

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



Medical Factual Memorandum for Record

August 14, 2025

A. CASE

NTSB ID: ERA23FA370
Location: Fitzgerald, Georgia
Date: September 13, 2023
Time: Approximately 4:54 p.m. local time

B. MEDICAL SPECIALIST

Specialist Turan Kayagil, MD, FACEP
National Transportation Safety Board
Washington, DC

C. DETAILS

1.0 Description of Review

For purposes of evaluating the fatally injured private pilot (pilot) for potentially impairing substances and potentially impairing medical conditions, the above Medical Specialist reviewed the following sources of medical information, along with selected relevant regulation, medical literature, and National Transportation Safety Board (NTSB) investigator reports.¹

- Final Federal Aviation Administration (FAA) medical case review
- Post-accident hospital records - pilot
- Autopsy report - pilot

¹ The surviving passenger held a student pilot certificate and had not applied for FAA medical certification. According to the Record of NTSB Conversations in the docket for this investigation, the passenger reported that he never took the controls during the accident flight. The passenger was not included in this medical investigation.

- FAA Forensic Sciences Laboratory toxicology report – pilot

2.0 Summary of Medical Facts

2.1 Information from Reviewed Records

The 68-year-old male pilot's last aviation medical examination was January 27, 2012. At that time, he was 69 inches tall and weighed 197 pounds. He reported a history of diabetes and high blood pressure. He reported using the prescription oral diabetes medication metformin, the prescription blood pressure medications lisinopril and nifedipine, and the prescription cholesterol-controlling medication pravastatin. The Aviation Medical Examiner (AME) documented a hemoglobin A1c (HbA1c) of 7%.² The pilot was issued a second-class medical certificate by AME-Assisted Special Issuance (AASI); he had been granted an Authorization for Special Issuance in September 2011 for high blood pressure and diabetes requiring oral medication.³ The most recent medical certificate was not valid for any class after January 31, 2013, and was limited by a requirement to wear corrective lenses and possess glasses for near/intermediate vision. The pilot's most recent Authorization for Special Issuance was granted in March 2012, for high blood pressure and diabetes requiring oral medication. The pilot completed a BasicMed Course and reported completing a BasicMed Comprehensive Medical Examination Checklist (CMEC), both most recently in July 2019.⁴ These were not current as of the accident date. At the time of the accident, the pilot did not possess current FAA medical certification or BasicMed qualifications.⁵

² HbA1c is an indirect measure of a person's average blood sugar over approximately the preceding 3 months. For a person with diabetes, HbA1c of less than 7% generally indicates good diabetes control.

³ AASI is a process by which an AME may issue a medical certificate under the provisions of an applicant's FAA Authorization for Special Issuance if the applicant provides specific required medical information from treating physician(s). AASI determinations are subject to review by the FAA.

⁴ BasicMed provisions allow pilots who meet certain requirements to fly as pilot in command or as a required flightcrew member without current medical certification. Among those requirements, a pilot must have completed a BasicMed education course within 24 calendar months and must have had a medical examination with a state-licensed physician using the CMEC within 48 calendar months. Aircraft and operating restrictions apply. Some medical conditions (including epilepsy, heart attack, and coronary heart disease that has required treatment), require at least one Special Issuance before a pilot may fly under BasicMed provisions. For details, see [14 Code of Federal Regulations \(CFR\) Part 68](#), [14 CFR 61.113\(i\)](#), [14 CFR 61.23\(c\)\(3\)](#), and https://www.faa.gov/licenses_certificates/airmen_certification/basic_med/.

⁵ The Ercoupe 415-C is on the FAA's "[Light Sport Aircraft: Existing Type Certificated Models](#)" list. Such aircraft may be operated by pilots exercising sport pilot privileges if all applicable requirements are met. Neither FAA medical certification nor BasicMed qualifications are required for a pilot to exercise sport pilot privileges if other required qualifications and operating restrictions are met ([14 CFR Part 61 Subpart J](#)). Prohibitions on operations during medical deficiency ([14 CFR 61.53](#)) and while using drugs that affect faculties in a way contrary to safety ([14 CFR 91.17\(a\)\(3\)](#)) apply.

According to the Record of NTSB Conversations in the docket for this investigation, the pilot's daughter told the NTSB that the pilot had a history of seizures, for which he was taking the medication levetiracetam (sometimes marketed as Keppra). She stated that his last seizure had been not too long before the accident, in August or September 2023. She stated that his seizures always occurred at dusk, and were characterized by uncontrolled muscle spasms during which he is "present." She also stated that the pilot had undergone open-heart surgery in 2011 and had later had stents installed.

