



MEMORANDUM

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National Transportation Safety Board
Office of Aviation Safety - Eastern Region

Subject: Factual Medical Case Review

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On October 31, 2019, at 1730 eastern daylight time, an experimental, amateur-built Vans RV-4, N425JW, was destroyed after it impacted power lines near Middleburg, Florida. The private pilot was fatally injured. The airplane was registered to and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91 as a personal flight. Day visual meteorological conditions prevailed, and no flight plan was filed for the local flight, which originated from Haller Airpark (7FL4), Green Cove Springs, Florida, at 1715.

You asked us to review this accident (ERA20FA025; Middleburg, FL) because of the pilot's toxicology findings.

I reviewed the Federal Aviation Administration (FAA) medical case review and the pilot's FAA medical certification file, autopsy report, personal medical records, and FAA Forensic Sciences laboratory toxicology report.^[1] I also reviewed relevant medical information.

According to the FAA medical certification file and FAA medical case review, at the time of the accident, the 72-year-old male pilot did not hold a valid medical certificate. His last FAA medical certification examination was on 12/4/11 and at that time he reported he had accrued 17,868 total flight hours and was 67 inches tall and weighed 202 pounds. He reported taking aspirin and having a history of kidney stones, obstructive sleep apnea (OSA), and prostate

^[1] See <https://jag.cami.jccbi.gov/toxicology/> for a complete list of tested-for substances.

cancer. For the latter two conditions, he had received a special issuance from FAA; OSA was well well-managed with continuous positive airway pressure (CPAP) therapy and his prostate cancer was reported as cured. His third class medical certificate, which had the limitation that he must wear corrective lenses for distant vision and have glasses for near vision, expired on 12/31/13. Prior to the last exam, the pilot had annual or biannual medical examinations since 1965 and held a first class medical certificate. The pilot had applied for BasicMed and was last issued a basic medical certificate on 3/26/19.

According to the Office of the Medical Examiner, Jacksonville, Florida autopsy report, the cause of the pilot's death was multiple blunt injuries and the manner of death was accident. With the exception on an enlarged heart (537 grams), there was no evidence of any significant natural disease identified.

Toxicology testing performed for the Office of the Medical Examiner was negative for tested for drugs in the pilot's liver tissue. The FAA Forensic Sciences Laboratory toxicology testing detected the impairing medication gabapentin in the pilot's liver tissue and urine (56 micrograms per milliliter [$\mu\text{g/mL}$]). Gabapentin (commonly marketed as Neurontin) is an antiseizure medication that is also used to treat chronic nerve pain and postherpetic neuralgia (shingles). It carries a warning that it "may cause dizziness, somnolence and other symptoms and signs of central nervous system depression" and patients should be advised not to operate complex machinery "until they have gained sufficient experience on gabapentin to assess whether gabapentin impairs their ability to perform such tasks." Gabapentin has a long half-life that ranges from 6.5 to 52 hours.^{[2],[3]} The non-impairing high blood pressure medication amlodipine was also detected in heart blood and urine.^[4]

The pilot's personal medical records were obtained for an elective outpatient procedure (transesophageal echocardiogram, TEE) one month prior to the accident.^[5] In addition to the prostate cancer, prostate surgery, kidney stones, and OSA that he reported to the FAA, he or his cardiologist reported several cardiovascular conditions including hypertension, mitral valve prolapse, left and right ventricular enlargement, and severe mitral regurgitation. His cardiologist reported that a recent echocardiogram had shown an ejection fraction of 35-40% (55% or greater is considered normal). The pilot reported taking the non-sedating high blood pressure medications amlodipine and olmesartan.

^[2] National Institutes of Health (NIH). U.S. National Library of Medicine (NLM). DailyMed. Updated 12/31/20. Gabapentin capsule. <https://dailymed.nlm.nih.gov/dailymed/drugInfo.cfm?setid=7538e255-95df-4991-aac0-a90d709f1e95>

^[3] FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Gabapentin. <https://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=254>

^[4] FAA. Updated 1/16/19. Forensic Toxicology's WebDrugs. Amlodipine. <https://jag.camii.jccbi.gov/toxicology/DrugDetail.asp?did=128>

^[5] An echocardiogram is a procedure that uses soundwaves to create pictures of the heart. A transesophageal echocardiogram (TEE) uses an ultrasound probe that is guided through the esophagus into the stomach to look for heart abnormalities. [NIH. NLM. MedlinePlus. Echocardiogram. <https://medlineplus.gov/ency/article/003869.htm> Page last updated 1/5/21]