

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



Medical Factual Memorandum for Record

August 13, 2025

A. CASE

NTSB ID: CEN23FA359
Location: Virden, Illinois
Date: August 12, 2023

B. MEDICAL SPECIALIST

Specialist JE Tuttle MD MHA FACS
National Transportation Safety Board
Washington, DC

C. DETAILS

1.0 Description of Review

For purposes of evaluating the pilot for potentially impairing substances and potentially impairing medical conditions, the above Medical Specialist reviewed the following sources of medical information regarding the pilot, along with selected relevant regulation, medical literature, and investigator reports.

- Federal Aviation Administration (FAA) final medical case review
- FAA medical certification file
- Autopsy report
- Toxicology report

2.0 Summary of Medical Facts

According to FAA medical records, the 62-year-old male pilot's last aviation medical examination was August 19, 2019. At that time, he reported using prednisolone eye drops and ketorolac eye drops. Prednisolone eye drops are a

prescription steroid medication commonly used to reduce inflammation and swelling associated with allergies or eye surgery. Ketorolac eye drops are a prescription non-steroidal anti-inflammatory medication commonly used to treat inflammation and pain after eye surgery. The pilot reported having undergone bilateral cataract surgeries (July 2019) and treatment for a retinal detachment (April 2019). The Aviation Medical Examiner deferred the medical certification decision to the FAA due to his recent surgeries. In March 2020, the FAA granted the pilot an Authorization for Special Issuance of medical certification for retinal detachment and a right visual field defect. The pilot was issued a third-class medical certificate limited by a requirement to have available glasses for near vision, and not valid after August 31, 2020. The pilot's medical certificate was expired at the time of the crash. The pilot completed a BasicMed Course, most recently in September 2022, and had reported completing a Comprehensive Medical Examination Checklist (CMEC), most recently in August 2020.¹

An autopsy was performed by a forensic pathologist in Springfield, Illinois at the request of the Maucopin County Coroner's Office. In the opinion of the pathologist who performed the pilot's autopsy, the pilot's cause of death was multiple blunt force injuries. Structural evaluation of the brain was limited by the severity of injuries and the heart was absent. Within these limitations, the autopsy did not identify significant natural disease.

The FAA Forensic Sciences Laboratory performed toxicological testing of postmortem specimens from the pilot.² Ethanol was detected in blood at 0.01 g/dL and in urine at 0.018 g/dL. Ethanol was not detected in vitreous fluid.³ Lorazepam was detected in urine at 82 ng/mL, and lorazepam testing in blood was inconclusive. O-desmethylvenlafaxine (also called desvenlafaxine) was detected in urine at 10,880 ng/mL and in blood at 522 ng/mL. Quetiapine was detected in urine at 48 ng/mL and in blood at 44 ng/mL. Norquetiapine was detected in blood and urine. The specimen was unsuitable for carboxyhemoglobin testing.

Ethanol is a type of alcohol. It is the intoxicating alcohol in beer, wine, and liquor, and, if consumed, can impair judgment, psychomotor performance, cognition,

¹ BasicMed provisions allow pilots who meet certain requirements to fly without current medical certification. Among those requirements, a pilot must have completed a BasicMed training course within 24 calendar months and must have had a medical examination with a state-licensed physician using the CMEC within 48 months. Aircraft and operating restrictions also apply. 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/BasicMed/.

² 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.

³ The FAA Forensic Sciences Laboratory uses an ethanol reporting threshold of 0.01 g/dL.

and vigilance.⁴ Alcohol consumption is not the only possible source of ethanol in postmortem specimens. Ethanol sometimes can be produced by microbes in a person's body tissues and fluids after death. Postmortem ethanol production is made more likely by severe trauma.⁵

Lorazepam is a prescription medication used to treat anxiety and depression. Lorazepam can cause sedation as well as amnesia, memory impairment, disorientation, disinhibition, and a feeling of euphoria.⁶ The FAA considers lorazepam to be a "do not fly" medication.⁷ According to the FAA Medical Case Review for this accident, lorazepam is conditionally acceptable for FAA medical certification if use is short-term and a five-day waiting period is observed from last dose to piloting an aircraft.

