

Venous Thromboembolism (VTE) Fact Sheet

About Venous Thromboembolism (VTE)

- **Venous Thromboembolism (VTE)** occurs when red blood cells, fibrin, platelets, and leukocytes, form a clot within a vein, preventing blood from flowing freely.¹ VTE is a common but serious condition that can sometimes be fatal²
- VTE normally occurs in two different ways:
 - **Deep Vein Thrombosis (DVT):** DVT occurs when a blood clot forms in a vein deep in the body, commonly in the lower leg or thigh^{1,3,4}
 - **Pulmonary Embolism (PE):** A more serious condition, occurring when a piece of the clot, called an embolus, detaches, travels to the lungs, and lodges in the pulmonary arteries in the lungs.^{1,2} PE can cause long-lasting or permanent damage to part of the lung, limited blood oxygen levels or damage to other organs, and may be fatal²
- VTE may be caused by decreased blood flow in the veins, such as during long periods of inactivity (e.g., long distance air travel, hospitalization). Other risk factors for VTE may include surgery, trauma, cancer, pregnancy, advancing age, inherited blood disorders, oral contraceptive use⁵
 - Traveler's thrombosis is the occurrence of DVT in travelers. It is most commonly reported in people who have traveled long distances by airplane and who are already at increased risk of thrombosis⁶
- Few data exist on the economic burden of DVT and PE, however a retrospective study of direct medical costs showed that initial DVT and/or PE is associated with high total health care costs that increase with subsequent events⁷
 - Data in this study demonstrated higher annualized costs per patient before initial DVT, PE, or DVT and PE (median: \$7227, \$6381, and \$6771, respectively) versus controls (median: \$1045)
 - Median annualized total reimbursed costs for DVT, PE, or DVT and PE rose to \$17,512, \$18,901, and \$25,554, respectively, compared with \$680 in the control group

Prevalence & Incidence of VTE:

- Estimates suggest that at least 350,000, and as many as 600,000, Americans each year contract DVT/PE, and at least 100,000 deaths are thought to be related to these diseases each year⁸
 - Nearly 300,000 people in the US will die from VTE-related causes each year and more than 600,000 people will experience non-fatal VTE events⁸
 - In the US, VTE occurs for the first time in approximately one to two of every 1,000 people^{9,10}
 - The incidence of VTE has a strong correlation with age. For those aged 25-35, there are about 30 cases of VTE per 100,000 people.¹¹ For those between 70-79, there are about 300-500 cases of VTE per 100,000 people¹⁰

Prevalence and Incidence of DVT and PE:

- About one third of patients with symptomatic VTE will develop PE and about two thirds will develop DVT alone¹⁰
- PE is the third most common cause of death in hospitalized patients.¹² It is estimated that there are over 500,000 cases annually, with more than half being fatal¹²

¹ Begelman, Susan M. "Venous Thromboembolism. The Cleveland Clinic." Available online: <http://www.clevelandclinicmeded.com/medicalpubs/diseasemanagement/cardiology/venous-thromboembolism/>. Accessed March 4, 2009.

² Hirsh J, Hoak J. Management of deep vein thrombosis and pulmonary embolism: a statement for healthcare professionals from the Council on Thrombosis (in consultation with the Council on Cardiovascular Radiology), American Heart Association. *Circulation*. 1996;93:2212-2245.

³ National Heart, Lung and Blood Institute. "What is Deep Vein Thrombosis?" Available online: http://www.nhlbi.nih.gov/health/dci/Diseases/Dvt/DVT_Whats.html. Accessed March 4, 2009.

⁴ Browse NL, Thomas ML. Source of non-lethal pulmonary emboli. *Lancet*. 303;1974: 258-259.

⁵ Rosendaal FR and Buller HR. Venous Thrombosis. In: Harrison's Principles of Internal Medicine. 17th ed. New York, NY: McGraw Hill Medical; 2008.

⁶ Ansari, Mohammed T. Traveler's Thrombosis: A Systematic Review. *J Travel Med* 2005; 12:142-154.

⁷ Mac Dougall DA, Feliu AL, Boccuzzi SJ, et al. Economic burden of deep-vein thrombosis, pulmonary embolism, and post-thrombotic syndrome. *AM J Health-Syst Pharm*. 2006;63:S5-S15.

