

UK CAA Policy for the Medical Certification of Pilots and ATCOs with Diabetes

Information for Pilots, ATCOs and their Instructors, Examiners and Employers

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1) Introduction

This information has been prepared to assist pilots and ATCOs in understanding the requirements for medical certification in the UK with diabetes and gives their employers information to assist in their transition back to work once they have regained certification.

2) Certification assessments for Class 1/2/3/LAPL applicants with diabetes

Type of Diabetes & Treatment	Available Certification / Limitations
Medications with Potential of Hypoglycaemia	
Insulins (all types) Class 1, 2, 3, LAPL (unrestricted) - refer to CAA	Class 1 : OML SSL ILA MON Class 2 : OSL* SSL ILA MON Class 3 : SSL APC MON LAPL (unrestricted)*: SSL ILA MON LAPL (restricted OSL): see AMC to MED.B.095
Sulphonylureas Glinides (and any combination therapy that includes sulphonylureas or glinides) Class 1 and 3 - refer to CAA	Class 1 : OML SSL MON Class 2 : OSL* SSL MON Class 3 : SSL MON LAPL : OSL* or OPL* SSL MON
Treatment with Very Low Risk of Hypoglycaemia	
Glitazones Gliptins Incretin mimetics (GLP-1 analogues) Biguanides Alphaglucoosidase inhibitors Note: SGLT2 inhibitors are very new and currently are likely only to be accepted for Class 2 or LAPL certification.	Class 1 : OML (unless monotherapy) Unrestricted class 2/3 and LAPL
Diet only	Unrestricted class 1/2/3/LAPL

*unrestricted certification may be possible where a medical flight test with a CFI or CAA FI(E) demonstrates that the in-flight requirements are adhered to and testing does not interfere with safe operations

OML Operational Multi Pilot Limitation
OSL Operational Safety Pilot Limitation
OPL Operational Passenger Limitation
APC ATCO Proximity Endorsement

SSL Special Restrictions as specified

ILA Issued by the Licensing Authority in accordance with MED.B.001 (for EU medical certification)
MON Monitoring of blood sugar required whilst exercising licence privileges

3) Blood Testing Protocol

a) Frequency

Before Flight/Duty

- At least 1 hour before reporting for flight/duty period or at least 2 hours before commencing flight/controlling (this allows good control to be confirmed or notification to company of unfitness)
- Less than 30 minutes before take-off or commencement of controlling

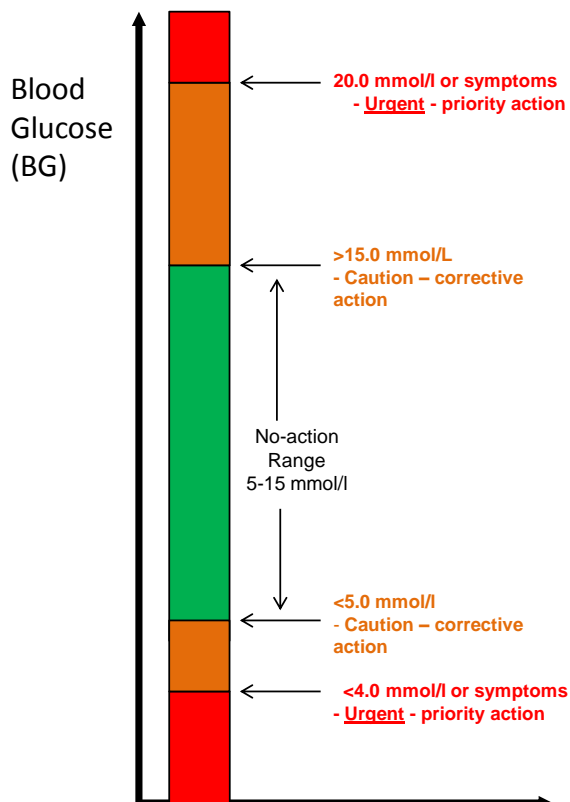
In-flight/controlling

- For insulins: At least every hour (2 hours ATCO) whilst flying/controlling
- For oral medicines that are potentially hypoglycaemic (sulphonylureas and glinides): At least every 2 hours (4 hours ATCO) whilst flying/controlling
- Within 30 minutes of anticipated landing time. If the approach and landing are delayed and an unexpected period is spent in the 'hold', repeat blood glucose testing may be necessary.
- If any diabetic symptoms are experienced

