



APHA

DEEP-VEIN THROMBOSIS: ADVANCING AWARENESS TO PROTECT PATIENT LIVES

White Paper

Public Health Leadership Conference on Deep-Vein Thrombosis
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American Public Health Association

**“The disconnect
between evidence
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as it relates to DVT
prevention amounts
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health crisis.”**

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Deep-Vein Thrombosis: Advancing Awareness to Protect Patient Lives

Introduction

Every year, an estimated 200,000 up to 600,000 Americans will suffer from deep-vein thrombosis (DVT) and pulmonary embolism (PE).^{1,2,3} Deep-vein thrombosis and PE are collectively known as venous thromboembolism (VTE). For the 60,000 to 200,000 individuals who develop PE, their condition will be fatal.^{1,2} In the United States, more people die each year from PE than motor vehicle accidents, breast cancer or AIDS.^{3,4,5,6}

| Some Causes of Death in the U.S. | Annual Deaths |
|-----------------------------------|---------------|
| Pulmonary embolism ^{2,3} | Up to 200,000 |
| AIDS ⁶ | 14,499 |
| Breast cancer ⁵ | 40,200 |
| Highway fatalities ⁴ | 42,116 |

Deep-vein thrombosis is a common but under-diagnosed medical condition that occurs when a thrombus (blood clot) forms in one of the large veins, usually in the lower limbs, leading to either partially or completely blocked circulation.¹ The condition may result in health complications, such as PE, if not diagnosed and treated in a timely and effective manner. Pulmonary embolism can occur when a fragment of a blood clot breaks loose from the wall of the vein and migrates through the heart to the lungs, where it blocks a pulmonary artery or one of its branches.¹ When that clot is large enough to completely block one or more of the vessels that supply the lungs with blood, it can result in sudden death.¹

Surprisingly, almost three-quarters (74 percent) of adults have little or no awareness of DVT, according to a national survey conducted on behalf of the American Public Health Association (APHA).⁷ Of the respondents aware of DVT, more than half (57 percent) were unable to name any common risk factors or pre-existing conditions that could lead to the development of DVT. And, 95 percent of adults surveyed reported that their physician had never discussed this medical condition with them.⁷

The APHA and the Centers for Disease Control and Prevention (CDC) convened 60 of the nation's leading medical experts and patient advocates in Washington, D.C. in early 2003. This event, the *Public Health Leadership Conference on Deep-Vein Thrombosis*, brought into the spotlight the urgency for increased diligence related to prevention on the part of the healthcare community – as well as the need to raise awareness of DVT and its complications among the public.

Conference participants addressed two critical issues: awareness and prevention. Physicians and other healthcare providers must be aware of risk factors and risk stratification. Moreover, they must take more aggressive action in screening patients for risk factors and in prescribing preventive interventions. In the case of prophylaxis with anticoagulants, well-controlled studies have shown that the use of these medications can reduce the risk of DVT and PE by two-thirds.¹ Unfortunately, a study also shows that only about 30 percent of patients at risk for DVT receive this type of prophylaxis.⁸ Based on these findings, conference participants also urged the American public to become more aware of DVT, its symptoms, and risk factors.

This White Paper is based on the initiatives suggested by the participants and attendees at the *Public Health Leadership Conference on Deep-Vein Thrombosis*. The goal of this communication is to create a better understanding of both the high incidence of DVT and PE and the availability of preventive options for these conditions.

Deep-Vein Thrombosis: Advancing Awareness to Protect Patient Lives

1. Describing Deep-Vein Thrombosis

A deep-vein thrombus (blood clot) is an intravascular deposit that is composed of fibrin and red blood cells with a variable platelet and leukocyte component. Deep-vein thrombosis occurs when a thrombus forms (usually in regions of slow or disturbed blood flow) in one of the large veins, usually in the lower limbs, leading to either partially or completely blocked circulation.¹ The condition may result in health complications, such as fatal PE, if not diagnosed and treated in a timely and effective manner.¹ Pulmonary embolism can occur when a fragment of a blood clot breaks loose from the wall of the vein and migrates to the lungs, where it blocks a pulmonary artery or one of its branches. When that clot is large enough to completely block one or more vessels that supply the lungs with blood, it can result in sudden death. Deep-vein thrombosis and PE are collectively known as venous thromboembolism (VTE).¹

2. Outlining the Scope of the Problem

Published studies estimate that the annual incidence of DVT and PE ranges from 200,000 up to 600,000 cases, and may contribute to 60,000 to 200,000 deaths.^{1,2} Many of these deaths can be prevented through routine use of simple preventive measures. Medical experts say that it is critical to warn patients about the risks, and for physicians and other healthcare providers to employ preventive measures.

