Compression Stockings for Preventing Deep Venous Thrombosis in Airline Passengers

Carl Bryce, MD, FAAFP, and Jacob Tuttle, MD
Abrazo Family Medicine Residency, Phoenix, Arizona

Author disclosure: No relevant financial affiliations.

Clinical Question:
Are compression stockings safe and effective for the prevention of deep venous thrombosis (DVT) in airline passengers?

Evidence-Based Answer
Compression stockings are effective at reducing asymptomatic DVT in airline passengers taking flights longer than five hours in both high-risk (number needed to treat [NNT] = 37; 95% CI, 35 to 46) and low-risk (NNT = 111; 95% CI, 100 to 143) populations.1 (Strength of Recommendation: C, based on disease-oriented evidence.) It is unclear if compression stockings prevent symptomatic DVT, pulmonary embolism (PE), or death. There are no significant adverse events associated with their use.

Practice Pointers
DVT occurs through the formation of a blood clot in the deep veins, typically within the lower extremities. This can ultimately lead to a PE, a significant cause of morbidity and mortality. Prolonged periods of immobility that occur during air travel are a risk factor for the development of venous thromboembolism (VTE).2 However, symptomatic VTE (including DVT or PE) after long-distance travel is rare, with an incidence of 27 per 1 million passengers within 14 days of travel.2 Asymptomatic DVT is a finding of uncertain clinical significance and occurs in 2.4% of high-risk travelers and 1.5% of low- or medium-risk travelers.3 Risk factors for VTE with long-distance travel (greater than four hours) include active malignancy, recent surgery, pregnancy or recent postpartum state, hormone therapy, obesity, and a history of VTE.3

This Cochrane review included nine randomized trials of 2,821 patients comparing the use of bilateral, below-the-knee compression stockings vs. no stockings during flights lasting more than five hours.1 The majority of these trials were conducted in the United Kingdom. All of these studies were at risk of performance bias because blinding of the participants was not possible. The authors also noted an unclear risk of selection bias—the majority of trials did not include sufficient information on the randomization methods. Two of the trials studied patients considered to be at high risk of DVT (i.e., those with obesity, prior DVT, recent cancer history, coagulopathy, or reduced mobility), whereas seven trials included individuals at low or medium risk. The follow-up period was immediately postflight through 48 hours postflight. Presence of DVT was assessed by ultrasonography or d-dimer and fibrinogen testing. Both groups demonstrated lower rates of asymptomatic DVT with compression stockings, but those in the high-risk population experienced a greater benefit.

Patients who wore compression stockings were at lower risk of developing asymptomatic DVT (odds ratio [OR] = 0.10; 95% CI, 0.04 to 0.25; high-certainty evidence). The incidence of asymptomatic DVT decreased from 1% to 0.1% for low-risk patients and from 3% to 0.3% for high-risk patients. The overall rate of asymptomatic DVT was very low, and no deaths, PE, or symptomatic DVTs were reported.

Four trials studied ankle compression strength of 20 to 30 mm Hg, and five trials studied over-the-counter compression strength of 10 to 20 mm Hg. The ideal compression strength could not be determined.4 Citing issues of cost and uncertain benefits, the American Society of Hematology (ASH) advises against the routine use of compression stockings for low-risk travelers. However, for long-distance travelers at high risk of VTE, the ASH recommends compression stockings or low-molecular-weight heparin for flights longer than four hours, or aspirin (no specific dosing recommended) for those who are unable to tolerate those two options.3 Although the optimal compression strength remains uncertain, this intervention is unlikely to be harmful. Insurance may cover compression stockings for specific medical conditions, and one pair typically costs $10 to $30 when bought over the counter.

The practice recommendations in this activity are available at http://www.cochrane.org/CD004002.

Editor’s Note: The NNTs and their corresponding CIs reported in this Cochrane for Clinicians were calculated by the authors based on raw data provided in the original Cochrane review.

References

American Family Physician 23

January 2022 • Volume 105, Number 1 www.aafp.org/afp

Downloaded for Anonymous User (n/a) at The University of New Mexico from ClinicalKey.com by Elsevier on April 03, 2022. For personal use only. No other uses without permission. Copyright ©2022. Elsevier Inc. All rights reserved.