

Guidebook for Psychologists: Working with Clients with Traumatic Brain Injury



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INTRODUCTION

Traumatic brain injury (TBI) is a pervasive public health problem in the United States, as well as worldwide. Given that the estimated incidence of TBI is 1.4 million new injuries per year in the United States,¹ with approximately 5.3 million individuals living with significant disability as a result of TBI,² it is very likely that psychologists in the healthcare arena will encounter at least one client who has sustained a TBI in their work experience. Despite the high incidence of TBI, information to help guide psychologists who may not have had specialized education or training regarding issues relevant to working with clients with TBI has not been readily available.

Specialized services are often available for those who experience TBI through trauma centers and neurosurgical intensive care units in major medical hospitals, rehabilitation hospitals with specialized units for brain injury rehabilitation, outpatient comprehensive brain injury rehabilitation programs focused on community re-entry, transitional living centers for persons with brain injury, and community-based brain injury programs. Psychologists who are employed in or serve as consultants to these various settings will likely become “experts” in working with those with TBI. Training for such psychologists may happen “on the job,” and through inservices, seminars, and individual study.

While a subset of individuals affected by TBI will receive specialized brain injury care in one of the aforementioned settings, a great number of such individuals will receive their post-injury care in general medical settings, in a general rehabilitation unit with no special expertise in working with issues related to TBI, in primary care settings, and in social service settings. In these situations, psychologists encountering individuals with TBI will be less likely to have access to training or educational materials that may assist them in the care of those with TBI. This manual has been developed to help fill this gap, by serving as a resource to psychologists who encounter clients with traumatic brain injury in their clinical practice. The goal of this educational tool is to assist clinical and counseling psychologists to feel more comfortable and confident in their clinical interactions with clients with brain injury, to increase knowledge regarding TBI, to outline skills that are useful in working with clients with TBI, and to highlight resources that may be of use to clients with TBI and their family members. Ultimately, the aim of this training tool is to improve the overall quality of care that individuals with TBI will receive in various healthcare settings.


In the initial sections of this manual, general information about TBI and clarification of some terminology are presented. The remainder of the manual will outline the likely reasons that clients with TBI might be referred to a psychologist for care, will address issues relevant to assessment for those with TBI, and will review issues relevant to the provision of interventions for such individuals.



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General Information - Brain Injury 101: Traumatic Brain Injury FAQs:



GENERAL INFORMATION: BRAIN INJURY 101



This section is intended to provide some general information about traumatic brain injury and to help clarify some of the confusing terminology that you may come across in your review of medical records and in your independent reading about brain injury.

The following [Frequently Asked Questions \(FAQs\)](#) will try to address some of the most commonly encountered terms and general issues. More detailed information about assessment and intervention approaches will be presented in future sections of this manual.

TRAUMATIC BRAIN INJURY FAQs:

◆ What is a traumatic brain injury (TBI)?

A traumatic brain injury is also referred to as a TBI. A TBI occurs when a mechanical force is applied to the head and affects brain functioning. The mechanical force can consist of a blow to the head (such as from an assault, a fall, or when an individual strikes his/her head during a motor vehicle accident) or from a rapid acceleration-deceleration event (like a motor vehicle accident). It is possible for the brain to become injured even if the head has not directly struck or been struck by another object. The brain can become injured whether or not the skull is fractured. The most common causes of TBI include the following:

- Falls (28%)
- Motor vehicle-traffic crashes (20%)
- Struck by/against (19%)
- Assaults (11%).³
- Blasts are a leading cause of TBI for active duty military personnel in war zones.⁴



Brain functioning is considered to have been disrupted if an individual has a change either in their level of consciousness or in their ability to be alert and/or fully oriented after injury. After a TBI, some people are “knocked out” or lose consciousness. This can be for a short time (seconds to minutes) or for a much longer time (days to weeks). A longer period of unconsciousness may be referred to as a *coma*. On the other hand, some people who experience a mild TBI may not lose

consciousness at all. Instead, they may feel dazed, confused, or “out of it” for a period of time. For many people who experience a TBI, there may be loss of memory for the events just before and for a period of time after the injury. The period of time when memories are affected after a TBI is called *post-traumatic amnesia*. Loss of memory for events preceding the injury is called *retrograde amnesia*. Loss of memory for events subsequent to the injury is referred to as *anterograde amnesia*.

In the upcoming training sections, additional information about TBI and how severity of TBI is measured will be discussed in greater detail.

◆ How does the brain become injured?

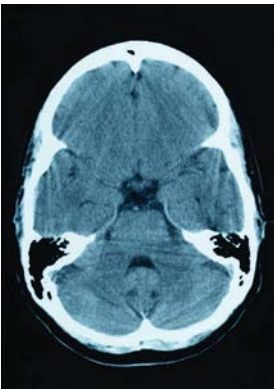
Injury to the brain can happen in many different ways. There are two main types of TBI: Closed TBI and Open TBI.

Closed TBI happens when the brain is injured without anything (like a knife, a bullet, or other object) going through the skull. Other terms you may encounter for this type of injury include *brain injury due to blunt-force trauma* or *non-penetrating TBI*. There are many ways that the brain can be injured in a closed TBI.

