

Diabetic Travelers

Traveler Summary

Key Points

Before and during travel, the following guidelines can help manage diabetes, protect health, and prevent complications:

- Avoid destinations with substandard medical care if diabetes is poorly controlled or if complications exist.
- Carry medical history and a letter of necessity for carrying syringes, insulin pumps, and testing equipment as either a hard copy or digital copy (e.g., in an email or secure app) for immediate access during travel.
- Store insulin refrigerated at 2-8°C (36-46°F) whenever possible; avoid temperatures below 1°C (33°F) or above about 25°C (77°F). Transport refrigerated (not frozen) insulin in an insulated bag with refrigerated gel packs; use U-40 syringes when traveling to countries where U-40 insulin is supplied (e.g., parts of Europe).
- Protect glucometers and test strips from extreme temperatures and humidity.
- Confirm with the manufacturer whether a specific insulin pump and/or continuous glucose monitor (CGM) can pass through airport security scanners and x-ray machines. Inform security personnel of the device(s) and request that they not be removed.
- Follow airline rules for insulin pumps and CGMs that transmit Bluetooth; turn them off for take-off and landing if required. Contact the airline for their rules on traveling with a particular device. Carry insulin vials as a backup in case of pump malfunction.
- Monitor blood sugar more frequently during flights and after arrival. Adjust long-acting insulin when crossing more than 3 time zones eastward. If using a short-acting insulin, wait to inject until the in-flight meal is served to avoid timing issues if meal service is delayed.
- Observe strict food and beverage precautions to prevent illness because vomiting and diarrhea can destabilize blood sugar. In hot climates, maintain adequate hydration to prevent dehydration and heat-related illness.
- Stay well hydrated if taking once-daily oral diabetes medications because these can cause dehydration, frequent urination, and increased risk of vaginal/genital yeast infections; consider carrying an antifungal (e.g., fluconazole) for self-treatment.
- Stay up-to-date with recommended vaccines, including COVID-19, influenza, and pneumococcal vaccines to reduce the risk of severe disease and complications.

Introduction

Diabetic travelers should see their health care provider well in advance of travel to ensure that their diabetes is well controlled. Avoid travel to low- and middle-income countries if the disease is not well controlled or if unstable complications exist (e.g., coronary artery disease, serious kidney disease, foot ulcers, or advancing eye disease). Changes to blood testing and insulin requirements may be needed during travel, especially for those travelers who plan to be more active than usual. Changes in meal patterns and time zones can also affect blood-sugar levels, and meals may be delayed or unavailable. Hand carry insulin and other medications (do not pack in checked luggage) and keep insulin cool. Additional preparations are needed for travelers using insulin pumps; travelers should obtain prescriptions for all medications and a letter documenting the need to carry medications, needles, and syringes (see below).

In addition to vaccines indicated for the specific itinerary, several routine vaccines that are recommended, particularly for diabetics (including pneumococcal polysaccharide, hepatitis B, and influenza vaccines), should be up-to-date and may need to be started 2 months or more prior to travel.

Insulin, Medications, and Other Supplies

Insulin

Bring enough insulin and needles/syringes (or insulin pens) for the entire trip, ideally up to twice the expected amount. In North America, insulin syringes are designed to be used with U-100 insulin; U-40 insulin, which is available in other countries, requires U-40 syringes to get the correct dose. Some countries do not have 70/30 or 50/50 insulin or insulin pens. Insulin is absorbed more quickly in warm temperatures and more slowly in cold temperatures. The performance of testing equipment (glucometers, test strips, etc.) can be affected by temperature, humidity, and altitude/elevation.

Proper storage of insulin while traveling is essential to maintain its potency; the following guidelines help ensure that insulin remains safe and effective from departure to arrival:

- Carry insulin on board in a precooled insulated container or wallet designed specifically for transporting insulin when traveling. Insulin is stable under normal conditions at airport terminals, security checkpoints, and during x-ray scanning. Avoid placing insulin in checked luggage because cargo holds may be subject to extreme temperatures that can reduce potency.
- Maintain insulin at about 1-25°C (33-77°F) by packing it in an insulated bag with refrigerated gel packs. Do not freeze, place directly on ice, or expose insulin to direct sunlight, car dashboards, or car trunks because extreme temperatures can reduce potency.
- Store opened vials of insulin at room temperature for up to 30 days or refrigerate for up to 90 days, following the manufacturer's guidance.

