



## Traumatic Brain Injury in a Homeless Male

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### Introduction

Traumatic brain injury (TBI) is a leading cause of disability in the United States, where about 1.4 million people have a reported head injury each year (CDC 2008). There is evidence that homeless individuals experience a greater incidence of severe head injury than the general population. In a survey of more than 2,000 homeless people with hospital visits in Broward County, Florida, 24% reported severe head injuries, compared to 1% of the general population (CN 2003). According to the principal investigator of that study, there was a positive correlation between time spent homeless, usually two-to-five years, and severe head injury.

Although the causes of TBI among homeless people are not yet well established by scientific research, anecdotal reports by clinicians indicate that assaults, falls, motor vehicle accidents, gunshot wounds, and violent shaking are among the traumatic events most commonly reported by homeless clients with head injuries (CN 2003). Homeless persons are at greater risk of exposure to violent trauma, physical injury, and substance abuse as a result of living on the streets. Moreover, the sequelae of childhood abuse, domestic violence, and traumatization during military service are among the factors known to precipitate and prolong homelessness (CN February 2008, Bonin et al. 2004).

Persons with brain injury tend to decline in socioeconomic status due to neuropsychiatric disturbances following head injury. They are frequently unable to hold jobs or maintain interpersonal relationships, and are at increased risk of being involved in the criminal justice system (Waldmann 2004). Functional impairments associated with TBI make accessing treatment and supportive services especially challenging for displaced people. The high prevalence of mental illness and substance use disorders among homeless people and their lack of financial and social supports further contribute to the complex sequelae of TBI. This case report illustrates the sequelae of a moderate traumatic brain injury and comorbidities in a young homeless adult.

### Clinical Background

TBI is classified as severe, moderate, or mild. The Glasgow Coma Scale (GCS) is the most widely used assessment tool to determine the severity of head injury. Combining GCS with the existence and duration of post traumatic amnesia (PTA) and/or loss of consciousness (LOC), the following definitions are most useful in describing head injury severity (Waldmann 2004):

- Severe brain injury:* GCS 8 or less, LOC >24hrs, and/or PTA >24hr
- Moderate brain injury:* GCS 9-12, LOC ½-24hrs, and/or PTA 1-24hrs
- Mild brain injury:* GCS of 13-15, LOC < 30min, and PTA < 1hr

TBI, including MTBI, can lead to persistent symptoms that are frequently observed in homeless individuals, including cognitive deficits, and physical and behavioral problems. Neuropsychological sequelae of traumatic brain injury include irritability, mood lability, aggressiveness, anger, disinhibition, and impulsivity. Signs of cognitive impairment include impaired memory, attention and judgment (Rao and Lyketos 2000). A wide range of somatic symptoms can also occur.

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### Acronyms

<b>TBI</b>	traumatic brain injury
<b>MTBI</b>	mild traumatic brain injury
<b>GCS</b>	Glasgow Coma Scale
<b>PTA</b>	post-traumatic amnesia
<b>LOC</b>	loss of consciousness
<b>MMSE</b>	Mini-Mental State Examination

The MTBI Working Group of the Centers for Disease Control and Prevention has defined mild traumatic brain injury as “the occurrence of an injury to the head arising from blunt trauma or acceleration/deceleration forces with one or more of the following conditions, either observed or self-reported, attributable to the head injury including: transient confusion, disorientation, or impaired consciousness; dysfunction of memory around the time of injury; or loss of consciousness lasting less than 30 minutes.” Observed signs of other neurological or neuropsychological dysfunction such as seizures,

irritability, lethargy, vomiting, headache, dizziness, fatigue or poor concentration acutely following a head injury also indicate brain injury. (CDC 2003)

Mild traumatic brain injury is commonly called a concussion, and can cause persistent and disabling problems such as headache, confusion, memory and cognitive problems, mood swings, changes in sleep pattern, and sensory problems. Most patients with MTBI recover fully, although as many as 15% of those diagnosed with a concussion by a physician will experience persistent problems. MTBI accounts for approximately 75% of all TBI, and costs \$17 billion per year in the U.S. The age cohorts most at risk for TBI comprise individuals 15–24 years of age and those aged 65 years and older. Fifty percent of traumatic brain injuries are directly associated with alcohol use, either by the brain injured person and/or by the person causing the injury. Alcohol use has also been shown to result in a higher level of post-trauma disability. Men are twice as likely to sustain TBI as women. (CDC 2008, Tate et al. 1999).

