Vertebral compression fractures in myeloma

Symptoms and complications Infoguide
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You will find a definition of the terms highlighted in bold throughout this publication in the 'Medical terms explained' section on page 23.

Disclaimer: The information in this Infoguide is not meant to replace the advice of your medical team. They are the best people to ask if you have questions about your individual situation.

This publication is intended for a UK audience. It therefore may not provide relevant or accurate information for a non-UK setting.
Myeloma – an overview

Myeloma is a type of cancer arising from plasma cells that are normally found in the bone marrow. Plasma cells are a type of white blood cell which form part of the immune system.

Normal plasma cells produce different types of antibodies to help fight infection. In myeloma, the plasma cells become cancerous (sometimes called malignant) and release a large amount of a single type of antibody, known as paraprotein, which has no useful function. It is often through the measurement of paraprotein that myeloma is diagnosed and monitored.

Myeloma affects multiple places in the body (hence why it is sometimes referred to as ‘multiple myeloma’) where bone marrow is normally active, such as the bones of the spine, pelvis, rib cage and the areas around the shoulders and hips.

Most of the complications and symptoms of myeloma are caused by a build-up of the abnormal plasma cells (often called myeloma cells) in the bone marrow and the presence of paraprotein in the body.

Common problems in myeloma include bone pain, bone fractures, fatigue, frequent or recurrent infection and kidney damage.

Myeloma is highly treatable in the majority of cases. Treatment is aimed at controlling the disease, relieving the complications and symptoms it causes, and extending and improving the quality of life.
Treatment for myeloma is often most effective when two or more drugs, with different but complementary mechanisms of action, are given together. Treatment is usually given over a number of weeks which may or may not be followed by a rest period. This pattern constitutes one cycle of treatment and a series of treatment cycles is referred to as a course or line of treatment.

While there are many effective treatments for myeloma, unfortunately it is currently incurable. This means that even after successful treatment has provided a period of remission or stable disease, the myeloma will return. This is called a relapse.

The causes of myeloma are not fully understood but it is believed to be caused by an interaction of both genetic and environmental factors.

Key facts

- There are approximately 5,700 people diagnosed with myeloma every year in the UK
- There are approximately 17,600 people living with myeloma in the UK at any one time
- Myeloma accounts for 15% of blood cancers and 2% of cancers generally
- Myeloma mostly affects people aged 65 and over. However, it can also be diagnosed in younger people
What is myeloma bone disease?

Myeloma bone disease is the most common and often most debilitating feature of myeloma. It causes bone pain as well as other symptoms and complications.

Between 70 – 80% of patients have evidence of myeloma bone disease at the time of diagnosis and approximately 90% of patients have myeloma bone disease at some point during the course of their myeloma.

Healthy bone is not static, but is in a constant state of remodelling which allows for minor areas of damage to be repaired and strengthened while maintaining the structure of the skeleton.

Although bone is made up of minerals and is hard, it is a living tissue containing blood vessels, nerves and cells, including two very important cell types which play a key role in the normal activity of bones. These are:

- **Osteoblasts** (cells which form new bone)
- **Osteoclasts** (cells which break down old bone)

Osteoblasts and osteoclasts work together to maintain a continuous cycle of bone formation and breakdown keeping the bone in a constant state of renewal. This ongoing process is known as bone remodelling (see Figure 1) and maintains the thickness, strength and health of bones in the body.

Normally, the rate of bone formation and the rate of bone breakdown are equal, so that the bone mass remains the same.

In myeloma, however, the myeloma cells in the bone marrow affect the surrounding bone, causing it to be broken down faster than it can be repaired. Specifically, myeloma cells produce proteins known as **cytokines** and **growth factors** which increase the production and activity of osteoclasts, and at the same time reduce the activity of osteoblasts. This results in a net loss of bone and causes bones to become weaker and more susceptible to fracture.
This breakdown of bone also releases higher than normal levels of calcium into the blood, causing **hypercalcaemia**.