- When force is applied to the head, the brain can move inside the skull. Think of the brain being like jello in a bowl. If you shake the bowl quickly and then stop it, the jello may continue to move and bounce against the inside of the bowl. Just like jello, if the head is stopped quickly, the brain can continue moving and strike against the inside of the skull. When this happens, a contusion (bruise) of the brain can occur. Sometimes the brain can be bruised both at the point of impact (*a coup injury*) and at a point directly opposite to that impact (*a contre-coup injury*). This is because the brain can bruise both on the side where it has been struck and on the opposite side where the brain has “bounced” back after the impact.
- When the brain is shaken inside the skull, other injuries can occur. One of the major mechanisms of injury in a high velocity TBI is *diffuse axonal injury*. The brain is made of millions of nerve cells called *neurons*, each of which has long and thin fibers called *axons* that are important for the transmission of messages from one neuron to another. Axons can become stretched or sheared when the brain is shaken. This stretching and shearing of axons may be seen throughout the brain and is called *diffuse axonal injury*. Sometimes a person can have an injury to the brain, even when the head itself has not been struck. The force of an acceleration-deceleration event (such as might occur in a motor vehicle accident) can cause these stretching or tearing injuries to the nerve fibers even if the head does not strike an object. If many axons are damaged, the injury can sometimes be seen with structural neuroimaging tests, like a CT or MRI scan.



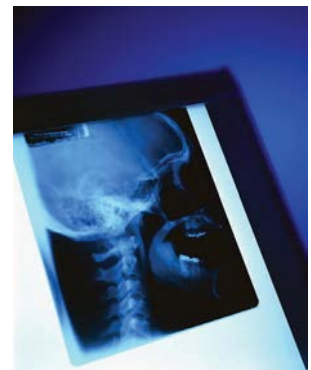
- The brain is highly vascular, and if sufficient force is applied to the head, blood vessels can tear and bleed. Bleeding will show up on neuroimaging tests, like a CT or MRI scan. Blood can collect inside the skull at the point of injury to the blood vessels. A collection of blood in the spaces between the *meninges* (layers of tissue surrounding and protecting the brain) and the skull is called an *epidural hematoma*. One that occurs between the dura mater (outer layer of the meninges) and the arachnoid mater (second layer of meninges) is called a *subdural hematoma*. Blood collection below the second layer of meninges is called a *subarachnoid hemorrhage*. Finally, blood that collects within the brain tissue itself is called *intraparenchymal hemorrhage* and blood that collects in the ventricles (spaces within the brain) is called *intraventricular hemorrhage*. If there is only a little bleeding, it will usually stop on its own. The blood vessels will heal, just like any cut on the body heals. If the bleeding is severe, doctors may recommend treatment, like surgery, to remove the blood.



- Sometimes extra fluid will build up near injured tissue within the brain. This causes swelling or *edema*. Think of what happens when you hit your arm on something. You may see swelling in the injured area. This is because the body sends extra fluid to the injured body part to protect it and help with healing. This same thing can happen to the injured part of the brain.
- Skull volume is limited, so if additional fluids such as blood or water take up sufficient space, intracranial pressure rises. If too much pressure builds within the skull due to edema or to the accumulation of blood, the individual is said to experience *intracranial hypertension*. This condition can cause secondary damage to brain tissue due to compression injury (brain tissue being compressed) or due to its impact on cerebrovascular blood flow. If intracranial hypertension is unable to be controlled, it may even be life-threatening.

Open TBI happens when something penetrates through the skull and hurts the brain. Other terms you may encounter for this type of injury include *penetrating TBI*. Things like a gunshot wound to the head, a stab wound, or a severe skull fracture can cause an open TBI.

- In an open TBI, most of the damage happens to the part of the brain that was cut or bruised by the object penetrating the skull.
- Just like in closed TBI, additional injury can occur due to bruising, bleeding, or swelling.



♦ What is the difference between a head injury and a TBI?

A **head injury** happens when a mechanical force is exerted toward an individual's head. Many things can cause a head injury. For example, a car accident, a fight, a fall, or other events can all cause a head injury.

- Most of the time, a head injury does not cause lasting problems. This is because the brain is well protected. The brain is surrounded by fluid, called cerebral spinal fluid (CSF). This fluid acts as a shock absorber. There are also several coverings around the brain. These coverings include the hair, the scalp, and the skull. There are also layers of tissue that cover the brain called *meninges*. These protective layers will often keep the brain from getting hurt. Often, a bruise, swelling of the scalp, or a cut to the scalp may be the only injury.
- Sometimes the force of the blow to the head is greater. The skull can fracture or break. The skull is like a "helmet" that protects the brain. When the skull fractures, it lessens the force of the blow. This may help keep the brain from getting hurt. However, sometimes the force exceeds the skull's ability to protect the brain, and the brain itself can be injured. Given sufficient force, the brain can become injured whether or not the skull is fractured.



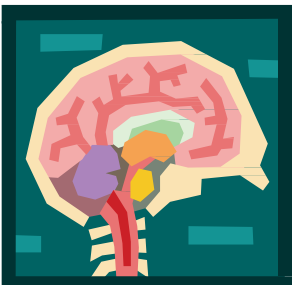
When the force that resulted in the head injury affects brain functioning, such as by reducing level of consciousness or by causing a period of confusion, the injury is called a **traumatic brain injury**. Only a subset of head injuries will result in TBI.

- For example, if you bump your head on the roof of your car, you probably will not injure your brain. If the only consequence of this injury is a sore head, no brain injury has occurred. This is a head injury, but not a traumatic brain injury.
- However, if your car is struck by another vehicle and you have trouble recalling what happened over the first 24 hours after the injury, you may have experienced a TBI.

