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# Acute Promyelocytic Leukaemia (APL)

**A Guide for  
Patients**

**Leukaemia Care**  
YOUR Blood Cancer Charity

# Introduction

**Being diagnosed with acute promyelocytic leukaemia (APL) can be a shock, particularly when you may never have heard of it. If you have questions about APL – what causes it, who it affects, how it affects your body, what symptoms to expect and likely treatments – this booklet covers the basics for you. You’ll also find useful advice about how to get the best from your haematologist, plus practical advice on how to help important people in your life understand such a rare condition. For more personalised information, talk to your haematologist, clinical nurse specialist or hospital pharmacist.**

Booklet compiled by Ken Campbell, MSc (Clinical Oncology) and peer reviewed by Dr George Cherian. We are also grateful to Professor David Grimwade for additional support and to Thea Wilson, patient reviewer, for her valuable contribution. The rewrite was put together by Lisa Lovelidge and peer reviewed by Nigel Russell, Professor of Haematology

at University of Nottingham, and James Allan, Professor of Cancer Genetics at Newcastle University.

Throughout this booklet you will see a number of quotations. These are the real experiences and words of blood cancer patients so will hopefully help you to understand your disease and situation a bit better.

If you would like any information on the sources used for this booklet, please email [communications@leukaemiacare.org.uk](mailto:communications@leukaemiacare.org.uk) for a list of references.

# In this booklet

Introduction	2
In this booklet	3
About Leukaemia Care	4
What is APL?	6
Symptoms and diagnosis of APL	8
Treating APL	11
Living with APL	14
Talking about APL	18
Glossary	21
Useful contacts and further support	23

# About Leukaemia Care

**Leukaemia Care is a national charity dedicated to ensuring that people affected by blood cancer have access to the right information, advice and support.**

## Our services

### Helpline

Our helpline is available 9.00am - 10.00pm on weekdays and 9.30am - 12.30pm on Saturdays. If you need someone to talk to, call **08088 010 444**

### Nurse service

We have two trained nurses on hand to answer your questions and offer advice and support, whether it be through emailing **nurse@leukaemicare.org.uk**, over the phone on **08088 010 444** or via LiveChat.

### Patient Information Booklets

We have a number of patient information booklets like this available to anyone who has been affected by a blood cancer. A full list of titles – both disease specific and general information titles – can be

found on our website at **www.leukaemicare.org.uk/support-and-information/help-and-resources/information-booklets/**

### Support Groups

Our nationwide support groups are a chance to meet and talk to other people who are going through a similar experience. For more information about a support group local to your area, go to **www.leukaemicare.org.uk/support-and-information/support-for-you/find-a-support-group/**

### Buddy Support

We offer one-to-one phone support with volunteers who have had blood cancer themselves or been affected by it in some way. You can speak to someone who knows what you are going through. For more information on how to get a buddy call

**08088 010 444** or email  
**support@leukaemicare.org.uk**

### Online Forum

Our online forum, **www.healthunlocked.com/leukaemia-care**, is a place for people to ask questions anonymously or to join in the discussion with other people in a similar situation.

### Patient and carer conferences

Our nationwide conferences provide an opportunity to ask questions and listen to patient speakers and medical professionals who can provide valuable information and support.

### Website

You can access up-to-date information on our website, **www.leukaemicare.org.uk**, as well as speak to one of our care advisers on our online support

service, LiveChat (9am-5pm weekdays).

### Campaigning and Advocacy

Leukaemia Care is involved in campaigning for patient well-being, NHS funding and drug and treatment availability. If you would like an update on any of the work we are currently doing or want to know how to get involved, email **advocacy@leukaemicare.org.uk**

### Patient magazine

Our quarterly magazine includes inspirational patient and carer stories as well as informative articles by medical professionals. To subscribe go to **www.leukaemicare.org.uk/communication-preferences/**

# What is APL?

**Acute promyelocytic leukaemia (APL) is a blood cancer that affects the myeloid cells, which include red blood cells, platelets and some white blood cells. APL is a rare sub-type of acute myeloid leukaemia (AML). APL has in the past been referred to as APML but is now more commonly known as APL. When you have APL, the bone marrow is not able to make enough normal blood cells.**

APL is commonly associated with chromosomes 15 and 17 swapping over. This causes parts from each of those chromosomes to "join" and create a gene called PML/RARA.