The primary method for diagnosis of traumatic brain injury remains a careful history and physical examination. Clinicians should ask all patients if they have experienced injuries or accidents, recognizing that many individuals do not spontaneously mention head injuries to their doctors or caregivers. Whenever a patient reports a previous injury, a detailed history of the signs and symptoms of head injury should be taken. Two of the most common tools utilized to assess cognitive functioning include the Mini-Mental State Examination (MMSE), and the Cognitive Impairment Assessment Education Series. Both of these assessment tools are formatted to allow a basic assessment of cognitive functioning by primary care and social service providers who are not certified mental health professionals (Backer & Howard 2007). (See CN 2008 for information about other TBI assessment tools.) While busy clinical settings may constrain the extent of cognitive assessment, the MMSE and a test of verbal fluency can be performed within 5 minutes and reveal signs of dysfunction (Spence et al. 2004).

It is important to understand brain injury within the context of homelessness so that appropriate referrals to specialists and supportive services can be made. Staff working with homeless persons should be educated to recognize behavior in shelters and on the streets that may herald the underlying history of TBI. Such an understanding is critical for the prompt recognition of brain injury, to facilitate clinical evaluation and care, and to protect client safety. Recognition of organic contributors to behavioral issues can inform approaches to client assistance and foster staff empathy and tolerance of difficult issues. Patients with head injury and those with multiple diagnoses, including TBI, substance use disorders and mental illness, present complex challenges and are likely to benefit from a multidisciplinary team approach to care.

## Case Description

Mr. P is a 30-year-old Caucasian male who suffered a TBI at age 23 after being thrown through the windshield of his car while driving intoxicated. He was unconscious after the injury and then kept under anesthesia for several weeks to allow the inflammation in his brain to subside. He did not receive any kind of therapy following discharge from the hospital.

*History* Prior to this accident, Mr. P had abused alcohol and marijuana since age 12 and was diagnosed with ADHD as a child. He reported having been exposed to cocaine, alcohol, and marijuana *in utero* and being physically abused by his stepfather. Mr. P finished high school and lived in his own apartment, working in restaurants and day labor jobs.

The client reported that he remembered very little about the accident, and said he did not receive therapy after discharge because he seemed physically and mentally 'OK'. Since his brain injury, Mr. P has suffered from short-term memory loss, impulsivity, and mood swings, including manic-like symptoms, rage and aggressiveness, racing thoughts, and auditory hallucinations. He also reported experiencing nightmares and flashbacks related to the auto accident. He had poor insight into his condition and deficits and a below average ability to initiate activities or remain motivated to complete tasks. The client reported that his use of alcohol and marijuana increased following his accident, and he started using methamphetamines during the past 5 years. As a result of these symptoms and his subsequent inability to maintain employment, Mr. P lost his apartment and became homeless.

*Diagnosis* Substance dependence with a history of multisubstance use (methamphetamines, alcohol, marijuana); 7 years status post moderate TBI secondary to motor vehicle accident; ADHD predating injury; possible posttraumatic stress disorder and/or other mood or cognitive disorder (undiagnosed).

*Interventions and treatment* In August 2006, following incarceration for possession of methamphetamines, Mr. P entered a men's residential recovery program administered by the Health Care for the Homeless (HCH) project, a 12-bed social model recovery program for homeless men with substance use disorders. Residents progress through 3 stages, from less to more independence, and are supervised by 4 resident advisors, all in recovery, who provide case management, coaching, skills training, and guidance to 3 residents each. Discharge planning is a central part of the third and final stage. Participants usually complete the program in about 7 months.