Desvenlafaxine is a prescription medication commonly used to treat major depression.⁸ Desvenlafaxine also is an active metabolite of venlafaxine, another prescription medication commonly used to treat major depression (venlafaxine was not detected in this case). Desvenlafaxine may cause drowsiness and dizziness and typically carries a warning that users should not drive or operate heavy machinery until they know how the medication affects them.⁹ According to the FAA medical case review for this accident, venlafaxine was considered unacceptable for pilot medical certification. In April 2024, the FAA added venlafaxine to the list of antidepressants that may be considered for FAA medical certification via Special Issuance on a case-by-case basis, depending on an assessment of the underlying condition and response to treatment.¹⁰

⁴ Cook CCH. Alcohol and aviation. *Addiction*. 1997;92(5):539-555.

⁵ Kugelberg FC and AW Jones. Interpreting results of ethanol analysis in postmortem specimens: A review of the literature. *Forensic Science International* 165 (2007) 10-29.

⁶ National Institutes of Health. National Library of Medicine. Lorazepam tablet. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/druginfo.cfm?setid=fdc11b95-2233-42b4-b5f3-9390b5e9e1b2>. Updated January 9, 2024. Accessed July 29, 2025.

⁷ 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 June 28, 2023. Accessed July 29, 2025.

⁸ National Institutes of Health, National Library of Medicine. Desvenlafaxine extended-release. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/lookup.cfm?setid=91cf39c9-4d26-480a-a3a3-a3d8d4c4d222>. Updated August 7, 2023. Accessed August 13, 2025.

⁹ National Institutes of Health. National Library of Medicine. Medline. Venlafaxine. <https://medlineplus.gov/druginfo/meds/>. Updated January 15, 2022. Accessed August 13, 2025.

¹⁰ Federal Aviation Administration. Decision considerations - aerospace medical dispositions, item 47, psychiatric conditions - use of antidepressant medications. Guide for Aviation Medical Examiners. https://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/app_process/exam_tech/item47/amd/antidepressants. Updated April 24, 2024. Accessed August 13, 2025.

Quetiapine is a prescription antipsychotic medication. It may be used to treat schizophrenia, acute episodes of mania and depression in bipolar disorder, and as part of a multi-drug maintenance treatment for a major depressive disorder and bipolar disorder.¹¹ Quetiapine may also be prescribed for treatment of insomnia without underlying psychiatric illness.^{12,13} Quetiapine may also be misused or abused, often in combination with other recreational substances.^{13,14} Quetiapine commonly causes drowsiness, especially in the initial days after starting a treatment regimen; however, users may develop tolerance to this effect over time. Quetiapine typically carries a warning that it has the potential to impair judgment, thinking, and motor skills, and that users should be cautioned about performing activities requiring mental alertness, such as operating a motor vehicle or hazardous machinery, until they are reasonably certain that the drug does not affect them adversely.¹¹ The FAA considers quetiapine to be a “Do Not Issue/Do Not Fly” medication.⁷

Submitted by:

JE Tuttle MD MHA FACS
Medical Officer

¹¹ National Institutes of Health, National Library of Medicine. Seroquel- quetiapine fumarate tablet, film coated. DailyMed. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=3dc79540-2f24-4920-99cd-ef6482f68eb2>. Updated December 27, 2010. Accessed July 29, 2025.

¹² Carney, Adam C, R.N., B.S.N. (2013). Efficacy of quetiapine off-label uses: Data synthesis. Journal of Psychosocial Nursing & Mental Health Services, 51(8), 11-8. doi: <https://doi.org/10.3928/02793695-20130709-01>

¹³ Roy S, Charreteur R, Peries M, et al. Abuse and misuse of second-generation antipsychotics: An analysis using VigiBase, the World Health Organization pharmacovigilance database. Br J Clin Pharmacol. 2022; 88(10): 4646-4653. doi:10.1111/bcp.15420.

¹⁴ Mattson ME, Albright VA, Yoon J, Council CL. Emergency department visits involving misuse and abuse of the antipsychotic quetiapine: results from the Drug Abuse Warning Network (DAWN). *Subst Abuse*. 2015; 9:39-46. doi:10.4137/SART.S22233.