The term acute does not describe the seriousness of APL. Rather, it refers to the fact that it develops rapidly and, if not treated, gets worse quickly. This is in contrast to chronic leukaemia which develops and progresses slowly. APL is called promyelocytic leukaemia because there are large numbers of abnormal, immature white blood cells called promyelocytes in the blood.

To understand APL, it is helpful to understand how blood cells are normally produced. Blood cells are produced in the bone marrow, which is spongy tissue found inside bones. Each day, the bone

marrow produces more than a trillion new blood cells to replace those that are worn out. Blood stem cells divide to produce either mature blood cells or more stem cells. Only about one in 5,000 of the cells in the bone marrow is a stem cell. A blood stem cell, also called haematopoietic stem cells, may become a myeloid stem cell or a lymphoid stem cell.

A myeloid stem cell becomes one of three types of mature blood cells:

1. Red blood cells that carry oxygen and other substances to all tissues of the body.
2. Platelets that form blood clots to stop bleeding.
3. White blood cells that fight infection and disease; the shortest lived white cells are called neutrophils.

A lymphoid stem cell becomes a lymphoblast cell and then one of three types of lymphocytes (white blood cells):

4. B lymphocytes that make antibodies to help fight infection.
5. T lymphocytes that help B lymphocytes make the antibodies that help fight infection.
6. Natural killer cells that attack cancer cells and viruses.

## How common is APL?

APL is considered a rare disease as it affects about 0.3 people in every 100,000 per year. It affects men and women equally. There are about 170 new cases diagnosed in the UK each year.

APL can be diagnosed at any age. It is most commonly diagnosed at about the age of 40 years, unlike other forms of AML, which are most common in patients between 55 and 70 years of age.

## What causes APL?

The cause of most cases of APL are not known. You cannot catch APL from someone who has it

and you cannot pass APL on to your children. It is sometimes seen in people who have been treated for other forms of cancer; but this only affects a very small percentage of cancer patients. This is known as therapy-related APL (t-APL) and accounts for about 1 in 10 cases of APL; this type of APL is treated in the same way as other cases and responds equally well to treatment.

If you would like more information about AML, you can order our booklet by calling the helpline on **08088 010 444** or by emailing [PatientServices.support@leukaemicare.org.uk](mailto:PatientServices.support@leukaemicare.org.uk)

# Symptoms and diagnosis of APL

## Symptoms of APL

The most common symptoms of APL are similar to those seen in other acute leukaemias and are caused by the bone marrow failing to produce enough normal blood cells. Most patients will experience shortness of breath and tiredness with slight exercise, which is caused by a shortage of red blood cells (anaemia). Anaemia means the body cannot supply enough oxygen to muscles and other tissues. Infections are common and often persistent because of a deficiency of the type of white blood cell that normally help fight infection – neutrophils.

Bruising and bleeding are often seen; which can range from slight bruises in the skin to serious internal bleeding. This is caused partly by a shortage of platelets (thrombocytopenia), but also by a condition called disseminated intravascular coagulation (DIC). Platelets help the body to form a clot at the site of bleeding, so when there are too few, this may cause bruising or slight bleeding.

DIC may happen in other forms of leukaemia but is rare. It affects

about four out of five patients with APL. DIC happens when the body forms clots and breaks down clots inside the blood vessels. This uses up the clotting factors in the blood and this can lead to severe, even life-threatening bleeding. Fortunately, modern treatments are very effective in blocking DIC.

To summarise, common symptoms and their causes are:

- **Anaemia** – breathlessness, easy tiredness
- **Low white cells** – frequent, persistent infections
- **Low platelets** – bruising and/or bleeding
- **DIC** – bruising/bleeding which may be very severe

## Diagnosis of APL

If APL is suspected, you'll have a set of tests to confirm the diagnosis. If you're diagnosed with APL, you will have further tests to determine the right treatment for your cancer. It's important that you know and understand your diagnosis, so you can ask questions and be fully informed of what to expect.



## Full blood count

A blood sample is examined using an automatic cell-counting machine and by examining a stained film under a microscope. The cell-counter will usually indicate that there are large numbers of abnormal white cells in the blood. The appearance of the stained blood cells is usually very typical of APL.