Affected areas of bone often appear as ‘holes’ on an X-ray. These ‘holes’ are called **lytic lesions**. They represent thinned and weakened bones, which have an increased risk of breaks without force or injury – known as a **pathological fracture**. As well as being at an increased risk of damage and fracture, areas of weakened bone can be painful. Sudden and severe pain can be a sign of a fractured bone.

The extent of myeloma bone disease varies from patient to patient. It is most common in the long bones of the upper arms and legs, shoulders, hips, rib cage and lower back. The bones in the hands and feet are not usually affected as they do not contain any bone marrow.

For more information see the [Myeloma bone disease and bisphosphonates Infoguide](https://www.myeloma.org.uk) from Myeloma UK.

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**Figure 1.** Process of normal bone remodelling

- **Osteoclasts**: Cells that break down bone matrix.
- **Mononuclear cells**: Cells that line bone matrix.
- **Osteoblasts**: Cells that form new bone.
- **Lining cells**: Cells that line bone matrix.

**Break Down** by osteoclasts

**Formation** by osteoblasts
What are vertebral compression fractures?

When myeloma bone disease occurs in the spine, fractures can develop in the vertebrae (the bones that make up the spine) causing them to collapse.

There are 33 vertebrae bones in the spine which support the body’s weight and protect the spinal cord.

Myeloma bone disease is particularly common in the vertebrae. Thinning of the bone results in fractures and causes the vertebrae to collapse. When this happens it is known as a vertebral compression fracture (VCF) (see Figure 2).

VCFs often result in pain, loss of height and kyphosis. This is because the fractured vertebra can become wedge shaped, and cause the spine to curve forwards, particularly near the top of the spine. This results in a bent over or hunched appearance.

Figure 2. Comparison of normal vertebrae and a vertebral compression fracture
Kyphosis can cause several complications, including:

- Chronic pain
- Height loss
- Mobility problems
- Breathing difficulties
- Reduced appetite due to bloating and/or bowel obstruction

Myeloma patients who develop kyphosis are at an increased risk of developing further VCFs because of the pressure and strain the abnormal curvature puts on surrounding vertebrae. Further VCFs can make kyphosis and its associated pain progressively worse.

**Plasmacytomas and VCFs**

A VCF can be caused by a plasmacytoma, which is a localised build-up of myeloma cells that can occur either inside bone or outside the bone, within the soft tissue. A plasmacytoma can also exist as a discrete, single mass of myeloma cells – this is called a solitary plasmacytoma. Solitary plasmacytomas are commonly found in the vertebrae where they can weaken the bone and increase the risk of a VCF.

For more information see the [Solitary plasmacytoma Infosheet](#) from Myeloma UK.
Spinal cord compression

Sometimes a VCF can put pressure on the spinal cord, which can cause **spinal cord compression**. This damages the nerves of the spinal cord and can cause numbness and tingling in the limbs, bladder and bowel incontinence and, in some cases, irreversible paralysis. Spinal cord compression is a serious potential complication of VCFs.

**Spinal cord compression is a medical emergency and if you have any of the symptoms above, you should dial 999 immediately.**

Symptoms include:

- Back pain
- Numbness or weakness in your legs or arms
- Incontinence
- A tingling sensation in your legs or arms
- Unsteadiness on your feet
How are VCFs diagnosed?

Your medical team will need to determine the size, location and vertebrae affected by a suspected VCF. There are a number of scanning procedures available depending on the level of detail required.

**X-ray**

An X-ray is a painless procedure which passes radiation through the body to create an image of your bones. X-rays are the standard of imaging if VCFs are suspected and are readily available. X-rays are also very good at identifying bones at risk of imminent fracture.

Soft tissues are visible on a CT scan and so they can be used to detect a plasmacytoma.

If there is suspected spinal cord involvement it may be necessary to have an MRI scan.

