



**T.E.D.[™] Anti-Embolism Stockings
Nursing Procedure Guide**



*Sizing and application
for optimal benefit*



- T.E.D. anti-embolism stockings apply the clinically proven graduated pressure pattern of 18mmHg at the ankle, 14mmHg at the calf, 8mmHg at the popliteal, 10mmHg at the lower thigh and 8mmHg at the upper thigh.¹ It is important to measure the patient's leg size to assure that the appropriate pressure pattern is applied.
- T.E.D. anti-embolism stockings are clinically proven to reduce DVT by 50%² and to promote increased blood flow velocity in the legs 138%¹ of baseline by compression of deep venous system.
- T.E.D. anti-embolism stockings have been clinically proven to prevent the damaging effects of venous distension that occurs during surgery and hospitalization.³

Clinically Proven Pressure Pattern



Getting Started

You will need:

- Wall Chart
- Tape Measure
- T.E.D.[™] Stocking Order Pad/Sizing Chart
- Package of Covidien T.E.D. anti-embolism stockings

Nursing is responsible for sizing, application, and maintenance of T.E.D. anti-embolism stockings.

Did you know?

According to a study by Dr. Sigel, the effect of graduated compression stockings on venous velocity lasts up to 30 minutes after removal of the stockings.⁴

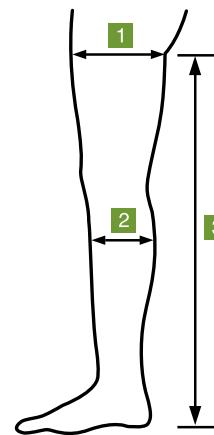
Sizing

Proper sizing and application must be assured for a patient to receive the optimal benefit of stockings. Refer to instructions for use in packaging for specific sizing information.

A. Thigh Length and Thigh Length with Belt (Figure I)

1. Measure upper thigh circumference at gluteal furrow. (Measurement #1)
2. Measure calf circumference at greatest dimension. (Measurement #2)
3. Measure leg length from gluteal furrow to base of heel. (Measurement #3)
4. Consult the back of this guide, wall chart or product packaging to determine the appropriate size.
 - a. If right and left legs measure differently, order two different stocking sizes.
 - b. If thigh circumference is greater than 36 inches, select a knee length stocking.
 - c. If calf circumference is outside the specified range of the recommended thigh length stocking based on Measurement #1, select a knee length stocking.

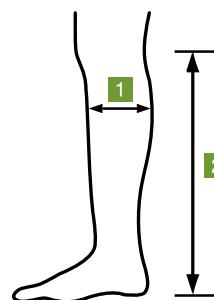
Fig. I



B. Knee Length (Figure II)

1. Measure calf circumference at greatest dimension. (Measurement #1)
2. Measure length from bend of knee to base of heel. (Measurement #2)
3. Consult the wall chart or back of this guide to determine the appropriate size.
 - a. If right and left legs measure differently, order two different stocking sizes.

Fig. II



C. Order two pairs of stockings to ensure that prophylaxis is uninterrupted during laundering care or to send a pair home with the patient.

Fig. III



Applying

A. Insert hand into stocking as far as the heel pocket (Figure III)

Fig. IV



B. Grasp center of heel pocket and turn stocking inside out to heel area. (Figure IV)

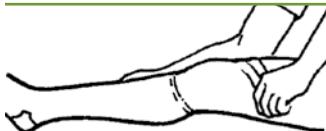
Fig. V



C. Position stocking over foot and heel. Be sure patient's heel is centered in heel pocket. (Figure V)

D. Pull a few inches of the stocking up around the ankle and calf.

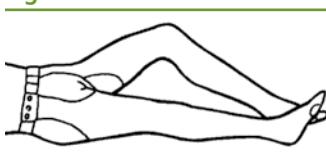
Fig. VI



E. Continue pulling the stocking up the leg. The stitch change (change in fabric sheerness) should fall between 1" to 2" below the bend of the knee. (Figure VI)

F. As thigh portion of the stocking is applied, start rotating stocking inward so panel is centered over femoral artery. Panel is placed slightly towards the inside of the leg.

Fig. VII



When using thigh length with belt (Figure VII), be sure side panels are at hip bone and upper hem rests at the gluteal furrow.

Fig. VIII



When using thigh length, the top band rests in the gluteal furrow. (Figure VIII)

G. Smooth out wrinkles

H. Align inspection toe to fall under the toes. (Toes should not stick out.)

I. Instruct patient as to the proper positioning of stocking to insure that the patient will not reposition the stockings incorrectly.

J. For improved efficacy in moderate/high risk patients, additional prophylaxis methods may be appropriate. To further determine the best mechanical or pharmacological prophylaxis options, please refer to risk assessment on Page 7.