## Bone marrow examination

If the results of a blood sample show that you may have APL, or another form of leukaemia, a bone marrow sample will be taken, usually from the pelvic bone. This is done under a local anaesthetic and does not take very long. The bone marrow sample is important to confirm the diagnosis and also for comparison with later samples to show how APL is responding to treatment.

## Additional investigations

There is a test that looks for an abnormality called PML-RARA. This is an abnormal "fusion gene" - PML and RARA are two genes which are normally found on different chromosomes. In APL, the two

chromosomes swap over part of their DNA, which joins the PML and RARA genes together. This test is important because the main drugs used to treat APL work directly on the PML-RARA gene; in the very rare cases of APL without PML-RARA, other treatments can be used.

There are also a number of other special investigations that can be done to confirm the diagnosis of APL and to help in planning treatment. Unlike most forms of leukaemia, treatment of APL often starts before all the tests are completed.

These tests may be repeated from time to time during your treatment. This is to find out how the APL is responding to treatment.

*"Lots of things were thrown at me in a short amount of time but the sentence I clung on to was, "We are awaiting confirmation, but the type of leukaemia we think you have carries a high cure rate. We should know by the morning." I remember thinking, "Please, please let it be that one."*

# Treating APL

Unlike other kinds of leukaemia, it is normal to start treatment for APL as soon as possible when you are diagnosed, even before all of the tests have been done. This is because, until you have started treatment, there is a risk of a serious, possibly fatal bleed. Most patients respond very well to treatment, but it is vital to start this as soon as possible. Fortunately, in the very rare cases where the diagnosis is changed after starting APL treatment, the treatment already received will do no harm.

APL is treated in a very different way from other forms of AML; if a patient with APL is given standard treatment, there is a risk of serious problems with their clotting system. Fortunately, it is usually very easy to tell the difference between APL and other types of AML.

APL usually responds very well to treatment and patients with this form of leukaemia have a good chance of being cured.

APL can affect people of any age, but this booklet is about APL in adults. If you are a parent of a child

with APL, you should ask their specialist about differences in treatment and outlook for children.

If you have any concerns, contact your haematologist.

## Treatment options

Normally, promyelocytes mature (differentiate) into normal functioning white blood cells, but in APL the PML-RARA gene prevents this from happening. The standard first line treatment (treatment that occurs after being diagnosed) for APL involves all-trans retinoic acid (ATRA), which is similar to vitamin A, and anthracyclines (anthracyclines are a group of chemotherapy drugs). ATRA blocks the effects of the PML-RARA gene. When the abnormal gene is blocked the cells continue to develop – this is called differentiation. ATRA and anthracyclines may be given at the same time (normally if you have a high white blood cell count at the time of diagnosis), or the anthracyclines may be introduced a few days after the treatment with ATRA is started. It is normally given to patients as an in-patient treatment in up to

# Treating APL (cont.)

four courses. This is then followed by four courses of ATRA. ATRA is usually given in the form of tablets, while anthracyclines are given intravenously (injected directly into a vein).

ATRA may cause a side effect called differentiation syndrome (DS).

## Differentiation syndrome (DS)

Also known as retinoic acid syndrome (or RA syndrome), this can affect some patients being treated with ATRA/ATO. ATRA and/or arsenic trioxide (ATO) make leukaemia cells mature into normal white blood cells, but there can be problems when there are large numbers of white blood cells. DS is most likely to happen during the first 3 weeks of treatment. Symptoms include a cough, breathing difficulty, weight gain, fever, and fluid in the tissues. DS can usually be treated with steroids. Treatment may be temporarily reduced or suspended, but this would only happen if the DS is very severe, which is rarely the case.

There is a very good chance that standard treatment will cure APL.

Second line treatment is used for patients who haven't gone into remission or who have relapsed. A relapse can occur in any patient with APL, regardless of if they have been treated with ATO/ATRA or chemo/ATRA. This treatment is usually a combination of ATRA and ATO.