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

For pilots taking non-hypoglycaemic medications, pilots should test before commencing flight/controlling and if symptoms are experienced during flight (mandatory for classes 1 and 3, recommended for class 2 and LAPL)

b) Actions to be taken



High Readings

Priority Action

- 1) Shall hand over PF duties
- 2) Repeat reading (+/- check CGMS)
- 3) Take appropriate insulin and/or modify CHO intake
- 4) Resume full duties when BG <20 mmol/l

Corrective Action

- 1) Confirm reading (check CGMS)
- 2) Review insulin dosing and/or modify CHO intake

Low Readings

Corrective Action

- 1) Repeat reading (+/- check CGMS)
- 2) Ingest 10-15g readily absorbed CHO and retest after 30 mins
- 3) Review insulin dosing and/or modify CHO intake

Priority Action

- 1) Shall hand over PF duties
- 2) Ingest 10-15g readily absorbed CHO and retest after 30 mins
- 3) Repeat reading (+/- check CGMS)
- 4) Review insulin dosing and/or modify CHO intake
- 5) Wait for 45 mins after the BG returns to the 'green' range before resuming PF duties. (In the unlikely event of any symptoms of cognitive impairment the pilot should not resume PF duties for the duration of the flight).
- 6) If crew assistance is required or the pilot becomes incapacitated then a MOR shall be filed

CGMS = Continuous glucose monitoring system

Important Notes. Certificate holders must comply with the following:

- **Testing should be performed using an ISO 9000 certified device. A spare device must be carried.**
- Pilots and ATCOs should ensure that blood glucose testing is pre-planned and alerts/reminders are set up for testing as per the relevant schedule.
- All commercial pilots should brief their co-pilot fully prior to the flight. The brief should include the nature of their diabetes, their testing regime, the timing and method of blood glucose testing, actions to ensure the blood glucose remains in the acceptable range, medication that will be or may be required during the flight, possible symptoms of high or low blood glucose and actions to be taken in the event of incapacitation, according to the SOPs.
- Commercial pilots should ensure their co-pilot cross checks their test result and should always say the reading aloud so that it is recorded on the voice flight recorder.
- All pilots and ATCOs should annotate the results of testing in their log book for compliance monitoring (alternative, electronic recording methods may be acceptable).
- Pilots who have to take action for a high or low reading should always make an entry in their log book, documenting the action taken.
- The basic principle of following the 'Be aware → Eat → Test' cycle should be remembered at all times.
- 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.
- General aviation pilots should record the blood glucose levels in their log book along with the time of testing. They may wish to use the commercial pilot recording template (see 'information for operators' section below) as a checklist for longer flights.
- Emergency situations are covered in the section 'Information for operators' below. Pilots should always adhere to the fail safe position which is to always take rapidly absorbed carbohydrate if unable to test.

4) Insulin pumps

Pilots who use insulin pump delivery systems should submit details of their 'back-up' non-pump regimen in the event of pump failure. Tubing should be checked for bubbles prior to ascent to altitude and any bubbles should be tapped out.

In the event of a rapid decompression at high altitude the insulin pump should be switched off immediately and 15g readily absorbed carbohydrate ingested as soon as possible, certainly within 15 minutes of the decompression. More frequent blood glucose testing should be carried out thereafter. The insulin pump may be restarted after landing or when blood glucose levels and stability of glycaemic control can be verified. A similar procedure should be followed for other emergency situations.

5) Follow up/surveillance requirements for pilots/ATCOs with diabetes

a) Requirements for Pilots/ATCOs on insulin or taking other hypoglycaemic medication

		Class 1 and 3	Class 2	LAPL
Review with CAA Diabetes Specialist - symptoms, clinical reports, data logging of operational blood sugars and review of flying/duty log		6-monthly	Annual	For initial assessment only
HbA1c frequency		Three monthly	Six monthly	Six monthly
Medical Report(s) (See CAA specification for diabetes reports)		Six monthly (own local consultant diabetologist)	Annual (i.e. six monthly alternating with CAA review) (Specialist or GP diabetes clinic)	Annual (Specialist or GP diabetes clinic)
Exercise test Notes: 1) A cardiology review, including exercise test, may be required at any time on clinical indication. 2) Pilots with persistent microalbuminuria or hypertension who hold a Class 1 medical certificate require annual cardiology review, to include exercise testing, according to their level of cardiovascular risk.		At initial assessment then: 5 yearly under 40 Annual over 40	At initial assessment then: 5 yearly under 40 Annual over 40 If omitted, requires OSL/OPL and ECG at every medical	At initial assessment then: 3 yearly over 40 If omitted, requires OSL/OPL and ECG at every medical
Certification Review	Oral	6 monthly AMS	Annual by AME	Annual by AME
	Insulins	6 Monthly AMS	Annual by AMS	Annual by AMS