Contraindications

Stockings are not recommended for patients with the following:

1. Any local leg condition in which stockings would interfere, such as: dermatitis, vein ligation (immediately postoperative), gangrene, or recent skin graft.
2. Severe arteriosclerosis or other ischemic vascular disease.
3. Massive edema of legs or pulmonary edema from congestive heart failure.
4. Extreme deformity of leg.

Charting

- A. Record style and size of stocking applied, and date applied.
- B. Record removal of stockings.
- C. Note appearance of skin.
- D. Report absence or presence of tenderness in calves, thighs or toes.
- E. Record inspection of stockings during each shift.
- F. Be aware of patient's size changing and weight loss.

Maintenance

- A. Wash every 2 to 3 days to remove bodily secretions.
- B. Machine wash, temperature not to exceed 160° F (71°C); Machine dry for 15 to 20 minutes, temperature not to exceed 250° F (121°C).
- C. Do not use ointments. Use talcum powder.
- D. With correct care, stockings last 2 to 3 months (approximately 30 washings).





Maintaining skin integrity with T.E.D. anti-embolism stockings while preventing DVT and/or improving vascular circulation

A. Assess Potential Risk for Altered Skin Integrity

- Altered mobility (hyperactivity or decreased mobility)
- Altered nutritional state (emaciation; albumin 3.0 g/dl)
- Altered metabolic state
- Altered skin turgor
- Altered sensation
- Altered circulation (venous or arterial)

B. Measure Patient

DO use a measuring tape.

DO remeasure with decrease or increase of weight. (i.e., edema).

C. Apply Stockings

DO "walk" the stockings up the legs and use powder sparingly, if necessary, to assist with easy application.

D. Maintain Stockings Properly

DO check for proper heel and gusset placement.

DO remove stockings at least daily, inspect skin, provide skin care and reapply stockings.

E. Inspect Skin

DO inspect skin* (especially ankle/heels) at least every 8 hours and document your assessment.

DO assess patient's subjective report of comfort/discomfort.

F. Prevent All Sources Of Pressure, Shear, and Friction

DO loosen linens and use bed cradles to increase patient comfort.

DO position patient using a lift sheet, overhead trapeze, etc.

DO keep HOB lower than 30° whenever possible.

DO use devices or measures which suspend heels to relieve pressure.

DON'T guess size of stockings. Tight or loose fitting stockings can impact compression efficacy.

DON'T pull or tug into place. This increases friction and shear.

DON'T position the heel of the stocking above or below the heel. This could impact the pressure gradient.

DON'T take stocking off for long periods of time to let the skin "breathe". This could impact efficacy.

DON'T massage reddened areas. This can increase tissue damage.

DON'T rely solely on visual signs of pressure or friction. Visual signs of tissue damage may be late or absent.

DON'T tuck linens tightly. This increases pressure over heels and tops of toes.

DON'T pull patient up in bed dragging heels. This increases friction to heels.

DON'T keep HOB > 30° for long periods of time. This may increase friction and shear to heels.

DON'T use donut-type devices or rely solely on pressure reduction devices.

* More frequent inspection or aggressive care may be required for patients at high risk or in patients with signs and symptoms of tissue change.

Thrombosis Risk Assessment for Surgical & Medical Patients

Step 1: Risk Factors Associated with Clinical Setting

Choose no more than one of the below listed disease states or associated hospital services to determine the baseline risk factor score.

Score 1 factor	Score 2 factors	Score 3 factors	Score 5 factors
<input type="checkbox"/> Minor surgery	<input type="checkbox"/> Major surgery (>45 min.) <input type="checkbox"/> Laparoscopic surgery (>45 min.) <input type="checkbox"/> Patients confined to bed (>72 hrs.) <input type="checkbox"/> Immobilizing plaster cast <input type="checkbox"/> Central venous access	<input type="checkbox"/> Major surgery with: - Myocardial infarction - Congestive heart failure or - Severe sepsis/infection <input type="checkbox"/> Medical patient with additional risk factors	<input type="checkbox"/> Elective major lower extremity arthroplasty <input type="checkbox"/> Hip, pelvis, or leg fracture <input type="checkbox"/> Stroke <input type="checkbox"/> Multiple trauma <input type="checkbox"/> Acute spinal cord injury (paralysis)

Baseline Risk Factor Score (If Score \geq 5, go to Step 4)

Step 2: Risk Factors Associated with Patient

Clinical	Hypercoagulable States (Thrombophilia)
(1 factor unless noted) <input type="checkbox"/> Age 41 to 60 years <input type="checkbox"/> Age over 60 years (2 factors) <input type="checkbox"/> History of DVT/PE (3 factors) <input type="checkbox"/> History of Prior Major Surgery <input type="checkbox"/> Pregnancy, or postpartum (<1 month) <input type="checkbox"/> Malignancy (2 factors) <input type="checkbox"/> Varicose veins <input type="checkbox"/> Inflammatory bowel disease <input type="checkbox"/> Obesity (>20% of ideal body weight) <input type="checkbox"/> Oral contraceptives or hormone replacement therapy	INHERITED (score 3 factors for each) <input type="checkbox"/> Factor V Leiden/ Activated protein C resistance <input type="checkbox"/> Antithrombin III deficiency <input type="checkbox"/> Protein C or S deficiency <input type="checkbox"/> Dysfibrinogenemia <input type="checkbox"/> Prothrombin 20210A <input type="checkbox"/> Homocysteinemia