## New treatments

Recently, ATO was approved by NICE for first line treatment of APL in cases where the patient is not suitable for chemotherapy. It is given with ATRA in patients with untreated, low-to-intermediate risk disease (white blood count of 10,000 cells per microlitre or less) or for APL that has returned (relapsed) or not responded to chemotherapy plus a retinoid, such as ATRA. As a treatment, the use of ATO decreases the chance of relapse.

Chemotherapy is often reserved for high risk patients, including children, when their white cell count at diagnosis is  $>10$ . If high risk patients then relapse after being treated with chemotherapy, they will be treated with ATO.

Treatment also involves blood and

platelet transfusion, along with plasma. Platelet counts are kept higher with platelet transfusion in APL compared to other AMLs.

## Treatment of relapsed APL

A relapse means that, after a good initial response to treatment, the APL has come back. Treatment for patients who have relapsed is usually ATRA and ATO. For young, fit patients a stem cell transplant may be recommended. This means having strong chemotherapy to kill off the bone marrow followed by a transplant, either of your own healthy bone marrow stem cells, or of stem cells from a matched donor.

If you have a relapse, your haematologist will explain in detail what this means and what treatment is recommended for you.

## Prognosis of APL

For patients who are diagnosed and start treatment promptly, the outcome for APL is very good. Early death before treatment starts or in the first days of treatment remains a problem, which is being addressed to improve overall

survival even further.

The number of white blood cells is an important factor in the prognosis of APL. Patients with a good prognosis have a white blood cell count of 10,000 cells per microlitre or more, while those with a count below that value have a poorer prognosis. In addition, patients who are older, male, have problems with their kidneys (measured by serum creatinine levels) and increased levels of fibrinogen, which is involved with blood clotting, have a worse prognosis.

# Living with APL

**Being diagnosed with an aggressive blood cancer like APL can be difficult, both practically and emotionally. This chapter will talk about both of these aspects.**

## Emotional impact of APL

Being told you have cancer can be very upsetting. It can be especially difficult with acute leukaemia as you often get ill suddenly and have to start treatment quickly. There is usually very little time to take in information and start to cope with it.

APL is a rare condition and, because of this, you may need emotional, as well as practical, support. Being diagnosed with a rare disease can impact you emotionally at any point of your journey. It is likely that you will experience a range of complex thoughts and emotions, some of which may feel strange or unfamiliar to you. It is important to know that these feelings are all valid and a normal response to your illness.

## Looking after you

Following a diagnosis of APL, you

may wish to make changes to your lifestyle. It's important to know your limits and don't try to change too much at once. Exactly what you can do will vary and will depend on the treatment you have had, and how fit you were before your leukaemia. Adopting a healthy way of living is about making small, manageable changes to your lifestyle.

## Diet

Diet plays an important part in coping with cancer and its treatment and recovery. A well-balanced diet can help you feel stronger, have more energy, and recover quicker.

If you're having treatment, you may notice that you lose weight, or your taste or appetite changes. This may be due to the side effects of your treatment including sore mouth or nausea and sickness.

Once your treatment has finished though, you should begin to feel

better and be able to eat a normal diet. This can take a while after intensive treatment.

## Exercise

With some of the side effects you may be experiencing, such as fatigue, the idea of getting out and being active may be the last thing you want to do, but it is important to try and stay as active as possible. This will help to make you feel better and reduce some of the symptoms or side effects you may be experiencing. Speak to your Clinical Nurse Specialist about exercises that may be suitable for you.

You can find more information about living well with leukaemia on our website: [www.leukaemicare.org.uk/support-and-information/information-about-blood-cancer/living-well-with-leukaemia/](http://www.leukaemicare.org.uk/support-and-information/information-about-blood-cancer/living-well-with-leukaemia/)

## Infection

One of the most common problems following a diagnosis of APL is infection. When you have APL, your body is not able to fight infections as well as normal - this is known as immunosuppression. If you have immunosuppression,

ordinary infections may occur more often and be more severe or longer lasting. You may also get ill from infections with germs that normally live in your body without causing problems, but which grow more rapidly when your immune system is not working - these are called opportunistic infections.