**Computerised tomography (CT or CAT) scan**

A CT scan involves a series of X-rays which create detailed cross-sectional images of the spine. A CT scan is more sensitive than an X-ray and is used when your doctor needs to see a VCF in greater detail, or to see whether the VCF has affected the spinal cord.

Soft tissues are visible on a CT scan and so they can be used to detect a plasmacytoma.

If there is suspected spinal cord involvement it may be necessary to have an MRI scan.

**Magnetic resonance imaging (MRI)**

An MRI involves the combination of radio-waves and a powerful magnetic field to produce images of organs or tissues in the body. It can generate very detailed images of the spine, including the nerves and discs around it. If your doctor suspects you have spinal cord compression, you will have an MRI to confirm this. MRIs aren't available in all hospitals so you may be referred to another hospital for the scan.

An MRI is also useful in identifying small compression fractures which may not have shown up clearly in X-rays or CT scans.
Preventative and non-surgical treatment for VCFs

There are several non-surgical options to treat VCFs which aim to minimise pain, prevent further VCFs and enable existing VCFs to heal.

There are several options available and they will depend on the severity of the VCF(s), which vertebra is affected and how stable the fracture is. Any height loss and kyphosis that may have occurred will not be reversed but these treatments can stop VCFs getting worse and stabilise them.

Radiotherapy

Radiotherapy aims to prevent further VCFs by killing myeloma cells in the affected area of the spine and relieve pain caused by myeloma bone disease. It also stabilises the vertebrae and reduces the risk of developing new VCFs.

Radiotherapy can be used to relieve pressure on the spinal cord if myeloma cells have expanded out of the bone marrow, or if the VCF is compressing the spinal cord.

It can also be used to treat solitary plasmacytomas within the vertebrae.

It may take several days for radiotherapy to relieve pain, so it is likely you will still require painkillers for a few days after radiotherapy. The most common side effects of radiotherapy include skin sensitivity and fatigue, but these usually improve within 2–3 weeks. The effects of radiotherapy can last from months to years.

For more information see the Radiotherapy Infosheet from Myeloma UK
**Bisphosphonates**

**Bisphosphonates** are commonly used in the treatment of myeloma bone disease. They are drugs that bind to calcium and are taken up into the bone. They inhibit the activity of osteoclasts and therefore interrupt the increased bone breakdown.

Bisphosphonates aim to stabilise existing VCFs and prevent further VCFs occurring by stopping the breakdown of bone.

Bisphosphonate treatment has several potential benefits including:

- Preventing/slowing down further bone breakdown
- Reducing bone pain and the need for painkillers
- Preventing and reducing high levels of calcium in the blood (hypercalcaemia)
- Reducing the need for radiotherapy

- Reducing the likelihood of pathological fractures due to myeloma bone disease
- Improving quality of life, particularly by decreasing pain and maintaining mobility
- Improving the chances of healing and recovery of strength of bone

For more information see the [Myeloma bone disease and bisphosphonates Infoguide](#) from Myeloma UK
**Back braces**

In rarer cases, a back brace may be necessary to control movement of the spine, enabling any fractures to heal on their own. It will help support your body’s weight and alleviate some of the pressure on the vertebra.

Usually a brace must be worn for several months whenever you are out of bed, but your doctor or nurse will explain how and when to wear the brace.

Wearing a brace can be restrictive and make everyday tasks difficult and can have a significant impact on your quality of life. It is important to discuss this with your doctor or nurse, especially if you feel you will need extra assistance with your normal daily routine.

**Painkillers**

Painkillers do not directly treat VCFs or prevent further VCFs occurring, but you will be given them alongside your treatment to help relieve pain while existing VCFs are healing.

Mild painkillers are available over the counter, while stronger painkillers can be prescribed by your doctor. There are many different types of painkillers available, so if the painkillers prescribed to you are not relieving your pain, speak to your doctor and they will be able to prescribe an alternative painkiller or a stronger dose.

