Deep Vein Thrombosis... Pulmonary Embolism

Virchow’s Triad

Stasis
A reduction in blood flow velocity, resulting from reduced mobility (eg prolonged bed rest).

Blood Coagulation
A disorder in the blood clotting mechanism, which is inherited or acquired (eg anti-thrombin III deficiency).

Vessel Wall Damage
Caused by mechanical injury or dilation of the veins (eg manipulation of the leg during hip replacement).

The Formation of a Thromboembolism

Blood pools behind valve cusps, forming a thrombus

Thrombus propagates...

Thrombus dislodges and becomes an embolus

Consequences of DVT

Deep Vein Thrombosis
160 incidents per 100,000 general population.

Chronic Venous Insufficiency
300 cases per 100,000 general population.

Pulmonary Embolism
50 deaths per 100,000 general population.

With Deep Vein Thrombosis, the patient suffers from long term morbidity: varicose veins, leg ulcers etc.

Femoral DVT’s are responsible for 75% of all fatal pulmonary embolism.

Embolus lodges in major pulmonary artery

“Pulmonary Embolism remains the most common preventable cause of death in the hospital”

Who is at risk?

Age 47: Minor surgery. Risk Status: Low (1 Factor)

Age 57: Operation TURP. Anti-coagulants contraindicated. Risk Status: Moderate (2-4 Factors)

Age 68: Stroke & left lateral paralysis. Risk Status: High (>4 Factors)

Risk Assessment
Medical and surgical patients should be assessed for clinical risk factors for venous thromboembolism.

The checklist below gives a summary of pertinent risk factors (each factor has a value of one or more):

- Age 41 to 60 years
- Age 61 to 70 years (2 Factors)
- Age over 70 years (3 Factors)
- Anticipated bed confinement over 72 Hours
- Obesity (>20% of ideal body weight)
- Pelvic Surgery or Joint Replacement
- Planned Operation over 2 Hours
- Malignancy
- Severe infection
- Previous history of DVT/PE
- Emergency caesarean section (2 Factors)
- Lower limb paralysis (2 Factors)
- Contra-indication to anti-coagulants

A complete thrombosis Risk Factor Assessment Sheet is available from your Tyco Healthcare representative.

Pharmaceutical
- Unfractionated Heparins
- Low Molecular Weight Heparins
- Other Anti-coagulants (eg Warfarin)

Physical
- Graduated Compression Stockings
- Intermittent Pneumatic Compression
- Early Mobilisation

Combination
- Tailoring prophylactic treatment to suit individual patient

Risk status

Low (1 Factor)
- Recommended T.E.D. stockings and early ambulation

Moderate (2-4 Factors)
- Recommended T.E.D. stockings and S.C.D. sleeves or anti-coagulants

High (>4 Factors)
- Recommended T.E.D. stockings and S.C.D. sleeves or anti-coagulants

*The invisible threat ... the silent killer

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Hidden
In a 1989 UK study, pulmonary embolism was the cause of death in 10% of patients; 83% had a DVT confirmed at post mortem. Only 19% showed symptoms prior to death.

Always costly
In a 1991 UK study, the cost of treating a DVT was in excess of $3,900. Patients remained in hospital an extra 10 days.

Frequent occurrence
The average incidence of DVT in trauma, surgical and medical patients can be as high as 56%.

Often fatal
Venous thromboembolic disease is the most common fatal complication following surgery to the lower extremities.
T.E.D. Anti-Embolism Stockings

**Anti-Embolism Stockings**

**Prophylactic Effect**

**Risk Assessment**

**Blood Coagulation**

T.E.D. anti-embolism stockings enhance the effect of anti-coagulants.

**Vessel Wall Damage**

The compression profile of T.E.D. anti-embolism stockings reduces venous distension.

**Stasis**

The compression profile of T.E.D. anti-embolism stockings increases venous flow velocity.

**Clinical Evidence**

Over 50 clinical papers support the use of T.E.D. stockings, recommending their use in:

- orthopaedic surgery
- general medicine
- cardiovascular surgery
- neurosurgery

An average of 80% of all medical and surgical patients admitted to hospital will require physical prophylaxis such as T.E.D. stockings.

**Graduated**

Optimum graduated compression profile. Reduces the diameter of the veins and so increases venous blood velocity out of the limbs.

**Pressure Relief**

Interrupted band at thigh. This helps the stocking to stay up without creating a tourniquet effect at the femoral vein.

**Circumferential**

One way circumferential knit. Means that the stocking compression profile cannot stretch and distort, therefore maintaining the correct position, without slipping down the leg.

**Range of sizes**

27 sizes and styles available. To fit 97% of the population.

**Graduated compression T.E.D. has been evaluated in many clinical studies and its efficiency in the prevention of DVT is well established... it is important that the stockings with a proven clinical efficiency are used.**

**SCURR JH 1994**

**The advantages of graduated compression stockings (T.E.D.) over other forms of prophylaxis are low cost, convenience, and freedom from bleeding complications.**

**WELLS PC et al 1994**

**The routine use of carefully fitted T.E.D. stockings will result in a decreased incidence of deep vein thrombosis and provide a singularly safe, convenient and non-invasive method of prophylaxis.**

**COMEROTA AJ et al 1985**

**The most striking thing of this survey is that about one fourth of all post operative PE occur after hospital discharge.**

**HUBER O et al 1992**

**The risk of developing a DVT may extend up to 6 weeks post-operative.**

**CAPRINI JA et al 1991**

**Patients developing a DVT in hospital may fare better than those who develop a DVT at home where it may not be diagnosed as easily.**

**SCURR JH et al 1988**

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**Patients per DVT Risk Group**

- **4 Risk factors**
  - 17%
- **3 Risk factors**
  - 42%
- **2 Risk factors**
  - 21%
- **0-1 Risk factors**
  - 20%

**T.E.D. stockings should be worn before, during and after surgery or hospital stay...**

**The T.E.D. Hospital Ward Box offers convenient, compact storage and easy selection of all thigh length stocking sizes.**

**The T.E.D. is the only anti-embolism stocking clinically proven to demonstrate a reduction in DVT of up to 75%.**

**Popliteal 8mm Hg**

**Calf 14mm Hg**

**Ankle 18mm Hg**

**Lower Thigh 10mm Hg**

**Upper Thigh 8mm Hg**

**Pressure Break off at knee.**

Ensures unrestricted blood flow at the popliteal vein.