⁸ The Surgeon General's Call to Action to Prevent Deep Vein Thrombosis and Pulmonary Embolism 2008; US Department of Health and Human Services

⁹ A population-based perspective of the hospital incidence and case-fatality rates of deep vein thrombosis and pulmonary embolism. The Worcester DVT Study. *Arch Intern Med*. 151: 1991; 933-938.

¹⁰ Trends in the incidence of deep vein thrombosis and pulmonary embolism: A 25-year population-based study. *Arch Intern Med*. 158: 1998; 585-593.

¹¹ White, Richard H. "Epidemiology of Venous Thromboembolism." *Circulation*. 2003;107;I-4-I-8.

¹² JA Helt, Estimated Annual Number of Incident and Recurrent, Non-Fatal and Fatal Venous Thromboembolism (VTE) Events in the US. *Blood* (American Society of Hematology Meeting Abstracts) 2005 106: Abstract 910.

- Mortality rates for DVT are also serious. After being treated for DVT, 6 percent of patients will die within one month,¹⁰ and about 30 percent will develop VTE again in ten years or less¹⁰

Diagnosis of VTE:

One or more tests may be required to determine a patient is suffering from DVT or PE. Tests may include:

- DVT^{1,13}
 - D-Dimer Testing: Measures a substance in the blood that is released when a blood clot dissolves
 - Ultrasound: Sound waves create moving pictures of the blood flowing through the arteries and veins
 - Venography: A dye is injected into a vein and an x-ray is taken of the leg, making the dye in the vein visible and showing whether blood is flowing properly
- PE^{1, 14}
 - Echocardiogram: Uses sound waves to determine if there are blood clots inside the heart
 - Electrocardiogram (EKG): Evaluates the speed and regularity of the heartbeat
 - Chest X-Ray: Photographs the lungs, heart, large arteries, ribs, and diaphragm
 - Magnetic resonance imaging (MRI): Radio waves and magnetic fields make pictures of organs and may provide information that an x ray cannot
 - Spiral CT Scan or CT angiogram: Dye is injected into a vein in your arm to make the blood vessels in your lungs and legs more visible on the x-ray image so that doctors can identify any clots.
 - Ventilation perfusion lung scan (VQ scan): Uses a radioactive material to show how well oxygen and blood are flowing to all areas of the lungs
 - Pulmonary Angiography: Dye is injected into the blood vessels through a catheter and x-ray pictures are taken to show the blood flow in the lungs.

Prevention:

- Most prevention efforts focus on avoiding the development of the common forms of VTE
- Prevention measures for DVT and PE may include:^{15,16}
 - Scheduling regular checkups with a physician; discuss with physician identification of risk factors, including inherited blood abnormalities
 - Adhering to and regularly taking prescribed medications
 - Exercising the lower leg muscles during long trips or if sitting for an extended period of time

Resources:

- The National Heart, Lung and Blood Institute has information on [DVT](#) and [PE](#), including a [video showing a deep vein blood clot](#)
- The National Institutes of Health features images showing [DVT](#), a [venous blood clot](#) and how DVT is [identified and treated](#)
- The American Heart Association has [statistics](#) on the prevalence and incidence of VTE

About AstraZeneca

For more information visit www.astrazeneca.com.

For further information contact:

Donna Huang
302-885-6396
donna.huang@astrazeneca.com

###

¹³ National Heart, Lung and Blood Institute. "How is Deep Vein Thrombosis Diagnosed?" Available online: http://www.nhlbi.nih.gov/health/dci/Diseases/Dvt/DVT_Diagnosis.html. Accessed March 4, 2009.

¹⁴ National Heart, Lung and Blood Institute. "How is Pulmonary Embolism Diagnosed?" Available online: http://www.nhlbi.nih.gov/health/dci/Diseases/pe/pe_diagnosis.html. Accessed March 4, 2009.

¹⁵ National Heart, Lung and Blood Institute. "How Can Deep Vein Thrombosis Be Prevented?" Available online: http://www.nhlbi.nih.gov/health/dci/Diseases/Dvt/DVT_Prevention.html. Accessed March 4, 2009.

¹⁶ National Heart, Lung and Blood Institute. "How Can Pulmonary Embolism be Prevented?" Available online: http://www.nhlbi.nih.gov/health/dci/Diseases/pe/pe_prevention.html. Accessed March 4, 2009.