

# CANCER AND DEEP VEIN THROMBOSIS: WHAT YOU SHOULD KNOW

*This educational brochure has been provided by Pharmion Corporation in partnership with your healthcare provider. For more information, you may find the following resources helpful:*

**American Cancer Society**

1-800-ACS-2345

[www.cancer.org](http://www.cancer.org)

**National Cancer Institute**

1-800-4-CANCER (1-800-422-6237)

[www.nci.nih.gov](http://www.nci.nih.gov)

**American Heart Association**

1-800-AHA-USA-1 (1-800-242-8721)

[www.americanheart.org](http://www.americanheart.org)

**National Heart, Lung, and Blood Institute**

[www.nhlbi.nih.gov](http://www.nhlbi.nih.gov)

**American Geriatrics Society**

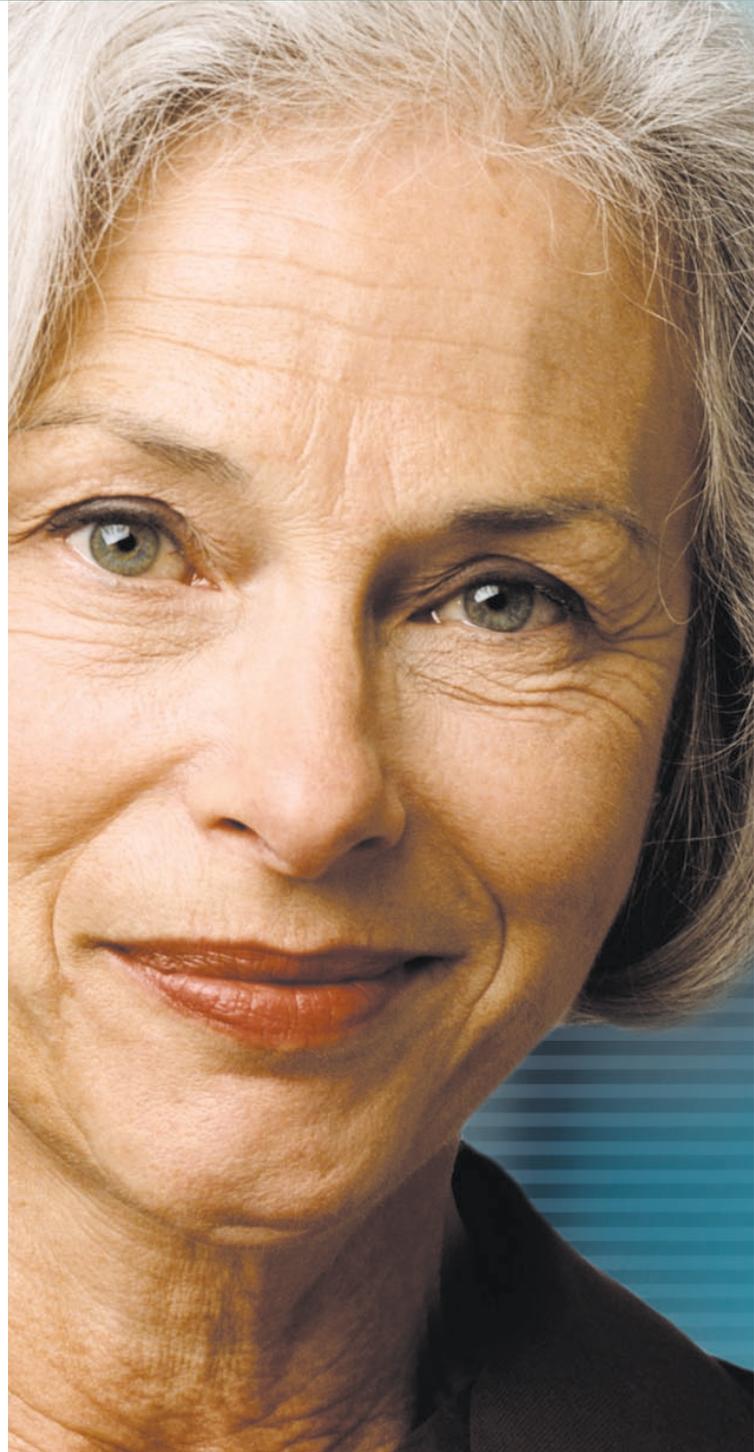
[www.americangeriatrics.org](http://www.americangeriatrics.org)



[www.pharmion.com](http://www.pharmion.com)

References: 1. DeSancho MT, Rand JH. Bleeding and thrombotic complications in critically ill patients with cancer. *Crit Care Clin*. 2001;17(3):599-622. 2. Anand SS, Wells PS, Hunt D, et al. Does this patient have deep vein thrombosis? *JAMA*. 1998;279(14):1094-1099. 3. Dellinger RP. Is your patient at risk for venous thromboembolism? *J Crit Illn*. 1997;12(7):405-417. 4. Goldhaber SZ, Grodstein F, Stampfer MJ, et al. A prospective study of risk factors for pulmonary embolism in women. *JAMA*. 1997;277(8):642-645. 5. Donati MB. Cancer and thrombosis. *Haemostasis*. 1994;24(2):128-131. 6. Hirsh J, Fuster V. Guide to anticoagulant therapy. Part 1: Heparin. American Heart Association. *Circulation*. 1994; 89(3):1449-1468. 7. Hirsh J, Fuster V. Guide to anticoagulant therapy. Part 2: Oral anticoagulants. American Heart Association. *Circulation*. 1994;89(3):1469-1480.

