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Preparing the suitcase:

a practical guide for traveling with diabetes

Traveling can be a challenge for people with diabetes; so much so that up to 15% of people with diabetes acknowledge that insulin use has affected their choice of destination when traveling (1). However, with the necessary knowledge and adequate planning, diabetes should not be a barrier to enjoying a safe and pleasant trip.

TRAVEL PREPARATION

Adequate **planning** is essential for a safe and smooth trip. It is important to consider factors such as the type of trip, access to medical care, and the availability of supplies for diabetes management.

To minimize unforeseen events, it is recommended to organize the trip well in advance, ensuring the supply of medications and necessary materials, obtaining a medical report, and, if applicable, receiving the required vaccinations according to the destination (1).

In the case of international travel, it is essential to have **travel insurance** that includes coverage for pre-existing conditions. You should verify with the insurer that possible diabetes decompensations are covered in the policy, thus guaranteeing access to medical care if needed (1).

General recommendations during travel:

• Carry a document/bracelet/pendant or others that identify the presence of diabetes. Notify flight/train personnel (especially those patients who travel alone).

• Check glucose levels frequently: on any trip we take, our eating and physical exercise routines change; furthermore, changes in climate can affect insulin needs; therefore, it is essential to check levels glucose more frequently.

• Choose healthy foods: we must enjoy local food in moderation, trying to maintain a balanced diet that includes fruits and vegetables.

• Stay active: on very long road trips, breaks should be taken to walk and stretch the legs. Similarly, on flights or long train journeys, it is advisable to walk down the aisle every 1 or 2 hours.

• Follow medication intakes: with the change of routines, it is easier to forget medication intakes. Activate a reminder on your mobile phone can be an effective alternative to not forget any drug intake.

• Foot care: during travel, sometimes more intense walks than usual are taken, which can lead to the appearance of wounds or blisters on the feet. It is important to check your feet daily and avoid walking barefoot to prevent or detect any incidence in time.

NECESSARY MATERIAL

It is essential to prepare everything in advance the necessary material for the trip. For prevent possible unforeseen events, it is recommended carry **double** the estimated amount of insulin, medications, strips reactive, continuous glucose monitoring sensors, and replacements for continuous insulin infusion systems (1–3). Creating a detailed list can be very helpful to make sure you don't forget any important item. In Table 1 includes a list that may facilitate travel planning and ensure that everything necessary is available. If traveling accompanied, an effective strategy is to distribute supplies among travel companions, which helps reduce the risk of loss or theft of material. »

1.	**Medical report specifying** allergies, type of diabetes, complications, degree of prior control, and treatments (specifying dosages). In the case of air travel, it must include the **need to carry insulin and diabetes supplies in the cabin.**
2.	**Travel medical insurance** (notify the insurance company that you have diabetes to confirm coverage during the trip).
3.	**Two blood glucose meters** (spare batteries if battery-operated or charger).
4.	**Glucose test strips and lancets** to cover at least double the estimated need.
5.	Rapid-acting and long-acting **insulins; insulin needles.**
6.	**Chronic drugs** for diabetes and other conditions.
7.	**Injectable and/or nasal glucagon.**
8.	**Rapid-acting and slow-acting carbohydrates** to treat potential hypoglycemia (e.g., glucose gels or tablets).
9.	Ketone urine or blood ketone strips.
10.	Necessary **replacements for continuous glucose monitoring systems and infusion devices** (for users of continuous infusion systems).
11.	**First aid kit** including analgesics, sterile gauze, and adhesive tape.
***NOTE: It is recommended to carry double the anticipated amount of supplies and obtain the material in advance in case prescriptions or extra supplies are needed.**	

TABLE 1. List of necessary materials for travel.

TO PREVENT POSSIBLE UNFORESEEN EVENTS, IT IS RECOMMENDED TO CARRY DOUBLE THE ESTIMATED AMOUNT OF INSULIN, DRUGS, TEST STRIPS, CONTINUOUS GLUCOSE MONITORING SENSORS, AND SUPPLIES FOR CONTINUOUS INSULIN INFUSION SYSTEMS

HOW TO KEEP INSULINS IN GOOD CONDITION?

One of the main concerns of people with diabetes when traveling **is the proper storage of insulin**. There are various options for cold storage of insulin during travel, such as cold wallets, portable refrigerators, etc.

However, it is important to remember that insulin can be kept at room temperature (between 2 and 30 degrees Celsius) for up to 4 weeks (4). Similarly, injectable glucagon can be kept at a temperature between 2 and 25 degrees for a period of up to 18 months, provided it does not exceed its expiration date (5) and nasal glucagon is stored at temperatures below 30 degrees, correctly sealed (6).

