

Deep Vein Thrombosis—DVT



What is Deep Vein Thrombosis?

DVT is a condition in which a blood clot forms in a vein deep in the body. Blood clots occur when blood thickens and clumps together. Most deep vein blood clots occur in the lower leg or thigh although 2% to 3% occur in the arms. If the clot breaks off and moves through the blood-stream, it is called an embolism and can get stuck in the brain, lungs, heart, or other area leading to severe damage.

What Causes Deep Vein Thrombosis?

- Blood clots can form when damage occurs to a vein's inner lining from injuries caused by physical, chemical, and biological factors. Those factors include surgery, serious injury, inflammation, or an immune response.
- Clots can also form when lack of motion cause slowed blood flow. This can happen after surgery, if you are ill and in bed for a long time, or if you are traveling and seated for a long time.
- Certain conditions cause the blood to become thicker than usual such as inherited conditions like Factor V Leiden or treatment with hormone replacement therapy or birth control pills.

Who Is At Risk for Deep Vein Thrombosis?

LEVEL OF RISK	RISK OF DVT w/o PROPHYLAXIS	SUGGESTED PROPHYLAXIS
Low Mobile patients undergoing minor surgery; Medical patients who are fully	Less than 10%	No specific prophylaxis; early and aggressive ambulation
Moderate Patients undergoing general surgery or open gynecologic or urologic surgery; Medical patients who are sick or	10% to 40%	Low-molecular-weight heparin(LMWH) at recommended doses, low dose unfractionated heparin 2 or 3 times/day; or fondaparinux
Moderate, plus high bleeding risk	10% to 40%	Mechanical prophylaxis with intermittent pneumatic compression or venous foot pump or graduated compression stock-
High Patients undergoing hip or knee arthroplasty or hip fracture surgery; Patients with major trauma or spinal cord injury	40% to 80%	LMWH at recommended doses, fondaparinux, or oral vitamin K antagonists to maintain an INR between 2 and 3
High, plus high bleeding risk	40% to 80%	Mechanical prophylaxis as described above

Special Points of Interest:

- DVT is a condition in which a blood clot forms in a vein deep in the body.
- Being overweight/obese, a female, a smoker and over 60 are risk factors.
- Check out all of the new devices for helping to locate veins on Page 3

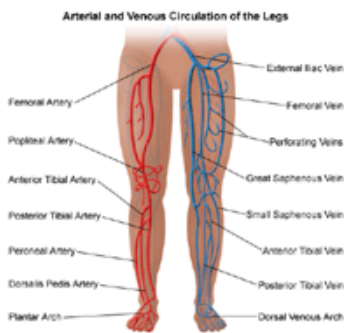
Inside this issue:

Deep Vein Thrombosis—DVT	1
Need Help Locating a Vein?	3
ACA Recertification	4

Deep Vein Thrombosis - con't

If you have more than one of the following risk factors, your risk for DVT increases.

- A history of DVT.
- Disorders or factors that make the blood thicker.
- Injury to a deep vein from surgery, a broken bone, or other trauma.
- Slow blood flow in a deep vein from lack of movement.
- Pregnancy and the first six weeks after giving birth.
- Recent or ongoing treatment for cancer.
- A central venous catheter.
- Being older than 60 years.
- Being overweight or obese.
- Being female.
- Being a smoker.



What Signs and Symptoms of Deep Vein Thrombosis?

Only about half of the people with DVT have symptoms. A patient with DVT may have edema, pain, and warmth in one leg – typically in the calf; venous stasis ulcers and venous varicosities, and pain or tenderness in the leg which can be felt only when standing or walking. Look for localized tenderness, calf swelling that is about 1½ inches greater than the circumference of the asymptomatic leg – measured 10 cm (about 4 inches) below the tibial tuberosity, and pitting edema on the symptomatic leg.

When signs and symptoms develop, they are related to local inflammation and local tissue ischemia as well as to the degree of venous outflow obstruction. Complications of DVT include venous valvular damage, chronic venous insufficiency characterized by chronic pain, swelling, cramping, skin discoloration, and ulceration of the affected limb and pulmonary embolism.

How is Deep Vein Thrombosis Diagnosed?

A diagnosis is based on medical history, a physical exam and results for diagnostic testing.