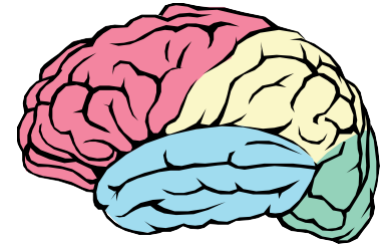
◆ What is the difference between traumatic brain injury (TBI) and acquired brain injury (ABI)?

Increasingly, as one reads news articles, consumer-focused periodicals, and scientific publications about brain injury, the term “Acquired Brain Injury” or ABI has gained prominence. So, what distinguishes a TBI from an ABI?

- ◆ **Traumatic brain injury (TBI)** refers specifically to injuries to the brain that are the result of mechanical force. As described above, falls, motor vehicle accidents, assaults, and falling objects may cause a traumatic brain injury.
- ◆ **Acquired brain injury (ABI)** is a more general term that refers to any acquired (i.e., not developmental) injury to brain tissue. Traumatic brain injury is just one type of acquired brain injury. All traumatic brain injuries would be considered acquired brain injuries. However, not all acquired brain injuries should be considered traumatic brain injuries. Although not an exhaustive list, other causes of brain injury that would be classified as acquired brain injuries include:



- ◆ Stroke (or “brain attack”) is when brain cells are damaged or die due to interruption of blood flow to the brain. There are two main types of strokes: 1) blockage of a blood vessel in the brain due to either a clot or a buildup of fatty deposits and cholesterol in the walls of blood vessels; and 2) breakage of a blood vessel in the brain with bleeding from the blood vessel.
- ◆ Cerebral aneurysm is a weak or thin spot on a cerebral blood vessel wall that can break under pressure and result in a bleed or hemorrhagic stroke)
- ◆ Arteriovenous malformation (also known as AVMs) are defects of the circulatory system that typically involve a collection of blood vessels with abnormal connections. Such malformations are usually present from birth and can occur in various areas of the body, including the brain. Typically, AVMs are non-symptomatic. However, a certain percentage of these cerebral malformations can cause problems such as headache, seizure, and other neurological symptoms. These occur either through bleeding from the AVM, through blockage of blood flow, or due to pressure effects on surrounding brain tissue.
- ◆ Brain Tumor is a mass or growth of abnormal cells within the brain. These can be benign (noncancerous) or malignant (cancerous), slow-growing or fast-growing, and can be primary (the first site of cancer) or metastatic (a second site of cancer that has spread from somewhere else in the body).



- ◆ Brain abscess is an uncommon, but serious or life-threatening infection. An abscess is a mass of immune cells, pus, and other material due to bacterial or fungal infection.
 - ◆ Cerebral hypoxia occurs when there is a decrease of oxygen supply to the brain even though there is adequate blood flow. Drowning, strangling, choking, suffocation, cardiac arrest, head trauma, carbon monoxide poisoning, and complications of general anesthesia can create conditions that can lead to cerebral hypoxia. Brain cells are extremely sensitive to oxygen deprivation and can begin to die within five minutes after oxygen supply has been cut off.
 - ◆ Radiation necrosis is a focal structural lesion that usually occurs at the original tumor site and is a potential long-term central nervous system (CNS) complication of radiotherapy or radiosurgery. Radiation necrosis can occur when radiotherapy is used to treat primary CNS tumors, metastatic disease, or head and neck malignancies. It can occur secondary to any form of radiotherapy modality or regimen.
- Injury Severity: What does it mean to say a client has sustained a mild, moderate, or severe TBI?

The level of severity of the initial injury can be related to many different variables. Such variables include how much force was involved, how hard the head was struck, how heavy the object was that struck the head, and how fast the head or object was moving at the time of injury. When an injury is referred to as mild, complicated mild, moderate, or severe, we are referring to the initial injury itself – not the eventual outcome that an individual with TBI may experience. It is possible that a person with an initial rating of mild TBI may experience a poor outcome that includes areas of moderate to severe difficulty. Likewise, an individual who presents initially with a severe injury may experience a very good outcome. However, in general, initial injuries with greater severity will be associated with poorer outcomes.

As soon as healthcare professionals encounter an individual with TBI, an attempt is made to grade the severity of the injury. The level of severity is determined to assist with initial triaging and to help with planning treatment. There are several factors that are considered when assessing injury severity, including loss of consciousness, scores on the Glasgow Coma Scale, and duration of post-traumatic amnesia.

- **Loss of Consciousness (LOC):** After a head injury, an individual may be “knocked out” or lose consciousness. The longer this period of unconsciousness, the more severe the injury. In an acute hospital setting, the medical team will be tracking consciousness on an hourly and daily basis. Frequently, such tracking is done using a scale called the Glasgow Coma Scale (GCS), which is described on the following page.

- Glasgow Coma Scale (GCS):** The GCS is a scale to assess responsiveness after TBI (Teasdale & Jennett, 1974) and is widely utilized in many hospital settings throughout the United States and the world. The GCS evaluates three aspects of responsiveness: eye opening (can the individual open his/her eyes spontaneously?), motor responses (can the person move when asked or when responding to painful stimuli?), and verbal responses (can the person speak and is the person oriented?).



The GCS score can range from 3 to 15, with scores of 13-15 considered mild, 9-12 moderate, and 3-8 severe levels of injury. The scale values are shown in the table below. The medical team completes this scale at the scene of the injury if the individual is transported by EMS. The GCS is also completed upon arrival at the emergency room. If the individual requires hospitalization due to the injury, the GCS may be conducted hourly and/or several times daily until the individual is consistently responding as alert and oriented.

