



## New Air Travel Guidelines for Diabetics



Changes in cabin pressure during flights may cause insulin pumps to deliver too much or too little of the medication -- possibly putting sensitive diabetics at risk, researchers report.

They recommend disconnecting the pump before take-off and after landing and making sure there are no air bubbles in the insulin before reconnecting it. But an outside researcher said the concern might only apply to some diabetic patients.

People who are worried should talk with their doctors about the safest way to fly before trying to fiddle with the pumps themselves, he cautioned.

"It's certainly not a frequent and recurring problem that I hear about from patients who fly," said Dr. Robert Cohen, an endocrinologist at the University of Cincinnati College of Medicine, who was not involved in the new study.

"The people who are very sensitive to small changes in doses are the ones who are going to be most sensitive to this," he told Reuters Health. "People who are on large doses or are not very sensitive...are far less likely to be affected by this."

After learning of a 10-year-old girl with type 1 diabetes whose blood sugar got too low an hour after take-off, Bruce King of John Hunter Children's Hospital in Newcastle, [Australia](#), and colleagues found cases of other insulin-pump-using diabetics who reported the same problem during flight.

To see what was going on, they put ten insulin pumps -- which are meant to deliver insulin throughout the day, generally to people with type 1 diabetes -- on a commercial flight.

Sure enough, during takeoff (when air pressure was decreasing), the pumps delivered about 1 to 1.4 extra units of insulin, on average. (For comparison, a typical adult with type 1 diabetes might need about 50 units of insulin per day.)

And during descent, when pressure was increasing, some insulin was sucked back into the pumps -- causing them to give out too little insulin, by less than 1 unit.

Cohen said he expected those types of changes to be more of a problem for kids and people who use low doses of insulin to begin with.

Still, "Any person using an insulin pump should be aware that big pressure changes can cause this effect," King

told Reuters Health in an email.

The pumps used in the study were made by Animas and Medtronic. In a joint statement to Reuters Health, the companies wrote that, "Many factors affect blood glucose during travel and the effect of small dose variations over the course of a plane flight is unlikely to be clinically significant. However, we are both continuing to further explore this subject."

They advise customers to "consult your healthcare team before taking a trip, always be prepared with extra supplies and sources of glucose, and test your blood sugar frequently."

King's team wrote in the journal *Diabetes Care* that it's possible that rare flight problems that cause very fast depressurization could mean diabetics get way too much insulin.

To prevent any danger to flyers, the researchers set out a list of recommendations, including that insulin cartridges should only contain 1.5 milliliters of insulin.

Diabetics should disconnect the pump before takeoff, remove air bubbles and reconnect at cruising altitude, then disconnect again and prime the line with 2 insulin units after landing before reconnecting for good. They should also disconnect the pump during flight emergencies when there's a big drop in cabin pressure, King and colleagues wrote.

"I believe most people would rather know exactly how much insulin their pumps were giving. Following the recommendations means that they know and are in control of what is happening with their pump," King said.

Cohen added that it's important patients know how to carry out these recommendations safely, if they're going to follow them. Otherwise, he said, "their solution may be worse than the underlying problem if somebody doesn't really understand how to carry it out."

Patients can talk to their doctors to see if this concern applies to them, and if so, learn how to safely disconnect and reconnect their insulin pumps while flying, he said.

The researchers added that it's possible other big changes in pressure could cause insulin pumps to deliver too much or too little of the drug -- such as ski lifts, or even a trip up the Empire State Building for very young kids, King said.

"There aren't very many other major pressure changes that we experience," Cohen said. Still, he added, "I don't know how to advise people about what they should do with their pumps if they're going parachute jumping."

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