

Commentary

USA joins Canada, UK, Ireland and Austria in allowing people with insulin-treated diabetes to fly commercial aircraft

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Several occupational activities demand a stringent approach to safety to ensure protection of the public and the employee [1]. Transport by whatever means is one such area, and air travel in particular requires strict measures to ensure a very high standard of safety because of the potentially devastating consequences of an accident involving a commercial aircraft. Pilots of aeroplanes conveying passengers are therefore subjected to rigorous medical screening and review, and are debarred from flying by the presence of some medical disorders.

Historically, individuals with diabetes treated with insulin were disqualified from piloting aircraft, principally because of the potential risk of developing hypoglycaemia, which could have very serious consequences on performance, but also because progressive complications of diabetes could interfere with flying skills. It is therefore a considerable milestone that the US Federal Aviation Authority (FAA) has recently published (7 November 2019) a new protocol enabling pilots with insulin-treated diabetes to fly commercial aircraft, subject to individual medical examination [2]. The new protocol accepts continuous glucose monitoring (CGM), using a US Food and Drug Administration (FDA)-approved device and protocol-specific features for appropriate in-flight monitoring. The USA has now joined Canada, the UK, Ireland and Austria in allowing pilots to fly while being treated with insulin. Although several national authorities have allowed pilots to fly privately for leisure while receiving treatment with insulin, in 2002, Canada became the first country to allow pilots with insulin-treated diabetes to fly commercial aircraft, including into UK airspace, a significant factor influencing the subsequent UK Civil Aviation Authority (CAA) response. In 2007, a group of eight individuals with type 1 diabetes, very much aware of the Canadian initiative and not unaware of the implications of the Disability Discrimination Act [3,4] met in London and formed an organization, Pilots with Diabetes, to promote

their cause. Their campaign included several planned flights, such as breaking a 15-day record to land in all 50 states of the USA and a flight to the North Pole in 2011 to raise awareness of flying with diabetes.

In 2010, the UK CAA convened an expert committee to review scientific knowledge and it was concluded that a protocol for safe flying could be developed, which was published on the UK CAA website. At that time, it was decided that non-invasive glucose monitoring with CGM did not provide sufficient accuracy and capillary blood glucose monitoring using samples obtained by finger stick was stipulated as a requirement for the protocol. The protocol required regular, rigorous case-by-case medical assessment, submission of specialist reports, and review of monitoring data, including in-flight log records of adherence to protocol [5]. In 2012, the UK CAA began issuing class 1 medical certificates for commercial flying. The outcomes of UK pilots with insulin-treated diabetes who were certificated from 2012 to March 2015 were reported in 2017 [6].

The UK protocol requires finger-prick monitoring of blood glucose to be undertaken before reporting for flying, immediately before take-off, at hourly intervals in flight and within 30 min of landing. All commercial pilots must ensure the co-pilot who does not have diabetes cross-checks their blood glucose and records the results on the flight voice recorder. A green range of blood glucose values is defined as being between 5 and 15 mmol/l. A caution ‘amber range’ that requires corrective action is defined as any blood glucose between 4–5 and 15–mmol/l, while the red range is defined as being between < 4 and > 20 mmol/l, and requires action by the pilot with diabetes to correct their glucose whilst the other pilot maintains control of the aircraft.

Ireland joined the protocol in 2015, as did Austria the following year. The protocol was approved by the European Aviation Safety Agency but was not universally accepted; some countries in Europe have expressed opposition, with a few commentaries voicing concerns [7,8].

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With the increasing sophistication of modern technology, it has been postulated that CGM systems are now of sufficient accuracy to allow safe flying by commercial pilots using this method of monitoring alone [9,10]. Others have suggested that the introduction of CGM could improve the existing blood glucose monitoring protocols [9,10]. It is of note that, while flying, most of the pilots certificated through the UK, Irish and Austrian protocol use additional CGM to show glycaemic trends, but actions are all based on blood glucose determinations from finger-prick samples. Although the new FAA protocol refers specifically to CGM, a similar consideration could also be applied to the other new technology of ‘flash’ glucose monitoring.

The UK, Irish and Austrian protocol has proven to be feasible, practical and, to date, safe [5,6]. The UK, Irish and Austrian consortium has embarked on a clinical evaluation and trial of CGM alongside the blood glucose testing protocol but the study is unlikely to report until 2021. In this environment, the announcement by the US FAA on its website that it will now allow certification of pilots for commercial flying using CGM marks a major step forward in this debate [2]. The US decision to utilize CGM has presumably been made based on advances in the accuracy and reliability of the technology as, to our knowledge, the efficacy of CGM in relation to flying has not been examined. The USA has ‘leapfrogged’ countries in Europe with their direct reliance on modern monitoring technologies in their protocol [2]. This decision and announcement allows the USA to join Canada and the European consortium in furthering occupational opportunities for people with diabetes and is to be welcomed. In 2011, the International Diabetes Federation published its first International Charter of Rights and Responsibilities for People with Diabetes [1]. The aim was to reduce the barriers that deny people with diabetes realization of their full potential as members of society while balancing this against public safety. This recent development accepting the role of CGM supports the capability of motivated individuals with diabetes to fly commercial aircraft with a greater degree of safety.

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