Glasgow Coma Scale

Eye Opening		
	Spontaneous	4
	To Voice	3
	To Pain	2
	No Response	1
Motor Response		
	Follows commands	6
	Localizes to pain	5
	Withdraws from pain	4
	Abnormal flexion	3
	Extension (Posturing)	2
	No Response	1
Verbal Response		
	Oriented	5
	Confused, Disoriented	4
	Inappropriate Words	3
	Incomprehensible Sounds	2
	No Response	1

- **Post-Traumatic Amnesia (PTA):** Injury severity can also be judged by looking at what is called post-traumatic amnesia. People may be confused or disoriented for a period of time after a TBI. They may not know where they are for minutes, hours, or even days. They may not be able to accurately state the day, date, time, month, or year. This period of time is called post-traumatic amnesia or post-traumatic confusion. It is a common experience for persons with TBI. During this time, people may be unable to make new memories. They may not remember this period of time later. In general, the longer the period of PTA, the more severe the injury has been. In acute hospital settings and in rehabilitation settings, a record of orientation is typically conducted on at least a daily basis. You may find this in a description from the treating physician or nursing staff, and you may find it in a report by the neuropsychologist or therapy staff. One instrument frequently used to assess orientation after TBI is the Galveston Orientation and Amnesia Test (GOAT) (Levin et al. 1977), which is described below.
- The GOAT contains questions about orientation to person, place, time, and situation. The following questions and listing of error points are used to calculate total scores for the GOAT. Scores are obtained by subtracting the total number of error points from 100. Scores can range from -8 to 100 on this measure. For example, a person who was unable to recall an event after the injury and was significantly disoriented to month and date would receive 30 error points for a total score of 70. Scores less than 66 are considered defective and those from 66-75 are considered borderline. Persons scoring 76 and above on two consecutive days are considered to be oriented and out of post-traumatic amnesia.

Galveston Orientation and Amnesia Test (GOAT)

1. What is your name? (-2 points)
When were you born? (-4 points)
Where do you live? (-4 points)
2. Where are you now?
City? (-5 points)
Hospital? (-5 points – unnecessary to state name of hospital)
3. On what date were you admitted to this hospital? (-5 points)
How did you get here? (-5 points)
4. What is the first event you can recall after the injury? (-5 points)
Can you describe in detail (e.g., date, time, companions) the first event you recall after the injury? (-5 points)
5. Can you describe the last event you recall before the accident? (-5 points)
Can you describe in detail (e.g., date, time, companions) the last event you recalled before the injury? (-5 points)
6. What time is it now? (-1 point for each ½ hour removed from correct time for maximum of -5 points)
7. What day of the week is it? (-1 point for each day removed from the correct one for a maximum of -3 points)
8. What day of the month is it? (-1 point for each date removed from the correct one for a maximum of -5 points)
9. What is the month? (-5 points for each month removed from the correct one for a maximum of -15 points)
10. What is the year? (-10 points for each year removed from the correct one for a maximum of -30 points)



Based on information obtained from these variables (LOC, GCS, and PTA) and from results of medical testing, like a CT scan or MRI of the head, the injury may be classified as one of the following:

- Uncomplicated Mild
- Complicated Mild
- Moderate
- Severe

- Mild TBI

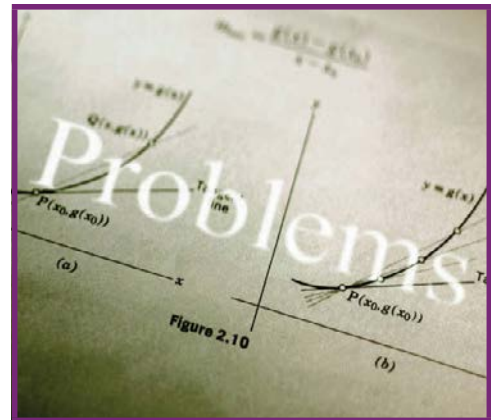
- A person with a mild TBI will have a loss of consciousness for 30 minutes or less. GCS scores at the time of injury range from 13 to 15. This means that the person can talk, can follow commands, and can open their eyes when asked. Another name for a mild traumatic brain injury is a “concussion.” Sometimes, the GCS score can be lower at first. But, this low score may be due to things other than the head injury. Medication effects or having had alcohol or drugs before the injury can lower the GCS score. However, the person quickly begins scoring in the “mild” range after the effects of the medications have worn off.
- Uncomplicated Mild TBI:
An injury is called “uncomplicated” if the person has a mild TBI and there are NO problems seen on CT scan or MRI of the brain.
- Complicated Mild TBI:
An injury is called “complicated” if the person has a mild TBI and there are abnormalities seen on a CT scan or MRI of the brain. Abnormalities on neuroimaging may reflect bruising of the brain or a collection of blood in the brain. Some research has shown that persons with complicated mild TBI may have longer-term outcomes that are more similar to those with moderate TBI.

- Moderate to Severe TBI

- GCS scores at the time of injury are lower. Traditionally, GCS scores ranging from 9-12 would be classified as “moderate” injuries, while GCS scores ranging from 3-8 would be classified as “severe” injuries.
- Someone with moderate to severe TBI may not be able to open their eyes, move on their own, talk, or respond to things or people around them. People with this severe of an injury may have had loss of consciousness for just over 30 minutes or for as long as several days or weeks. They may have post-traumatic amnesia for many days or weeks after their TBI. Also, they may not remember days or even weeks before their TBI. These patients will usually take longer to recover than patients with a mild TBI. For a small subset of individuals with severe TBI, responsiveness may be affected for a much longer period of time. For nearly all those who experience moderate to severe TBI, treatment at a rehabilitation hospital is usually recommended and can help recovery.

