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# Original Contributions

# SUBWAY-RELATED TRAUMA: AN URBAN PUBLIC HEALTH ISSUE WITH A HIGH CASE-FATALITY RATE

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□ **Abstract—Background: Between 1990 and 2003, there were 668 subway-related fatalities in New York City. However, subway-related trauma remains an understudied area of injury-related morbidity and mortality. Objective: The objective of this study was to characterize the injuries and events leading up to the injuries of all patients admitted after subway-related trauma. Methods: We conducted a retrospective case series of subway-related trauma at a Level I trauma center from 2001 to 2016. Descriptive epidemiology of patient demographics, incident details, injuries, and outcomes were analyzed. Results: Over 15 years, 254 patients were admitted for subway-related trauma. The mean (standard error of the mean) age was 41 (1.0) years, 80% were male (95% confidence interval [CI] 74–84%) and median Injury Severity Score was 14 (interquartile range [IQR] 5–24). The overall case-fatality rate was 10% (95% CI 7–15%). The most common injuries were long-bone fractures, intracranial hemorrhage, and traumatic amputations. Median length of stay was 6 days (IQR 1–18 days). Thirty-seven percent of patients required surgical intervention. At the time of injury, 55% of patients (95% CI 49–61%) had a positive urine drug or alcohol screen, 16% (95% CI 12–21%) were attempting suicide, and 39% (95% CI 33–45%) had a history of psychiatric illness. Conclusions: Subway-related trauma is associated with a high case-fatality rate. Alcohol or drug intoxication and psychiatric illness can increase the risk of this type of injury.** **© 2018 Elsevier Inc. All rights reserved.**

□ **Keywords—subway-related trauma; subway; public transportation; trauma; suicide**

## INTRODUCTION

In 2004, subway collisions accounted for 24% of all public transit–related fatalities, and in New York City (NYC) alone, there were 668 subway-related fatalities between 1990 and 2003 (1). Victims of subway-related trauma often have severe injuries, including extremity fractures and amputations (2,3). Understanding the nature of subway injuries and the events leading up to them is an important part of treatment and control of these unique injuries. This issue is particularly pertinent to dense urban environments where residents rely heavily on public transportation (4).

Studies have highlighted several events leading up to subway-related injuries, with the rate of suicides exceeding unintentional injuries (such as slips and falls), which in turn exceed assaults (1,3–5). In a retrospective analysis of 16 cases of subway rail electrocutions, Rabban et al. found that the most common mechanisms

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included suicide attempts and unintentional falls (6). The types of injuries sustained in subway-related trauma have also been the subject of a small number of previous studies. Lin and Gill examined subway-related fatalities in NYC between the years 2003 and 2007 (3). They found rates of head injury, torso injury, and amputation of 88%, 76%, and 33%, respectively. This suggests that many subway-related fatalities involve polytrauma.

The objective of this study was to characterize the injuries and events leading up to the injuries of all patients admitted after subway-related trauma. This is the first step in developing an understanding of the epidemiology of subway-related trauma. This may allow for future developments in trauma patient care, and potentially prevention of subway-related injuries.

## METHODS

This is a retrospective study of patients admitted after subway-related injury to Bellevue Hospital, a Level I trauma center in NYC, from January 1, 2001 to December 31, 2015. Patients were identified from the American College of Surgeons National Trauma Registry System using the e-codes outlined in the Appendix 1.

Abstracted data included demographics, incident-related variables, type and severity of injuries, surgical interventions, and clinical outcomes. Risk factors of interest included blood alcohol content (BAC), history of alcohol and drug dependence, and history of psychiatric illness among the study patients. Alcohol intoxication was defined as a BAC >80 mg/dL, based on the legal definition. The BAC of patients for whom no BAC was obtained was coded as unknown in alcohol intoxication analyses. Drug use (excluding alcohol) was detected via urine drug screen (UDS). Patients were considered "not intoxicated" when BAC was <80 mg/dL and no drugs were detected on UDS. Psychiatric history included evidence of past alcohol or drug abuse, depression, and schizophrenia, among other psychiatric diagnoses in the electronic medical record or by self-report. Incidents were considered suicidal in nature only if self-reported by the patient or if bystander accounts clearly documented such activity. Patients who died at the scene and whose injuries did not involve the subway tracks or train were excluded (e.g., patients who fell on the platform or on the station stairs). Surgical interventions included amputation, surgical fracture reduction, intracranial pressure monitoring, craniotomy/craniectomy, and laparotomy.