With all this, on trips that do not exceed 4 weeks, except in extreme temperatures, we can keep insulins and glucagon at room temperature and will maintain its properties.

PARTICULARITIES OF AIR TRAVEL

It is essential to carry all the material used for diabetes management in your **hand luggage**. For this it is advisable to carry a report from the health team specifying the material you need to carry on board (medications, insulins, needles, systems glucose monitoring, test strips, and other materials related to diabetes).

In general, monitoring sensors continuous glucose and systems continuous insulin infusion can pass through airport security arches (metal detectors). Without However, manufacturers recommend avoiding exposure to X-ray systems, including body scanners from some airports and X-ray machines for hand luggage. In these cases, the situation must be explained to airport security personnel and present the health team report if necessary, requesting alternative control, such as a manual inspection.

During flights, you should not inject rapid-acting insulin until you have the food in front of you, because if it is administered in advance and there is any setback that delays the distribution of meals, you run the risk of presenting hypoglycemia severe.

SPECIAL PRECAUTIONS IF TRAVELING ABROAD

Before traveling abroad, it is essential verify if additional vaccines are required for the destination country and hire medical insurance that provides coverage in that territory.

In addition to carrying double the medication planned for the trip, it is advisable know the generic names of insulin and other medications used in the treatment of diabetes. This will facilitate its acquisition if needed during the stay abroad.

Another relevant consideration is the difference in glucose measurement units according to the country. In some places, as in our environment, the levels of glucose are expressed in milligrams per deciliter (mg/dL), while in others millimoles per liter (mmol/L) are used. It is important to consider this when using a glucometer purchased in the abroad to avoid errors in the interpretation of the results.

The conversion from one unit to another can be performed with a simple operation (mg/ dL÷18=mmol/L or mmol/ Lx18=mg/dL).

ADJUSTMENTS IN TREATMENT

In some cases, small adjustments may be required in the treatment during travel. The need to modify the insulin treatment will depend on the treatment prior to travel, the duration of the same and the destination. On north-south trips, those that cross less than 5 time zones, stays of less than 3 days and in people who use insulin Degludec or continuous infusion systems insulin, adjustments in treatment are usually not necessary.

However, on trips that cross more than 5 time zones and whose duration exceeds 3 days, it may be necessary adapt the doses of long-acting insulin on the day of the flight (2):

- **Eastbound travel:** as the day shortens, the long-acting insulin needs may be **reduced** on the day of the flight. It is recommended to assess the need to reduce the dose of long-acting insulin by 20-40% on the day of the flight.

- Westbound travel: as the day lengthens, insulin needs may increase, as long-acting insulin will not cover beyond 24 hours in most cases. Therefore, it is »

» suggested to maintain the usual dose and monitor glucose more frequently, making corrections with rapid-acting insulin if blood glucose levels exceed 240 mg/dL.

In general, it is recommended to maintain the usual time until reaching the destination and once there, adjust the clocks to local time. Rapid-acting insulin will be administered without modifications before meals.

Occasionally, additional personalized adjustments may be required, so it is always advisable to discuss the travel plan with the healthcare team and agree on whether or not changes in treatment are necessary.

PEOPLE ON CONTINUOUS SUBCUTANEOUS INSULIN INFUSION SYSTEMS

When traveling abroad, it is recommended to keep the time of the place of origin on all devices until reaching the destination and once there, adjust to local time.

It is important to carry all the necessary material for insulin administration with pens, in case of system failure. For this, you must carry: pens of rapid-acting and long-acting insulin, insulin needles, capillary glucose test strips, and the alternative regimen.

During flights, changes in atmospheric pressure that occur can alter insulin infusion: when pressure decreases (during takeoff), a larger amount of insulin than expected could be released, while when pressure increases (during landing), less insulin may be released than expected due to the generation of bubbles. To minimize these effects, it is recommended (7):

- Keep the cartridge with 1.5 mL of insulin (not completely full).
- Check for bubbles before, during, and after the flight.
- Briefly disconnect the system from the body before takeoff and landing.
- After landing, purge with 2 units of insulin and reconnect the system.
- In case of emergency with cabin decompression, disconnect the system from the body to avoid accidental insulin infusion. D

CONCLUSIONS

- Diabetes should not be a limitation when traveling. One adequate planning helps prevent unforeseen events.
- It is recommended to carry a detailed medical report on the state of health and diabetes treatment, as well as a specific certification of the material that must be transported in the aircraft cabin.
- It is advisable to carry double the material that is expected to be used during the trip (insulin, medications, and necessary materials for the administration of insulin, the determination of glucose and the determination of acetone).
- If traveling by plane, you should not check in the material for the care of diabetes.
- Monitor blood glucose levels more frequently allows act in time and enjoy a smooth trip.

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