'E lava ke ke kole ke toe fai ha faka'uto'uta 'a ha taha kehe ange. 'Oku 'uhinga ia ke lava ke ke sio ki ha toketā toto (haematologist) kehe fekau'aki mo e ola 'o ho'o sivi pea mo e/pe ko ho faito'o. 'E lava ke ke 'eke ki ha taha pe 'o ho kau tauhi 'o kau ai 'a ho'o toketā toto, fekau'aki mo ha faka'uto'uta 'a ha taha kehe ange.

Ngaahi fehu'i ke 'eke ki ho'o kau tauhi

Kimu'a pea ke toki 'alu 'o sio ki ho'o toketā toto, teuteu mo ha'o ngaahi fehu'i ke ke 'alu 'o 'eke. 'E 'aonga ke ke 'alu mo ha'o pepa mo ha peni 'o hiki'i hifo ai 'a e ngaahi fehu'i ke 'eke lolotonga 'a ho'o mo talanoa.

'Alu mo hao poupou

'I he taimi ni'ihi 'e 'ikai lava manatu'i e me'a kotoa pe 'e fakahā atu 'e he toketā. Pea 'e tokoni kapau te ke 'alu mo ha taha mei ho fāmili pe kaume'a te ne lava 'o hiki hifo 'a e ngaahi tali ki ho'o fehu'i pe tokoni ke fakamanatu atu e ngaahi fehu'i ke 'eke, 'o hangē ha tokotaha talifaki ke ne poupou'i koe.

Ko ha'o kau 'i ha fekumi pe fakatotolo 'o ha faito'o fo'ou.

'E lava ke 'eke atu 'e he toketā pe 'oku ke fie kau 'i ha 'ahi'ahi'i 'o ha faito'o fo'ou (ko e fekumi pe ko e fakatotolo). Ko e 'ahi'ahi'i 'o ha faito'o fo'ou 'e tokoni ia ke 'ilo pe 'oku 'aonga pe 'e saiange ha ngaahi founga faito'o fo'ou 'i he founga lolotonga.

Ko e kau 'i he 'ahi'ahi faito'o 'oku ke fa'iteliha mo tau'atāina pe ki ai 'o 'ikai ke fakamalohi'i koe kapau 'oku 'ikai te ke loto ki ai. Kapau 'e 'ikai te ke loto ki ai, 'e faka'apa'apa'i 'a ho'o tu'utu'uni. 'E 'ikai fiema'u ke ke fakahā 'a e 'uhinga 'o ho'o ta'eloto pea 'e 'ikai ke uesia ai pe liliu 'a e founga 'oku tauhi'aki koe.

Fakapapau'i 'oku ke 'ilo 'a e 'uhinga 'o ha 'ahi'ahi'i 'o ha faito'o. 'E fiema'u ke ke 'ilo pau 'a e taumu'a 'o e 'ahi'ahi 'o kapau te ke fie kau ai. Talanoa mo kinautolu 'oku nau tauhi koe kimu'a pea ke toki fakamo'oni 'i he foomu fakamahino 'oku ke loto ke ke kau.

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

KO HO NGAAHI VĀ

Ko hono ʻilo ʻoku ke puke ʻi he kanisā toto ʻe lava ke ne uesia ai ʻa ho vā mo e fāmili pea mo ho ngaahi kaungāmeʻa.

ʻE kau ʻa e femahinoʻaki lelei mo ho hoa, fānau mo e kaungāmeʻa ʻi hono tauhi ʻo ho vā mo kinautolu.

Ko hono tala ki he fānau

ʻE tokoni ki he fānau ke ʻoua naʻa nau nofo hohaʻa kapau ʻe mahino kia kinautolu ʻa e tūkunga ʻo hoʻo puke pea mo ʻene uesia kinautolu.

ʻE lava ke fai ha tokoni faleʻi mo fakanonga kapau ʻoku ke hohaʻa ki ha uesia ʻa hoʻo fānau. Kole ki hoʻo kau tauhi pe ko e vaʻa ngāue tokoni ʻa e LBC ke nau fakahinohino eni kiate koe.