Descriptive statistics were calculated using mean (standard error of the mean [SEM]) for normally distributed variables and median (interquartile range [IQR]) for non-normally distributed variables. When making comparisons between groups of patients, the Student's *t*-test was utilized for continuous data. Mann-Whitney *U* test was used for non-normally distributed variables, such as Injury Severity Score (ISS). A $\chi^2$ analysis was used for categorical data and, when appropriate, substituted with the Fisher's exact test or binomial test. A $p$ value of <0.05 was considered significant. This study was approved by the Institutional Review Boards of NYU School of Medicine and Bellevue Hospital.

## RESULTS

During the 15-year period, 254 patients were admitted for subway-related trauma. Demographic details can be found in Table 1. The mean (SEM) age of the cohort was 41.3 (1.0) years with only 5% of patients younger than 20 years old (95% confidence interval [CI] 3–8%). Eighty percent of patients were male (95% CI 74–84%). The time of injury was equally distributed throughout the day. There was significant seasonal variability, with more cases occurring in winter and spring relative to summer and fall ($p = 0.01$), as defined by astronomical seasons in the northern hemisphere.

**Table 1. Demographic Characteristics and Mechanisms of Injury (n = 254)**

| Characteristic | Data |
|---|---|
| Age, y, median (IQR) | 40.37 (27–54) |
| Male sex, % (95% CI) | 80 (74–84) |
| Length of stay, d, median (IQR) | 6 (1–18) |
| Injury time of day, % (95% CI) | |
| 6 AM to 12 PM | 13 (9–18) |
| 12 PM to 6 PM | 18 (14–23) |
| 6 PM to midnight | 19 (15–25) |
| Midnight to 6 AM | 17 (12–22) |
| Unknown | 33 (27–39) |
| Transfers | 0.39 (0–2) |
| Injury season, % | |
| Winter | 26 |
| Spring | 33 |
| Summer | 20 |
| Fall | 21 |
| ISS, median (IQR) | 14 (5–24) |
| Event type, % (95% CI) | |
| Unintentional | 70 (64–75) |
| Suicide | 17 (12–22) |
| Assault | 3 (1–6) |
| Unknown | 11 (8–15) |
| Injury mechanism, % (95% CI) | |
| Hit by train | 49 (43–55) |
| Fall onto tracks | 44 (38–50) |
| Pinned by train | 3 (1–6) |
| Unknown | 5 (3–8) |
| Intoxication, % | 55 |
| Alcohol (BAC >80 mg/dL), % | 42 |
| Positive UDS, % | 20 |
| Unknown (no BAC or toxicology), % | 9 |
| Suicide, % | 17 |
| Psychiatric history, % | 39 |

BAC = blood alcohol content; CI = confidence interval; IQR = interquartile range; ISS = Injury Severity Score; UDS = urine drug screen.

Median ISS was 14 (IQR 5–24). The rate of unintentional injuries (70%) exceeded that of suicides (17%) (Table 1). Three percent of cases involved assaults. Eleven percent of cases had an unknown cause. The mechanisms of injury included being hit by the train (49%), falling onto the subway tracks (44%), and being pinned by the train (3%).

The most common injuries were long-bone fractures (38% of patients), intracranial hemorrhage (ICH) (27% of patients), and extremity amputations (21% of patients). Thirty-four percent of patients sustained torso injuries, including rib fractures (21% of patients), pneumothoraces (13% of patients), and hemothoraces (4% of patients). Seven percent of patients sustained solid abdominal organ injuries (Table 2). When analyzing fatalities only, the rates of any bone fracture, ICH, amputation, and torso injury were 85%, 62%, 27%, and 42%, respectively, with many patients sustaining more than one injury.

