



## **DEATH ON NEW YORK'S SUBWAYS AND BUSES: A SURVEY OF THE PSYCHOLOGICAL RESPONSE OF NEW YORK CITY TRANSIT WORKERS**

**Howard M. Rombom, Ph.D.**  
**Behavioral Medicine Associates**  
**310 East Shore Road**  
**Great Neck, New York 11023**  
[www.behavmed.com](http://www.behavmed.com)

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### **INTRODUCTION**

The purpose of this article is to review the psychological aspects of death incidents experienced by transit workers while working for the New York City Transit Authority. This article will describe and evaluate the experience of our Occupational Psychology Health Practice, Behavioral Medicine Associates related to these workplace incidents.

For the purpose of this review, psychological injury is defined as a significant emotional, behavioral or cognitive response to an event that occurred at work. Examples include witnessing a suicide, being threatened, injuring a passenger without intent, being exposed to toxic substances, as well as other non-physical events involving trauma. Psychological injuries also result from incidents in which there is a physical injury, an assault in which a worker is shot, assaulted, stabbed or spit on.

New York City Transit workers are employed in positions vulnerable to incidents that result in psychological injury. Death related incidents are described by New York Transit Authority workers as "12-9" incidents. In the psychological literature these incidents are often called "person under train (PUT) incidents," or "on-the-track accidents."

This article will review the details of these incidents including the nature of the incident, the season of the incident, the age and sex of the transit worker, whether this was the first event and the experience of our psychology practice in treating these workers and our success in enabling them to return to work.

### **LITERATURE REVIEW**

In a review of the literature there are indications that train drivers who experience on the track accidents generally report more health problems than do other drivers. The strongest reactions were attributed to the most serious situations, that is, accidents causing death or major injuries.

In a study published by the Journal of Psychosomatic Research (1) describing the experience of train drivers in Norway, there were indications that a causal relationship may develop between traumatic on the track experiences and long-term physical complaints and psychological complaints.

In a French study (2) there were indications that the prevalence of Post Traumatic Stress Disorder (PTSD) in those who have been involved in traumatic “person under train” accidents was greater than in the general population. A French Railways Medical Department study conducted between the years of 1996 to 2000 with follow-up of drivers for three years results indicated the following:

1. “All of the disorders observed in the immediate aftermath of the accident disappear in less than one year.”
2. “Vulnerability factors are: Prior trauma history, acute and sustained life events, and the professional situation where the driver is not accompanied and drives the train away alone immediately after the accident.”
3. “The driver’s occupational future does not seem to be affected by this event.”

Policy implications derived from this study include the need for closer medical follow-up during the first year post-incident as well as professional support and professional medical accompaniment. The evaluation of psycho-behavioral disorders indicated that the symptoms of Post Traumatic Stress Disorder gradually decreased over successive assessments and were absent by the third year assessment. Nearly 70% of drivers interviewed were given temporary sick leave after the 12-9 accident. It was acknowledged in the article that the subjective significance of the event was mitigated by the driver’s own reaction. However, in this study in over 95% of cases, no negative short, medium, or long-term impact on occupational fitness was found. The conclusion of this study was that the frequency of psycho-behavioral disorders following a “person under train” accident is low among the population of French drivers. Any of the disorders observed in the immediate aftermath of the accident disappeared quickly, in less than one year.

Another article published in the Journal of Psychiatric Research (3) focused on the psychological effects of “person under train” incidents on drivers the findings indicated that train drivers who have experienced a person under train accident experience acute psychological disturbances; the results also highlight the utility of a systematic prevention program for these problems as well as direct and forceful intervention subsequent to the incident.

In a dissertation published in 2000 (4) a study of the Brotherhood of Locomotive Engineers affiliated with the Long Island Railroad in New York was described. This study indicated a correlation between the experience of a 12-9 incident and the development of Acute Stress

Disorder by locomotive engineers. It was found that social support after the incident decreased stress levels.