b) Requirements for Pilots/ATCOs taking non-hypoglycaemic medication

		Class 1 and 3	Class 2	LAPL
HbA1c frequency		Six-monthly	Annual	
Medical Report(s) (See CAA specification for reports)		Annual (Specialist)	Annual (Specialist or GP)	
Exercise test : Notes: 1) A cardiology review, including exercise test, may be required at any time on clinical indication. 2) Pilots with persistent microalbuminuria or hypertension who hold a Class 1 medical certificate require annual cardiology review, to include exercise testing, according to their level of cardiovascular risk.		At initial assessment 5 yearly under 40 Annual over 40	If 10 yr cardiovascular risk >20%. Then, annual if 10 yr cardiovascular risk remains >20%.	On clinical indication
Certification Review		Annual AMS	Annual by AME	

6) Medical Assessment for UK National Private Pilots' Licence (NPPL)

UK pilots with a NPPL who wish to carry passengers shall meet the DVLA group 2 assessment requirements (including an independent diabetologist assessment), follow the testing schedule according to medication used and demonstrate safe testing in flight. For flying solo or with another qualified pilot (DVLA group 1 standard), the DVLA testing schedule should be followed.

7) Indications for change of fit status.

- An HbA1c between 8.5-10% should trigger a diabetes review and review of treatment. A period of unfitness may be required to re-stabilise treatment.
- An HbA1c of greater than 10% indicates poor control and should normally entail an unfit assessment.
- Medication change (which necessitates a change to the testing protocol) = unfit minimum 2 months. For those under continuing CAA clinic surveillance must be reviewed before a return to flying/controlling. Otherwise a medical report of stability/symptoms/satisfactory BGMs is required before return to flying.
- Change of insulin regimen (including new use of pump) = unfit minimum 1 month. For those under continuing CAA clinic surveillance must be reviewed before a return to flying/controlling. Otherwise a medical report of stability/symptoms/satisfactory BGMs is required before return to flying.
- Change of non-hypoglycaemic medication type or dose = 2 weeks unfit. Stability should be reviewed/confirmed by GP or AME.
- **Episodes of severe hypoglycaemia must be reported and shall entail unfitness.** Specialist review will be required before consideration of any resumption of flying/duties.
- Development of any retinopathy requires CAA ophthalmological assessment and is likely to result in further restriction or unfitness if there is any field loss or reduction in visual acuity.
- Presence of significant nephropathy significantly increases cardiovascular risk and is likely to entail unfitness.
- Non-declaration of symptoms, medical history or provision of incomplete testing records/flying logbook is likely to entail unfitness.

8) Diabetes report specification

The following headings are for guidance purposes only and should not be taken as an exhaustive list. All relevant information should be reported.

(Please note that the European Regulations and UK CAA's Guidance Material for fitness decision, acceptable treatments and required investigations (if specified) can be found in the medical section of the CAA website (www.caa.co.uk/medical then click on 'decrease in medical fitness' for the relevant class of certificate). For many conditions, there are also flow charts available for guidance on the assessment process.)

1. Diagnoses

Type
Comorbidities

2. Presenting History and initial Investigation and Treatment (initial report only)

Presenting complaint and symptoms (incl date of diagnosis)
Nature of condition, circumstances surrounding onset, precipitating factors

3. Progress since last report

Review and management of glucose monitoring, correlated with symptom review
Changes to treatment
Number of severe hypoglycaemic episodes in past year
Loss of hypoglycaemic awareness
Other relevant medical history
Current treatment

4. Screening Examination and Investigation Findings

- Blood tests
 - HbA1c
 - Liver and Renal Function (eGFR and ACR)
 - Lipids
- Screening for Complications
 - Retinopathy report including gradings (for Class 1 and 3 by an ophthalmologist/ specialist clinic)
 - Neuropathy
 - Nephropathy
 - Cardiovascular risk assessment confirming no evidence of cardiovascular disease
 - See requirement for periodic exercise testing
 - Risk factors including family history, smoking, alcohol intake and weight (BMI)
 - Blood Pressure within acceptable parameters (British Hypertension Guidelines)