The client expressed an interest in recovery in order to regain housing and employment, and to avoid further incarceration. He initially presented with concrete thought processes, some paranoia, and a restricted affect, and had repeated conflicts with other residents in the group living situation. He experienced irritability and aggressive feelings toward the other residents.

While participating in the residential recovery program, Mr. P was treated by an interdisciplinary team at the HCH clinic. He was given a physical exam by a primary care provider. There were no additional medical illnesses. He participated in a full psychiatric assessment performed by a Psychiatric Clinical Nurse Specialist who is a member of the HCH Behavioral Health Therapy team. The nurse specialist prescribed the following medications to alleviate his symptoms: Depakote for mood instability; Risperdal for paranoia, nightmares and flashbacks; and Wellbutrin for depression, motivational problems and poor concentration. Medications were monitored and administered daily at the residential site to assist with adherence. The residential program staff provided case management services, established a daily routine for Mr. P to follow, and specified clear expectations for his interactions with others. He attended a weekly anger management group facilitated by members of the behavioral health therapy team and was given daily feedback by other residents as to his progress.

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Mr. P began to interact with other residents in more positive ways, but had a lot of difficulty completing his tasks for recovery or house responsibilities (gardening, construction and maintenance, cooking, cleaning, and facilitating group meetings). He showed poor motivation to work or access community resources, including case management through Goodwill Industries for TBI patients, and had difficulty following through with the process of applying for disability benefits. His moods and ability to get along with others improved markedly when he took prescribed medications, however. Staff worked with Mr. P to initiate weekly behavioral contracts to assist him in prioritizing and accomplishing tasks, and for the most part, he was able to work within this structure. Mr. P experienced difficulty sitting through 12-step meetings and being around large crowds of people. A plan was developed to allow Mr. P to sit by a door during meetings and take breaks as needed.

**Outcome** After 7 months, Mr. P applied and was accepted to a more independent, co-ed residential program associated with the HCH project. Here he received ongoing psychotherapy focused on affect regulation, anger management and self care, as well as life and social skills training classes taught by therapists and case managers, and an increased amount of peer support. He was able to get a job on the weekends preparing and cooking food for a local drop-in center for persons with mental illness. He continued to rely on lists, appointment books, and behavioral contracts to stay on task in his recovery program. Once he became more independent in his own apartment, he exhibited poor medication adherence and again required staff to assist with daily reminders.

Eighteen months after entering the recovery program, Mr. P is now preparing for discharge. He has been clean and sober for more than 1.5 years and is willing to keep learning new skills. His goals are to live independently, continue in recovery, work in a job that is not too taxing, and find a girlfriend. Concerned that the client would not be able to engage in substantial gainful employment, the clinical team encouraged him to apply for SSI, but the client was initially resistant to this. His plan of care includes ongoing case management through the HCH program.

Mr. P plans to share an apartment with another participant in his recovery program, as there are no permanent supportive housing options in the community that welcome people with brain injury. He is working part time as a dishwasher and has initiated an application for disability benefits. He has been referred for ongoing supportive case management through the HCH clinic, but is resistant to this service as he feels it is time to “be more independent.” Staff are concerned that he is at risk of becoming homeless again if he is unable to maintain employment, as delays in approval for and receipt of disability benefits can be many months to years.

This client has done well with a lot of structure and support from an interdisciplinary team. His moods are stable at this time, and he experiences minimal cravings for drugs and alcohol. The HCH clinic was never able to obtain neuropsychological testing to assess his cognitive deficits more thoroughly, as these resources are extremely rare in the community and nonexistent for persons without health insurance. He has shown improved coping and social skills and now has a support system comprised of recovering individuals as well as a 12-step sponsor. It remains to be seen how he will fare living independently with far less structure.