Myeloma patients should not use over the counter **non-steroidal anti-inflammatory drugs (NSAIDs)**, such as ibuprofen, due to the increased risk of kidney damage.

For more information see the [Pain and myeloma Infoguide](https://www.myeloma.org.uk) from Myeloma UK.
Surgical intervention

If non-surgical treatment does not sufficiently stabilise your VCF, it may be necessary to have one of two surgical interventions which aim to relieve pain and improve mobility.

These are:

- **Percutaneous vertebroplasty**
- **Balloon kyphoplasty**

These procedures are explained in more detail on pages 15–16.

The location of your fracture along your spine does not affect whether it can be surgically treated, but it may affect which procedure is chosen and the technique used.

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**Who might benefit from surgical intervention?**

Not every myeloma patient will be eligible for or benefit from percutaneous vertebroplasty or balloon kyphoplasty. Your doctor will need to consider whether:

- Non-surgical treatment for relieving bone pain (e.g. painkillers) has been tried
- Pain has persisted for more than two months after non-surgical treatment (some pain may take some weeks to respond to treatment)
- Other causes of pain have been excluded
- The vertebrae are not too severely compressed
- The procedure will be taking place within 12 months of the collapse occurring
Surgical intervention is not likely to be the best option if you have:

- A very unstable VCF that would not repair successfully
- Heavily collapsed vertebrae where the procedure would be very difficult to carry out, or where there is risk of damaging the spinal cord
- Compression of the nerves around the spinal cord
- Underlying conditions that could make surgery unsafe e.g. low blood counts or abnormal blood clotting
- An infection in your spine

If you are selected to have surgical intervention to repair your VCF, your doctor will recommend either percutaneous vertebroplasty or balloon kyphoplasty. Your doctor will use their experience and preference to decide which procedure is most suitable for you. Not all hospitals can perform these procedures, so you may be referred to another hospital which has suitable facilities for the procedure.
Percutaneous vertebroplasty

Percutaneous vertebroplasty involves the injection of an acrylic material (bone cement) into the vertebra to support and strengthen it. The aim of the procedure is to repair VCFs, alleviate pain, improve function and restore mobility.

The percutaneous vertebroplasty procedure

Percutaneous vertebroplasty is a minimally invasive procedure. The three basic steps are:

1. A small keyhole incision is made in the back and a hollow tube (cannula) is inserted
2. The cannula is moved into the fractured vertebra, guided by fluoroscopy to ensure it is positioned precisely
3. A small amount of bone cement is injected through the cannula into the vertebra to stabilise the fracture

The procedure does not aim to restore the shape of the compressed vertebra, so any height loss will not be restored.

A CT scan may be performed at the end of the procedure to check the distribution of the cement.
Balloon kyphoplasty

Balloon kyphoplasty is a similar procedure to percutaneous vertebroplasty but, in addition to stabilising VCFs, it aims to reshape and restore the height of the damaged vertebra.

This is achieved by inserting a small balloon, called a bone tamp, into the fractured vertebra and inflating it before the cement is inserted. This helps to restore the vertebra to its original shape before it is strengthened with cement, which prevents it from collapsing in future. This can correct kyphosis and restore lost height in some cases.

The balloon kyphoplasty procedure

The balloon kyphoplasty procedure, like percutaneous vertebroplasty, is minimally invasive. Before the procedure you will have X-rays and MRI scans to determine the precise location, type and shape of the fracture.

The steps in this procedure are shown in Figure 3.

Figure 3. The balloon kyphoplasty procedure
The procedure is assisted by fluoroscopy to help guide the balloon tamp and cement. A CT scan may be performed at the end to check the distribution of the cement.

Balloon kyphoplasty is best performed before radiotherapy which can lead to hardening of the bone, making it difficult to carry out the procedure. However, balloon kyphoplasty may still be considered if back pain persists even after radiotherapy.