Thirty-seven percent (n = 95) of patients required a surgical intervention. The majority of amputations involved the lower extremities only (64% of amputations), with 3 patients requiring both upper- and lower-extremity amputations (6% of amputations). None of the amputated extremities or digits were deemed salvageable. Need for amputation was associated with a 13% mortality rate, which was not significantly different from patients who did not undergo amputation (9.45%; $p = 0.45$).

Fifty-five percent of patients were intoxicated with alcohol or had a positive UDS at the time of injury, or both. Forty-two percent of patients' BAC on admission was above the legal limit, and suicide accounted for only 3% of intoxicated patients (odds ratio 0.09; 95% CI 0.03–0.27; $p < 0.0001$). Twenty percent of patients had a positive UDS at the time of injury. Forty incidents were suicidal in nature (17% of all cases; Table 1). Seventy-nine cases involved patients with a history of drug or alcohol abuse, or both (31% of all cases). These categories were not mutually exclusive, as several patients satisfied the criteria for more than one category.

**Table 2. Type and Location of Injuries**

| Injury | Percent of Patients |
|---|---|
| Torso | 34 |
| Rib fracture | 21 |
| Pneumothorax | 13 |
| Hemothorax | 4 |
| Amputation | 21 |
| Upper | 6 |
| Lower | 13 |
| Both | 1 |
| Intracranial hemorrhage | 27 |
| Patients with at least one fracture | 49 |
| Long-bone fracture | 38 |
| Facial fracture | 25 |
| Vertebral fracture | 15 |
| Solid organ injury | 17 |

The mean (SEM) hospital length of stay (LOS) was 11.9 (0.94) days with a median LOS of 6 days (IQR 1–18 days). Overall mortality rate was 10% (n = 26; 95% CI 7–15%). Deaths occurred relatively soon after admission. Mean LOS for patients who died $\bar{x}$ (1.5 days) was significantly shorter than for those who survived $\bar{x}$ (13 days, n = 228; $p < 0.001$). Excluding fatalities, mean (SEM) LOS was 13 (1.0) days, with a median LOS of 7 days (IQR 2–19 days).

Overall case-fatality rate was 10% (95% CI 7–15%). Increased likelihood of mortality was associated with ICH (unadjusted odds ratio [uOR] 5.4; 95% CI 2.4–12.5; $p = 0.001$) and any bone fracture (uOR 6.7; 95% CI, 2.3–18.3; $p < 0.001$) (Figure 1A). Mortality was not significantly associated with amputation (uOR 1.5; 95% CI 0.6–3.5; $p = 0.45$), torso injury (uOR 1.5; 95% CI 0.7–3.2; $p = 0.39$), or solid abdominal organ injury (uOR 1.2; 95% CI 0.3–4.0; $p = 0.82$) (Figure 1A). Patients who died had a significantly higher mean ISS score than those who survived (674.5; $p < 0.001$).

There was a significantly reduced likelihood of fatality associated with a psychiatric history (uOR 0.20; 95% CI 0.07–0.61; $p = 0.002$) (Figure 1B). However, there was no significant difference in ISS relative to those without a psychiatric history (psychiatric history: median ISS 13; IQR 5–22; n = 99; no psychiatric history: median ISS 14; IQR 6–26; n = 155; $p = 0.058$). In contrast, suicide attempts ($t = 2.012$, $p = 0.05$) were associated with an elevated ISS relative to non-suicide attempts.

## DISCUSSION

This study demonstrates the significant morbidity and mortality associated with subway-related injuries. A recent study of 12 years of U.S. trauma inpatient admission data described an overall all-injury case-fatality rate of 2.4% (7). Compared to this, subway-related injuries in our study were almost four times more lethal. Because patients who died in the field were excluded, this reported mortality rate is underestimated.