The neutropenia diet can help protect patients with weakened immune systems. You can find out more about neutropenia and the neutropenic diet on our website: [www.leukaemicare.org.uk/support-and-information/information-about-blood-cancer/living-well-with-leukaemia/diet-and-nutrition/](http://www.leukaemicare.org.uk/support-and-information/information-about-blood-cancer/living-well-with-leukaemia/diet-and-nutrition/)

If you think you may have an infection, you should contact your doctor straightaway. Common symptoms of infection include:

- Fever - a raised temperature (38°C or higher)
- Aching muscles
- Diarrhoea
- Headaches
- Excessive tiredness

The signs and symptoms of

# Living with APL (cont.)

infection may be less obvious when you have APL, so if you are in any doubt it is best to contact your doctor and ask for advice.

You can help to reduce the risk of infection by taking some simple precautions:

- Wash your hands frequently, especially after using the toilet, and also if you have touched something like a door knob or banister which can be contaminated with lots of germs.
- Try not to spend more time than you can help in crowds; especially if there is an epidemic of flu or other illness.
- You should be very careful to follow food safety advice, such as cleanliness in the kitchen and not keeping food after 'use-by' dates.

## Vaccines

Vaccinations may not work as well when you have leukaemia, but it is still recommended that you have your annual flu vaccine. This will still reduce the risk of getting ill and will offer you some protection.

APL patients should avoid having 'live' vaccines which are used

for measles, mumps and rubella (MMR) and shingles. If a vaccine is recommended by someone other than your APL specialist, you should check that it is safe.

## Shingles

If you have previously been exposed to chickenpox, you may develop a painful nerve condition called shingles. Even if it was a long time ago, the virus can live dormant for many years and surface when your immune system is suppressed. You may be able to receive a vaccine against shingles but, as it is a live vaccine, you should talk to your doctor about this.

## Practical support

### Work and finances

Being diagnosed with APL means you will need to start treatment straightaway and so you, or someone you know, will need to contact your employer to inform them of your situation. Your condition will mean that you will need to be at hospital frequently at first and you will need to make the appropriate arrangements with your employer with regard to your working arrangements.

You may need to negotiate a reduction in working hours or make an arrangement with your employer for times when you have to go into hospital or for those times when you may not be well enough to go into work.

Your consultant or your GP can arrange letters to confirm your diagnosis and the effects it may have on your work life to your employer. It is often worth taking time to explain APL to your employer, as it is likely they will never have heard of the disease.

You could provide them with a copy of this booklet or invite them to download it from the Leukaemia Care website at: **[www.leukaemiacare.org.uk/support-and-information/help-and-resources/information-booklets/](http://www.leukaemiacare.org.uk/support-and-information/help-and-resources/information-booklets/)**

It is important for you to know that people with any form of cancer are covered by law by the Equality Act. This means that legally your employer cannot discriminate against you and must make reasonable arrangements and adjustments relating to your disease.

Macmillan has published a booklet about financial support

following a diagnosis of cancer. They can also give you personal advice over the phone via their helpline at **0808 808 0000** and you can discuss which benefits you are eligible for. Some Macmillan centres can arrange face-to-face meetings with a benefits advisor. They can also provide financial assistance in the form of grants – ask your nurse in the hospital how to apply.

You can also find more information about practical issues on our website at: **[www.leukaemiacare.org.uk/support-and-information/information-about-blood-cancer/living-well-with-leukaemia/practical-issues/](http://www.leukaemiacare.org.uk/support-and-information/information-about-blood-cancer/living-well-with-leukaemia/practical-issues/)**

As APL is a type of cancer, you will also be entitled to apply for a medical exemption certificate, which means that you are entitled to free NHS prescriptions. Your GP or specialist nurse at the hospital can provide you with the details how to apply for this. If you are undergoing chemotherapy you may qualify for a Blue Badge to help with hospital car parking. To apply for a badge contact your local council.

# Talking about APL

## Talking to your haematologist

APL is a rare condition. It is important for you to develop a good working relationship with your haematologist, so you are given the best treatment possible for you.

The following gives advice on working well with your haematologist:

- If it's an initial consultation, take along a list of your current medications and doses, and a list of any allergies you may have.
- If you have a complicated medical history, take a list of diagnoses, previous procedures and/or complications.
- Make a list of questions to take to your appointment. This will help the discussion with your haematologist.
- It can be useful to repeat back what you have heard so that you can be sure that you fully understood.
- Note information down to help

you remember what was said.