ʻOku totonu ke fakahā eni ke ʻilo ki ai ʻa e faiako ʻa e fānau ʻoku nau kei ako pea ke tala ke nau ʻilo ʻa hono uesia ʻo e tūkunga ʻo e fāmili.

ʻOku maʻu atu ʻa hono fakaikiiki ʻi he ʻinitaneti

Ko e mōhenga

ʻOku ʻikai lava ke pihia ha taha ʻi he kanisā kapau te ke mohe mo ha taha kehe.

ʻE lava ke uesia mo liliu ʻe he kanisā toto pea mo hono faitoʻo ʻa e ouau ʻo e mōhenga. Ko e ngaahi ʻuhinga ki ai:

- Fuʻu ongoʻi tāvaivaia
- Ko e uesia tamaki ʻi he faitoʻo ʻo hangē ko e tokakovi
- Ongoʻi hohaʻa
- Liliu ʻoku hoko ki he sino ʻo hangē ko e ngangana ʻa e louʻulu, holo ʻa e sino
- Liliu ki hoʻo fiemaʻu ke ke mohe mo ho hoa
- Mātuʻu ʻa e halanga fānau pe ko ha ʻikai lava ʻo fefeka/kekeva ʻa e kakai tangata.

Hili ʻa e faitoʻo ʻoku tonu ke toe foki pe ʻa e ouau mōhenga ki hono tuʻunga angamaheni.

ʻOku mahuʻinga ke ke talanoa mo ho hoa fekauʻaki mo e anga ʻo hoʻo mo nonofo mali pea mo hoʻo ongoʻi ʻa e faitoʻo ʻoku fai. Kapau ʻoku ke ongoʻi ʻoku ʻuesia ʻe he ouau mōhenga ʻa hoʻo tauhi vā mo ho hoa, pe ʻoku ke hohaʻa koeʻuhi ko ha kamataʻi haʻo fakakaumeʻa foʻou, lea ki ha taha ʻo ho kau tauhi. ʻE lava ke nau ʻoatu ha fakahinohino kiate koe pe te nau fakahoko ki ha taha ʻe lava ke tokoni atu.

Fakavaha fanau

Kapau ʻoku faitoʻo koe koeʻuhi ko ha kanisā toto pea ʻoku totonu ke ke tui ha konitomu ʻi he taimi kotoa pe te ke mohe ai mo ha taha.

ʻO tatau ai pe pe kuo ke ʻosi paʻa pe ʻoku ʻikai ke kei fiemaʻu ke ke fakavaha fānau (birth control), ʻoku mahuʻinga ʻaupito ke ke ngāueʻaki ha konitomu. Ko e ongo ʻuhinga lahi ʻe 2 ki heni ko e:

1. Ke maluʻi koe naʻa ke pihia ʻi ha faʻahinga siemu pe mahaki. Koeʻuhi ko e tōlalo ʻa sela toto hinehina, ʻe faingofua ange ai ke ke pihia ʻi ha mahaki.
2. Ke maluʻi ʻa e tokotaha te ke mohe mo ia lolotonga ʻa hono faitoʻo kimo koe. Ko e faitoʻo kimo ʻoku tukuange ki tuʻa mei he sino ʻi hoʻo tuʻuofi, tuʻumamaʻo pea mo e ngaahi huhuʻa kehekehe ʻo e sino ʻo hangē ko e huhuʻa fakafanau ʻo e kakai tangata pea mo e fakahauhau ʻo e halanga fānau ʻo e kakai fefine. ʻOku fakatupu ha veli mo ha fakakulokula ki he kili ʻo ho hoá ʻe ha kiʻi memeʻi faitoʻo kimo.

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.

Kapau ‘oku mo mohe pea ‘oku fai hao faito‘o kanisā toto, ‘oku lava ai ke hoko ha maumau ki ha‘a mo tama ‘i ha hoko ha feitama, ko ia ai ‘oku fakapotopoto ke malu‘i na‘a hoko ha me‘a pehē.

Ko e mōhenga lolotonga ‘a e tōlalo ‘a e peletileti

Tala ki he toketā pe neesi kapau ‘oku mo mohe lolotonga ‘a e tolalo ‘a e peletileti he ‘e lava ke hoko ai ha fetoto‘i. ‘E fakapotopoto kapau ‘e faka‘aonga‘i ‘e he kakai fefine ha seli ‘o hangē ko e KY koe‘uhi ke ‘oua na‘a matangatanga.