The predominantly male sex distribution of our patient population was similar to that found by Lin and Gill, who also described more of these injuries occurring in the spring and winter seasons (3). The events leading to subway-related injury that were found in this study were similar to those found by Rabban et al. (6). While Rabban et al. found that the two most common events leading to injury were intentional jumping or falling onto the tracks, our study found that they were falling onto the tracks and being hit by the train. Of note, in our study, being hit by the train frequently involved

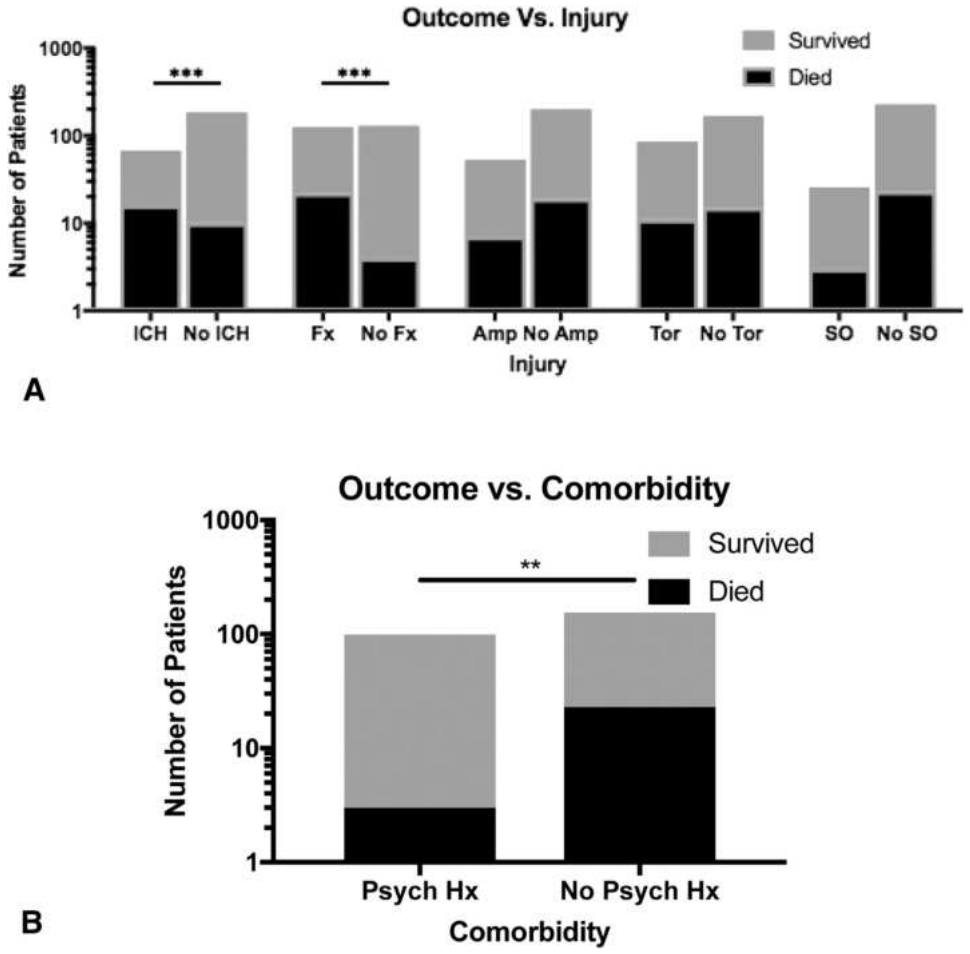


**Figure 1. Patient survival. The relationship between (A) injury type and (B) psychiatric history on patient survival. Amp = amputation; Fx = any fracture; Hx = history; ICH = intracranial hemorrhage; SO = solid organ injury; Tor = torso injury. *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$. Error bars: standard error of mean.**

jumping in front of it. Future research should be aimed at investigating the seasonal cycle of injuries. A likely driving factor is ridership numbers, which may be increased during those times, although a relationship to seasonal depression and suicide cannot be excluded.

Rates of head injury, torso injury, and amputation in our study differed somewhat from those of Lin and Gill, who found head injury, torso injury, and amputation rates of 88%, 76%, and 33%, respectively (3). This may be due to differences in categorization of different injuries between the two studies (e.g., counting skull fractures as bone fractures vs. head injuries) and the inclusion of all patients versus fatalities only.