5. Follow up and further investigations/referrals planned or recommended

Anticipated follow up/frequency of clinical reviews and investigations
Confirmation disease is well controlled at date of report on stable dose of acceptable medication

6. Clinical Implications

Any concerns regarding disease progression, treatment compliance or risk of sudden incapacity

9) PILOT WITH DIABETES TREATED WITH POTENTIALLY HYPOGLYCAEMIC MEDICATION

UNITED KINGDOM CIVIL AVIATION AUTHORITY

OPERATIONAL/MEDICAL FLIGHT TEST REPORT

Note: For commercial pilots the Medical Flight Test should preferably be undertaken on the first line flight, as testing in the simulator may not adequately replicate the relevant aspects of the flight environment.

1) Candidate's Personal Details:

Name (in full):

CAA Ref No:

Date of Birth:/...../.....

Current Address:

.....

.....

Telephone Numbers

Home:

Work:

Mobile:

2) Purpose of test:

To determine that the applicant demonstrates knowledge of the aeromedical issues relevant to diabetes and demonstrates safe management of their health condition whilst exercising licence privileges

3) Declaration

I understand the purpose of the medical flight test

Signature of candidate Date/...../.....

Name: CAA Ref No

4) **Medical Flight Test Report** (To be completed by Company TRE for Class 1, CFI or FIE for Class 2 or LAPL)

Aircraft Type & Registration:

Flight/Sectors assessed:

Date & Place Of Test:/...../..... -

Examiner's Name (please print):

Examiner's CAA Licence No:

Blood Testing machine Used:

Acceptable

Appropriate briefing on diabetes conducted using UK CAA briefing sheet Yes/No

Evidence of compliance with blood testing in accordance with relevant protocol..... Yes/No

Check Log book and glucose memory meter congruity for previous flight(s)..... Yes/No/N/A

Tests conducted in safe manner without interference with safe operations..... Yes/No

Tests conducted at correct times in accordance with schedule..... Yes/No

Time	Flight phase	Result & Comments		Time	Flight phase	Result & Comments

Spare meter available? Yes/No

Appropriate stowage of equipment/resources Yes/No

Availability of carbohydrate – state what Yes/No

Comments:

Recommendations (e.g. any type/class-specific issues)

Signed Date/...../.....

Return completed form to: CAA Medical Department, Aviation House, Gatwick Airport South, West Sussex RH6 0YR

10) ATCO WITH DIABETES TREATED WITH POTENTIALLY HYPOGLYCAEMIC MEDICATION

UNITED KINGDOM CIVIL AVIATION AUTHORITY

OPERATIONAL TEST REPORT

1) Candidate's Personal Details:

Name (in full):

CAA Ref No:

Date of Birth:/...../.....

Current Address:

.....

.....

Telephone Numbers

Home:

Work:

Mobile:

2) Purpose of test:

To determine that the applicant demonstrates knowledge of the aeromedical issues relevant to diabetes and demonstrates safe management of their health condition whilst exercising licence privileges

3) Declaration:

I understand the purpose of the operational test

Signature of candidate Date/...../.....

Name of ATCO:CAA Ref No

4) Operational Test Report (To be completed by Watch Manager)

Job role (e.g. area, approach, tower):

Duty period(s) assessed:

Date & Place of Test:/...../..... -

Examiner's Name (please print):

Examiner's CAA Licence No:

Blood Testing Machine Used:

Acceptable

Appropriate briefing on diabetes conducted using UK CAA briefing sheet Yes/No

Spare blood testing machine available Yes/No

Where an insulin pump is used, alternative delivery method available Yes/No/N/A

Availability of carbohydrate – state what Yes/No

Appropriate stowage of medication/equipment/resources Yes/No

Appropriate briefing on diabetes conducted using UK CAA briefing sheet Yes/No

Check operational blood glucose testing records and glucose memory meter congruity

..... Yes/No

Evidence of compliance with blood testing in accordance with relevant protocol Yes/No

Tests conducted in safe manner without interference with safe operations Yes/No

Time	Result & Comments		Time	Result & Comments

Appropriate stowage of equipment/resources Yes/No

Availability of carbohydrate – state what Yes/No

Comments:

Recommendations (e.g. any type/class-specific issues)

Signed Date/...../.....