• Medical History

The physician will need to do a health assessment, review prescription medications being taken, find out about any recent injuries or sur-

geries and find out whether or not you have had any cancer treatment.

• Physical Exam

The physician will check the legs for DVT as well as check blood pressure, heart and lungs.

• Diagnostic Testing

- A *D-dimer test*: This test measures a substance in the blood that is released when a blood clot dissolves. A normal test value less than 500 ng/mL can help rule out DVT and the patient is at low risk for DVT. If the patient has a d-dimer value about 500 ng/ml and is at moderate to high risk, he will need to have a duplex ultrasound.

-*Duplex Ultrasound for Thrombi*: This is the most common test for diagnosing deep vein blood clots in the femoral and popliteal veins. This two dimensional ultrasound with Doppler provides images of the veins along with measurements of blood flow. For DVT in the calf veins, the ultrasound loses its accuracy.

-*Contrast Venography*: This test is considered the gold standard for detecting DVT but has the potential for complications and is only used if the ultrasound does not provide a clear diagnosis. Dye is injected into a vein, and then an x-ray is taken of the leg. The dye makes the vein visible and will show whether or not blood flow is slow in the vein.

Other tests that may be used include MRI and CT scanning. Other lab tests may be checked to determine whether or not there is an inherited blood clotting disorder. A ventilation perfusion scan (V/Q scan) may be ordered if the physician suspects a pulmonary embolism.

How is Deep Vein Thrombosis Treated?

The main goals of treating DVT are to:

- Stop the blood clot from getting bigger.
- Prevent the blood clot from breaking off and moving to your lungs.
- Reduce your chance of having another blood clot.

The first line of treatment for DVT is anticoagulation, bed rest and elevation of the affected leg. Anticoagulants or blood thinners can be taken either as a pill, an injection, under the skin, through a needle or by IV. Warfarin (Coumadin®) and heparin are the two blood thinners usually used to treat DVT. There are different types of heparin. Treatment with blood thinners lasts from 3 to 6 months.

“Only about half of the people with DVT have symptoms.”

NEED HELP IN LOCATING A VEIN??

There has been a surge of devices designed to help locate veins from which to draw blood. Listed below is summary and contact information.

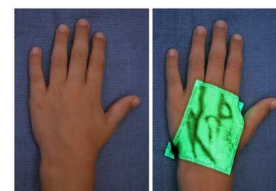
AV300 (AccuVein)

This device relies on the physical property of hemoglobin in that it absorbs infrared light. When the device is held about 7 inches above the skin and activated, it detects the difference in the hemoglobin concentration between the veins and the surrounding tissue. The reflected infrared light indicates the size and position of veins beneath the surface of the skin by projecting a precise map of the veins on the skin above them. www.accuvein.com AccuVein 816-298-6991



VeinViewer

This hand-held device uses a flexible head unit that positions the infrared light over any part of the anatomy. The light makes veins visible to a digital video camera, which then transmits live video to an image processor. The processor then enhances and aligns the images for output through a projector that displays the enhanced image in real time. www.luminetx.com Luminetx 910-252-3752



Venoscope

The Venoscope II Transilluminator device is used to locate veins using high intensity red and white LEDs that penetrate deep into the subcutaneous tissue. The device is placed on the patient's skin and illuminates the subcutaneous tissue with an array of high intensity LED lights highlighting the veins, which absorb the light rather than reflect it. A white light provides definition between the tissue, which is lighter in intensity and the veins, which appear as dark lines or shadows between the two illuminating arms. Venoscope also manufactures the Neonatal Transilluminator.

www.venoscope.com Venoscope 800-284-7655



Wee Sight

This transilluminator uses a strong LED light to reveal vein location without emitting heat. This device can light flat on the baby's arm or leg or it can be held in the user's hand and positioned against the baby's leg or arm. <http://weesight.respironics.com> Children's Medical Ventures 800-345-6443



Vein Locator

This locator used three LED lights to transilluminate the patient's tissue, highlighting veins. The device is limited to use for neonatal, pediatric, and frail adult patients. The device is battery operated and provides 40 hours of use. Once the batteries are used up, the device must be discarded – the batteries are not replaceable. www.sharn.com Sharn, Inc. 800-325-3671