KO E TAUHI LELEI HILI HONO ‘ILO‘I ‘OKU KE PUKE

Hili ‘a hono ‘ilo ‘oku ke puke ‘i he kanisā totó, ‘oku matu‘aki mahu‘inga ke ke tauhi lelei. ‘I ho‘o ongo‘i pe kuo ke faka‘au ke sai, ‘oku mahu‘inga mo totonu ke ke fakamalohisino ma‘u pe mo kai lelei.

Koe‘uhi ke ‘oua na‘a hoko ha fakafaingata‘a‘ia ki ho faito‘ó pe ko ha uesia tamaki ‘o tu‘uloa, ko e ngaahi liliu eni ki ho‘o mo‘ui kuo pau ke fakahoko leva ‘o ‘oua ‘e toe tatali:

- Ta‘ofi ‘aupito ‘a e ifi tapaka
- Malu‘i ‘a ho kili mei he la‘ā
- Ta‘ofi pe fakasi‘isi‘i ‘a ho‘o inu ‘olokaholo

Kole ki he toketā pe neesi ke nau tokoni atu ke ta‘ofi ho‘o ifi tapaka pea ke fakasi‘isi‘i pe ta‘ofi mo ho‘o inu ‘olokaholo.

‘E lava ke tokoni atu ‘a ho‘o kau tauhi ke fakahinohino ‘a e founga ke ke tauhi lelei ai. ‘E lava ‘e he fisiō (physiotherapist) ‘o fakahinohino atu ‘a e ngaahi fakamalohisino ‘oku tuha mo koe. ‘E lava ‘e he tokotaha ‘oku ne fakahinohino ‘a ho‘o kai (dietician) ke fale‘i koe ‘i he kai lelei ‘o tautefito kapau ‘oku ke ongo‘i puke mei he faito‘o pe ‘oku hoko ha liliu ki ho u‘a.

Fetu‘utaki ki he LBC Support Services Coordinator kapau ‘oku ke fiema‘u fakahinohino ki he ngaahi fakamalohisino ‘oku fiema‘u ‘i he feitu‘u ‘oku ke nofo ai.

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.

KO E KAHA'U

'E uesia 'a e ngaahi me'a kehekehe 'o e mo'ui 'o hangē ko e ngāue, ako, ko ho'o ongo'i mo ho'o fakakaukau, ko ho ngaahi va pea mo e ngaahi me'a fakapa'anga foki.

Ko e hoko 'a e puke kanisā toto 'e tupu ai 'a e ngaahi liliu lahi ia ki he mo'ui 'a e ni'ihi. Ko e ni'ihi foki te nau ongo'i 'oku hangē 'oku tu'u 'o fakatatali 'a 'enau mo'ui. Pea 'oku kehekehe 'a e fuoloa 'o e taimi ke fai ai ha fakaakeake faka'atamai mo fakasino hili 'a hono fai 'o ha faito'o pea 'e kehe 'a e tokotaha kotoa pe.

Ko e toe foki ki ho'o tō'onga mo'ui angamaheni 'o hangē ko e ngāue, ako, tauhi fānau 'e hoko ia ko ha taumu'a ke fai ha feinga ki ai pe ko ha ngaahi me'a ia 'e 'ikai te ke toe loto ke hoko atu. 'E fiema'u ia ke fakahoko ha ngaahi liliu ki ho'o mo'ui.

Hili 'a e fai 'o ho faito'o, 'e fiema'u ke toutou sivi koe 'e he toketā totó pea mo ho kau tauhí. 'E tu'utu'uni atu ke vakai na'a 'oku tonu ke ke foki 'o sio ki ho'o toketā fakafāmili (GP). 'E toutou tohi atu 'a ho'o kau tauhi ki ho'o toketā fakafāmili ke ne 'ilo 'a e tūkunga 'oku ke 'i ai pea mo e ngaahi me'a ke muimui ki ai 'o hangē ko e sivi toto pea mo ha ngaahi huhu malu'i. 'Oku lava pe ho'o toketā fakafāmili ke fetu'utaki ki he toketā toto kapau 'oku ne fiema'u ha fale'i.