None of the amputated limbs in this study were believed to be salvageable. This may be due to the extreme nature of soft-tissue injury that is commonly sustained in subway-related trauma. Consistent with our findings, Maclean et al. found a 0% limb salvage rate in subway-related traumatic amputations (2). In addition, they noted only 5% mortality in such cases, which is slightly lower than the 13% mortality rate associated with amputation in our study. Limb loss is a significant cause of physical and psychiatric disability (as reviewed by Desmond), and may compound underlying psychiatric illness (8,9).

We found that the number of unintentional injuries exceeds that of suicides, while both exceed that of assaults. This is discordant with previous studies, which found that suicides were more frequent than unintentional injuries (1,3). This discrepancy may be due to the fact that previous studies have used data from fatalities only, while our study only excluded patients who were declared dead at the scene. It is possible that suicides result in higher in-the-field mortality than "accidents." In our study, suicide was associated with a higher ISS. Of note, 11% of cases in our study had an unknown mechanism. It is possible that many of these cases were suicide attempts. Further studies should incorporate fatalities from the field to get a more complete sample of subway-related suicides.

Despite heterogeneity in injury rates across studies, it is clear that subway-related trauma represents a significant source of morbidity, and that substance use and abuse is frequently involved. Our finding that nearly half of patients were intoxicated with alcohol at the time of injury is consistent with the literature. We found that alcohol intoxication is not associated with ISS or mortality. This contrasts with Sethi et al., who found that alcohol intoxication was associated with higher ISS and mortality rate in NYC after bicycle trauma (10). Again, it is possible that this is due to the severe nature of subway-related injuries, leading to higher in-the-field mortality and consequent selection bias. A protective effect of alcohol in the setting of acute traumatic injuries has been suggested by Yaghoubian et al., who analyzed all incoming trauma patients over 4 years at a major urban trauma center in Los Angeles, California (11). Data from in-the-field mortalities should be included in subsequent analyses to differentiate between these and other possibilities. Alcohol intoxication, in our study, was more common in non-suicidal patients than in suicidal patients, which is also consistent with the findings of Lin and Gill (3).

We found a reduced probability of mortality associated with psychiatric history, despite there being no difference in ISS. In contrast, there was no change in probability of mortality associated with suicide attempts, alcohol intoxication, or a positive UDS. Because our trauma center is a tertiary care center for the severely psychiatrically ill, there may be some bias with regard to the prevalence of psychiatric patients and suicidal patients referred to our ED.

Our results suggest that citywide subway-related trauma prevention efforts should be investigated. In our cohort, injuries related to falling onto the tracks or coming into contact with the train were prominent. A large percentage of victims were middle-aged males. Furthermore, many patients had a history of psychiatric illness, alcohol or drug abuse, were acutely intoxicated, or were attempting suicide. While this study is observational, it opens the door for more targeted studies in the future, which may address causality. Interventions focusing on the at-risk populations identified in this study may reduce the morbidity and mortality of subway-related trauma.

This study helps elucidate the epidemiology of subway-related injuries at a major urban trauma center in NYC. Accurately anticipating the most probable presentation of the undifferentiated subway-related trauma victim can help health care teams prepare to provide the highest possible quality of care. Doing so requires an understanding of the epidemiology of this cohort. Additional studies should be aimed at possible interventions aimed at injury prevention.

*Limitations*

Limitations of this study include its retrospective nature, which relies on the accuracy and thoroughness of the database, thereby limiting our ability to generalize the results. Although our data collection spans 15 years, the study population is limited to a single trauma center. A multicenter study incorporating all emergency medical services' data would yield a larger and more descriptive patient population and may allow for more robust subgroup analyses. Also, incorporating data from the Office of the Chief Medical Examiner would yield more representative data, as all field fatalities could be included. Furthermore, other important data points, such as race, insurance status, and social information (e.g., non-domiciled status) were sparsely collected and therefore could not be included in our analysis. Lastly, we were unable to adequately perform toxicology screens for a large number of patients, due to our inability to verify the indication and timing (e.g., inpatient use or recreational use before arrival) of the administration of controlled substances (e.g., narcotics for pain, benzodiazepines for agitation or anxiety) in relation to the toxicology studies. We were unable to perform analyses on positive toxicology screens as we were for blood alcohol levels.