Veintector

This device uses 38 red and yellow LED lights to illuminate the tissue beneath the skin upon which it rests. A protective sheet is placed between the patient and device to prevent patient contact. There is a color adjustment button to allow the user to change settings for optimal contrast. The device uses two oxyride batteries. <http://www.carolinachemistries.com> Carolina Liquid Chemistries 336-722-8910



Veinlite Transilluminators

A side-transillumination method is used in these devices. A bright ring of light is placed against the skin, and light is focused into the tissue and towards the center of the ring creating a virtual light source under the skin that uniformly illuminates the superficial tissues within the ring. The deoxygenated blood in veins causes them to show up as dark lines in contrast with the surrounding tissue. An opening in the ring allows for blood draws and injections.

Veinlite offers halogen light fiber optic units and LED based models. Halogen light Veinlites have a variable intensity light source and a metal ring illuminator with a fiber optic cable. Smaller rings are available for pediatric patients. LED based models achieve the best contrast by using a combination of bright orange LEDs combined with a deep red light. Light shields snap on to the units to stop interference from overhead lights. There are two other models: Veinlite EMS and Veinlite PEDI.

www.veinlite.com TransLite 281-240-3111



ACAreer

PO Box 58, Osceola, IN 46561

Presorted Standard
US Postage Paid
South Bend, IN
Permit #498

ACAreer is published by the American Certification Agency for Healthcare Professionals and is free to all of the certificants.

ACAreer is published in February, June and November. If you have any questions, comments, or topics you would like to see covered in our newsletter, please fax them to (574)277-4624, phone to (574) 277-4538, e-mail to Info@acacert.com or mail to ACA, PO Box 58, Osceola, IN 46561.

ACA CONTINUING EDUCATION INFORMATION

A reminder that ABP, Inc. offers home study continuing education booklets to help you earn CE contact hours. Call ABP at (574) 277-0691 to order or visit ABP's website at www.abpincorp.com to download an order form. Some topics available are:

- Hand Hygiene
- JCAHO and Patient Safety
- HIPAA Security Rules
- Legal Issues in Phlebotomy
- Interpreting ECGs
- Plus many more

DEEP VEIN THROMBOSIS—con't from page 2

The most common side effect of blood thinners is bleeding. Patients are monitored with PT and aPTT tests. Thrombin inhibitors are used to treat blood clots in patients that cannot take heparin. Thrombolytics are only used in life-threatening situations because they can cause sudden bleeding. In cases where medications do not work, surgery may be indicated. Placement of a vena cava (the body's largest vein) filter can be placed to prevent blood clots from traveling to the lungs. Graduated compression stockings can be worn to reduce the swelling that may occur after a blood clot has developed in your leg. Graduated compression stockings are worn on the legs from the arch of the foot to just above or below the knee. These stockings are tight at the ankle and become looser as they go up the leg. This creates gentle pressure up the leg. The pressure keeps blood from pooling and clotting. These stockings should be worn for at least a year after DVT is diagnosed.

How Can Deep Vein Thrombosis Be Prevented?

If you are at risk for DVT, you can help prevent the condition by seeing your doctor for regular checkups, take all prescribed medications, get up and moving as soon as possible after surgery and exercise lower leg muscles during long trips. If your travel time is longer than 4 hours: walk up and down aisles or if traveling by car, stop about every hour and walk around; move legs and flex and stretch feet; wear loose, comfortable clothing, drink plenty of fluids and avoid alcohol.

References

- Nursing2009 – April. ▪ www.nhlbi.nih.gov/health/dci/Disease/DVT ▪ http://en.wikipedia.org/wiki/Venous_thrombosis
- www.nlm.nih.gov/medlineplus

ACA RECERTIFICATION—Date extended to September 1, 2009

ACA recertification packets were mailed out in April. Please contact the ACA office by phone or mail if you have not received your packet!

ACA Recertification Fees:

One Category 2-year renewal \$60.00

Two Categories 2-year renewal \$85.00

Three Categories 2-year renewal \$95.00

Instructor 1-year renewal \$60.00

Any recertification not postmarked on or before September 1, 2009 must include an additional \$15.00 making their recertification fee \$75.00. Visit www.acacert.com to download the application form.