- What are common problems faced after TBI? What are the common sequelae of a mild TBI? What are common sequelae of a moderate to severe TBI?

The following sections will list potential areas of difficulty that persons may experience after a TBI. While this list is not exhaustive, it does detail the more common areas of difficulty that individuals may face. For each of the sequelae listed, there is an indication of whether the particular symptom is commonly seen following mild, moderate, and severe TBI, or is seen primarily in those with moderate to severe TBI. While we have listed the problems that are typically experienced with varying degrees of injury severity, it is certainly possible that someone with a milder injury may experience symptoms listed as more common for those with moderate to severe injury.



It is important to note that every brain injury is different. The consequences that people experience may differ depending on the severity of the injury (mild vs. moderate/severe), the location of the injury (what part of the brain was injured), the mechanism of the injury (high velocity vs. low velocity), and other factors. To provide a useful reference, a table has been presented in Appendix I that details some specific differences between those with mild TBI versus those with moderate to severe TBI.

Somatosensory Issues:

Headaches (Mild, Moderate/Severe):



Headaches are a frequent problem after TBI. These are called *post-concussive* or *post-traumatic headaches*. The pain may be constant, or may come and go over time. Pain can vary from mild to severe. Headaches are one of the more common problems experienced after a mild TBI, but persons with moderate to severe TBI may also experience headaches. They often go away after a few weeks. Sometimes, though, headaches can be a more long-lasting problem.

There are two types of headaches that can happen after a head injury. These are called *tension headaches* and *vascular headaches*.

Tension headaches: These headaches are the most common. They happen when an individual is under stress. They may also happen when the muscles in the neck, shoulders, or jaw are tight. When this happens, pain can transfer to the head. Tension headaches feel like a dull, steady pain. These types of headaches can last for a long time, but they don't have to be a long-lasting problem. Relaxation may help to get rid of tension headaches.

Vascular headaches: These kinds of headaches are sometimes called *migraine headaches*. They happen because of problems with the blood vessels around the brain. These kinds of headaches often include throbbing pain. This pain can be on one side or both sides of the head. Associated problems, like nausea and vomiting, can occur. Many people find that bright lights and loud noises make a vascular headache feel worse. Migraine or vascular headaches may last only a short time or may last for many hours.

Fatigue (Mild, Moderate/Severe):

Fatigue is a common problem for all levels of severity of TBI. Such fatigue may not be anticipated, and can contribute to increased difficulties with thinking abilities. With fatigue, persons with TBI may be more likely to be stressed, and may notice more problems such as headache, dizziness, poor concentration, and irritability. Problems with fatigue tend to improve over time; however, individuals with TBI may need more sleep than was typical pre-injury.



Dizziness (Mild, Moderate/Severe):

Some people may feel dizzy after a TBI. An injury to the head can change how the inner ear works. Problems with the inner ear or its connections to the brain can cause dizziness. Often associated with these kinds of problems are a loss of balance, nausea, ringing in the ears, or headaches. Problems with dizziness are fairly common after a mild TBI, but tend to improve over the first few months. For those with more severe TBI, dizziness may also occur and may be somewhat longer lasting. There are treatments for certain causes of dizziness.

Blurred or double vision (Mild, Moderate/Severe):

After TBI, vision can become blurred and sometimes people experience double vision. This tends to get better for most people over time. Sometimes an evaluation by a neuro-ophthalmologist or neuro-optometrist may be conducted.



Visual Field Cut (Moderate/Severe):

If the injury causes damage to the optic nerve (the nerve from the eye to the brain) or to visual tracts within the brain (pathways that carry visual information within the brain), a visual field cut may occur. A field cut means that a part of visual space is not being perceived because the pathways by which visual sensory information is relayed to or within the brain have been damaged. For example, some persons may not be able to see information that is on the right side of space from either eye (right visual field cut).

Sensitivity to noise and/or light (Mild, Moderate/Severe):

After a TBI, some people find that they are sensitive to noise and/or to light. So, if placed in a noisy setting, like a crowded cafeteria, or in a setting with bright lights, like the fluorescent lights of a hospital or the flashing lights of a dance club, they may feel overwhelmed and uncomfortable.

Trouble with Tasting or Smelling (Moderate/Severe):

Damage to sensory fibers that relay olfactory (smell) information to the brain can occur with a brain injury. The olfactory system is located on the underside of the frontal lobes of the brain and is an area that can be vulnerable to injury. Since the sense of smell is important to our sense of taste, both senses can be affected. Individuals may complain of foods not tasting the same or of needing to add more spices to their food. Some may not be able to smell things like food burning on the stove, leaking gas, or smoke from a fire, so this can be a major safety issue.



Motor Issues:

Hemiparesis/hemiplegia and Spasticity (Moderate/Severe):

If motor pathways or centers have been damaged due to the TBI, an individual can experience weakness on one side of the body. This weakness can be total (hemiplegia) or can be partial (hemiparesis). Persons with hemiparesis often have problems with spasticity. Spasticity is a condition in which certain muscles are continuously contracted. Symptoms can include increased muscle tone, rapid muscle contractions, exaggerated deep tendon reflexes, muscle spasms, involuntary leg crossing, and fixed joints. Weakness and spasticity can interfere with walking and with performing activities of daily living like grooming, etc.

