

# Travelers' Thrombosis

## Traveler Summary

### Introduction

Deep vein thrombosis (blood clots in the leg veins) can occur during or after long flights on aircraft. The term "economy class syndrome" was coined after early cases occurred among people who had taken long-distance flights while seated in the "coach" section of the aircraft; however, the term is misleading. "Travel-related thrombosis" or "travelers' thrombosis" would be more accurate terms since this risk is not restricted to economy class or even to air travel. Deep vein thrombosis (DVT) can also occur in passengers during long distance transport by bus and train and can occur with activities other than travel.

Some people who develop DVT can also develop a complication called pulmonary embolism (PE). PE is a potentially life-threatening condition that occurs when a section of the clot in the leg dislodges, travels to the lungs, and plugs a blood vessel. Overall, PE occurs in about 0.4 per million airline passengers and is fatal in about 2% of cases.

### Risk Factors for DVT

*Whether or not a clot forms depends on the condition of the walls of the veins, blood flow, and factors that prevent or cause the clotting of blood.* In addition, blood flow in the legs may be reduced during long flights or any long trip during which the traveler is sitting for long periods of time. For air travel, the risk of thrombosis increases with the length of flight. Passengers on flights 10 hours or longer are 2 to 3 times more likely to experience DVT than those who do not fly. DVT almost never occurs in young adults who have no risk factors and is almost always restricted to persons with one or more underlying risk factors. Even in those with risk factors, DVT is uncommon on flights of less than 6 hours.

Risk factors for DVTs include (most important ones listed first):

- | A personal or family history of DVT or pulmonary embolism
- | A personal or family history of a known blood clotting disorder predisposing to thrombosis
- | Major surgery, significant trauma, or prolonged immobilization (includes limb casts) in the last 6 weeks
- | Cancer within the last 2 years or currently receiving chemotherapy
- | Late pregnancy or the first 6 weeks after childbirth
- | Estrogen-containing medication taken for oral contraception, female hormone replacement therapy (HRT), or antiestrogen therapy (Tamoxifen)
- | Age greater than 50 years
- | Severe obesity
- | Congestive heart failure or recent myocardial infarction (heart attack)
- | Chronic venous insufficiency or large varicose veins
- | Other factors which have been associated with DVT in non-travel situations: chronic inflammatory disease, autoimmune diseases such as SLE (systemic lupus erythematosus) and inflammatory bowel diseases (ulcerative colitis or Crohn's disease), recent stroke, polycythemia vera (an abnormal increase in the number of red blood cells), dehydration (due to diarrhea or other condition)
- | One report from WHO indicated that there may be an increased risk of DVT for flights longer than 4 hours, although this is very uncommon; the report also suggested that risk may be increased for persons who are very tall (more than 6.2 ft) or short (less than 5.2 ft)

In addition, subtle clotting abnormalities are surprisingly frequent in the overall population, and these people may not know they are at risk until they experience a problem after a long flight.

Many airlines now warn passengers about the potential for DVT development and include information and prevention tips along with long-haul tickets or in their online publications. Some airlines have developed videos and/or print material describing leg exercises to perform while flying.

### Preventive Measures

Prevention of venous stasis (blood pooling in the legs) is the most important measure to follow in preventing DVTs. Travelers can help decrease their risk of DVT while traveling by observing the following precautions:

- | Wear comfortable, loose-fitting clothing when possible. Avoid clothing that binds at the knees (such as socks/stockings with strong elastic tops) or at the waist (such as pantyhose).
- | When flying, wear graded compression stockings that exert 15-30 mmHg at the ankle level (such as support stockings).
- | When practical and safe, walk around in the aircraft cabin at least every hour. This is easiest if sitting in an aisle seat.
- | Stand up and periodically stretch arms and legs. Many airlines now provide video presentations on stretching exercises during long flights.
- | Exercise leg and calf muscles frequently by flexing and extending the ankles and knees.
- | Avoid crossing legs as this may decrease blood circulation.
- | Use a footrest when possible to reduce the pressure on the back of the thighs from the seat. Alternatively, elevate feet on a briefcase, small bag, or pillow.
- | At transit stops, get up and walk around.
- | Drink plenty of water to prevent dehydration.
- | Avoid alcohol and coffee, both of which contribute to dehydration.
- | Avoid sleeping pills during a flight.
- | Avoid the window seat.

## Pretravel Advice

DVT occurrence during or after travel is a small but real danger. Therefore, travelers who are or may be at risk of DVT should consult with their medical provider before making their travel plans, and all travelers should observe the general preventive tips noted above. It is particularly important to seek medical advice prior to travel if any preexisting risk factors (especially a past history of DVT or pulmonary embolism) exist. Individuals who are on blood thinners (e.g., Coumadin/Warfarin), should have their blood clotting test results checked prior to travel.

## Posttravel Advice

During and after an extended flight, be alert for symptoms of DVT (usually involving only 1 leg, but possibly both). Most episodes of symptomatic DVT or PE occur during or immediately after flight while the passenger is still in the airport, but they may occur later. Individuals who develop any of these symptoms should consult a health care provider:

- | Leg pain, ache, or discomfort
- | Leg swelling
- | Increased warmth in the leg
- | Leg skin discoloration (red)
- | Joint pain

## Seeking Medical Assistance

If DVT is not treated, it can lead to serious complications such as pulmonary embolism. Individuals who develop chest pain, shortness of breath, or difficulty breathing, should seek immediate medical attention.

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