

UK CAA BRIEFING SHEET: CERTIFICATE HOLDERS WITH DIABETES TREATED WITH POTENTIALLY HYPOGLYCAEMIC MEDICATION

Briefing Requirement

All pilots or ATCOs who are required to undertake blood sugar testing to monitor their diabetes whilst flying/controlling, shall brief the other member(s) of the crew (or ATC watch) before each flight / duty period. The briefing shall include:

- 1) Why they are testing and when tests are required. Reference should be made to the flight/duty plan.
- 2) What test results are acceptable, and actions to be taken if the results are 'out of range.'
- 3) Whether, when and how any medications will be taken during flight/duty
- 4) The possible symptoms of high or low blood sugar, and actions to be taken by the pilot/ATCO.

Background

Diabetes is a condition caused by a failure of the pancreas to produce enough of the hormone insulin to properly regulate blood sugar, and hence energy delivery to the brain and other body tissues. Some of the medicines used (tablets or by injection) to treat diabetes can, if not balanced by carbohydrate intake, cause low blood sugar. Alternatively, if diabetes is poorly controlled, by not enough medicine or too much carbohydrate, sugars can run high. Both ends of the spectrum can cause partial or complete incapacitation if appropriate action is not taken. Possible symptoms are tabulated below:

Low blood sugar (hypoglycaemia) (if level less than 3)	High blood sugar (hyperglycaemia) (if level greater than 20)
Sweaty, pale skin	Thirst
Mood changes	Excess urine output
Poor concentration/distraction	Dehydration
confusion	Mood changes
	Excessive tiredness/sleepy
	Blurred vision

All diabetic patients monitor their blood sugars at a frequency appropriate to the type of diabetes they have, the treatment they take and their food intake and exercise pattern. To ensure flight safety, diabetic medical certificate holders with diabetes treated with medicines that can cause low blood sugar are required to perform additional tests to a schedule set out below according to the medicines they take. This is to ensure that a flight or shift is not commenced with too high or too low a sugar level, and that the blood sugars are maintained within the range 5-15 mmol/l during the flight/shift. If tests results are outside this range, actions are required by the certificate holder. These are set out in the table overleaf. If a briefed crew member/colleague observes symptoms of concern, then this should be fed back to the pilot/ATCO. Symptoms/behaviour of concern should be dealt with in the same way as any other presenting acute medical condition in a crew member.

Testing involves a small finger prick to produce a drop of blood that is then applied to a meter/test strip. Each test takes between 20 and 60 seconds depending on the equipment used. It is the responsibility of the tester to dispose of any clinical waste appropriately, but most machines currently used are self-contained. A spare serviceable meter should be carried in case of breakdown. If both meters become unserviceable, a solo pilot should land without delay, a pilot in a multi pilot environment should relinquish command, or an ATCO cease controlling within 30 minutes.

Testing requirement

The result of testing should be shown to the other crewmember/watch-member to confirm the result and any appropriate actions.

Medication includes	Minimum Frequency of Testing relating to flight/controlling	Actions
All Insulins	<ul style="list-style-type: none"> • At least 1 hour before reporting for flight/duty period or at least 2 hours before commencing flight/controlling • <30 minutes before flight/controlling • At least every hour (2 hours ATCO) whilst flying/controlling* • Within 30 minutes of anticipated landing time • If diabetic symptoms are experienced 	<ul style="list-style-type: none"> ➤ If >15mmol/l should not commence flight/controlling and/or cease carbohydrate ingestion until blood sugar reduces ➤ If measured level is less than 5mmol/l then 10-15g of carbohydrate (e.g. glucose tablets) should be ingested and a retest performed within 30 minutes
Sulphonylureas Glinides	<ul style="list-style-type: none"> • At least 1 hour before reporting for flight/duty period or at least 2 hours before flight/controlling • <30 minutes before flight/controlling • At least every 2 hours (4 hours ATCO) whilst flying/controlling* • Within 30 minutes of anticipated landing time • If diabetic symptoms are experienced 	<ul style="list-style-type: none"> ➤ If a measurement is missed for operational reasons (e.g. high workload), 10-15g of carbohydrate should be ingested and a retest performed within 30 minutes
Glitazones Gliptins GLP-1 analogues Biguanides AlphaglucoSIDase inhibitors	<ul style="list-style-type: none"> • At least 1 hour before reporting for flight/duty period or at least 2 hours before commencing flight/controlling: Mandatory classes 1 and 3, Recommended class 2 and LAPL 	<ul style="list-style-type: none"> ➤ If >15mmol/l then should not commence flight/controlling and/or cease carbohydrate ingestion until blood sugar reduces ➤ If measured level is less than 5mmol/l then 10-15g of carbohydrate (e.g. glucose tablets) should be ingested and a retest performed within 30 minutes

* Pilots/ATCOs who are taking formal rest and not seated at the controls/controlling position may suspend testing, but should restart testing prior to resuming flying/controlling.