An article published by the National Institute of Psychosocial Factors in Health from Stockholm, Sweden (5) found that:

“A mild acute psychophysiological reaction was observed three weeks after the event, with elevated prolactin and increased sleep disturbance in the person under train (12-9) group.”

Such acute reactions were transitory and not correlated with long-term sick leave. Drivers in the group with seriously injured victims were absent from work for longer periods than drivers in the groups with mildly injured or dead victims. Drivers described a successively worsened psychosocial work situation during the 12 months of follow-up.

A study of the British rail system conducted in 1994 (6) indicated that a specific process following suicides or similar traumas for drivers of trains would be necessary in order to help them overcome the difficulties sustained as a result of these types of incidents.

In a study conducted for the Swedish Foundation for Occupational Health and Safety for State Employees in 1993 (7) it was found that a month after an accident symptoms of distress were significantly reduced among drivers with no pre-accident risk experience.

“Drivers with two or more previous accident experiences and those who had worried about being involved in accidents showed the highest symptoms of distress at follow-up. The few drivers who report long-term psychological distress are best predicted by a combination of acute high scores, experience of previous accidents and risk expectancy prior to the current accident.”

This study suggests that premorbid and non-accident related variables are more important for psychological outcome of healthy drivers after on the track accidents than the stress event itself.

A 1992 study conducted by the Department of Public Health and Epidemiology at the University of London (8) found that:

“16.3% of the drivers involved in incidents did develop Post Traumatic Stress Disorder and that other diagnoses, especially depression and phobic states, were present in 39.5% of drivers interviewed one month after the incident.”

In a 1994 study from the Department of Clinical Psychology in London (9) the findings indicated that diagnoses other than PTSD, such as depression and phobic state were present in 31% of the drivers. However, the results of the study indicate:

“Although approximately one third of drivers suffered a severe psychological reaction following a railway suicide, when interviewed again six months after the incident most drivers reported a marked reduction in symptoms.”

In a 1998 article published in the Journal of Occupational Health Psychology entitled, "Studies of Health Outcomes in Transit Operators: Policy Implications of the Current Scientific Database," (10) the authors concluded that an area of support which is often overlooked after these incidents is psychological and social support. They indicate:

"It is well established that prolonged stress responses can follow traumatic events like accidents and criminal assault. Transit systems should establish mechanisms for psychological, social and even legal support after such incidents."

Overall, there is little published data about the effects of 12-9 accidents in transit systems, despite the relatively high number of incidents encountered. Reasons include reluctance on the part of transit systems to reveal data on the number of these incidents; workers too uncomfortable to be interviewed for research purposes, and, perhaps most significantly, relatively minimal publicity about these incidents.

The purpose of this present survey is to review the experience of Behavioral Medicine Associates as treating psychologists for train operators and other New York City Transit workers after incidences of this nature. Behavioral Medicine Associates (BMA) is the leader in providing behavioral care for injured workers.

## **SUBJECTS**

We have identified 70 cases in which transit workers were involved in 12-9 incidents. Almost all (69 of 70) of the workers sought care within 30 days of the incident and the majority were seen within seven days. All of the workers were initially screened by a medical doctor who referred the worker to our psychology practice. The amount of time between the incident and first psychology consultation ranged from one day to 135 days (4.5 months) after the incident. The two primary diagnoses which were used to describe the symptoms reported by these workers were Post Traumatic Stress Disorder and Acute Stress Disorder. The diagnostic criteria for both of these diagnoses are the same; Acute Stress Disorder is given to those individuals who present within 30 days of the incident. Once the symptoms persist for longer than 30 days, the diagnosis of Post Traumatic Stress Disorder can be used.

