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Fitness to Fly: Older Adults and Air Travel

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As more and more older adults travel on commercial airliners, it is important to recognize and, when possible prevent, medical complications related to airline travel. While the vast majority of older adults travel without incident, this issue of *Elder Care* addresses key issues to consider when providing care for jet-setting older patients (Table). Patients with recent hospitalization, injury, or surgery should seek medical clearance at least 10 days before flying. For those with complicated cardiopulmonary problems or planning foreign travel, referral to a travel medicine specialist may be helpful.

Immunizations and Medications

Clinicians should be prepared to provide advice on recommended immunizations for patients planning foreign travel. The Centers for Disease Control and Prevention provides recommendations about immunizations on its travel website at wwwnc.cdc.gov/travel/page/vaccinations.htm.

For foreign travel, patients generally should bring enough medication to last at least 2 weeks longer than they plan to be away. Medications should be in carry-on luggage, and injectable meds should be in original labeled containers. Airlines cannot refrigerate medications; those requiring refrigeration should be in a cool bag or vacuum flask.

Oxygen Pressures During Air Travel

Stressors associated with air travel include the low oxygen levels in the airplane cabin that can aggravate cardiopulmonary conditions, venous stasis that can lead to venous thromboembolic disease (VTE), as well as the physical stresses associated with getting around airports.

The low oxygen pressures in aircraft cabins are a particular concern. With cabin pressures the equivalent of an elevation of 5000-8000 ft above sea level, low oxygen levels can affect the respiratory and cardiovascular systems of older adults. Instead of the 21% oxygen found

at sea level, there may be only 15% oxygen in a airplane cabin. These low oxygen levels may cause significant arterial oxygen desaturation resulting in worsening of pulmonary or cardiac conditions. They can also cause changes in cognitive status.

Air Travel with Chronic Obstructive Lung Disease

Patients with chronic obstructive pulmonary disease are at risk for hypoxemia due to decreased oxygen in the aircraft cabin. Patients who are already on supplemental oxygen should increase in-flight oxygen flow by 1-2 liters/minute.

Evaluating Fitness to Fly: Key Issues to Consider

- Immunizations for foreign travel
- Sufficient supply of medications
- Pulmonary status - need for oxygen
- Cardiopulmonary contraindications to air travel
- Risk for venous thromboembolism
- Travel insurance for medical care and evacuation
- Airport accommodations (wheelchairs, etc.)

There is some debate, however, about determining the need for in-flight oxygen supplementation for patients not already using oxygen, and many current models may be insufficiently accurate. A widely used approach, however, is to perform a pre-flight evaluation that includes pulse oximetry to assess oxygen saturation. Patients with an oxygen saturation >95% at sea level may fly without any further assessment. Patients with an oxygen saturation between 92-95% at sea level should have supplemental in-flight oxygen if they have additional risk factors including hypercapnia, lung cancer, cardiac disease, or an FEV1 <50% of predicted. Patients with an oxygen saturation at sea level <92% should always have in-flight oxygen regardless of the presence or absence of complicating conditions.

TIPS FOR ADVISING OLDER ADULTS ABOUT AIR TRAVEL

- For foreign travel, check the CDC website for immunization recommendations and bring enough medication on the trip to last at least two weeks longer than the planned absence.
- For patients with chronic lung disease who are planning air travel, check pulse oximetry and recommend in-flight oxygen to any patient with an oxygen saturation less than 92%, and also to patients with an oxygen saturation between 92-95 percent if they have hypercapnia, lung cancer, cardiac disease, or an FEV1 below 50% of predicted.
- Recommend against air travel for patients with active cardiac conditions, like recent myocardial infarction, unstable angina, uncontrolled hypertension or arrhythmias, severe symptomatic valve disease, or recent bypass surgery.
- Consider compression stockings during long flights for patients with a history of or risk for venous thrombosis.

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Airline passengers who require oxygen are not permitted to bring their own oxygen on board the plane. They need to contact the airline at least 7 days before departure to make arrangements for oxygen to be available for them. There may be an additional charge associated with providing the oxygen, ranging from \$75-\$800 depending on the airline and flight duration.

Patients with bullous emphysema are at increased risk for pneumothorax during air travel. While not a specific contraindication to air travel, patients with bullous emphysema should be made aware of the risk and be able to recognize the symptoms of pneumothorax should they occur.

Air Travel with Other Respiratory Tract Disorders

For patients with a known pneumothorax, air travel is considered unsafe and should be avoided. Air travel is also considered unsafe for patients with severe asthma or asthma that recently required hospitalization. Patients with severe middle ear infections also should not fly.

Air Travel with Cardiovascular Disease

Altitude increases the need of the myocardium for oxygen, but evidence exists that patients without active cardiac disease can safely handle altitudes of up to 11,000 ft. Since commercial flights are pressurized to 5000-8000 ft, older adults with stable cardiovascular disease should be able to fly without risk. However, air travel is considered unsafe for, and should be avoided by, patients with a variety of active cardiac conditions. These include:

- unstable angina
- uncomplicated myocardial infarction (MI) within the past 2-3 weeks or complicated MI within the past 6 weeks
- uncontrolled hypertension
- coronary artery bypass surgery within the past 10-14 days
- severe decompensated heart failure
- severe symptomatic valvular heart disease
- uncontrolled supraventricular or ventricular tachycardia

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Air Travel and Venous Thrombosis

There is a 3-fold increase in the risk of venous thromboembolic (VTE) disorders with air travel, and there is a direct correlation between the length of a flight and risk of VTE. Among air travelers over age 50 years, the risk of VTE is approximately 1 in 600 for flights that have a duration of more than 4 hours, and 1 in 500 for flights over 12 hours. The risk of pulmonary embolism is 4.8 per million in flights over 12 hours. There are no recommendations, however, that patients use prophylactic aspirin, anticoagulants, or other interventions to prevent air travel-associated VTE if they have no history of or increased risk for VTE. However, selecting an aisle seat will allow frequent walking during a flight; calf muscle stretching may also be of benefit.

But, for patients who have had VTE or have risk factors for VTE, evidence supports the use of graduated compression stockings to prevent VTE during flights longer than 6 hours. A meta-analysis of studies involving more than 2,500 long-distance air passengers, many of whom had risks for VTE, found that VTE occurred in 0.2% of those using compression stockings compared to 3.7% in control passengers who did not use them.

Other Considerations for Air Travel

Several resources and accommodations can be helpful to older adults when traveling. One such resource is travel insurance, including air evacuation back to the U.S. in case of an unforeseen medical illness. Insurance might be particularly important for international travelers who have active medical problems.

Patients should also consider taking advantage of airline and airport services. For example, skycaps can assist with heavy luggage, and in-airport shuttles can aid in transportation between connecting gates. Wheelchairs are available by federal law at no charge to passengers who need them; contacting the airline in advance of travel will assure that a wheelchair is ready and waiting for passengers who need them. Similarly, if meals will be offered during a flight, special dietary meals may be ordered in advance.

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