For balloon kyphoplasty to be most effective in restoring the height and shape of the vertebra, the procedure must be performed within a few weeks of the fracture occurring. After this time the procedure may not be as effective in restoring the height and shape of the vertebra, although it will still be an effective way to relieve pain.
What are the potential benefits and risks of surgical intervention?

As with all treatments, the potential benefits and risks of surgical intervention need to be taken into consideration when deciding whether to have the treatment.

**Potential benefits**
The potential benefits of surgical intervention include:

- Stabilising VCFs
- Helping to reduce chronic back pain when other treatments have not been successful
- Improving quality of life
- Potentially better results than non-surgical treatments

Additional benefits of balloon kyphoplasty include:

- Restoring vertebral shape and, in some cases, height
- Reducing kyphosis and therefore relieving any breathing problems or discomfort to the abdomen

**Potential risks and complications**
In a few cases, however, there have been reported cases of:

- Cement leakage from the repaired vertebrae, which can lead to complications such as nerve damage, infection and blood clots
- Post-operative infection. Although the risk of this is very low, you may still be given antibiotics before or during the procedure to prevent infection *(prophylaxis)*
- Allergy or other reaction to the bone cement
- Spinal nerve damage
Data from small clinical trials show that myeloma patients being treated for spinal fractures have a slightly lower risk of cement leakage following balloon kyphoplasty compared to percutaneous vertebroplasty, although this remains the subject of ongoing research.

It is uncertain whether the risk of further VCFs is increased after surgical intervention. Studies investigating this, which included both myeloma and non-myeloma related VCFs, have been inconclusive.

Your doctor will be able to explain in greater detail the potential risks and complications that may arise because of your surgery.
What to expect when receiving surgical intervention

You are likely to have questions about your procedure and what to expect. Some of the more common questions are answered here. Your doctor should go over this in more detail with you and can answer any further questions you have.

Who will perform the procedure?
A trained and experienced specialist will perform the procedure. In some cases, the procedures are performed by a specialist spinal surgeon or an interventional radiologist, but this varies from hospital to hospital.

What type of anaesthesia is used?
The procedures can be performed using either local or general anaesthetic. You and your doctor will discuss which option is best for you.

How long will the procedure take?
For both percutaneous vertebroplasty and balloon kyphoplasty, the procedure takes up to an hour to treat one vertebra. Multiple fractures can be treated at once, so the length of the procedure will depend on the number of vertebrae being treated. Although there is no limit to the number that can be treated at once, it is recommended that no more than three vertebrae are treated at one time.

How long will I need to stay in hospital?
Patients are usually able to go home the same day or the following day.

What happens after the procedure?
The surgeon or radiologist will follow up with you within the first week to check on your progress and to answer any questions.
Post-surgical care

Some patients report improvement in pain within 24 hours, while others feel a more gradual benefit over a few months. You will be given painkillers afterwards to manage the pain from surgery.

Your doctor or nurse will give you full instructions for after-care. They will tell you how to look after the incision; usually you must keep it dry for the first day and then you can shower and change the dressing after 24 hours.

You should take it easy after the procedure for a day or so. Mobility can be restored quickly and normal activities may be resumed within a few days but strenuous activity should be avoided for six weeks or for as long as your doctor recommends.

If you show signs of infection, such as a fever, swelling at the incision site or redness, pain or discharge, you must contact your doctor as soon as possible.

If you have difficulty walking or with bladder or bowel incontinence, you must contact your doctor immediately, as these are symptoms of spinal cord compression.
How does surgical intervention compare to non-surgical treatment?