- Be open when you discuss your symptoms and how you are coping. Good patient–doctor communication tends to improve outcomes for patients.

Other tips:

- Bring someone along to your appointment. They can provide support, ask questions and take notes.
- Don't be afraid to ask for a second opinion – most haematologists are happy for you to ask.

## You need to tell your haematologist if...

You're having any medical treatment or taking any products such as prescribed medicines, over the counter treatments or vitamins. It is important to understand that treatments, including complementary therapies, which are perfectly safe for most people, may not be safe if you are being treated for APL.

Remember, if you choose to start any form of complementary

therapy outside of your medical treatment, consult your haematology consultant or clinical nurse specialist prior to beginning it. It is important to understand the difference between complementary therapies, used alongside standard treatment, and alternative therapies, used instead of standard treatment. There is no evidence that any form of alternative therapy can treat APL.

For help with talking to your haematologist, you can access more information about APL, including a section on 'Questions to ask your medical team' at [www.leukaemiacare.org.uk/support-and-information/information-about-blood-cancer/blood-cancer-information/leukaemia/acute-promyelocytic-leukaemia/](http://www.leukaemiacare.org.uk/support-and-information/information-about-blood-cancer/blood-cancer-information/leukaemia/acute-promyelocytic-leukaemia/) which features a list of questions that you may want to ask.

## Talking to other people

Telling people you have a rare condition like APL can be hard to explain. You might find it useful to let your close family and friends, as well as your employer, know

about your health condition. It might be easier to provide people with basic information and give them information leaflets about APL if they want to know more in-depth details.

*"I made a conscious decision to be very open about my illness. Telling family was tough. But I encouraged people to ask questions."*

It is probably best to focus conversations on the symptoms that you are experiencing, how the condition affects you and how you feel about it. Often people misunderstand and, unfortunately, it will mostly fall to you to educate them as best as you can. Where possible, it's advisable to let people know what you find helpful and unhelpful, in terms of what others say and do. Often people make assumptions and do what they think helps. For example, saying you look well, recounting stories of others they know with a similar diagnosis, encouraging you to look ahead and stay positive isn't always what people really want to hear. In many ways, the more you communicate with them the

# Talking about APL (cont.)

better.

These points may help you:

- Explain that you have a condition that means your bone marrow does not function properly, and this affects the number of blood cells it produces.
- Explain your symptoms (maybe you are tired or have a lot of pain).
- Explain what you need (maybe more help day-to-day, or someone to talk to).

You could also consider the following when telling people about your diagnosis:

- **Find out more** - Try to find out as much as you can about your condition, from reliable internet sources, charitable organisations or your consultant haematologist. The more you know, the more you can share.
- **Have a print-out to hand** - It may help to have some information to hand to share with family and friends. This will take the pressure off you having

to remember everything they may want to know.

- **Explain your needs** - Try and be clear about what your needs may be. Perhaps you need help with the weekly food shop, help with cooking dinner, or someone to drive you to and from appointments. You may find that friends and family are pleased that they can do something to help you.
- **Be open about how you feel** - Don't be afraid of opening up about how you feel, as people who care will want to help you as best they can. Talk as and when you feel comfortable, so those around you will know when you need them most.

If you're struggling to come to terms with your diagnosis and prognosis, you can speak to us on our helpline. Call us on **08088 010 444**

# Glossary

## Anaemia

A medical condition in which the red blood cell count or haemoglobin is less than normal.

## Arsenic trioxide (ATO)

Arsenic trioxide is a chemotherapy drug used as a treatment for a type of acute myeloid leukaemia (AML) called acute promyelocytic leukaemia (APL).

## All-trans retinoic acid (ATRA)

All-trans retinoic acid is a drug for the treatment of APL. It is based on Vitamin A and is not a chemotherapy drug, but users may experience some side effects including headaches, nausea, dry skin and mouth, bone pain and dry eyes.

## Bone marrow

The soft blood-forming tissue that fills the cavities of bones and contains fat, immature and mature blood cells, including white blood cells, red blood cells, and platelets.

## Disseminated intravascular coagulation (DIC)

Disseminated intravascular

coagulation is where the body forms and breaks down the clots inside the blood vessels.