- Pilots may wish to annotate the results of testing in their log book for easy reference.
- Pilots who have to take action for a high or low reading should always make an entry in their log book. Commercial Pilots and ATCOs should also complete a Mandatory Occurrence Report
- The test meter memory will be periodically reviewed by an AME or the CAA against the flying/controlling log to ensure protocol compliance. Failure to demonstrate compliance with the schedule of testing is likely to result in suspension of the medical certificate.

Commercial Air Operations

It is the responsibility of an individual who holds a medical certificate with an operational restriction relating to diabetes to ensure that the other pilot and, where necessary, other crew members, are aware of the restriction(s). Testing should be performed in such a way as to maintain compliance with standard operating procedures. Companies who employ pilots, and crewmembers, with diabetes are encouraged to review their relevant manuals as appropriate.

The principle, as with all medical restrictions, is that the risk associated with the potential diabetic hazard is mitigated by the medical monitoring procedures detailed above, the type of operation undertaken by the pilot and awareness of the risk within other operating crew. The required level of awareness is established, and maintained, by the additional briefing requirement, and reference to normal incapacitation procedures established by the operator respectively.

If a need for amended procedures is identified, issues for consideration are:

- The pilot holding a diabetic operational restriction should advise the other crew member, or members, at the start of the flying duty period.
- The actions (see table above) that a pilot holding a diabetic operational restriction will take during the flying duty period to ensure that his or her blood sugar level remains within the prescribed limits.
- Cross checking by the other crew member(s) of the blood glucose values obtained.
- In the unlikely event of the symptoms of hypoglycaemia or hyperglycaemia occurring, confirmation of the actions to be taken relating to standard incapacitation procedures..

It would be appropriate for pilots subject to the operational restrictions above to discuss with their employer the interaction of operational duty with management of their condition.

Considerations for Operation Manuals

Part A

- Appropriate references to additional briefing requirements during the pre-flight preparation
- Reporting of instances when crew intervention was required to assist a pilot controlling his or her blood sugar level, or a failure to comply with the testing schedule. In either case a MOR should be raised.

Part D

- Awareness or inclusion within existing crew training of material for identifying the signs of pilot incapacitation to include either hypoglycaemia or hyperglycaemia.

Training/Examining

If a pilot is acting as an instructor and/or examiner, for which a valid licence is required, then testing shall be carried out in accordance with the protocol. For other duties, e.g. simulator work, then following the testing protocol is recommended.

Flying Instruction

Flying instructors with a Class 1 medical certificate flying under these protocols will be have an OML restriction ('as/with co-pilot') applied to their medical certificate. Guidance for the type of flying instruction that can be given with such a restriction is outlined in CAP 804. Under the EASA regulations, flying instruction may also be undertaken with a PPL and Class 2 medical certificate. The same principles of good practice and professionalism shall be applied in both cases with respect to adherence to the testing requirements, their inclusion in flight planning, and briefings.

The principle, as with all medical limitations, is that the risk associated with the diabetic hazard is mitigated by the medical procedures detailed above, the type of operation undertaken by the pilot and awareness of the risk within the operating crew. In this case the student or pilot under instruction or test. This includes a raised level of awareness by pre-flight briefing, and its maintenance, by additional briefings and sharing of results of mandatory testing. Student and other pilots should be briefed using this information sheet as a minimum before flights.

PPL, NPPL and LAPL

Private pilots who take medications (see table) which require in-flight testing, will have operational restrictions applied to their medical certificates/declarations until they have demonstrated safe testing in flight to a CFI or CAA FI(E). The principles of good self-care and good airmanship should be applied in with respect to adherence to the testing requirements, their inclusion in flight planning briefings and in-flight testing.

The principle, as with all medical limitations, is that any risk associated with the potential diabetic hazard is mitigated by the medical procedures detailed above, the type of operation undertaken by the pilot and awareness of the risk within the operating crew. This includes a raised level of awareness by pre-flight briefing of other pilots and any passengers, and its maintenance, by additional briefings and sharing of results of mandatory testing.

Air traffic Control

Controllers should ensure that taking of medication and testing during duty periods do not affect operational safety. This will normally be achieved by taking meals and any medication, and testing during rostered breaks. For longer period of controlling, e.g. at night, controllers should discuss working/testing arrangements.

Further Information: www.caa.co.uk/medical

Optional results recording table

Time							
Duty/ Phase of flight							
Result							

Time							
Duty/ Phase of flight							
Result							