

The Problem of Substance Use and TBI

1. Who is at risk for developing a substance abuse problem after TBI?

Many people who incur a traumatic brain injury have a substance abuse problem prior to their injury. As a result, it is not surprising that a number of people after they have had traumatic brain injury also have a substance abuse problem. Adolescents and adults who are hospitalized for traumatic brain injury are much heavier drinkers than their peers who have not incurred a TBI. However, for traumatic brain injury as well as for other injuries, there is often a "honeymoon" after the injury when the amount of drinking stops or reduces (Bombardier, Temkin, Machamer & Dikmen, 2003; Corrigan, Lamb-Hart & Rust, 1995; Kreuzer, Doherty, Harris & Zasler, 1990; Krueutzer, Witol, Sander, Cifu, Marwitz & Delmonico, 1996).

A few studies of persons with traumatic brain injury have found that alcohol use gets worse in the period 2 to 5 years after the injury and that unless something is preventing them, many resume their prior levels of alcohol and other drug use (Corrigan, Rust et al., 1995; Kreuzer, Witol et al., 1996; Kreuzer, Witol et al., 1996; Corrigan, Smith-Knapp et al., 1998). Situations that limit resuming use include having to live in an institutional setting where alcohol and other drugs may be less available, or living under closer supervision of family members who help the individual consume less. Of course, use may reduce or stop if the individual is provided information about the effects of alcohol and other drugs after traumatic brain injury or, for people with actual substance abuse problems, being provided treatment.

In addition to the large number of individuals who had a substance use disorder before their injury and return to those levels after, some studies have indicated that between 10% and 20% of persons with traumatic brain injury develop a substance use problem for the first time after their injury (Corrigan et al., 1995; Kreuzer et al., 1996). Thus, taken together, it is a very high proportion of individuals who have been hospitalized for traumatic brain injury who will be at risk for developing a problem after their injury — either because they had one before or because of the vulnerabilities created by the injury itself.

"Substance abuse is a risk factor for having a traumatic brain injury and traumatic brain injury is a risk factor for developing a substance abuse problem."—John Corrigan

2. How many people who have traumatic brain injuries are intoxicated at the time of injury?

At least 20% of adolescents and adults who are hospitalized and at least 30% of those requiring rehabilitation are intoxicated at the time of their injury. It is not surprising that there is a significant link between being intoxicated and incurring a serious injury. Whether because of diminished motor control, blurred vision, poor decision making or greater vulnerability to being victimized, a number of persons incur a traumatic brain injury while they are intoxicated. There is a lot of information available about how susceptible to injury people are when they have blood alcohol levels that exceed the legal limit. There is every indication that other drugs also put people at risk for injury. Three studies that have provided estimates of the number of people intoxicated at the time of their injury are shown below:

In persons hospitalized:

- Colorado TBI Surveillance and Follow-up System: 21% BAC .08 (n=2,151 hospital admissions in Colorado 16 years old).

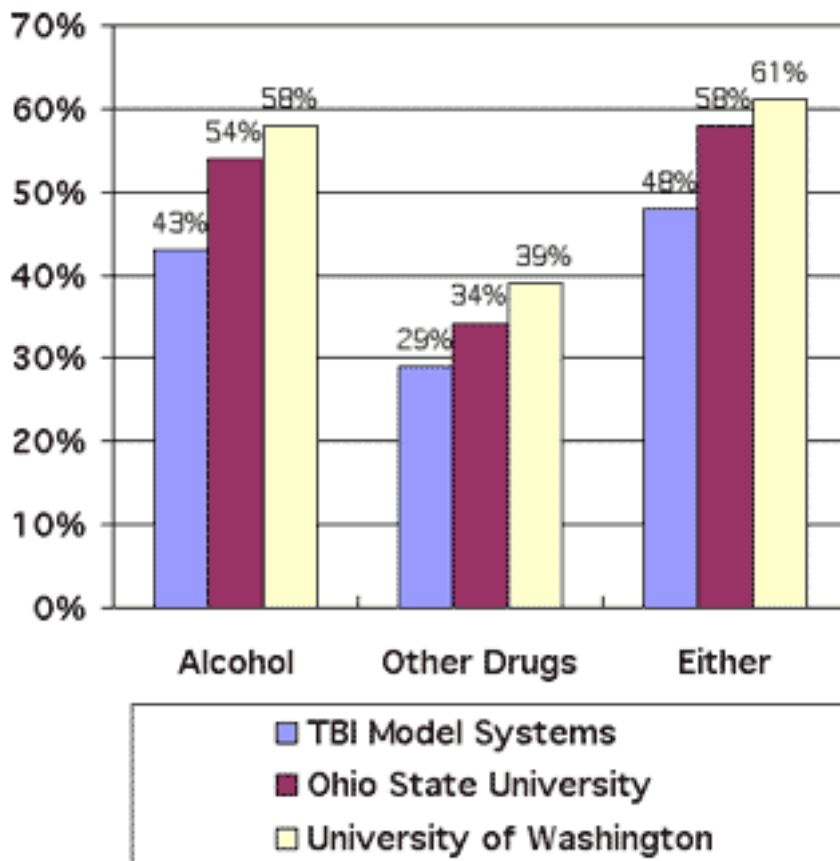
In persons treated in rehabilitation:

- TBI Model Systems: 37% BAC .10 (n=3,893 admissions to Model Systems acute rehab centers).
- OSU Suboptimal Outcomes Study: 25% BAC .10, 12% + drug screen, 32% either (n=356 consecutive admissions for acute rehab).