## Fatigue

Extreme tiredness, which is not alleviated by sleep or rest. Fatigue can be acute and come on suddenly or chronic and persist.

## Full blood count (FBC)

A blood test that counts the number of different blood cells.

## Leukaemia

A cancer of the blood with many different subtypes. Some forms are acute (develop quickly) and others are chronic (develop slowly). Leukaemia is an excess number of abnormal cells in the blood, usually white blood cells, which stop the bone marrow working properly.

## Neutropenia

Low levels of neutrophils (a type of white blood cell) in the blood, leading to increased susceptibility to infection.

## Platelet

A disc-shaped blood cell that assists in blood clotting.

# Glossary (cont.)

During normal blood clotting, the platelets clump together (aggregate). A normal platelet count in a healthy individual is between 150,000 and 450,000 per microlitre of blood. In general, low platelet counts increase bleeding risks.

## PML-RARA

Oncoprotein formed by translocation of chromosome 15 and 17 present in AML M3 or APL.

## Promyelocytes

The type of immature white blood cell affected in APL.

## Stem cells

Cells that have the potential to develop into many different or specialised cell types.

## Thrombocytopenia

Deficiency of platelets in the

blood.

## White blood cell (or leukocytes)

One of the cells the body makes to help fight infections. There are several types of white blood cells. The two most common types are lymphocytes and neutrophils.

## Tell us what you think!

If you would like to give us some feedback about this patient information booklet, please hover over the code to the right using your phone or tablet's camera. Click the link as it appears and this will take you to a short web form to fill in.

Suitable for Android, iPhone 7 and above.



# Useful contacts and further support

There are a number of helpful sources to support you during your diagnosis, treatment and beyond, including:

- Your haematologist and healthcare team
- Your family and friends
- Your psychologist (ask your haematologist or CNS for a referral)
- Reliable online sources, such as Leukaemia Care
- Charitable organisations

There are a number of organisations, including ourselves, who provide expert advice and information.

## Leukaemia Care

We are a charity dedicated to supporting anyone affected by the diagnosis of any blood cancer.

We provide emotional support through a range of support services including a helpline, patient and carer conferences, support group, informative website, one-to-one buddy service and high-quality patient information. We also have a nurse on our help line for any medical queries relating to your diagnosis.

Helpline: **08088 010 444**  
**[www.leukaemicare.org.uk](http://www.leukaemicare.org.uk)**  
**[support@leukaemicare.org.uk](mailto:support@leukaemicare.org.uk)**

## Bloodwise

Bloodwise is the leading charity into the research of blood cancers. They offer support to patients, their family and friends through patient services.

**020 7504 2200**  
**[www.bloodwise.org.uk](http://www.bloodwise.org.uk)**

## Cancer Research UK

Cancer Research UK is a leading charity dedicated to cancer research.

**0808 800 4040**  
**[www.cancerresearchuk.org](http://www.cancerresearchuk.org)**

## Macmillan

Macmillan provides free practical, medical and financial support for people facing cancer.

**0808 808 0000**  
**[www.macmillan.org.uk](http://www.macmillan.org.uk)**

## Maggie's Centres

Maggie's offers free practical, emotional and social support to people with cancer and their families and friends.

**0300 123 1801**  
**[www.maggiescentres.org](http://www.maggiescentres.org)**

## Citizens Advice Bureau (CAB)

Offers advice on benefits and financial assistance.

**08444 111 444**  
**[www.adviceguide.org.uk](http://www.adviceguide.org.uk)**

Leukaemia Care is a national charity dedicated to providing information, advice and support to anyone affected by a blood cancer.

Around 34,000 new cases of blood cancer are diagnosed in the UK each year. We are here to support you, whether you're a patient, carer or family member.

## Want to talk?

Helpline: **08088 010 444**

(free from landlines and all major mobile networks)

Office Line: **01905 755977**

**[www.leukaemicare.org.uk](http://www.leukaemicare.org.uk)**

**[support@leukaemicare.org.uk](mailto:support@leukaemicare.org.uk)**

Leukaemia Care,  
One Birch Court,  
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WR3 8SG

Registered charity  
259483 and SC039207

**Leukaemia Care**  
YOUR Blood Cancer Charity