Slowed Performance (Moderate/Severe):

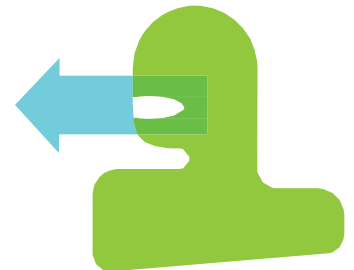
People who experience moderate to severe TBI may have a slowed speed of performance. It may take them longer to accomplish motor tasks, like walking or tying their shoelaces. Writing and even speech can be slowed. Such slowing can be due to problems with motor weakness or can be due to diffuse injury to the brain, which can contribute to overall slowed transmission of nerve signals.

Poor Coordination (Moderate/Severe):

Sometimes persons with brain injury may experience difficulties with coordination. Control of gross and/or fine motor movements may be impaired. This can result in difficulties with activities like sitting, walking, buttoning a shirt, typing, etc. Individuals with coordination and motor control problems may be more unsteady when sitting, standing, or walking; may bump into things; or have trouble picking up things or manipulating them.

Slurred speech (dysarthria) (Moderate/Severe):

Individuals with TBI may have problems with slurred speech. Articulation can be affected by a variety of factors, but typically involves motor weakness or poor motor control of the muscles associated with the production of speech. Occasionally, this slurring of speech related to motor control difficulties as a result of injury may be misinterpreted by others as intoxication. As a psychologist encountering individuals with slurred speech, it is important to ascertain whether a neurological problem related to injury is causal rather than assuming that a substance use condition is involved.



Cognitive Issues:

Attention/Concentration (Mild, Moderate/Severe):



One of the more common difficulties experienced after TBI is decreased attention and concentration. This is a common complaint for those with all levels of severity of injury, and is the most frequent cognitive problem experienced for those with mild TBI. Sometimes what may be described as a memory problem can really be a problem with attention. Individuals may have trouble remembering things because they are not attending to the information well. Here are some common attention problems:

- ◆ Trouble focusing attention.
- ◆ Easily distracted by noises or visual information that wouldn't have bothered them before (e.g., trouble listening to a conversation in a crowded restaurant because they are distracted by other people talking and moving around).
- ◆ Trouble concentrating while reading.
- ◆ Difficulty doing more than one thing at a time (e.g., watching T.V. and cooking a meal)
- ◆ Difficulty “switching gears” or changing focus from one thing to another (e.g., may continue to do things the wrong way even after you explain why things should be done a different way).
- ◆ Persons with attention difficulties may be observed to disagree about what you or someone else said due to missing the information initially.

Memory (Mild, Moderate/Severe):

Many people have some type of memory problem after injury. One of the areas of the brain that is considered important for memory functioning, the anterior temporal lobes, is particularly vulnerable to injury from TBI. Most people can remember information that they knew well before injury, but have trouble learning and remembering new information. Here are a few of the most common types of memory difficulties that may be experienced:

- ◆ Forgetting appointments.
- ◆ Forgetting peoples' names.
- ◆ Needing to have things repeated many times.
- ◆ Taking longer to learn new information.
- ◆ Forgetting things very quickly.
- ◆ Frequently losing or misplacing things (like keys, wallet, etc.).
- ◆ Repeating questions or the same story over and over again.



Slowed Information Processing Speed (Mild, Moderate/Severe):

The most common cognitive problem noted after TBI is slowed processing speed, particularly for those whose injuries occurred due to a high velocity event (like a car accident).

- ◆ Takes longer to answer questions.
- ◆ Takes longer to understand things he or she understood easily before.
- ◆ Takes a long time to react to things (this may be dangerous in emergency situations or when driving).

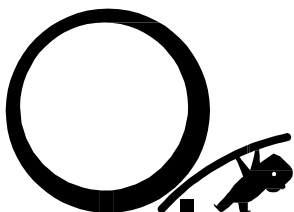
Visuospatial Difficulties (Moderate/Severe):

Sometimes persons with TBI experience difficulty with visuospatial functioning. This can involve problems such as:

- ◆ Difficulty attending to things on one side, usually the left side.
- ◆ Bumping into things, usually on the left side.
- ◆ Difficulty recognizing shapes and telling the difference between shapes.
- ◆ Difficulty finding their way around, especially in new places.

Problem-Solving Difficulties (Moderate/Severe):

After TBI, some individuals have problems generating solutions to everyday or complex problems. This problem falls within the realm of executive functioning, which is often associated with damage to the prefrontal cortex and/or its connections to the rest of the brain. Your client may experience difficulties such as:



- ◆ Making quick decisions without thinking about what will happen.
- ◆ Getting stuck between different choices, unable to pick between them.
- ◆ Getting stuck on one idea, unable to consider other choices.
- ◆ Approaching problems in a way that does not make sense.

Language/Communication (Moderate/Severe):

Unlike persons with stroke, persons with TBI tend to have fewer problems with basic language abilities, like understanding language or being able to speak. Some individuals may experience difficulties with basic language problems, but the more common difficulties faced are with social communication abilities. Such difficulties can include:

- ◆ Difficulty finding the right words to tell others what they want to say.
- ◆ Talking around a topic, never really getting to the point; getting off topic when telling a story or answering a question.
- ◆ Trouble understanding what others say to them.
- ◆ Difficulty keeping up with a conversation especially if talking to more than one person.
- ◆ Difficulty starting a conversation.
- ◆ Talking about topics that are too personal or are offensive to others.