Venous thromboembolism is the number-one cause of unexpected hospital death, according to Samuel Z. Goldhaber, M.D., of Harvard Medical School, who directs the VTE Research Group at Brigham and Women's Hospital in Boston. Additionally, Dr. Goldhaber has reconfirmed the finding that VTE is a major national health problem, especially among hospitalized patients.

3. Measuring DVT Awareness

Most Americans are unaware of DVT, its symptoms, and its risk factors, according to a nationwide survey conducted on behalf of the APHA.⁷ At the Public Health Leadership Conference on Deep-Vein Thrombosis ("Conference"), Georges C. Benjamin, M.D., F.A.C.P., the Executive Director of the APHA presented key findings.⁷

Conference panelist Rear Admiral Kenneth P. Moritsugu, M.D., M.P.H., Deputy Surgeon General of the United States, stated that DVT is a condition that does not discriminate – it affects young and old, the very fit (e.g., Olympic athletes), as well as public figures, such as former Vice President Dan Quayle. Less than two months after the Conference, acclaimed journalist David Bloom died as a result of VTE while on assignment in Iraq. His death raised awareness and questions among the public about DVT.

“It’s fascinating to us that two-thirds of Americans do not know anything about deep-vein thrombosis. And what’s even more fascinating is that more than half of those individuals who do know about the disease, don’t know what the risk factors are, nor do they know the signs and symptoms.”

*Georges Benjamin, M.D., F.A.C.P.,
Executive Director, APHA*

- *Almost three-quarters (74%) of those surveyed have little or no awareness of DVT.*
- *Of the respondents aware of DVT, more than half (57%) were unable to name any common risk factors or pre-existing conditions that could lead to the development of DVT.*
- *95% of adults surveyed report that their physician has never discussed DVT with them.⁷*

4. Listening to a Silent Epidemic

Fatal PE may be the most common preventable cause of hospital death. “Two-thirds of those individuals who die from PE do so unnecessarily,” maintains Dr. Goldhaber. “Routine use in hospitals of simple, well-established and effective methods of DVT prevention would save the lives of thousands of Americans each year. Unfortunately, however, the management of PE has been characterized by a failure to use preventive measures that are known to be effective.” According to Dr. Goldhaber, the failure to administer preventive measures, or to “prophylax,” is an established practice pattern with significant adverse consequences.

To illustrate that the silent epidemic of DVT remains unacknowledged, a recent study in hospital patients with DVT, known as DVT-FREE, found that 71 percent of patients with DVT did *not* receive prophylaxis within 30 days prior to diagnosis. Surgical patients were much more likely than nonsurgical patients to receive prophylaxis for this condition. These findings indicate that proven regimens for the prevention of DVT are underutilized. Clinical trials and guidelines for prophylaxis and treatment have progressed further and faster than “real-world” preventive efforts and outpatient therapy.⁸ “The disconnect between evidence and execution as it relates to DVT prevention amounts to a public health crisis,” says Dr. Goldhaber.

5. Understanding DVT Risk Factors

The following information summarizes the risks and symptoms for DVT. About half of the time, however, the condition causes no symptoms.^{1,10}

WHO IS AT RISK?

Top risk factors and triggering events for DVT:

- | | |
|--|--|
| • <i>Increasing age</i> | • <i>Obesity</i> |
| • <i>Prolonged immobility</i> | • <i>Varicose veins</i> |
| • <i>Stroke</i> | • <i>Congestive heart failure and myocardial infarction</i> |
| • <i>Paralysis</i> | • <i>Indwelling central venous catheters</i> |
| • <i>Previous VTE</i> | • <i>Inflammatory bowel disease</i> |
| • <i>Cancer and its treatment</i> | • <i>Nephrotic syndrome</i> |
| • <i>Major surgery (particularly operations involving the abdomen, pelvis and lower extremities)</i> | • <i>Pregnancy, oral contraceptives or post-menopausal hormone replacement</i> |
| • <i>Respiratory failure</i> | • <i>Inherited predisposition for clotting^{11,12}</i> |
| • <i>Trauma (especially fractures of the pelvis, hip or leg)</i> | |

“All too often, patients die of PE without ever knowing they had it. The condition is difficult to detect because it is often ‘silent,’ presenting no obvious signs or symptoms.”