According to an Emergency Department (ED) physician's note in reviewed hospital records, Emergency Medical Services (EMS) found the pilot in cardiac arrest with asystole following the crash. EMS initiated cardiopulmonary resuscitation and transported the pilot to the hospital ED, where he was pronounced dead just after arrival. He was diagnosed with traumatic cardiac arrest. Limited medical history information in reviewed hospital records included history of coronary artery disease, heart attack, coronary artery bypass graft in 2012 with two grafts, two cardiac stents, high blood pressure, high cholesterol, and chronic obstructive pulmonary disease. Home medications documented in reviewed hospital records included citalopram, losartan, amlodipine, metformin, montelukast, glimepiride, ezetimibe, and clopidogrel (see "Descriptions of Detected Substances" below). Additional documented home medications included baby aspirin (available without a prescription and commonly used to lower cardiovascular risk), ranolazine (a prescription medication that may be used for chronic heart-related chest pain), atorvastatin (a prescription medication commonly used to help control cholesterol and reduce cardiovascular risk), dulaglutide (a prescription injectable medication that may be used as part of diabetes treatment), esomeprazole (available without a prescription for stomach acid suppression), guaifenesin (available without a prescription for relief of chest congestion), and docusate sodium (a stool-softener available without a prescription). No seizure history or seizure medication use was documented in hospital records.

The Georgia Bureau of Investigation, Division of Forensic Sciences, Central Regional Medical Examiner's Office performed the pilot's autopsy. According to the pilot's autopsy report, his cause of death was multiple blunt force trauma, and his manner of death was accident. His weight at autopsy was 204 pounds. His autopsy identified a markedly enlarged heart with marked four-chamber dilatation. Dense fibrous adhesions limited evaluation of the coronary artery anatomy. An occluded aortocoronary venous bypass graft was observed but its insertion point could not be determined. The heart valves and aorta demonstrated atherosclerotic disease. No areas of scarring of the heart muscle were seen.

The FAA Forensic Sciences Laboratory performed toxicological testing of postmortem specimens from the pilot.⁶ Glucose (sugar) was measured at 24 mg/dL in vitreous fluid and at 366 mg/dL in urine.⁷ HbA1c was measured at 7.1% in blood.⁸ Citalopram was detected at 730 ng/mL in blood and at 1,807 ng/mL in liver tissue. N-desmethylcitalopram was detected at 127 ng/mL in blood, and also was detected in liver tissue. Levetiracetam, losartan, amlodipine, and metformin were detected in blood and urine. Glimepiride and montelukast were detected in blood and liver tissue. Ezetimibe was detected in liver tissue; ezetimibe testing of blood was inconclusive. Clopidogrel was detected in urine and was not detected in blood.

2.2 Descriptions of Detected Substances

Citalopram is a prescription medication commonly used to treat depression. N-desmethylcitalopram is a metabolite of citalopram. Studies of citalopram have not established that it causes significant cognitive or psychomotor impairment.^{9,10,11} However, citalopram may carry a warning that any psychoactive drug may impair judgment, thinking, or motor skills, and that users should be cautioned about operating hazardous machinery, including motor vehicles, until they are reasonably certain that citalopram does not affect their ability to engage in such activities.¹² Additionally, major depression can cause cognitive impairment, particularly of executive function.¹³ Pilots on citalopram seeking FAA medical certification are

⁶ The FAA Forensic Sciences Laboratory has the capability to test for around a thousand substances including toxins, prescription and over-the-counter medications, and illicit drugs.

⁷ The FAA Forensic Sciences Laboratory considers glucose levels in vitreous and urine to be abnormal if above 125 mg/dL and 100 mg/dL, respectively. The choice of these values is discussed in FAA Aerospace Medicine Technical Report [DOT/FAA/AM-00/22](#). Urine glucose may increase due to high blood glucose or altered kidney function. Urine glucose is raised by high blood glucose only if the blood glucose surpasses a certain threshold, which varies among individuals, but which is typically higher than normal blood glucose. Vitreous glucose decreases after death.

⁸ HbA1c of 7.1% corresponds to an estimated average blood sugar over the prior few months of about 157 mg/dL. For many adults with diabetes, recommended pre-meal blood sugars are between 80 and 130 mg/dL, recommended peak after-meal blood sugars are less than 180 mg/dL, and recommended HbA1c is less than 7%.