Additional Risk Factor Score

Step 3: Total Risk Factor Score

Baseline + Additional

Step 4: Recommended Prophylactic Regimens for Each Risk Group

Low Risk (1 factor)	Moderate Risk (2 factors)	High Risk (3-4 factors)	Highest Risk (5 or more factors)
No Specific Measures Early Ambulation	IPC or LDUH (q12h) or LMWH or GCS	GCS* and IPC or LDUH (q8h) or LMWH	GCS* and IPC† + (LDUH or LMWH) or ADH or LMWH or Oral Anticoagulants

* Combining GCS with other prophylactic methods (LDUH, LMWH or IPC) may give better protection than any modality alone.

† Data demonstrates benefit of Plantar Pneumatic Compression in total joint arthroplasty. Plantar Pneumatic Compression can also be used when IPC is not feasible, including leg trauma.

Based on: GP Claggett, MD et al: Prevention of Venous Thromboembolism. CHEST 1998; 114:531S-560S.; 1997 International Consensus Statement: Prevention of Venous Thromboembolism, Guidelines According to Scientific Evidence; and Caprini JA, Arcelus JI et al: Clinical Assessment of Venous Thromboembolism Risk in Surgical Patients. Semin Thromb Hemost 1991;17(suppl 3):304-312. Provided as an educational service by COVIDIEN, 15 Hampshire Street, Mansfield, MA 02048 www.covidien.com

Thigh Length

All X-large, XX-large, and LF suffix stockings are latex free



Calf Circumference	Length	Description	Item Code
< 12"	< 29"	Small Short	3071LF / 3071
	29"-33"	Small Regular	3130LF / 3130
	> 33"	Small Long	3222LF / 3222
<25"	< 29"	Medium Short	3310LF / 3310
	29"-33"	Medium Regular	3416LF / 3416
	> 33"	Medium Long	3549LF / 3549
15"-17.5"	< 29"	Large Short	3634LF / 3634
	29"-33"	Large Regular	3728LF / 3728
	> 33"	Large Long	3856LF / 3856
25"-32"	< 29"	X-Large Short	3180
	29"-33"	X-Large Regular	3181
	> 33"	X-Large Long	3182
32"-36"	< 29"	XX-Large Short	3183
	29"-33"	XX-Large Regular	3184
	> 33"	XX-Large Long	3185

Knee Length

All stockings are latex free



Calf Circumference	Length	Description	Item Code
< 12"	< 16"	Small Regular	7071
	> 16"	Small Long	7339
12"-15"	< 17"	Medium Regular	7115
	> 17"	Medium Long	7480
15"-17.5"	< 18"	Large Regular	7203
	> 18"	Large Long	7594
17.5"-20"	< 18"	X-Large Regular	7604
	> 18"	X-Large Long	7802
20"-23"	< 18"	XX-Large Regular	7470
	> 18"	XX-Large Long	7471
23"-26"	< 18"	XXX-Large Regular	7472
	> 18"	XXX-Large Long	7473

Thigh Length with Belt

All stockings are latex free



Calf Circumference	Length	Description	Item Code
<10"	< 28"	X-Small Regular	3306
	> 28"	X-Small Long	3320
10"-12"	< 28.5"	Small Regular	3039
	> 28.5"	Small Long	3364
12"-15"	< 28.5"	Medium Regular	3144
	> 28.5"	Medium Long	3449
15"-17.5"	< 29"	Large Regular	3221
	> 29"	Large Long	3523
25"-32"	< 28.5"	X-Large Regular	3922
	> 28.5"	X-Large Long	3995

References

1. Sigel B, et al. Type of Compression for Reducing Venous Stasis. *Archives of Surgery*. 1975; 110: 171-175.
2. Ishak, M.A. and Morley, K.D. Deep venous thrombosis after total hip arthroplasty: a prospective controlled study to determine the prophylactic effect of graded pressure stockings. *Br. J. Surg* 1981; 68: 429-432.
3. Coleridge-Smith PD, et al. Deep Vein Thrombosis: Effect of Graduated Compression Stockings on Distension of the Deep Veins of the Calf. *British Journal of Surgery*. June 1991. Vol 78, No. (6): 724-726.
4. Sigel, et al. Compression of the Lower Leg During Inactive Recumbency. *ARCHIVES OF SURGERY* 1976



For additional information, log on to
www.covidien.com/dvtcompression



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