Insulin Pumps and Continuous Glucose Monitors (CGMs)

More advanced insulin pumps and CGMs (some in combined systems) may transmit Bluetooth and thus may not be allowed to operate on the aircraft by some airlines. Contact the airline for their rules on traveling with a particular device. Confirm with the manufacturer whether a specific insulin pump and/or CGM can pass through airport security scanners and x-ray machines. Inform security personnel of the device(s) and request that they not be removed. Insulin pumps and CGM receivers may need to be switched off or set to airplane mode during take-off and landing. Carry pens or syringes/vials of both long-acting and short-acting insulin in case of pump malfunction, to avoid the frequent need for short-acting insulin if the pump fails. If water activities are planned, consider obtaining a special waterproof box for the pump to avoid damage.

Noninsulin Hypoglycemic Agents

Liraglutide (Victoza) is generally treated like insulin and needs to be kept cool. Neither liraglutide nor the once-weekly drugs, like dulaglutide (Trulicity) and exenatide extended release (Bydureon), need to be rigidly dosed for short trips; some doses may be missed without significant effect. Oral, once-daily drugs, including canagliflozin (Invokana), empagliflozin (Jardiance), and dapagliflozin (Farxiga), are associated with dehydration, frequent urination, and increased risk of vaginal/genital yeast infections. Travelers should stay well hydrated and consider bringing an antifungal (e.g., fluconazole) for self-treatment.

Other Medications and Supplies

To ensure uninterrupted access to essential medications, equipment, and appropriate nutrition, travelers with diabetes should:

- Keep all medications in their original containers.
- Obtain a physician's letter documenting medical history and the need to carry diabetes medications and other drugs, as well as needles, syringes, and other necessary equipment.
- Carry prescriptions for all medications in case drugs are misplaced or lost. Request that prescriptions be written using generic names because brand names vary in different parts of the world.
- Carry twice the amount of medication that may be needed (in hand luggage; preferably in 2 different bags in case 1 is lost), as well as extra testing strips, extra batteries for the glucometer, and a first aid kit. A traveling companion could carry half the supplies.
- Always carry a supply of glucose tablets, gel, or nonperishable snacks in the event of a low blood-sugar reaction.
- Carry a glucagon kit if frequent low blood sugar is a problem.
- Request specific dietary requirements on the airline website; airlines generally require at least 48 hours' notice. Because airline "diabetic meals" are often low in carbohydrates, a regular meal may be a better option.
- Plan for safe disposal of needles and syringes (e.g., a travel needle clipper with storage); alternatively, insulin pens may simplify the medication and equipment needed.

Identification, Insurance, Medical Care Abroad

Wear a medical alert wristband indicating the diagnosis of diabetes and always instruct a travel companion on how to deal with an emergency (especially low blood sugar) and how to give glucagon. If traveling alone, inform the flight attendant (or another appropriate person).

Carry travel insurance that covers overseas medical care and evacuation. Read the policy carefully for coverage and exclusions (e.g., a preexisting condition such as diabetes).

Develop a list of medical facilities and providers, including reliable pharmacies, with location and contact information. The following strategies may be used:

- Consult a travel health care provider for destination-specific information.
- Review embassy or consulate websites for nonprioritized lists of medical facilities and services. Note that specific providers are not recommended and those with reported problems are typically removed from the list.
- Speak with persons who have lived in the destination to obtain word-of-mouth recommendations for medical care.
- Use the International Society of Travel Medicine (ISTM) Clinic Directory (www.istm.org) to locate health care professionals worldwide with expertise in infectious diseases and travel medicine. Note that ISTM does not verify provider credentials.
- Ask an overseas assistance company about recommended local doctors if such services are available.
- Contact the credit card company to request referrals to medical facilities overseas.
- Ensure access to local emergency assistance numbers (e.g., 911 in the US) at all travel sites.
- Confirm the tour group's policies and procedures for accessing care during the trip.