Organizational Difficulties (Mild, Moderate/Severe):

Organizational difficulties are also a common problem after TBI. Such problems may result from inattention and/or executive functioning dysfunction. They include:

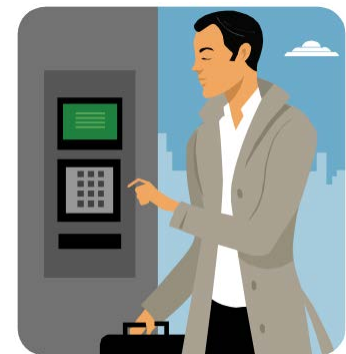


- ◆ Difficulty organizing their time to get things done (for example, may tell someone they can be at a party at the same time they have a doctor’s appointment).
- ◆ Trouble setting goals, planning the correct steps to reach a goal, or completing the steps to reach a goal.
- ◆ Trouble completing tasks in the correct order (for example, does not put soap in the washing machine when washing clothes).
- ◆ Trouble getting ready for daily appointments, school, or work.

Reasoning and Judgment (Moderate/Severe):

Problems with reasoning and judgment may also be experienced after TBI. These problems are often associated with damage to the prefrontal cortex and/or its connections to the rest of the brain. Such difficulties may include:

- ◆ Trouble thinking in abstract terms (e.g., difficulty applying a strategy used in one situation to other similar situations).
- ◆ Making literal or “concrete” interpretations (e.g., interpreting the phrase “Go take a hike” as taking a long walk in the forest).
- ◆ Showing poor judgment in real-life situations (e.g., loaning a significant sum of money to a casual acquaintance; sharing a bank account PIN number).
- ◆ Trouble making decisions that are in his or her long-term best interests.
- ◆ Poor safety awareness (e.g., leaving a public place with a person he or she just met).



Behavioral/Emotional Issues:

Decreased Initiation (Moderate/Severe):

After TBI, some individuals may have trouble getting started with activities. While they may express interest in engaging in activities, the ability to get going is affected. Problems with initiation can often be misinterpreted as laziness or as noncompliance. However, initiation difficulties can occur as a result of damage to neural systems that are involved in activating motor sequences. Initiation problems can be observed as:

- ◆ Seeming to sit all day staring at the television.
- ◆ Doesn't seem interested in the things he or she liked to do before.
- ◆ Doesn't think to bathe or brush their teeth unless reminded.
- ◆ May not think of ideas for social activities, or if has ideas, may not get started with making any plans.
- ◆ Knows what needs to be done, but just doesn't seem to be able to get started.



Lack of Awareness (Moderate/Severe):

One of the major challenges that can be faced for healthcare professionals and family members is poor awareness. As a direct result of injury to the brain, some individuals have a difficult time seeing themselves accurately. They may be unable to notice that they are experiencing certain problems and may act as though nothing has changed since the injury, despite evidence to the contrary. This kind of unawareness is a result of the brain injury, and is different from denial. With unawareness (or anosognosia), the individual does not realize that any problem is present or is unaware that a problem can affect their ability to perform tasks like driving and working. Such difficulties can be evidenced as:

- ◆ Never seeming concerned, as if nothing is different.
- ◆ Insisting that they can do things just as well as before the injury, or wanting to do activities that you know they can't do.
- ◆ Complaining that the doctors and you "don't know what you're talking about".
- ◆ Blaming other people for the things they can't do (for example, "I can go back to work, but the doctor won't let me").



Impulsivity (Moderate/Severe):

Some individuals with TBI have problems with being impulsive. That is, they may have a difficult time inhibiting actions. The neural systems that help us “stop and think” before we act have been affected. Such difficulties are often seen in individuals who have sustained injury to the prefrontal cortex and/or connections between this area and other brain systems. Impulsive behaviors can include:

- ◆ Acting or speaking without thinking first.
- ◆ Doing whatever he or she wants to without regard for what happens
- ◆ Doing things that are dangerous or will cause problems (for example, walking into street without looking for cars; spends all their money on an impulse buy).

Inappropriate or Embarrassing Behavior (Moderate/Severe):

Some persons with TBI exhibit inappropriate or embarrassing social behaviors. These problems can significantly impact social integration, as well as the ability to return to work, school, or other community activities. Such problem behaviors are often very stressful for family members. These problem behaviors may include:

- ◆ Telling strangers about personal matters that people are usually quiet about.
- ◆ Asking casual acquaintances overly personal questions.
- ◆ Making embarrassing sexual comments, behaviors, or gestures.
- ◆ Frequent use of foul/coarse language or frequent use of expletives, particularly in inappropriate situations
- ◆ Lifting an article of clothing in order to show a casual acquaintance or stranger a scar.

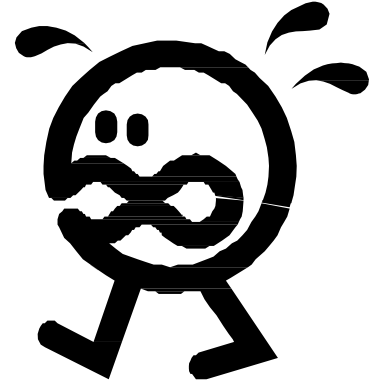
Depression (Mild, Moderate/Severe):



Depression is the most common affective disturbance experienced by persons with TBI, with incidence rates far exceeding those of community base rates. Injury-related factors, including location of the injury and neurochemical dysregulation, along with psychosocial factors, including pre-injury psychiatric history, high levels of perceived stress, and maladaptive coping skills have been hypothesized to contribute to increased rates of depression. It is important to note that vegetative symptoms of depression can overlap to some degree with typical impairments that can occur after injury, such as diminished attention and concentration or low energy. So, you may wish to consider affective symptoms as clearer signs of depression in this population.

