



Managing Pulmonary Embolism Associated with Myeloma and Its Treatment

InfoSheet

Multiple myeloma and some of the medications used to treat it can increase your risk of developing blood clots (known as venous thromboembolism or VTE). One serious type of blood clot is called a pulmonary embolism (PE), which occurs when a clot blocks blood flow in the lungs.

This InfoSheet will give you more information about PE, how it can affect the body, signs and symptoms to watch for, treatment options, and steps you can take to help prevent and manage this complication.

Definition and Causes of PE

A PE is a serious and potentially life-threatening condition that happens when one or more blood vessels in the lungs becomes blocked. It is most often caused by a blood clot that forms somewhere else in the body, usually in the veins of the legs or pelvis (known as a deep vein thrombosis or DVT). If a clot breaks loose from its origin, it can travel through the bloodstream, and get stuck in a lung artery. This blocks the normal flow of blood, and reduce oxygen levels in the body.

Multiple myeloma itself, as well as some of the treatments used to treat the disease, can significantly increase the risk of blood clots forming and PE.

General Risk Factors for PE

- Older age
- Obesity (body mass index over 30)
- Reduced mobility (can be due to prolonged sitting/travel, recovery after surgery, extended bed rest, or bone disease)
- History of blood clots
- Active infection, recent illness, or inflammation
- Use of a central venous catheter (also known as a central line: a special IV placed in a large vein)
- Medical conditions including kidney disease, heart disease, or diabetes
- Smoking or history of smoking

Why are Myeloma Patients at a Higher Risk of PE?

- **Cancer:** People with cancer are more likely to form blood clots (1 in 200 people with cancer per year versus 1 in 1000 people per year in the general population).
- **Myeloma:** People with myeloma have one of the highest risks of developing blood clots compared to other forms of blood cancer.
- **Age:** People with myeloma tend to be older at diagnosis, with an average age around 70 years.
- **Comorbidities:** People with myeloma often have other comorbidities that increase their risk, including dyslipidemia (abnormal levels of fat in the blood), high blood pressure, and/or diabetes.
- **Mobility:** Because myeloma can cause bone pain or discomfort and fatigue, people with myeloma may have decreased activity levels.
- **Treatment of myeloma:** Some myeloma treatments called immunomodulatory drugs (such as thalidomide, lenalidomide, pomalidomide) combined with steroids (such as dexamethasone or prednisone) or chemotherapy can raise the risk of developing blood clots to 2–20% if no preventative treatments are used.

Symptoms of PE and DVT

The signs and symptoms of PE include:

- Sudden shortness of breath or difficulty breathing normally (rapid, shallow breaths)
- Sharp, stabbing chest pain (worse with a deep breath or coughing)
- Coughing up blood or mucus with blood streaks
- Rapid heart rate
- Feeling lightheaded, dizzy or even passing out

The signs and symptoms of a DVT (before the PE occurs):

- Swelling in a location, usually in a leg
- Pain or tenderness in the location
- Warmth, redness, or changes in skin colour (red or purple)

The signs and symptoms listed above highlight the most common signs symptoms of PE and DVT but others are possible. People may experience symptoms differently, and some clots may only cause mild symptoms. If you think you may have a blood clot (DVT or PE), **seek emergency medical care right away**. Both PE and DVT are medical emergencies, and prompt diagnosis and treatment can be lifesaving.

How is PE Managed?

The main goals of PE treatment are to restore blood flow and lung function, and to prevent complications or new blood clots from forming. This helps protect your organs and lowers the risk of long-term problems. PE is typically treated with anticoagulant medicines (commonly known as blood thinners) that helps stop the blood clot from growing and lowers the risk of new blood clots forming.

For many years, injections such as low-molecular-weight heparin (LMWH) were the standard treatment. More

recently, newer oral medicines known as direct oral anticoagulants (DOACs) such as apixaban, rivaroxaban or edoxaban have also been shown to be safe and effective in people with cancer. Your healthcare team will decide which medicine is best based on your kidney function, whether you can give yourself injections, and what is covered by your health plan.

Treatment usually continues for 3 to 6 months, and sometimes longer if myeloma therapy is ongoing, or if the cancer is still active. Treatment duration depends on why the clot happened. In some cases, myeloma treatments that increase the risk of blood clots (such as thalidomide, lenalidomide, or pomalidomide) may be paused while blood thinner treatment is started, then restarted once safe.

Tips for Preventing Blood Clots

Primary prophylaxis means taking steps to help stop a problem before it happens, in this case preventing blood clots.

If you are taking an immunomodulatory medicine (such as thalidomide, lenalidomide, or pomalidomide), your risk of developing blood clots is higher. Because of this, guidelines recommend that all people with myeloma starting these medicines receive preventative treatment for blood clots based on individual risk factors.

Risk factors you may have

(as assessed by your healthcare team-list below provided for informational purposes only)

None or only 1 risk factor

2 or more risk factors

High-risk therapy (high-dose steroids such as dexamethasone or prednisone, doxorubicin [a type of chemotherapy], or multiple chemotherapy drugs) — even with fewer other risks

What this usually means for prevention

Acetylsalicylic acid (Aspirin)

Low molecular weight heparin (LMWH)

or

Warfarin

or

Direct oral anticoagulant (DOAC)

LMWH

or

Warfarin

or

DOAC

Important:

Never start, stop, or change the dose of a medication without talking to your healthcare team. These medicines can prevent dangerous blood clots but also increase the risk of bleeding, so they must be managed carefully.

Risk factor checklist

- Age over 70
- Obesity (body mass index over 30)
- Previous blood clot (DVT or PE)
- Reduced mobility (can be due to extended bed rest, prolonged sitting/travel, recovery after surgery, or bone disease)
- Active infection, recent illness, or inflammation
- Use of a central venous catheter (also known as a central line; a special IV placed in a large vein) or a pacemaker
- Heart disease
- Kidney disease
- Diabetes
- Recent surgery or trauma
- Taking high-dose steroids (such as dexamethasone or prednisone)
- Receiving doxorubicin or multiple chemotherapy drugs
- Use of erythropoietin (medication used to stimulate red blood cell production)
- Blood clotting disorder

The suggestions below can help lower your risk of developing blood clots while living with myeloma or receiving treatment. Try to make these actions part of your everyday routine and review them regularly with your healthcare team.

- **Move regularly** – avoid sitting for long periods and try to get up to walk or stretch every 1-2 hours.
- **Stay hydrated** – drink fluids, aim for 2 litres of water every day unless otherwise advised by your healthcare team.
- **Maintain a healthy lifestyle** – quit smoking, limit alcohol, maintain a healthy weight, and engage in regular, gentle exercise.
- **Wear compression garments** – ask your healthcare team if compression stockings are appropriate for you.
- **Take preventative medications** – take your preventative medications exactly as prescribed to you.

Conclusion

PE and DVT are serious, potentially life-threatening complications for people with myeloma. Understanding your risk, recognizing early symptoms, and following prevention and treatment plans are key to staying safe.

Contact your healthcare provider right away if you have any symptoms of DVT and seek immediate medical attention if you develop shortness of breath, chest pain, feel dizzy or faint, or cough up blood. With proper medical care, most blood clots can be treated successfully, and many can be prevented. Always discuss your individual risk and prevention plan with your healthcare team.

To learn more, visit Myeloma Canada's Resource library at myeloma.ca.

References:

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