Air Travel

Some medications and devices require special attention at different phases of air travel. The concern is centered around the CGM, insulin pump, and insulin, as previously noted. Pack all supplies in a carry-on bag. Pack extra vials of insulin and be prepared for manual blood sugar testing and insulin injections in case of pump/CGM failure.

Before airport security screening begins, notify security personnel about any carry-on devices or supplies and if wearing an insulin pump and/or CGM, request that it not be removed. Avoid the full-body scanners, do not put receiver or extra sensors through an x-ray machine, and request a full-body pat-down with a visual inspection of your sensor and transmitter.

Aircraft cabin pressure is often lower than that in the insulin vial; when withdrawing insulin, insert the syringe/needle into the vial without the plunger to equalize the pressure. Air should not be injected into the vial.

Some glucometers might underestimate blood sugar at the lower air pressure and oxygen levels found in aircraft, so check with the manufacturer's customer service before travel.

No simple set of rules exists to deal with the problem of glucose control through many time zones, as happens when flying. The key is to avoid hypoglycemia. To keep track of shots and meals throughout changing time zones, set a watch to the home time zone. Additional guidelines include the following:

- Adjust insulin requirements downward when traveling east because the shortened day may lower insulin requirements.
- Increase insulin and snack intake when traveling west because the lengthened day may require additional glucose control.
- Test blood sugar more frequently regardless of travel direction.
- Check blood sugar as soon as possible after landing because jet lag can mask symptoms of high or low glucose.
- Administer Tresiba daily (if prescribed) without adjusting timing because its 3-day duration of action eliminates the need for schedule changes.

On an aircraft:

- Do not take premeal insulin until the meal is on the tray, in case turbulence interrupts the meal service.
- Be prepared for flight delays and lost luggage.
- Keep medications and snacks on hand; do not place them in an overhead bin.
- Drink enough water to remain well hydrated while flying because aircraft often have low humidity.
- Exercise legs every 2 hours during long flights and walk around the cabin of the aircraft to prevent a blood clot from developing.

Staying Healthy Abroad

Test blood sugar more often than usual when traveling and adjust insulin, fluid, and food intake as necessary for changes in activity level or increased heat, which can also affect blood-sugar levels and increase the absorption of some fast-acting insulin.

Observe strict food and beverage precautions to avoid travelers' diarrhea and its adverse effect on diabetic control. Carry loperamide and an antibiotic (e.g., azithromycin) for self-treatment of travelers' diarrhea and consider carrying oral rehydration salts.

Some oral hypoglycemic agents may increase sun sensitivity, and additional sun protection may be necessary.

Travel involves more walking than usual, so foot care is especially important. Carry a spare pair of comfortable shoes (and extra socks), and do not break in a new pair of shoes while traveling. Avoid open-toed shoes, sandals, or flip flops, and wear shoes specifically made for beach walking. Carry a first aid kit to treat minor foot injuries. Quickly seek medical care if any sign of infection or inflammation occurs.

Acclimatization to hot climates may be impaired with diabetes. Frequent rest stops, adequate hydration with extra salt, and a reasonable pace of activity are important to prevent dehydration and heat illness.

Urinary tract infections can be reduced by staying well hydrated, and yeast infections of the skin can be prevented by frequent bathing and keeping the skin dry.

Resources

American Diabetes Association: <https://diabetes.org/search?keywords=travel>

CDC Diabetes Resources and Publications: <https://www.cdc.gov/diabetes/about/tips-for-traveling-with-diabetes.html>

Diabetes Canada: <http://www.diabetes.ca/diabetes-and-you/healthy-living-resources/general-tips/travel-tips-for-people-with-diabetes>

Diabetes UK: <https://www.diabetes.org.uk/guide-to-diabetes/life-with-diabetes/travel>

Additional resources:

<https://www.tsa.gov/travel/special-procedures>

<https://www.medicalert.org/>

<https://www.frioinsulincoolingcase.com/>

<https://www.diabetesadvocacy.com/traveling-with-an-insulin-pump-and-cgm/>

<https://www.nutrisense.io/blog/can-i-fly-with-a-cgm>

<https://www.dexcom.com/dexcom-airport-and-travel-guide-flying-dexcom-cgm>

<https://www.medtronicdiabetes.com/loop-blog/get-tsa-5-diabetes-devices/>

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