## Discussion

The importance of early and appropriate assessment of traumatic brain injury cannot be underestimated. Clinicians and shelter or outreach staff should regard all head injuries among homeless persons, regardless of severity, as potentially serious medical conditions. These individuals should be referred as soon as possible after injury to a physician, and every effort should be made to find a safe environment where they can recover. Many cities have found medical respite facilities to be very helpful in this regard (see Donovan et al. 2007).

Traumatic brain injuries lead to multiple and complex cognitive, physical and behavioral impairments which further complicate the situation of homelessness. Moreover, TBI is one of multiple intertwined morbidities frequently seen in homeless individuals, many of which may contribute to their functional impairments. Psychiatric sequelae of TBI include increased incidence of depression and PTSD as well as other illnesses. Cognitive and impulse control issues may be magnified in brain injured persons beyond those experienced by individuals with mental illness and/or substance use disorders alone, underscoring the need for multidisciplinary care. Clinical teams that include medical and behavioral health care providers and case managers are critical in assisting clients with traumatic brain injuries to recover and adjust to the sequelae of their injuries. Optimally, all members of the clinical team should participate in care planning and coordination. Psychotropic medications can help to alleviate many symptoms related to TBI but can also have problematic side effects, and should therefore be prescribed by a provider who is knowledgeable about psychiatric medications, in consultation with a psychiatrist or other mental health professional when needed.

All clinicians working in homeless health care should be educated to recognize impairments associated with TBI, and physicians and mental health staff should make screening for head injury a routine part of assessments. Patients with evidence of ongoing symptoms should be referred to appropriate specialty services, for neuropsychological testing as well as specialized multidisciplinary cognitive therapy programs, whenever available. Assisting patients to secure SSI/SSDI benefits when eligible may enable them to access additional supportive services and housing. Health Care for the Homeless projects should routinely document the number of brain injured clients they serve. Such data collection can help to quantify this problem in homeless populations and focus clinicians' efforts on changing their practice to accommodate these clients.

## Take Home Messages

*The experience of homelessness may present numerous obstacles that complicate management of traumatic brain injury, which often requires a coordinated, interdisciplinary approach to care in which practitioners in multiple disciplines share care planning and coordination. Experienced HCH practitioners recommend the following strategies to optimize care of clients who have suffered TBI:*

- **Take all head injuries seriously, including MTBI** (Waldmann 2004, Ashman et al. 2006, NICE 2007).
  - Primary care providers should routinely screen homeless patients for past head injury and sequelae of TBI.
  - Persons with a head injury should be referred to a health care provider as soon as possible after the injury and every effort should be made to find a safe environment for injured individuals to recover – in a hospital, medical respite facility, or supportive housing, as needed.
  - Patients with evidence of ongoing symptoms should be referred to the appropriate services and counseled about secondary prevention, possible complications, and prognosis for recovery.
  - Recognize that brain injured persons may have many comorbid medical and psychological problems. When possible, individuals with TBI should have a neuropsychological evaluation to determine the nature and extent of cognitive impairments and plan treatment.
  - Work to alleviate symptoms using multiple modalities: medications, case management, skills training, as well as safe and affordable housing.

➤ *Educate clients and family members about the symptoms and potential sequelae of TBI.*

➤ *Simplify medical regimens and instructions.*

- Prescribe as few medications as possible with once daily dosing, in consultation with a mental health professional when needed.
- Provide verbal and written instructions that are easy for the patient to understand, explaining how to take prescribed medications and why they are necessary. List all medications and dosing instructions on a wallet-sized card; include a name and dedicated telephone number to call for refills or in emergencies.
- Provide patients with memory aids to help them remember to take medications as prescribed, such as customized pillboxes or “bubble packs” containing a week’s supply of prescribed medications.

