Medcal Evidence for Elastic Compression Stockings to Decrease the Risk of DVT

There is overwhelming evidence that compression stockings are one of the safest and most effective means available to decrease the risk of forming leg clots. The medical names for this condition are venous thromboembolism (VTE) and deep venous thrombosis (DVT). The development of a VTE and ultimately, a pulmonary embolus (PE), can be life-threatening. At a minimum, a DVT is treated with 3 months of blood-thinners, such as warfarin, in order to limit the risk of a portion of this clot breaking off and travelling within the blood to the lungs – ie. The PE. Elastic Compression Stockings (ECS) or Graduated Compression Stockings (GCS) limit leg swelling, or edema, and improve venous blood flow within the limbs wear they are worn. These stockings are a first-line defense against developing this severe condition, and are strongly recommended for people who are at risk for developing VTE.

Air-travel, the “road-trip” and extended periods of sitting increase the risk of developing a DVT, especially with longer flights or road travel lasting more than 4 hours. Elastic compression stockings significantly reduce the risk of developing this potentially life-threatening condition.

Key Literature Summary:

Clarke et al. Compression Stockings for Preventing DVT in Airline Passengers. Cochrane Database 2010. Ten randomized trials met inclusion criteria. Review’s conclusion: Airline passengers similar to those in this review can expect a substantial reduction in the incidence of symptomless DVT and leg edema if they wear compression stockings.

Scurr et al. Frequency and Prevention of Symptomless DVT in Long-haul Flights. Lancet 2001. In this prospective randomized controlled trial, >10% (12/116) of air travelers without elastic compressive stockings developed DVT. ECS resulted in 100% reduction of DVT, with no DVT (0/115) occurring in travelers wearing ECS.

Shigemitsu et al. Effectiveness of Mechanical Methods for Preventing Venous Thromboembolism in Nonorthopedic Surgical Patients: A Systematic Review and Meta-analysis. Chest 2011. Use of compression stockings alone results in a 67% reduction in the incidence of DVT compared to no prophylaxis in surgical patients.

American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. Chest Journal 2012. Most physicians agree that this series of articles represents the most comprehensive and extensive guidelines available in the medical literature. Mechanical prophylaxis, including compression stockings, is a mainstay of VTE prevention strategies and included in all of their recommendations.

Sajid et al. Knee length vs thigh length graduated compression stockings for the prevention of DVT in post-operative surgical patients. Cochrane Database 2012. Review's conclusion: There is no evidence that knee vs thigh length GCS results in any difference in reducing DVT in post-op patients. Therefore, it is recommended that length of stocking be determined by factors such as patient compliance, cost and ease of use.

American Academy of Orthopaedic Surgeons Clinical Practice Guidelines for DVT Prophylaxis in Surgical Patients. The AAOS guidelines include the use of mechanical compressive devices, for the prevention of DVT in patients undergoing hip and knee surgeries.

Philbrick et al. Air Travel and Venous Thromboembolism: A systematic revew. Journal of General Internal Medicine. A meta-analysis including pooled data from 25 studies. All travelers regardless of duration of flight and risk factors should avoid dehydration and frequently exercise leg muscles. Symptomatic VTE is rare, though asymptomatic VTE are far more common. GCS prevented travel-related DVT ($p<0.05$).

Charles et al. Merino Wool Graduated Compression Stocking Increases Lower Limb Blood Flow: a randomized controlled trial. Advances in Therapy 2011. Wearing these leg compression stockings resulted in significant increase of venous blood flow and decrease in leg edema after only 120 minutes of sitting, compared to control.