

# Air Travel–Related Deep Vein Thrombosis and Pulmonary Embolism

**D**eep vein thrombosis occurs when a blood clot forms in the deep veins of the leg and obstructs the flow of blood back to the heart. This can lead to swelling of the leg and pain in the calf muscle, although sometimes there are no symptoms. **Pulmonary embolism** occurs when blood clots leave the veins where they developed, travel through the right side of the heart, and lodge in the small or large branches of the blood vessels going to the lung (pulmonary arteries). This can cause symptoms such as chest pain, difficulty breathing, or coughing up blood. In severe cases, it may result in collapse and sudden death. Long airplane flights or multiple flights in a short period can be associated with deep vein thrombosis and pulmonary embolism. Any situation in which the leg is bent at the knee for prolonged periods without much active motion may lead to a reduction of blood flow and increase the risk of blood clots. Other factors can increase this risk, such as recent surgery, taking oral contraceptives or hormone therapy, pregnancy, cancer, heart problems, and older age. Inherited genetic factors may also play a role.

## PREVENTION

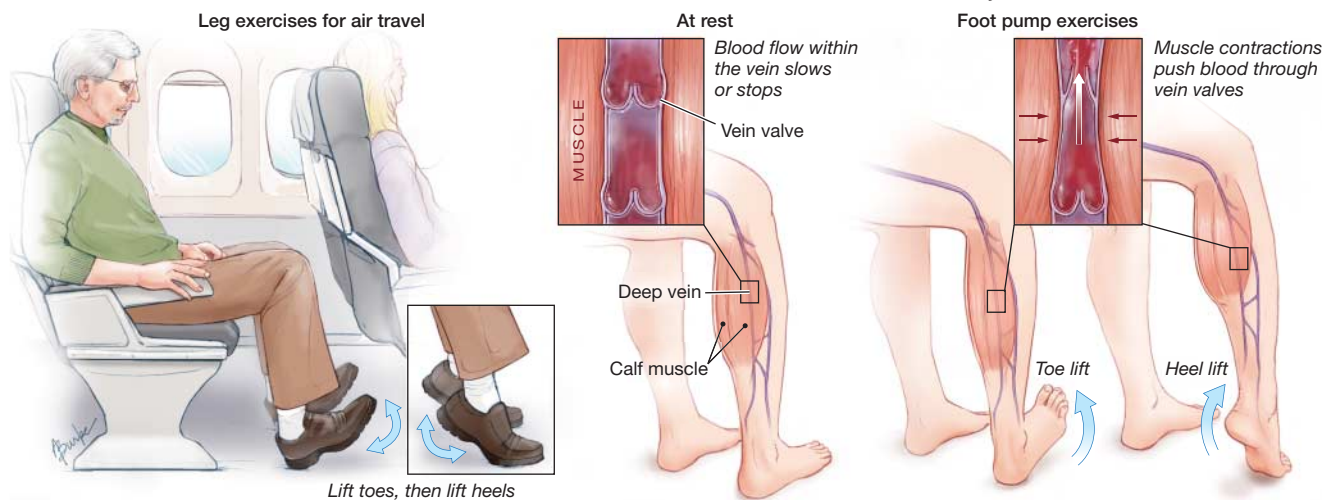
- Properly fitted graduated compression stockings have been shown to be of some value.
- For people at high risk, such as those who have had a previous episode of thrombosis, low-molecular-weight heparin can be prescribed by a primary care physician and can be self-administered by injection beneath the skin just prior to a flight.
- Getting up frequently and walking in the aisle of the plane increases blood flow and may reduce the risk of clots forming but is not always practical or safe.
- The simplest preventive measure is to frequently “pump your feet” while sitting in your seat. Alternately lifting the toes and then lifting the heels increases blood flow in the calf veins and reduces the risk of forming blood clots.

## FOR MORE INFORMATION

- World Health Organization Research Into Global Hazards of Travel (WRIGHT) Project  
[www.who.int/cardiovascular\\_diseases/wright\\_project/phase1\\_report/WRIGHT\\_REPORT.pdf](http://www.who.int/cardiovascular_diseases/wright_project/phase1_report/WRIGHT_REPORT.pdf)
- The Surgeon General’s Call to Action to Prevent Deep Vein Thrombosis and Pulmonary Embolism  
[www.surgeongeneral.gov/library/calls/deepvein/call-to-action-on-dvt-2008.pdf](http://www.surgeongeneral.gov/library/calls/deepvein/call-to-action-on-dvt-2008.pdf)

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