Several studies have evaluated the effectiveness of percutaneous vertebroplasty and balloon kyphoplasty and have found that they are safe and effective treatments for VCFs in myeloma patients. Research comparing surgical intervention to non-surgical treatment in myeloma patients specifically is not extensive. However, studies which have included myeloma patients have shown that both percutaneous vertebroplasty and balloon kyphoplasty provide greater pain reduction than non-surgical treatment and can lead to a more significant improvement in quality of life. For example, both the FREE (Fracture Reduction Evaluation) and CAFE (Cancer patient Fracture Evaluation) studies showed that patients who had surgical intervention had superior improvement in back function, back pain and quality of life, compared to those patients who were treated non-surgically.

Balloon kyphoplasty in particular has been found to provide a greater quality of life than non-surgical treatment, because it can usually correct kyphosis and relieve the associated complications if performed within a few weeks of the fracture occurring.

Although surgical intervention has been shown to be an effective way of treating VCFs, and in some cases can provide immediate relief from pain, every patient is individual and surgical intervention is not recommended for all patients. Your doctor will recommend the treatment most suitable for you.
Medical terms explained

**Antibodies (immunoglobulins):** Proteins found in the blood which are produced by cells of the immune system, called plasma cells. Their function is to bind to substances in the body that are recognised as foreign such as bacteria and viruses (known as antigens), enabling other cells of the immune system to destroy and remove them.

**Bone marrow:** The soft, spongy tissue in the centre of bones that produces white blood cells, red blood cells and platelets.

**Computerised tomography (CT or CAT) scan:** A scanning procedure that uses X-rays and a computer to create detailed images of the body.

**Cytokine:** A protein produced mainly by cells of the immune system that acts as a chemical messenger between cells. Cytokines can stimulate or inhibit the growth and activity of various types of cells.

**Fluoroscopy:** A procedure that uses X-rays to obtain real-time moving images of the internal body systems of a patient.

**Growth factor:** A protein produced by the body that stimulates the development and growth of cells. Growth factors can also be made synthetically and given as a treatment in some circumstances.

**Hypercalcaemia:** A higher than normal level of calcium in the blood, which may cause loss of appetite, nausea, thirst, fatigue, muscle weakness, restlessness and confusion.

**Immune system:** The complex group of cells and organs that protect the body against infection and disease.

**Inventional radiologist:** A healthcare professional who specialises in using imaging techniques to diagnose and treat diseases.

**Kyphosis:** An abnormal curvature of the spine.

**Lytic lesions:** Damage to the bone caused by myeloma. They look like holes in the bone on an X-ray.
Magnetic resonance imaging (MRI): A scanning procedure that involves a combination of radiowaves, a powerful magnetic field and a computer to produce images of any organ or tissue in the body. An MRI scan generates very detailed crosssectional images of the area under investigation.

**Malignant**: A term for cancerous cells which have the ability to spread.

**Non-steroidal anti-inflammatory drug (NSAID)**: A type of drug used to prevent or treat pain which do not contain steroids.

**Osteoblasts**: Cells that form new bone.

**Osteoclasts**: Cells that break down old bone.

**Paraprotein**: An abnormal antibody (immunoglobulin) produced in myeloma. Measurements of paraprotein in the blood can be used to diagnose and monitor the disease. Also known as M protein.

**Pathological fracture**: A break in a bone caused by bone disease or bone cancer, rather than by trauma.

**Percutaneous vertebroplasty**: A procedure used to repair/stabilise a compression fracture in one or more vertebrae and to relieve pain. It involves injecting bone cement into the vertebra to stabilise and strength it.

**Plasma cells**: A type of white blood cell that produces antibodies (immunoglobulins) to fight infection.

**Plasmacytoma**: A localised build-up of myeloma cells found either inside the bone (intramedullary plasmacytoma) or outside the bone (extramedullary plasmacytoma).

**Prophylaxis**: A preventative measure taken to reduce the risk of disease or infection.

**Quality of life**: A term that refers to a person's level of comfort, enjoyment, and ability to pursue daily activities. It is a measure of an overall sense of wellbeing.
**Radiotherapy:** Treatment with X-rays, gamma rays or electrons to damage or kill malignant cells.