The mean age of the workers was 42.67 years. Of the group 55 were males and 15 were female. The average age of the women was 40.6 years, the average age of the men was 42.45 years. The majority of the workers were train operators, 46 of whom were male and 8 of whom were female. Also seen were eight male conductors and three female conductors. There was one station agent who was involved in a 12-9 incident. Also treated were three bus drivers, two of whom were male. A male power distribution technician was also treated for a 12-9 incident.

Of the 70 individuals treated 11 had had one or more prior 12-9 experiences.

## **INCIDENT CHARACTERISTICS**

Almost all of the incidents involving subways occurred as the trains were pulling into the station; incidents also occurred in the tunnel, and one occurred in the “yard.”

The incidents were equally distributed among the seasons; there was no seasonal effect noted.

Also treated were bus operators who were threatened and assaulted, bus operators who struck pedestrians, a station agent who witnessed a shooting and a worker who witnessed a co-worker electrocuted in the tunnel.

The 12-9 subway incidents included passengers jumping in front of an on-coming train and passengers struck while lying on the tracks.

## **TREATMENT ISSUES**

Workers reported feelings of helplessness, and would often go over the event in their minds to see if they could have done something differently. Typical of Post-Traumatic Stress Disorder (PTSD) and Acute Stress Disorder (ASD) were recurring thoughts about the incident which intruded on their day to day activities. Sleep problems, reduction of appetite and generalized hyper vigilance were also noted. Specific anxiety reactions to situations similar to the incident are common among this group. The most striking response to the incident, however, involved feelings of social isolation, distancing from family, friends and co-workers. Workers often felt as though the incident separated them from others; they felt that others could not understand their feelings or relate to the experience. This sense of isolation is a hallmark of both ASD and PTSD. Many of the workers were uncomfortable returning to situations that reminded them of the incident, i.e., subways, buses, etc.

The symptoms reported, however, were all within the range expected for these types of events. We did not encounter any psychotic reactions, “nervous breakdowns,” or other sequelae that would indicate a more serious psychiatric disturbance.

## **TREATMENT PROGRAM**

Cognitive-Behavioral Therapy was the cornerstone of our treatment program. The psychological staff of Behavioral Medicine Associates developed treatment plans and programs for each individual based upon the presenting problems and the workers’ needs. Our treatment program included relaxation training, cognitive restructuring, Rational-Emotive Therapy, self-instructional skills, desensitization training, behavioral assignments, as well as support empathy and concern. The social aspect of workers’ responses was often the most critical focus of the treatment. Enabling workers to share their feelings with others, to normalize their interactions, and to re-integrate into their social networks was critical to recovery.

Behavioral Medicine Associates works closely with occupational health physicians, coordinating care for injured and traumatized workers. The observations of these physicians are critical in

identifying problems and in referring for psychological evaluation and treatment. The team approach to the management of 12-9 workers is fundamental to the success of our program.

## **TREATMENT RESULTS**

All of the individuals treated were able to return to work within a year; the average amount of time before returning to work was 2-3 months. Several of the individuals who returned to work continued in treatment in order to maintain their treatment gains and maximum their ability to use the psychological skills learned during treatment. Support, from both the treating psychologist and from family and friends was an important component of the success seen.

Consistent with other reports, there were no indications of long-term psychological difficulties, permanent or chronic psychological damage resulting from these incidents. Our experience treating NYCTA workers involved in 12-9 incidents did not indicate any increase in physical problems as a result of the incidents. Temporary increases in blood pressure and occasional panic reactions were noted, but these effects abated rapidly.

We have treated individuals whose responses to 12-9 incidents have been more protracted and resulted in long-term problems. Examples of these are victims of the 9/11 World Trade Center attacks as well as other transit workers who were referred either before or after the temporal parameters for this study.