⁹ Baselt RC. *Drug Effects on Psychomotor Performance*. Biomedical Publications; 2001.

¹⁰ Fairweather DB, Pozzo CD, Kerr JS, Lafferty SV, Hindmarch I. Citalopram compared to dothiepin and placebo: effects on cognitive function and psychomotor performance. *Hum Psychopharmacol*. 1997;12(2):119-126.

¹¹ Paul MA, Gray QW, Love RJ, Lange M. SSRI effects on psychomotor performance: assessment of citalopram and escitalopram on normal subjects. *Aviat Space Environ Med*. 2007;78(7):693-697.

¹² National Institutes of Health National Library of Medicine. Celexa. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=4259d9b1-de34-43a4-85a8-41dd214e9177>. Updated October 9, 2023. Accessed August 14, 2025.

¹³ Snyder HR. Major depressive disorder is associated with broad impairments on neuropsychological measures of executive function: a meta-analysis and review. *Psychol Bull*. 2013;139(1):81-132. doi:10.1037/a0028727.

subject to case-by-case evaluation of the underlying condition and the response to treatment.

Levetiracetam is a prescription anti-seizure medication. It may cause sleepiness, fatigue, and coordination difficulties, and commonly carries warnings that users should be monitored for these signs and symptoms and advised not to drive or operate machinery until they have gained sufficient experience on the medication to gauge whether it adversely affects their ability to do so.¹⁴ The FAA considers levetiracetam to be a "Do Not Issue / Do Not Fly" medication.¹⁵ According to the medical case review for this accident, levetiracetam is unacceptable for pilot medical certification due to the underlying condition and medication side effects.

Losartan is a prescription medication commonly used to treat high blood pressure. It may also be used in the treatment of heart failure. Amlodipine is a prescription medication that can be used to treat high blood pressure and certain types of coronary artery disease. Losartan and amlodipine are not generally considered impairing.

Metformin is a prescription oral medication commonly used for blood sugar control in diabetes and prediabetes. Glimepiride is a prescription oral diabetes medication of a different class than metformin, with greater potential to cause symptomatic low blood sugar.¹⁶ Metformin and glimepiride are not typically impairing, and may be acceptable for FAA pilot medical certification depending on a case-by-case evaluation of the individual's diabetes and its response to treatment.¹⁷

Montelukast is a prescription oral medication commonly used for the long-term control of asthma and allergic rhinitis. Montelukast is not typically impairing,

¹⁴ National Institutes of Health National Library of Medicine. Keppra. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3ca9df05-a506-4ec8-a4fe-320f1219ab21>. Updated June 25, 2025. Accessed August 14, 2025.

¹⁵ Federal Aviation Administration. Guide for aviation medical examiners: pharmaceuticals (therapeutic medications) do not issue - do not fly. Federal Aviation Administration website. https://www.faa.gov/ame_guide/pharm/dni_dnf. Updated July 10, 2023. Accessed August 14, 2025.

¹⁶ Wexler DJ. Initial management of hyperglycemia in adults with type 2 diabetes mellitus. In: Connor RF, ed. *UpToDate*. Wolters Kluwer. <https://www.uptodate.com/contents/initial-management-of-hyperglycemia-in-adults-with-type-2-diabetes-mellitus>. Updated June 12, 2025. Accessed August 5, 2025.

¹⁷ Federal Aviation Administration. Acceptable combinations of diabetes medications. Guide for Aviation Medical Examiners. <https://www.faa.gov/sites/faa.gov/files/2022-08/Acceptable%20Combinations%20of%20Diabetes%20Medications%20Chart.pdf>. Updated August 31, 2022. Accessed August 14, 2025.

although it may have adverse effects on mood in some individuals.¹⁸ Montelukast is on the FAA's list of acceptable allergy medications.¹⁹

Clopidogrel is a prescription antiplatelet medication that can be used to reduce cardiovascular risk in certain medical conditions, including ischemic heart disease, coronary artery stenting, recent stroke or heart attack, and peripheral arterial disease. Clopidogrel is not typically impairing.

Submitted by:

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Chief Medical Officer

¹⁸ National Institutes of Health National Library of Medicine. Singulair. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=482dcc92-b47f-4ea6-854a-f5ac2aea7842>. Updated April 30, 2025. Accessed August 14, 2025.

¹⁹ Federal Aviation Administration. Allergy – antihistamine & immunotherapy medication. Guide for Aviation Medical Examiners. https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/media/AllergyAntihistamineImmunotherapyMedication.pdf. Updated October 26, 2022. Accessed August 14, 2025.