## CONCLUSIONS

This study shows that victims of subway-related trauma admitted to a Level I trauma center frequently sustain combined traumatic brain injury and extremity amputation. A large proportion of subway-related trauma victims are adult males. Many victims suffer from psychiatric illness and alcohol or drug abuse. A high proportion of patients are intoxicated at the time of the injury. This study helps elucidate the epidemiology of subway-related injuries at a major urban trauma center in NYC.

## REFERENCES

1. Gershon RRM, Pearson JM, Nandi V, et al. Epidemiology of subway-related fatalities in New York City, 1990–2003. J Safety Res 2008;39:583–8.
2. Maclean AA, O'Neill AM, Pachter HL, Miglietta MA. Devastating consequences of subway accidents: traumatic amputations. Am Surg 2006;72:74–6.
3. Lin PT, Gill JR. Subway train-related fatalities in New York City: accident versus suicide. J Forensic Sci 2009;54:1414–8.
4. Neff J, Dickens M. 2013 Public Transportation Fact Book. Washington, DC: American Public Transportation Association; 2013.
5. Chung YW, Kang SJ, Matsubayashi T, Sawada Y, Ueda M. The effectiveness of platform screen doors for the prevention of subway suicides in South Korea. J Affect Disord 2016; 194:80–3.

6. Rabban J, Adler J, Rosen C, Blair J, Sheridan R. Electrical injury from subway third rails: serious injury associated with intermediate voltage contact. Burns 1997;23:515–8.
7. Dimaggio C, Ayoung-Chee P, Shinseki M, et al. Traumatic injury in the United States: in-patient epidemiology 2000-2011. Injury 2016; 47:1393–403.
8. Desmond DM. Coping, affective distress, and psychosocial adjustment among people with traumatic upper limb amputations. J Psychosom Res 2007;62:15–21.
9. Melcer T, Walker GJ, Galarneau M, Belnap B, Konoske P. Midterm health and personnel outcomes of recent combat amputees. Mil Med 2010;175:147–54.
10. Sethi M, Heyer JH, Wall S, et al. Alcohol use by urban bicyclists is associated with more severe injury, greater hospital resource use, and higher mortality. Alcohol 2016;53:1–7.
11. Yaghoubian A, Kaji A, Putnam B, De Virgilio N, De Virgilio C. Elevated blood alcohol level may be protective of trauma patient mortality. Am Surg 2009;75:950–3.

## ARTICLE SUMMARY

**1. Why is this topic important?**

Subway-related trauma, a prevalent source of trauma, often results in severe injuries, including extremity fractures and amputations. Understanding the nature of subway injuries and the events leading up to them is an important part of treatment and control of these unique injuries.

**2. What does this study attempt to show?**

The objective of this study was to characterize the injuries and events leading up to the injuries of all patients admitted after subway-related trauma.

**3. What are the key findings?**

Over 15 years, the overall case-fatality rate was 10% (95% confidence interval [CI] 7–15%). The most common injuries were long-bone fractures, intracranial hemorrhage, and traumatic amputations. At the time of injury, 55% (95% CI 49–61%) of patients were intoxicated with alcohol or had a positive urine drug screen, 16% (95% CI 12–21%) were attempting suicide, and 39% (95% CI 33–45%) had a history of psychiatric illness.

**4. How is patient care impacted?**

This study helps elucidate the epidemiology of subway-related injuries at a major urban trauma center in New York City. Accurately anticipating the most probable presentation of the undifferentiated subway-related trauma victim can help health care teams prepare to provide the highest possible quality of care.