## **TREATMENT ISSUES**

Overall, we observed that transit workers who are involved in 12-9 incidents go through a grief period but overall experience only minimal guilt. This is due to the understanding that they were unable to avoid the situation. Patients often question whether there might have been something they could have done to avoid the situation; they may experience an illogical sense of control, when in fact they know they had no control over the situation. This is a testament to the seriousness with which they take the responsibility of driving a train or a bus. All workers understand the nature of the job and accept that a 12-9 incident could occur. Many of the workers treated have heard of, or know co-workers who have been involved in 12-9's. They have seen their co-workers adjust and often use these workers as role models for their recovery and adjustment.

Workers expressed anger at the person who may have been in the act of committing suicide. They often need to cope with being used by the individual as the instrument of the suicide. Discussions of the selfishness of suicide and understanding of how someone could take this course of action were a common theme among the patients treated. Anger reactions serve to place the blame on an external source; this reaction is adaptive and is used therapeutically as a means of helping workers with feelings of guilt and responsibility.

Train operators appear to suffer from Post Traumatic Stress Disorder for approximately 3-4 months and then begin to cope more effectively. In our limited experience, conductors and

token booth clerks (station agents) seem to develop a major depressive episode that lasts somewhat longer.

These workers have no prior psychological history; they do not report prior mental health treatment or express psychological vulnerability. They appreciate the psychological treatment including psychoeducational techniques which help them re-establish a routine to return to a normal lifestyle. The purpose of the treatment is to prepare the workers to return to work with a series of psychological skills to cope with the possibility of another 12-9 incident. This tends to be the most significant concern in the back-to-work stage of treatment.

Specifics of each incident may also need to be addressed, as workers often express concern about a particular aspect of the incident, i.e., location, route, or time of day. Workers who have experienced more than one 12-9 incident did not respond differently than those who had a singular experience. Some patients who have had more than one 12-9 experience say that prior treatment helps them cope better the second time and enabled them to return to work more easily. This suggests that workers value the psychological and behavioral skills being provided, and these skills remain an integral part of their thinking. It is our belief that the psychoeducational component and collaborative approach emphasized by cognitive behavioral therapy is empowering for the patient.

Patients universally indicated that these incidents occur without warning. Although they may see the incident developing they are simply unable to prevent it. As a result of this there is lessened attribution of fault both for their reactions and the reactions they receive from those around them, their peers, coworkers and family. A theme of helplessness is common when these patients are first seen due to the fact that they are simply incapable of changing the outcome of the event even though they can see the situation progressing. We have found that these workers display resiliency, they have been able to cope and move forward.

## **FUTURE IMPLICATIONS**

During the course of our treatment it became clear that many of the workers who experienced 12-9 incidents would benefit from support group treatment to help them learn from each other's experiences, discuss feelings and advice, and help each other cope with the difficulties they share as a result of these incidents. Further research will be conducted to assess whether Post Traumatic Stress Disorder leads to any long-term somatic or psychological problems. It has been our experience that this is not the case with this population.

It is our recommendation that new train and bus operators, and, to a lesser degree, other transit workers, are educated about the possibility of 12-9 and other traumatic workplace incidents. There is evidence that pre-education can reduce the emotional impact of these incidents and help workers understand the full nature of their jobs. Expectations about potential problems often help to mitigate the response to the event. Enabling workers to be prepared for these events by equipping them with information and "emergency behavioral techniques" might reduce the severity of the reaction should an incident occur. This type of training should parallel emergency preparedness for other types of accidents.

## **SUMMARY**

Overall, there was no long-term impact on occupational fitness found in the workers seen for these 12-9 situations. The common threads in treatment were social distancing, anxiety, sleep problems, and some mild somatic complaints. All of these difficulties were acute problems which resolved during the course of treatment and did not persist for any significant period of time. Our experience was similar to that seen in the psychological literature; the majority of the behavioral problems were observed in the immediate aftermath of the accident and disappeared within a relatively brief period of time.

The psychologists of Behavioral Medicine Associates are encouraged by the dedication and devotion expressed by the workers. We are pleased to be able to help these workers resolve the problems discussed as a result of 12-9 incidents.



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