"Priority Medicine. In Practice. " is a trademark of Pharmion Corporation.  
© 2003 Pharmion Corporation. All rights reserved. February 2003 Printed in USA



If you are living with cancer, you know that both the condition and its treatment are associated with potential complications. One such complication is an increased risk of deep vein thrombosis (DVT). DVT is a potentially serious, yet treatable, condition that is defined by a blood clot in the deep veins of your body, usually in the legs or pelvis.

Unfortunately, DVT is common in people with cancer. In fact, more than 90% of patients with cancer may experience an increase in the blood's clotting activity, which is a risk factor for DVT.<sup>1</sup> Fortunately, by becoming aware of the signs and symptoms of DVT and always keeping your healthcare providers informed, you can reduce the risks associated with this condition.

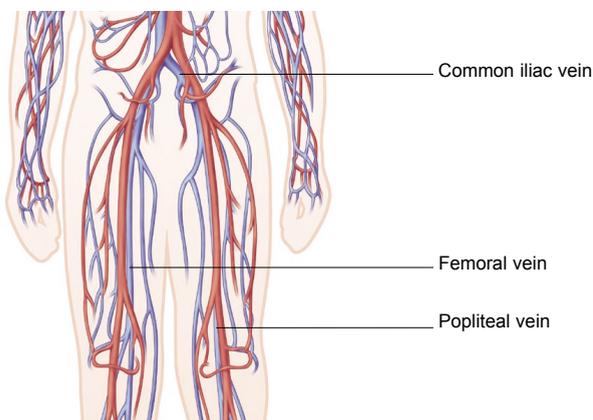
This brochure has been designed to answer some basic questions about DVT, its causes, and its treatment. This brochure is not intended to replace the advice or information provided by your healthcare team.

**Q: What is deep vein thrombosis (DVT)?**

**A:** To define deep vein thrombosis, it is best to break down its individual components.

**Deep Vein:** though blood clots can form in any blood vessel, they commonly occur in the veins deep inside the muscle of the legs, hips, and pelvis. These vessels are responsible for carrying blood from the body's tissues back to the heart.

**Vessels typically affected by DVT include:**



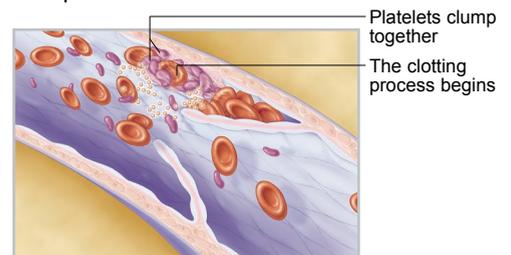
**Thrombosis:** under normal circumstances, clotting protects a wound, such as a cut, from bleeding excessively. However, if the delicate balance between the substances that promote blood clot formation and those that prevent it is upset, blood clots may occur freely. This process is called thrombosis.

*Therefore, deep vein thrombosis is an abnormal clot in the deep veins of your body.*

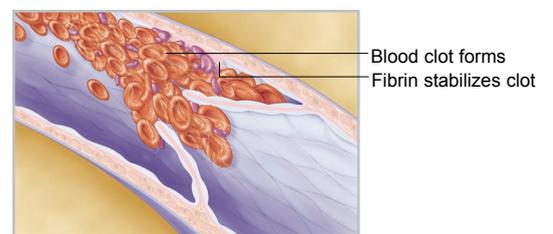
**Q: How do clots form?**

**A:** The formation of a clot is summarized in the following 5 steps:

1. The cells that line the inner layer of a blood vessel become injured, which can be caused by a wound such as a cut.
2. Blood platelets (a part of the blood chiefly responsible for blood clotting) rush to the injury site and attach themselves in an attempt to seal off the wound.



3. The platelets release a chemical substance that attracts more platelets to the wound.
4. Meanwhile, other substances combine with platelets to form a blood clot. This process is called coagulation.



5. Fibrin is produced. Fibrin is a thread-like protein that helps stabilize the clot in the blood vessel.

**Q: What are the signs and symptoms of DVT?**

A: If you have DVT you may experience<sup>2</sup>:

- ▶ Pain, tenderness, and/or swelling of the affected and surrounding areas (foot, leg, and/or ankle)
- ▶ Discoloration (redness) of the affected area
- ▶ The skin of the affected area may be warm to the touch

Please answer the following questions.  
Once completed, please share your answers with your healthcare team.