**Relapse:** The point where disease returns or becomes more active after a period of remission or plateau.

**Remission:** The period following treatment when myeloma cells and paraprotein are no longer detectable, and there are no clinical symptoms of myeloma.

**Side effects:** The undesired effects caused by a drug or treatment, for example fatigue or nausea.

**Spinal cord compression:** The term used to describe pressure on the spine. It can be caused by a collapsed vertebra or by the growth of a plasmacytoma within the spinal canal.

**Vertebra:** A bone that forms part of the spine. The plural is vertebrae.

**Vertebral compression fracture (VCF):** A fracture in one of the vertebrae of the spine.
Useful organisations

**Carers UK**
0808 808 7777
www.carersuk.org
Provides advice, information and support for carers.

**Citizens Advice**
www.citizensadvice.org.uk
England: 03444 111 444
Wales: 03444 77 20 20
Scotland: 0808 800 9060
Northern Ireland: call your local office
Offers advice about debt and consumer issues, benefits, housing, legal matters and employment.

**Macmillan Cancer Support**
www.macmillan.org.uk
0808 808 0000
Provides practical, medical and financial information and support to all cancer patients and their carers.

**Maggie’s**
www.maggiescentres.org
0300 123 1801
Provides free practical, emotional and social support to people with cancer and their family and friends.

**Mind**
www.mind.org.uk
0300 123 3393
Provides advice and support to empower anyone experiencing mental health problems.

**NHS 111 Service**
www.nhs.uk/111
111
Call 111 when you need medical advice fast but it’s not a 999 emergency. NHS 111 is available 24 hours a day, 365 days a year.
We’re here for everything a diagnosis of myeloma brings

Call our Myeloma Infoline on 0800 980 3332 for practical advice, emotional support and a listening ear.

Get answers to your questions by emailing AskTheNurse@myeloma.org.uk

Learn about myeloma from experts and meet other patients at our Patient and Family Myeloma Infodays.

Order or download our information publications, which cover all aspects of myeloma - call 0800 980 3332 or visit myeloma.org.uk

Join your nearest Myeloma Support Group to meet up and talk to other people face to face.

Visit myeloma.org.uk, a one-stop-shop for information on myeloma; from news on the latest research and drug discovery to articles on support, treatment and care.

Watch Myeloma TV, videos about myeloma presented by experts, patients and family members.

Use the Discussion Forum for the opportunity to share experiences and advice about living with myeloma.

myelomauk
We need your help

Thanks to our generous supporters we are able to provide information and support to patients and their families, as well as fund vital research that will help patients live longer and with a better quality of life.

Myeloma UK receives no government funding. We rely on fundraising activities and donations.

You can support Myeloma UK by:

- **Making a single donation or setting up a Direct Debit**
  - Online at [myeloma.org.uk/donate](http://myeloma.org.uk/donate)
  - Over the phone **0131 557 3332**
  - Or by posting a cheque payable to **Myeloma UK** to:
    Myeloma UK, 22 Logie Mill, Beaverbank Business Park, Edinburgh, EH7 4HG

- **Fundraising** – fundraising is a positive way of making a difference and every pound raised helps. As myeloma is a rare, relatively unknown cancer, fundraising is also a great way to raise awareness

- **Leaving a gift in your will** – legacies are an important source of income for Myeloma UK and help us to continue providing practical support and advice to myeloma patients and their families. They also help us to undertake research into the causes of myeloma and investigate new treatments

However you decide to raise funds, our Fundraising Team is here to support you. Contact us on **0131 557 3332** or email **fundraising@myeloma.org.uk**
Nobody ever forgets the moment they are diagnosed with myeloma. Myeloma UK advances the discovery of effective treatments, with the aim of finding a cure. That is what patients want, it’s what they deserve and it’s what we do.

Judy Dewinter – President, Myeloma UK
We’re here for everything a diagnosis of myeloma brings
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