

# Study shows UK commercial pilots with insulin-treated diabetes can fly with no safety concerns

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A study presented at this year's European Association for the Study of Diabetes (EASD) meeting in Munich, Germany (12-16 September), shows that UK commercial airline pilots with insulin-treated diabetes can fly safely, with almost all of their blood sugar readings at safe levels. The study is by medical staff at Royal Surrey County Hospital, Guildford, Surrey, UK and the UK Civil Aviation Authority, Gatwick Airport, UK.

In 2012, the UK became the second country worldwide, after Canada, to issue insulin-treated individuals with Class 1 Medical Certificates for Commercial Pilot Licences (CPLs). The UK now has the largest cohort of insulin-treated pilots, and is leading the way in Europe and beyond to create and maintain employment and leisure opportunities for people with insulin-treated [diabetes](#).

A comprehensive protocol, developed by a panel of medical and aviation experts, governs the medical certification of insulin-treated pilots. Ireland joined the UK in April 2015 in applying an agreed Medical Assessment Protocol under the European Aviation Safety Agency (EASA) regulation. Certificated pilots are subject to strict requirements, directly overseen by the UK Civil Aviation Authority (CAA) and Irish Aviation Authority (IAA) medical departments, including pre- and in-flight [blood glucose monitoring](#). This study aimed to evaluate the early experience and safety of the UK programme.

With the pilots' consent, the files for all insulin-treated, Class 1-certificated pilots were reviewed and data were collected. This included: age; date of issue of Class 1 Medical Certificate; diabetes type and duration; diabetes management regimen; comorbidities; diabetes complication monitoring; all available HbA1c values (a measure of blood sugar control) pre- and post-licence issue; and all flights undertaken with associated [blood glucose](#) monitoring values. Average pre- and post-licence HbA1c values were compared. Pre and in-flight blood glucose monitoring values were correlated against the CAA-specified "Green" (5-15mmol/l), "Amber" (4-5 and 15-20mmol/l), and "Red" (20mmol/l) ranges.

The researchers found that at the analysis date, 26 insulin-treated pilots had been issued with Class 1 medical certificates. All were male, with an average age of 41 years. The majority (85%) had type 1 diabetes, with an average diabetes duration of 8 years. Average follow up duration post-licence issue was 19.5 months. The average pre-licence issue HbA1c was 53.1mmol/mol; the average of the most recent HbA1c was 54.8mmol/mol, thus showing no significant change.

A total of 8,897 blood glucose monitoring values had been recorded during 4,900 flight hours. For short and medium haul flights (under 6 hours), 96% of 7,829 blood glucose monitoring readings were within the 'green' range. For long haul flights (over 6 hours), 97% of 1,068 readings were within the 'green' range. A total of 19 (0.2%) readings across short and long haul flights combined were in the 'red' range and to date, no pilot medical incapacitation due to low or high blood sugar has been reported.

Dr Hine says: "A growing number of insulin-treated pilots have successfully applied for Commercial Pilots' Licences in the UK and most recently Ireland. To date, the CAA protocol has shown to work well in the cockpit, with no reported safety concerns, and without

deterioration of diabetes control."

The study will be repeated, with these pilots and additional insulin-treated pilots who have gained Class 1 Medical certificates since the data were collected remaining under close follow up. Further data collection and analysis will follow.

If commercial pilots are already licensed and develop diabetes after getting their licence, these pilots can apply for a Class 1 Medical certificate under the protocol described for insulin treated pilots. They must show that they have excellent control of their diabetes, with no significant complications and they must comply with the pre- and in-flight blood [glucose monitoring](#) protocol.

Dr Hine adds: "There are a number of European states that have expressed interest in the programme. The American Diabetes Association's position is that individual assessment of people with diabetes is the appropriate approach to determining whether a person is qualified to perform certain activities. The Association is developing recommendations to share with the US Federal Aviation Administration (FAA) that would enable the FAA to identify pilots who are at no greater risk for incapacitation than any other pilot." (In the USA, diabetes diagnosis currently excludes pilots from flying commercial aircraft).

The need for this careful protocol and monitoring is necessary, say the authors, since commercial pilots can work long shifts, with multiple short haul flight sectors, or a single long haul sector. This has the potential to disrupt normal eating patterns, particularly when crossing time zones. Insulin-treated pilots, however, must demonstrate excellent control and understanding of their diabetes in order to gain a Class 1 Medical Certificate.

Dr Hine says: "Regular blood glucose testing in the cockpit ensures that any variability in blood sugar is detected and can be corrected early. If pilots are unable to test their [blood sugar](#) due to operational demands, the protocol dictates that they should consume 15mg of carbohydrate as a precautionary measure and then test within 30 minutes."

In a separate presentation, Dr Stuart Mitchell, Head Authority Medical Section at the CAA, will give details of the safety protocol for these [pilots](#), explaining how it was constructed.

Provided by Diabetologia

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