Do you have swelling in one or both of your legs?  
 Yes       No

Is your leg red or discolored?  
 Yes       No

Do you have constant or intermittent pain in your leg?  
 Yes       No

Do you have discomfort in your calf when flexing your foot?  
 Yes       No

Is your leg tender or warm to the touch?  
 Yes       No

Does your leg feel firm or hard to the touch?  
 Yes       No

Do you have a prominent, tender vein protruding from your leg?  
 Yes       No

**Q: What are the risks associated with DVT?**

A: There are several risks associated with DVT. Often, a clot can grow large enough to block the blood vessel, thus limiting or interrupting blood flow. Such blockages can prevent tissues from being adequately nourished, ultimately causing them to function poorly. If the clot remains anchored in the blood vessel, you may experience inflammation or ulcers (open wounds) on the skin surrounding the affected area.

If the clot breaks loose, you may be at risk for more serious complications, such as pulmonary embolism (PE). PE can occur if the clot becomes lodged in the vessels leading to or from the lungs, thereby reducing or blocking this vital blood flow. Symptoms of PE include sudden shortness of breath and/or pain when inhaling. PE can be life threatening and any troublesome symptoms should be reported to your healthcare provider immediately.

**Q: Who is at risk for DVT?**

A: Approximately 2 million people experience DVT each year.<sup>2</sup> It can affect anyone, with or without cancer. The people at the highest risk are those undergoing surgery, particularly of the legs, hips, or knees; those with cancer; and those with a history of DVT.

Other contributing factors include<sup>2,4</sup>:

- ▶ Trauma, such as a bone fracture
- ▶ Advanced age
- ▶ Use of hormonal agents (estrogen, oral contraceptives)
- ▶ Smoking
- ▶ Immobility

## DVT Risks and Prolonged Immobility

Whether sitting in confined areas for long periods of time during travel, or bedridden due to illness, it is important to understand the increased risk of DVT. Movement, such as walking, stretching, or simply moving the limbs helps the blood circulate through the body. This process is interrupted when movement is restricted. To help reduce the risk of DVT due to prolonged immobility, certain precautions should be taken:

- ▶ Get up and stretch periodically. When seated, shift your body position and do simple exercises, like partial leg lifts.
- ▶ Wear comfortable, loose-fitting clothes. Avoid tight garments and shoes.
- ▶ Drink plenty of water or juice to stay hydrated (alcoholic beverages tend to dehydrate).
- ▶ If you are immobile due to illness or injury, physical therapy may be recommended to ensure that limbs are moved regularly.

### Q: *Why are patients with cancer at a high risk for developing DVT?*

**A:** You may be at a high risk for DVT because the cancer, its treatment, and the presence of additional risk factors can result in a hypercoagulable state. That means that your blood's tendency to clot, or coagulate, is considerably increased (hypercoagulable state).

A hypercoagulable state may be caused by abnormalities in how your blood platelets function and/or an imbalance between the release of those substances that promote blood coagulation (procoagulant) and those that inhibit it (anticoagulant).<sup>1,5</sup>

More specifically, cancer treatment may trigger clot formation in the following ways:

- ▶ When chemotherapy destroys cancer cells, the cells release procoagulant substances<sup>1,5</sup>

- ▶ Surgical intervention, or chemotherapy can injure vessel walls, thereby triggering blood coagulation
- ▶ Therapy may reduce the body's ability to produce adequate supplies of anticoagulants<sup>1,5</sup>

### Q: *How is DVT treated?*

**A:** DVT is usually treated with anticoagulant medications. Anticoagulants do not break up or dissolve existing blood clots, rather, they prevent new clots from forming and keep existing clots from growing larger. There are several anticoagulant medications available:

- ▶ Heparin, which works quickly, but because of its chemical properties must be closely monitored, is used primarily in a hospital setting. Heparin is typically administered intravenously (introduced to the system directly through a vein) or subcutaneously (an injection given under the skin).<sup>6</sup>
- ▶ Low molecular weight heparin (LMWH), which is a modified form of heparin, is also administered subcutaneously and is usually preferred over heparin because it is easier to use and requires less monitoring.<sup>6</sup>
- ▶ Warfarin, a vitamin K antagonist, an essential component of procoagulant and anticoagulant substances, is the most commonly used oral anticoagulant. Because warfarin takes several days to achieve its full therapeutic effect, it is usually administered with heparin or LMWH for the first several days of treatment. Therapy may be given long term, lasting 3 to 6 months or longer.<sup>7</sup>

## Seeking additional information

DVT is a serious risk in patients with cancer. If you have any additional questions or concerns about DVT, its treatment, or its prevention, please contact your healthcare provider and explore the resources listed on the back of this brochure.