Victor Tapson, M.D., Duke University Medical Center

WHAT ARE THE SYMPTOMS OF DVT AND PE?

Neither DVT nor PE may present any obvious symptoms. DVT most commonly occurs in just one leg. Symptoms for both conditions include any or all of the following:

DVT of the leg or arm

- *Tenderness*
- *Pain*
- *Swelling*
- *Discoloration or redness^{1,13}*

PE

- *Unexplained shortness of breath*
- *Chest pain or palpitations*
- *Anxiety and/or sweating*
- *Coughing up blood*

6. Barriers in DVT Prevention

“Deaths resulting from PE, a complication of DVT, can be prevented; however, physicians and other healthcare professionals must routinely assess a person’s risk for the disease in the same way they currently look for risk factors for heart disease,” states APHA’s Georges Benjamin, M.D., F.A.C.P. “Furthermore, we need to encourage more physicians to routinely prophylax patients who may be at risk for DVT.” Yet, assuming knowledge of the risk factors for DVT does not necessarily result in prescribing prophylaxis for this condition. Indeed, participants at the Conference acknowledged that prophylaxis is underused. These experts identified various factors that may create barriers in DVT prevention, including a lack of awareness of DVT risk, perceived differences in risk assessment and perceived risks of bleeding with prophylaxis.

7. Using Available Prophylaxis

Traditional non-pharmacological prophylaxis measures for DVT include early mobilization and the use of sequential compression devices to prevent blood clotting.

However, there are many drugs available to prevent DVT. Anticoagulants, or blood-thinning drugs, work by impairing the body’s normal blood-clotting process, and help to prevent DVT and PE. The most commonly used anticoagulants include unfractionated heparin, low-molecular-weight heparin and warfarin sodium.^{12,14}

8. Moving Forward for DVT Prevention

In addressing DVT awareness and prevention, Conference participants agreed that *improving standards of care* and *enhancing physician training* are two key strategies for reducing death and disability due to this condition and its complications. According to Maureen Connors Potter, the Executive Director for disease-specific care certification for the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), one initiative to support these strategies is a new certification program at JCAHO. This approach aims to increase the use of evidence-based medicine as a focal point for disease-specific patient-care services or programs. As a strategy to improve clinical outcomes for patients with DVT, this certification offers a framework for practitioners to implement practice guidelines that impact this condition. *However, experts are urging that JCAHO consider a stronger step beyond certification and make DVT prevention a component of accreditation.*

Another initiative, the American Medical Association's (AMA) Physician Consortium for Performance Measurement, aims to become a leading source for evidence-based performance measures and outcomes reporting tools for physicians. This organization's secretary-treasurer, John Nelson, M.D., offered the AMA's assistance in developing an evidence-based performance measure for prevention of DVT.

The Conference identified areas in need of immediate attention for educating the professional community about DVT awareness and prevention. Participants were urged to take action to:

- *Create a national coalition to advocate for greater awareness of DVT and PE among healthcare professionals and the general public.*
- *Enlist the support of medical professional and patient advocacy organizations to make DVT and PE awareness part of their agenda.*
- *Develop a public awareness campaign to educate consumers about the risk factors, symptoms and prevention measures for DVT.*
- *Develop communications tools (printed materials, public service announcements, Web sites) to serve as patient educational materials about risk factors, symptoms and prevention for DVT.*
- *Encourage state medical licensing boards to include DVT and PE prevention in their CME/CE licensing renewal requirements.*
- *Encourage academic centers to incorporate DVT and PE education into curricula for all medical professionals.*
- *Close the gap between clinical practice guidelines for DVT prophylaxis and actual practice through the creation and implementation of institutional standards.*
- *Ask accreditation and "standardization" institutions to ensure that healthcare providers and institutions implement clinical practice guidelines for DVT prevention.*
- *Encourage the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) to make adherence to DVT prevention guidelines part of its accreditation process.*
- *Educate policy-makers about cost-effectiveness of DVT and PE prevention and treatment.*
- *Encourage policy-makers to support reimbursement of DVT and PE prevention and treatment.*

9. Reducing the Threat of DVT: Two Paths Toward Change

Conference participants recommended two paths to improve outcomes related to DVT and PE:

Educate the public and healthcare community to raise awareness of DVT and encourage proven methods for preventing deaths from PE.

