



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Washington, DC

Medical Factual Report

January 12, 2022

Mary Pat McKay, MD, MPH
Chief Medical Officer

A. ACCIDENT: RRD21FR013; Brookline, MA

Date and time: July 30, 2021

Injuries: 0 fatal

B. GROUP IDENTIFICATION

No group was formed for the medical evaluation in this accident.

C. DETAILS OF INVESTIGATION

1. Purpose

This investigation was performed to evaluate the train operators for medical conditions, the use of medications/illicit drugs, and the presence of toxins.

2. Methods

For the train operators, post-accident emergency treatment records (if they were treated), the post-accident toxicology tests and post-accident interview transcripts were reviewed. The Massachusetts Bay Transit Authority (MBTA) occupational medical records and drug and alcohol testing results were reviewed as well as the investigator's preliminary report. Relevant regulation and medical literature were reviewed as appropriate.

3. Regulations and MBTA Medical Standards

The Federal Transit Administration (FTA) has no medical certification regulations or standards but does require post accident urine drug testing (49 *Code of Federal Regulations* Part 655).

The MBTA has developed Medical Standards regarding employees in safety sensitive positions with various medical conditions and provided those Standards to the NTSB. The Standards are generally quite comprehensive, however,

decisions rely on information provided by the employee's treating physician who is provided with a position description.

4. Findings

Operator, Front Car of Striking Train

Occupational Medical Records

According to the MBTA health records, the 49 year old male train operator had undergone a pre-employment medical evaluation in September 2014 that included a medical history, review of medications, screening for sleep disorders, vital signs, comprehensive physical examination, vision and hearing testing, urine dip testing, an alcohol and drug screen, and an electrocardiogram. No significant issues or medications were reported by the train operator or identified and he was determined to be fit for duty with a requirement he wear corrective lenses. This examination was repeated in May 2015 with the same determination. In November 2015, he had a medical appointment after being involved in a "major" accident (no details of the events or the medical complaints provided). He was returned to duty. In May 2017 he again had a comprehensive examination. He was then out of work from June 30, 2017 and was returned to duty October 5, 2017 after another comprehensive examination. Another comprehensive examination was completed November 2019 without any new findings. In December 2019 and again in July 2020 he visited Medical Operations for evaluations following a "minor accident" (again, not further described). Each time, no significant abnormalities were identified, and he was returned to duty. Drug and alcohol testing performed during these visits was negative.

Post Accident Emergency Medical Treatment Records

Records from the train operator's emergency treatment following the accident were obtained and reviewed. He arrived at the hospital able to speak and primarily complaining of hip and wrist pain per the nursing report and left lower quadrant abdominal pain and left rib pain per the physician record. He reported having no primary physician and no medical conditions or use of medications. He was evaluated with blood tests, a CT scan, and a chest X-ray which did not reveal any traumatic injuries. He was treated and discharged from the emergency department.

Toxicology

Toxicology tests performed by Quest Diagnostics as required by the Federal Transit Administration on urine obtained at 02:23 on the day following the accident were negative for all tested-for substances.¹

¹ FTA post-accident toxicology testing is limited to testing urine for urinary metabolites of amphetamine, methamphetamine, cocaine, codeine, morphine, heroin, phencyclidine (PCP), methylenedioxyamphetamine (MDMA), methylenedioxyamphetamine (MDA),

Toxicology testing performed by the FAA's Forensic Sciences Laboratory on leftover blood specimens obtained during the train operator's emergency department visit identified no substances in a general drug screen.²

Operator, Rear Car of Striking Train

Occupational Medical Records

According to the MBTA records, the 27 year old female conductor had undergone a pre-employment medical evaluation in January 2018 that included a medical history, review of medications, screening for sleep disorders, vital signs, comprehensive physical examination, vision and hearing testing, urine dip testing, an alcohol and drug screen. She was found to have deficient distant vision (20/100 OD, 20/70 OS, and 20/70 OU); after a review by an optometrist and a prescription for corrective lenses, she was determined to be fit for duty. Drug and alcohol testing performed during these visits was negative.

Post Accident Emergency Medical Treatment Records

Records from the train operator's emergency treatment following the accident were obtained and reviewed. She arrived at the hospital able to speak and primarily complaining of lower back pain. She reported no chronic medical conditions or use of medications. She was evaluated with blood tests, a CT scan, and a chest X-ray which did not reveal any traumatic injuries. She was treated and discharged from the emergency department.