## Appendix

**Appendix 1. Description of All Ecodes Used to Identify Patients for Study Inclusion.**

| eCode | Description | eCode | Description |
|---|---|---|---|
| 800.0 | Railway accident involving collision with rolling stock and injuring railway employee | 805.2 | Pedestrian hit by rolling stock |
| 800.1 | Railway accident involving collision with rolling stock and injuring passenger on railway | 805.3 | Pedal cyclist hit by rolling stock |
| 800.2 | Railway accident involving collision with rolling stock and injuring pedestrian | 805.8 | Other specified person hit by rolling stoc |
| 800.3 | Railway accident involving collision with rolling stock and injuring pedal cyclist | 805.9 | Unspecified person hit by rolling stock |
| 800.8 | Railway accident involving collision with rolling stock and injuring other specified person | 806.0 | Other specified railway accident injuring railway employee |
| 800.9 | Railway accident involving collision with rolling stock and injuring unspecified person | 806.1 | Other specified railway accident injuring passenger on railway |
| 801.0 | Railway accident involving collision with other object and injuring railway employee | 806.2 | Other specified railway accident injuring pedestrian |
| 801.1 | Railway accident involving collision with other object and injuring passenger on railway | 806.3 | Other specified railway accident injuring pedal cyclist |
| 801.2 | Railway accident involving collision with other object and injuring pedestrian | 806.8 | Other specified railway accident injuring other specified person |
| 801.3 | Railway accident involving collision with other object and injuring pedal cyclist | 806.9 | Other specified railway accident injuring unspecified person |
| 801.8 | Railway accident involving collision with other object and injuring other specified person | 807.0 | Railway accident of unspecified nature injuring railway employee |
| 801.9 | Railway accident involving collision with other object and injuring unspecified person | 807.1 | Railway accident of unspecified nature injuring passenger on railway |
| 802.0 | Railway accident involving derailment without antecedent collision injuring railway employee | 807.2 | Railway accident of unspecified nature injuring pedestrian |
| 802.1 | Railway accident involving derailment without antecedent collision injuring passenger on railway | 807.3 | Railway accident of unspecified nature injuring pedal cyclist |
| 802.2 | Railway accident involving derailment without antecedent collision injuring pedestrian | 807.8 | Railway accident of unspecified nature injuring other specified person |
| 802.3 | Railway accident involving derailment without antecedent collision injuring pedal cyclist | 807.9 | Railway accident of unspecified nature injuring unspecified perso |
| 802.8 | Railway accident involving derailment without antecedent collision injuring other specified person | 884.9 | Other accidental fall from one level to another |
| 802.9 | Railway accident involving derailment without antecedent collision injuring unspecified person | 888.0 | Fall resulting in striking against sharp object |
| 803.0 | Railway accident involving explosion, fire, or burning injuring railway employee | 888.1 | Fall resulting in striking against other object |
| 803.1 | Railway accident involving explosion, fire, or burning injuring passenger on railway | 888.8 | Other fall |
| 803.2 | Railway accident involving explosion, fire, or burning injuring pedestrian | 888.9 | Unspecified fall |
| 803.3 | Railway accident involving explosion, fire, or burning injuring pedal cyclist | 917.4 | Striking against or struck accidentally by other stationary object without subsequent fall |
| 803.8 | Railway accident involving explosion, fire, or burning injuring other specified person | 917.8 | Striking against or struck accidentally by other stationary object with subsequent fall |
| 803.9 | Railway accident involving explosion, fire, or burning injuring unspecified person | 917.9 | Other accident caused by striking against or being struck accidentally by objects or persons |
| 804.0 | Fall in, on, or from railway train injuring railway employee | 957.0 | Suicide and self-inflicted injuries by jumping from residential premises |
| 804.1 | Fall in, on, or from railway train injuring passenger on railway | 957.1 | Suicide and self-inflicted injuries by jumping from other man-made structures |
| 804.2 | Fall in, on, or from railway train injuring pedestrian | 957.2 | Suicide and self-inflicted injuries by jumping from natural sites |
| 804.3 | Fall in, on, or from railway train injuring pedal cyclist | 957.9 | Suicide and self-inflicted injuries by jumping from unspecified site |
| 804.8 | Fall in, on, or from railway train injuring other specified person | 958.0 | Suicide and self-inflicted injury by jumping or lying before moving object |
| 804.9 | Fall in, on, or from railway train injuring unspecified person | 958.8 | Suicide and self-inflicted injury by other specified means |
| 805.0 | Railway employee hit by rolling stock | 958.9 | Suicide and self-inflicted injury by unspecified means |
| 805.1 | Passenger on railway hit by rolling stock | 988.0 | Injury by jumping or lying before moving object, undetermined whether accidentally or purposely inflicted |