Return completed form to: CAA Medical Department, Aviation House, Gatwick Airport South, West Sussex RH6 0YR

11) Information for Operators on Flight Crew with Insulin-Treated Diabetes

Summary

Operators may have flight crew who develop diabetes requiring insulin who wish to return to flying once their condition has stabilised or may recruit a pilot with this condition. This guidance addresses operational considerations for operators.

Background

Since August 2012 the UK CAA has been assessing applicants with insulin-treated diabetes for Class 1 medical certification; certificates have been issued under Part MED.B.001 on an individual basis since March 2013.

Diabetes

Insulin is a hormone produced by the pancreas which controls blood glucose (sugar) levels. Diabetes develops there is insufficient insulin or it cannot be effectively used by the body and blood sugar level regulation becomes unbalanced.

Treatment is often with medicines (tablets or insulin injections) that allow the body to use the circulating sugar, thus keeping the blood sugar level in the normal range. High levels occur if not enough medicine is taken/used or too much carbohydrate is eaten and low levels can occur if too much medicine is taken/used or not enough carbohydrate is eaten to balance the medicine.

Pilots with insulin-treated diabetes

A Class 1 medical certificate is only issued to a pilot on insulin if they fulfil stringent criteria including demonstration of excellent control of their diabetes.

Pilots with insulin-treated diabetes have to comply with the UK CAA protocol including frequent blood sugar testing before and during a flight duty period to ensure their blood glucose levels remain within an acceptable range.

Hazards should be identified through the operator's SMS and the operator is responsible for putting in place measures to remove, or mitigate, the risks of the identified hazards.

Examples:

Hazard	Mitigation
Incapacitation due to low or high blood sugar level	Multi-pilot flying only in commercial operations Adherence to UK CAA blood glucose mandatory blood glucose testing protocol Awareness of the risk of not adhering to the protocol through training and pre-briefing Cross checking of blood glucose results by other pilot(s) Immediate consumption of carbohydrate in the event of a low reading or if operational circumstances prevent blood glucose testing
Sharps injury from blood sugar testing equipment	Use of a self-contained testing system or a sharps box for lancet after use
Distraction of other pilot	Full briefing in advance of flight duty
Pilot incapacitation not identified	All pilots briefed in standard operating procedures in the event of a pilot becoming unwell or uncommunicative

Possible symptoms of high or low blood glucose:

Low blood glucose (hypoglycaemia) (if level less than 3)	High blood glucose (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

Considerations for Operations Manuals

a) General (these items are likely to be included already)

Pilot responsibility – decrease in medical fitness

The operations regulations contain requirements for crew not to perform duties when unfit or if aware of any decrease in their medical fitness that might render them unable to safely exercise licence privileges.

Incapacitation of pilot

Any incapacitation, whether sudden or subtle, should be handled in the same way as any other medical incapacitation.

Training for pilot incapacitation

Training on how to recognise pilot incapacitation and the standard operating procedures to follow in the event of pilot incapacitation should be included in the annual SEP training.

b) Specific (these items may need to be added)

Pilot responsibilities – insulin-treated diabetes

Flight crew members must inform their Fleet Manager if returning to flying after being re-certificated following a diagnosis of diabetes and being treated with insulin. In this circumstance, Class 1 medical certification will be subject to an operational multi-pilot limitation; the Fleet Manager should be informed of any other operational limitations.

The pilot must comply with the schedule of blood glucose testing required by the UK CAA.

The pilot must brief the other member(s) of the flight crew (and other members of the crew as necessary) before each flight on:

- The reason for blood glucose tests
- How the blood glucose test is done
- When blood glucose tests are required (including with reference to the flight plan)
- Actions to be taken in the event of a blood glucose test outside of the acceptable range (below 5 or above 15 mmol/l)
- Whether, when and how insulin will be used during the flight duty period.
- Possible symptoms of low or high blood glucose (Appendix 1).
- Actions to be taken by the pilot if a test is 'out of range'.

Blood glucose test times should be pre-planned, by time from departure, waypoints or by setting up alarms – an iPad, phone or in-cockpit alarm could be used.

It is the pilot's responsibility to carry with him at all times when on duty any medication (e.g. insulin) required, any equipment required to deliver the medication (e.g. pens and pumps) and documentary evidence from their general practitioner or diabetes specialist confirming the need to carry the medication and equipment. Sufficient medication and equipment should be carried to cover the planned duty period and additional contingency for unplanned extensions.

All equipment, medication and carbohydrate for emergency consumption should be safely stored in the cockpit and immediately accessible.