Public education can take the form of direct-to-consumer outreach or it can involve arming public health organizations with the information necessary to best serve their members. Healthcare professionals can benefit from the best practices of organizations and institutions that have successfully implemented prophylaxis and assessment programs to make best use of preventive therapies, both mechanical and pharmacological.

Work with policy-makers to make DVT a public health priority.

The policy issues include: ensuring appropriate levels of reimbursement for medications available to prevent fatal PEs, motivating adherence to established clinical guidelines, ensuring that treatment and prevention guidelines capture all at-risk populations, and allocating the resources necessary to further investigate ways to prevent long-term complications from DVT and fatalities from PE.

“If we increase awareness of this life-threatening condition and of individuals’ risk factors and triggering events, I hope we can reduce the number of people that die every year from DVT complications – some who were not as fortunate as me.”

Miranda Fowler, DVT patient

Summary

“Deep-vein thrombosis is preventable,” said Bruce Evatt, M.D., Chief of the Hematologic Diseases branch at the CDC. “We can reduce the risks of its serious and life-threatening complications if we raise education and awareness among the public and urge all health-care providers to institute standard preventive measures.”

To this end, experts convened at the *Public Health Leadership Conference on Deep-Vein Thrombosis* to move forward knowledge about this life-threatening condition. This White Paper summarizes the key learnings about DVT and PE with the goal of educating physicians and other healthcare providers, public health advocates and consumers about these conditions. Given the high incidence of DVT and PE, clarifying the risk factors, prophylaxis strategies and policy initiatives to help prevent them is a public health priority.

Understanding the gap in awareness of DVT and PE, as illustrated by the recent national survey, should motivate both professionals and consumers to learn more about these conditions. Moreover, the recognition and acceptance of treatment guidelines and prophylaxis should encourage all physicians and other healthcare providers to prophylax at-risk patients. In doing so, prevention will become an accepted practice and policy.

Advancing awareness of DVT and PE requires physicians and other healthcare providers, as well as patients, to seek more information about these serious conditions. Reviewing symptoms and risk factors, such as those outlined in this paper, will help elevate DVT awareness. For example, whereas surgical patients may be more likely to receive prophylaxis, medical patients with restricted mobility should also be considered at risk for this condition. In addition, greater knowledge is needed about the drugs available to prevent and treat DVT, including anticoagulants. This is critical in the hospital setting, as evidenced by the recent DVT-FREE Registry. The investigators emphasize the need for a new and better understanding of the urgency of providing prophylaxis, “Intensified education is needed to bridge this gap between clinical trial data and everyday clinical practice.”⁸

A Call to Action:

Deep-vein thrombosis and pulmonary embolism constitute major health problems in the United States. Physicians and other healthcare providers, public health advocates and consumers must regard DVT as a life-threatening condition because more people die each year from PE than motor vehicle accidents, breast cancer or AIDS. Furthermore, the need for advancing awareness goes beyond a greater acknowledgement of the incidence of DVT – it must incorporate a better understanding of the *preventability* of the condition. These constituencies must act now, each in their own sphere of influence, to create a heightened level of awareness and to take more aggressive steps to utilize the existing prophylaxis measures.

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American Academy of Family Physicians

Web site: <http://familydoctor.org>

American Academy of Orthopedic Surgeons

Web site: <http://orthoinfo.aaos.org>

American Heart Association

Web site: <http://www.americanheart.org>

Resources

American College of Chest Physicians

A resource for the improvement in cardiopulmonary health and critical care worldwide comprised of medical and allied health professionals who specialize in diseases of the chest.

3300 Dundee Road
Northbrook, IL 60062-2348
Phone: (800) 343-2227
Fax: (847) 498-5460
<http://www.chestnet.org>

Centers for Disease Control and Prevention

The lead federal agency charged with the promotion of health and quality of life by preventing and controlling disease, injury and disability.

1600 Clifton Road
Atlanta, GA 30333
Phone: (404) 639-3311
<http://www.cdc.gov>

American Thrombosis Association

A nonprofit organization dedicated to education for the prevention and treatment of thrombosis.

P.O. Box 6494
Denver, CO 80206-0494
Phone: (303) 384-9239
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<http://www.bloodclot.org>

Council for Leadership on Thrombosis Awareness and Management

A group of healthcare professionals and educators committed to raising public and health-care provider awareness of the risks of deep-vein thrombosis.

Major initiatives: DVT-FREE National Screening Program
 ClotAlert™ Resource Center
 1-800-CLOT-FREE

Public Health Leadership Conference on Deep-Vein Thrombosis

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