'E lava ke tokoni atu 'a ho'o kau tauhi pea mo e LBC Support Services Coordinator ki ha:

- Faingata'a'ia faka'aho 'o hangē ko e ngāue, fefononga'aki pea mo e malu'i (insurance) 'i he fefononga'aki.
- Tauhi va pea mo e fetu'utaki mo e fāmili, kaungāme'a mo e kaungā ngāue.
- Ko e uesia 'o e loto mo fakakaukau koe'uhi ko e mahaki mo hono faito'o 'o kau ai 'a e manavasi'i na'a toe foki 'a e mahaki pea mo e ta'emahino 'a e kaha'u.

'Oku lahi 'a e ngaahi poupou mo e tokoni 'e lava ke ma'u atu ma'au mo e fāmili.

ACKNOWLEDGEMENTS

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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.

FAKAMĀLŌ

‘Oku ‘oatu heni ‘a e fakamālō loto hounga mo‘oni ‘a e leukaemia & Blood Cancer (LBC) New Zealand kia kinautolu kotoa pe na‘a nau tokoni mai ki hono fa‘u ‘o e tohi fakahinohino ni: ‘a kinautolu ko e kau mahaki kanisā toto, ko honau kau poupou, ko e kau tauhi ‘o e kau mahaki pea mo e kau ngāue ‘a e LBC.

Ko e Leukaemia & Blood Cancer New Zealand

Ko e Leukaemia & Blood Cancer New Zealand (LBC) ko e kautaha Nu‘usila is ‘oku ne taki ‘a hono poupou‘i mo tokoni‘i ‘a kinautolu mo honau ngaahi fāmili ‘oku nau mo‘ua he mahaki lukīmia (leukaemia), limifoma (lymphoma), maieloma (myeloma) pea mo e ngaahi mahaki toto pehē.

Talu mei he 1977, ko ‘emau ngaahi ngāue na‘e lava ke fakahoko, na‘e makatu‘unga ia ‘i he ‘emau ngaahi feinga pa‘anga pea mo e ‘ofa mo e poupou mei he kakai taautaha, ngaahi kautaha, talāsiti pea mo e tokoni fakapa‘anga. ‘Oku ‘ikai ke fakapa‘anga kimautolu ‘e he pule‘angá.

‘Oku tukupā ‘a e LBC ke nau feinga ke fakalakalaka ai pe kimu‘a ‘a e mo‘ui ‘a e kau mahaki ‘oku nau mo‘ua ‘i he kanisā toto pea mo honau ngaahi fāmili foki.Pea ‘oku nau fakahoko eni ‘aki ha ngāue tokoni ma‘ae kau mahaki, fakapa‘anga ha fakatotolo pe fekumi, fa‘u ha ngaahi fakamatala pe fakahinohino, taukave‘i ke ‘iloa mo fai ha ngaahi ngāue ke tokoni‘i ‘a e kau mahaki pea mo honau ngaahi fāmili foki.

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

KO E NGAAHI SENITĀ HAEMATOLOGY (NU'USILA)

Senitā	Tu'asila	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
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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

Fetu'utaki mai:

Ko e Leukaemia & Blood Cancer New Zealand 'oku nau fakahoko ha tokoni mo e poupou 'i Nu'usila ni hono kotoa. 'Oku kehekehe foki 'a e fekuki 'a e tokotaha kotoa pe pea mo e mahaki kanisā toto. 'Oku 'ikai ko ha me'a faingofua 'a e nofo mo e mahaki lukīmia, limifoma, maieloma pe ko e ngaahi kanisā toto, pea 'oku 'i heni 'a 'emau ngaahi ma'u'anga tokoni ma'a kimoutolu.

Telefoni ta'etotongi 0800 15 10 15
Telefoni ta'etotongi 09 638 3556
Facsimile 09 638 3557
'imeili info@leukaemia.org.nz

National Office/'Ulu'i 'Ofisi

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

leukaemia.org.nz

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Vision to Cure. Mission to Care.