➤ *Adhere to the following principles of successful case management for cognitively impaired individuals who are homeless (CN 2003):*

**INTENSITY:**

- Reduce case loads; spend significant amounts of time with each client; and engage the client in a nurturing, caring, trusting relationship.
- Use reflective listening to better understand what the client is saying. Mirror the client’s comments with your own; reflect what you are hearing and probe further.

**LONGEVITY:**

- Convey respect for the individual, and use motivational interviewing to explore and resolve ambivalence about setting self-imposed goals. Essential to this process is the development of a partnership based on mutual trust.
- Recognize that short-term interventions are unlikely to be as effective as long-term strategies. For ambulatory clients without fixed addresses or dependable transportation, follow up by telephone or through outreach to shelters and other sites to maintaining continuity of care.
- To facilitate follow up, consider using the following interventions:
  1. Payee program – a place for clients to receive benefits payments and follow-up letters from case managers
  2. Adherence program – to set up appointments, track no-shows, monitor medications, and arrange transportation or travel partners
  3. Alternative sentencing team – to find alternatives to incarceration for homeless people with mental disorders
  4. Central referral system – to identify health care providers who will treat clients refused by other providers

**REPETITION:**

- Repeat instructions and plans of care many times. Role playing and portable reminder cards with distinctive colors, kept in a plastic sleeve, can help to reinforce this information between clinic visits.
- Provide printed information cards that include the clinic address and location, a 24-hour emergency telephone number, and space for the client’s personal information, including current medications. Pocket calendars help disorganized clients keep appointments and adhere to a routine.
- Schedule regular appointments for these clients on the same day, at the same time and place. Choose a single topic to discuss at each visit and stick with it.

**SUPPORT:**

- Use a team approach to case management. Essential elements include:
    - Multidisciplinary case management teams that meet regularly
    - Easily learned case management systems and low caseloads for each case manager (10:1 is optimal)
    - Local service networks including hospitals, shelters, mental health centers, and other public and nonprofit organizations
    - Flexible, intensive, short-term interventions during transition from homelessness to stable housing
  - Provide emotional support to individuals with pronounced cognitive deficits:
    - Speak clearly and use a calm and reassuring tone, in an adult voice.
    - Use the client's name to get attention and maintain eye contact.
    - Eliminate the impossible; do only what is realistic.
    - Avoid confrontations and arguing.
    - Encourage the client to slow down; it's all right to take one's time.
    - Use non-verbal expressions: nodding, smiling, and pointing.
  - Reduce confusion:
    - Provide orientation: Use calendars, clocks/watches, and/or signs.
    - Avoid confrontation. Don't ask clients to justify their decisions.
    - Redirect as necessary. Model calm behavior.
    - Keep the environment structured and familiar.
    - Assess the level of stimulation the client needs.
  - Provide memory aids:
    - Help the client keep a memory journal.
    - Help the client maintain a regular, predictable, structured routine.
    - Always write appointments down on the client's calendar.
    - Help the client set small goals; break complex tasks into simple steps.
- **Assist clients with applications for disability benefits (SSI/SSDI) (Dennis et al., 2007).**
- Focus on initial applications.
  - Become an applicant's representative.
  - Work closely with health care providers.
  - Reach out to medical records departments.
  - Establish ongoing communications with Social Security and Disability Determination Services to facilitate expedited disability determinations for homeless SSI/SSDI claimants.
  - Create a summary report of the client's medical and functional impairments.
- **Provide life skills training and employment support:**
- Train clients in anger management, emotional regulation, time management, and goal setting. Focus on social and communication skills, including assertiveness, relaxation, and stress reduction.
  - Refer clients to vocational rehabilitation services and supported employment services.
  - Provide job matching services in which the client's abilities and potential are matched with employment opportunities.
  - Aid in facilitating communications between the client and the employer.
  - Assist the client to arrange travel to and from potential job sites.
  - Provide on-the-job training and advocacy to help clients retain job placements.

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