Toxicology Testing

Toxicology tests performed by Quest Diagnostics as required by the Federal Transit Administration on urine obtained at 02:54 on the day following the accident were negative for all tested-for substances.

Operator, Front Car of Struck Train

Occupational Medical Records

According to the MBTA health records, the 44 year old female operator of the struck train had undergone a pre-employment medical evaluation in May 2014 that included a medical history, review of medications, screening for sleep disorders, vital signs, comprehensive physical examination, vision and hearing testing, urine dip testing, an alcohol and drug screen, and an electrocardiogram. No significant issues or medications were reported by the train operator or identified and she was

methylenedioxyethylamphetamine (MDEA), tetrahydrocannabinol (THC), oxycodone, oxymorphone, hydrocodone, and hydromorphone.

² The FAA Forensic Sciences Laboratory has the capability to test for more than 1300 substances including toxins, common prescription and over-the-counter medications as well as illicit drugs. See: <http://jag.cami.jccbi.gov/toxicology/default.asp?offset=0>

determined to be fit for duty. She underwent a similar comprehensive exam in January 2019 she was briefly removed from duty due to a high heart rate. After an evaluation by her physician, she was found to be fit for duty in February 2019. Drug and alcohol testing performed during these visits was negative.

Post Accident Emergency Medical Treatment Records

Records from the train operator's emergency treatment following the accident were obtained and reviewed. She arrived at the hospital able to speak and primarily complaining of back pain per the nurse report and neck pain per the physician report. She reported no chronic medical conditions or use of medications. She was treated and discharged from the emergency department.

Toxicology Testing

Toxicology tests performed by Quest Diagnostics as required by the Federal Transit Administration on urine obtained at 21:40 on the day of the accident were negative for all tested-for substances.

Operator, Rear Car of Struck Train

Occupational Medical Records

According to the MBTA records, the 44 year old female operator in the rear car of the struck train had undergone a pre-employment medical evaluation in May 2002 that included a medical history, review of medications, screening for sleep disorders, vital signs, comprehensive physical examination, vision and hearing testing, urine dip testing, and an alcohol and drug screen. This comprises the routine examinations she underwent over time. She was found to have mildly deficient distant vision and was color blind; she was determined to be fit for duty. During this and successive visits, drug and alcohol testing was negative.

Between 2002 and her most recent evaluation in 2021, she underwent periodic MBTA occupational health evaluations which addressed various issues including following up from accidents, psychiatric disease, development of the need to wear glasses, developing diabetes and hypertension, and requiring continuous positive airway pressure (CPAP) to treat obstructive sleep apnea. For some of these issues, she was temporarily removed from safety sensitive work and underwent additional evaluations by the relevant healthcare provider. Each time, she was returned to duty.

At her 2021 exam, her CPAP use was 62.5% of nights (>4 h/night).³ Her Hemoglobin A1C was 7.1% - indicating good compliance with her diabetes regimen.⁴ She was determined to be fit for duty.

Toxicology Testing

Toxicology tests performed by Quest Diagnostics as required by the Federal Transit Administration on urine obtained at 22:01 on the day of the accident were negative for all tested-for substances.

D. SUMMARY OF MEDICAL FINDINGS

The 4 train operators involved in this accident had all been determined to be fit for duty at the time it occurred. Post-accident toxicology testing (FTA required testing for all 4 and additional screening for the operator of the striking train) was negative.

³ MBTA medical standards recommend CPAP use longer than 4 hours on at least 70% of nights but the examiner has some leeway in determining fitness.

⁴ Hemoglobin A1C is a measure of the percentage of hemoglobin molecules that have a glucose molecule attached to them (what percentage have been glycosylated). It is used as a measure of average blood glucose over the preceding several weeks. Non-diabetic levels are below 5.4%. Between 5.5 and 6.4% is considered “pre-diabetes” and above 6.5% indicates diabetes. For diabetic individuals, levels below 7.0% are considered “good control.” [National Institutes of Health. U.S. National Library of Medicine. MedlinePlus. A1C. <https://medlineplus.gov/a1c.html> Page last updated 5/5/21.]