Testing should always be undertaken ensuring compliance with standard operating procedures at all times. The pilot should avoid testing blood glucose during ground manoeuvring in the vicinity of runway holding areas or entering or crossing a runway, or in phases of flight associated with heavy workload including the take-off and approach and landing.

The result of the blood glucose test should be spoken aloud by the pilot so that it is captured on the cockpit voice recorder and the test result should be shown to and cross-checked by the other pilot.

The blood testing schedules are described in 'Blood glucose testing' (Section 3 above). Blood glucose levels should be recorded in, and a comment made in the remarks column of, the Log Book.

An example template for recording blood glucose levels is shown here:

UK Civil Aviation Authority

Blood Glucose Log (for pilots with diabetes)

Pilot Name:

CAA Ref No:

A/C Type:

Flight No:

Route flown:

Date and Time:	Flight Phase:				Reading (mmolL ⁻¹):	X-Check:		Symptoms:	Comments:
	Pre-Report	Pre-Flight	In Flight	Pre-Landing		Other Crew	CVR		

A record should be made of any snacks or meals taken, insulin used, any bunk rest and any corrective action that was required in the event of a low or high result.

Any crew intervention required to assist a pilot in controlling their blood glucose levels is a reportable event and should be reported under the MOR scheme and the pilot should declare themselves unfit.

Any failure to comply with the testing schedule is a reportable event and should be reported under the MOR scheme.

Blood glucose testing must be done after every period of prolonged rest, 30 minutes prior to resuming flight duties.

If the testing equipment is not self-contained, the lancet, needle and any clinical waste should be disposed of in a single use sharps box.

The pilot should always carry a spare, functioning glucose meter with memory; if both meters become unserviceable the pilot should hand over control of the aircraft to the other pilot. In this event it is recommended that the autopilot should be engaged to reduce workload.

Emergency situations

If operational considerations prevent the pilot from undertaking a blood glucose test at the required time 15g of rapidly absorbable glucose/carbohydrate (e.g. 3 jelly babies, 4 glucotabs) should be consumed immediately and blood glucose testing done as soon as possible.

In an event such as a rapid decompression there would be no time to take precautionary carbohydrate and priority would be given to flying the aircraft. Carbohydrate should be taken once the emergency has stabilised. If a mask continues to be required, it could be quickly lifted, carbohydrate consumed and the mask replaced within a couple of seconds. In any other emergency situation 15g carbohydrate should be taken as soon as practicable.

If an operational emergency is prolonged, with no opportunity for blood glucose testing, this consumption of 15g carbohydrate must be repeated every hour. Blood glucose testing should be undertaken hourly or more frequently if there was any concern about the pre-emergency glucose trend or if a lot of carbohydrate has been taken over the course of several hours without the possibility of testing.

If the pilot has an insulin pump, in the event of a decompression, it should be switched off and 15g carbohydrate should be taken as soon as possible.

If the pilot is awoken from their bunk for an emergency, blood glucose must be tested prior to resuming control.

Responsibilities of other pilot(s) (whether commander or not)

The operator may wish to inform the whole fleet that they may be rostered with a pilot with insulin-treated diabetes so that flight crew who have any concerns about flying with another pilot using a needle and syringe on the flight deck and periodically undertaking finger prick blood tests have the opportunity to raise these concerns. Any pilot who is uncomfortable should notify the Director of Flight Operations.

The other pilot(s) should positively cross-check each blood sugar test result during the flight duty period and confirm the result verbally.

The other pilot should respect the confidentiality of any medical information shared by the pilot.

Responsibilities of the operator

The operator will need to ensure all additional operational procedures and information is promulgated to all pilots in the fleet of a pilot with insulin-treated diabetes.

Flight Manuals may need to be amended to include operational considerations for pilots and operators of pilots operating with insulin-treated diabetes.

The operator will have access to confidential medical information about their pilot with insulin-treated diabetes. The normal rules of medical confidentiality apply and must be respected at all times.

Flight crew with diabetes treated with medication other than insulin

Other medications that may lower blood sugar levels e.g. sulphonylureas or glinides may be used by diabetic pilots to control their blood sugar levels. Pilots on these medications should be subject to the same blood sugar tests, protocols and operational procedures as pilots on insulin. The testing schedule is reduced to every 2 hours during flight.

Pilots on glitazones, gliptins, GLP-1 analogues, biguanides, alphasglucosidase inhibitors only require one pre-flight blood glucose check; if this is within the acceptable range, they do not need to undertake further in-flight testing.