3. How common is a history of substance abuse before the injury?

Corrigan (1995) reviewed published literature on persons with TBI who were intoxicated at time of injury and those who had a prior history of substance use disorders, whether or not they were intoxicated. Based on articles reporting these variables, having a prior history of substance abuse was more common than being intoxicated at the time of injury. Additionally, clinicians and researchers who used screening tools during the hospital stays found significantly higher rates than those who relied on later medical record review. This result suggests that more people will be identified if a systematic method of inquiring is used; rather than counting on patients to volunteer information or relying on reports of intoxication at injury.

Since that review, there are several additional sources of data on the frequency of prior substance use disorders in adolescents and adults treated in acute rehabilitation. Results from the following articles are graphed below:



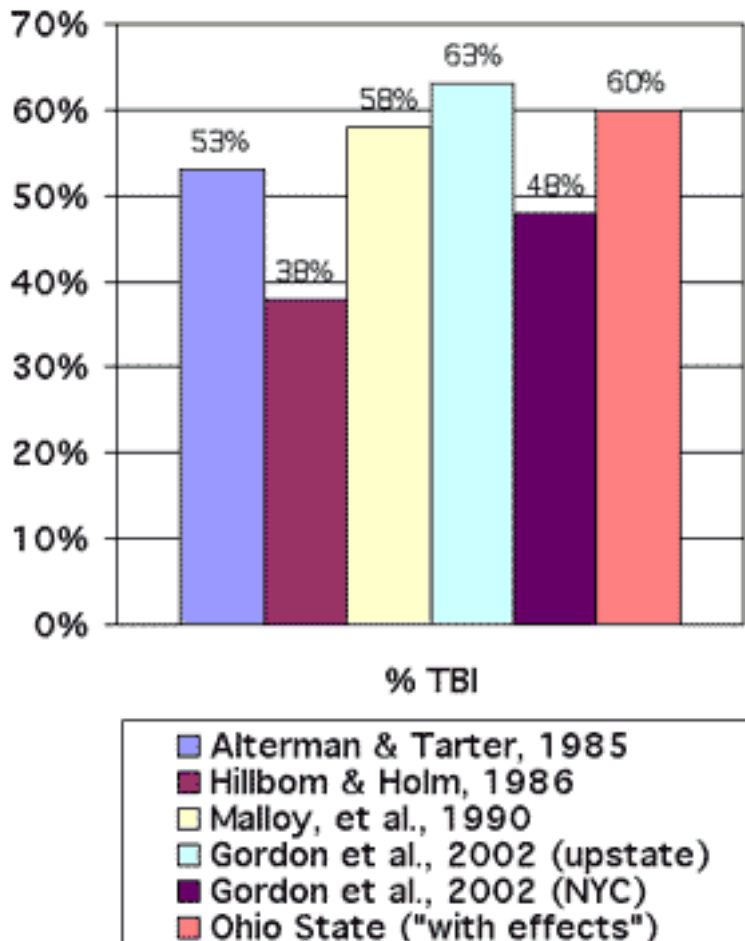
- TBI Model Systems National Database (n=1,262; Corrigan et al., 2003): 43% problem alcohol use or worse, 29% illicit drug use, 48% history of either;
- OSU Suboptimal Outcomes Study (n=356 consecutive admits to acute rehab): 54% alcohol abuse or worse, 34% other drug abuse or worse, 58% history of either;
- University of Washington (n=142 consecutive admits to acute rehab, Bombardier, Rimmele & Zintel, 2003): 58% at-risk alcohol use or worse, 39% recent illicit drug use, 61% history of either.

For adolescents and adults who require inpatient rehabilitation—as many as 60% may have a prior history of substance use disorder.

4. How common is TBI among persons receiving substance abuse treatment?

While there has not been a definitive, population-based study of how many individuals receiving treatment for substance abuse problems have incurred traumatic brain injuries, a collection of studies in the last 20 years suggests that it may be as high as 50%. The studies are summarized below and their results are graphed in the accompanying figure. The lowest

rate observed was 38% of persons in treatment, the highest was 63%. Visual inspection of the graph supports an estimate of 50%, if not more.



Articles included in graph (below)

- Alterman & Tarter (1985) found 53% of a sample of 76 male alcoholics had histories of TBI.
- Hillbom & Holm (1986) found 38% of a sample of 157 alcoholics had a history of TBI with loss of consciousness or hospitalization.
- Malloy, et al. (1990) found 58% of a sample of 60 alcoholics had TBI marked by loss of consciousness, hospitalization, or major neurological change.
- Gordon et al. (2002) found 63% of 243 clients screened in 13 publicly funded programs in upstate NY had TBIs; 48% of 404 screened in 12 facilities in NYC.
- At OSU, 119 clients in residential treatment, intensive outpatient or ambulatory detoxification at a publicly funded substance abuse facility:
 - 68% 1 TBI with loc 5 minutes, or required ER visit or hospitalization;
 - 35% 1 TBI with loc 1 hour or requiring hospitalization;
 - 60% 1 TBI with early effects that did not persist at time of interview;

- 53% 1 TBI with early effects that persisted at time of interview.