Anxiety (Mild, Moderate/Severe):

Anxiety is also frequently reported by persons with all levels of injury severity. Worries may be related to changes in functioning, concerns for recovery, return to work issues, financial concerns, and interpersonal relationships. Generalized anxiety disorder, post-traumatic stress disorder, and panic disorder are among the most common anxiety disorders in persons with TBI. As with depression, both neuropathological and psychosocial factors, including pre-injury psychiatric history and coping style, may contribute to the development of anxiety after TBI.



Irritability/Anger (Mild, Moderate/Severe):

After TBI, people often report having a “shorter fuse” or being more easily irritated or angry. Such increased irritability has been noted for persons with all levels of injury severity. While violent behavior is relatively rare for those with TBI, it can occur. More frequently, persons feel angered more easily and may be more prone to verbal outbursts.

Emotional Lability (Moderate/Severe):

For some persons with TBI, emotions may easily shift from one extreme to another. Control of emotions may be more difficult. Examples of such lability include:

- ◆ Seeming like they can be laughing one minute and crying the next.
- ◆ Laughing inappropriately; for example, laughs when someone is hurt or dies.
- ◆ Crying easily at things that would not have upset them before.

Additional information on emotional and behavioral disorders following TBI will be presented in the section on Referral Issues.

- ◆ What is the typical recovery course like for persons who sustained a mild TBI? What is the typical recovery course for persons who sustained a moderate/severe TBI?

Mild TBI:

The majority of individuals with mild TBI experience symptoms in the initial days and weeks after injury. The term “*postconcussion syndrome*” is often used to describe the symptoms experienced following mild TBI. Most persons will feel close to “normal” within the first three months after a single, uncomplicated mild TBI. It is important to note that different people have different rates of recovery after injury. Recovery can be slower in persons who have had one or more brain injuries in the past. Recovery can also be slower in persons who are older.

Symptoms are usually worse acutely. However, sometimes persons may not notice problems until they attempt to resume their normal daily activities (like returning to work or school). Symptoms will tend to get better over time for most people. Special medical or rehabilitation treatments are not usually required for persons with mild TBI to get better.

A subset of individuals with mild TBI continue to experience persisting physical, cognitive, or emotional symptoms following their injuries. While not well understood at this time, some individuals continue to have difficulties over time after mild TBI. This is likely due to multiple variables, including the force and type of injury, personal characteristics of the injured person (and brain), severity of the injury, the symptom presentation, reactions to such symptoms, and available resources to address issues after TBI.



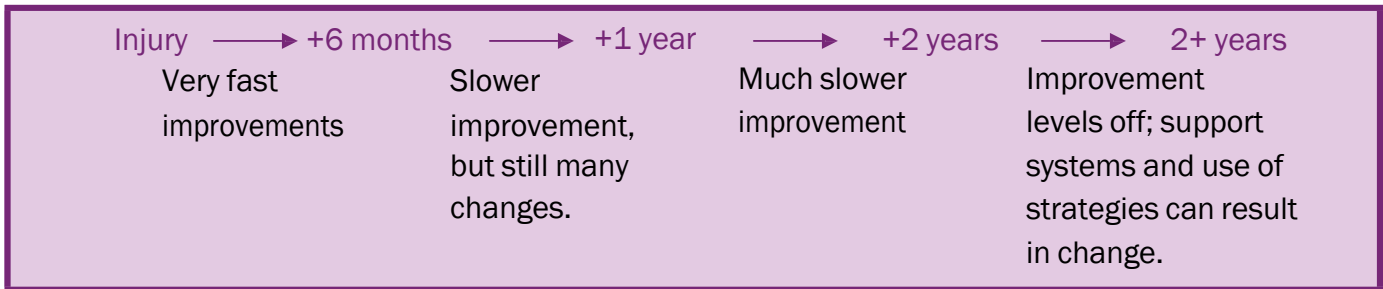
Moderate/Severe TBI:

For those with more severe injuries, the typical recovery course is longer in duration. In general, persons with more severe injuries experience the most rapid improvements in the first six months after injury with continued improvements between six months and one year after injury. However, these improvements are usually not as dramatic or rapid as those seen in the first six months after injury. As noted earlier, responsiveness may be affected for a much longer period of time in a small subset of individuals with severe TBI.

The time period between one and two years after injury is different for different people; some persons continue to show slow and gradual improvements while others show very little improvement. Persons with more severe injuries generally show little change two years or more after injury.

A table outlining the general recovery course for moderate to severe injuries is shown on the following page.

General Recovery Course for Persons with Moderate to Severe TBI



For those with moderate to severe TBI, residual cognitive and behavioral deficits are common. With increasing severity of injury and with greater degrees of initial impairments related to such injuries, the probability that symptoms will be long-standing increases. For example, duration of coma and duration of confusion are associated with the degree of impairment after injury. Longer durations of coma and longer durations of post-traumatic confusion are associated with more severe impairments after injury. Some people with moderate to severe TBI may never be able to return to all of the activities they did before their injury, but they may return to some.

As previously noted, every individual is different and every recovery after TBI is different as well. It is not well understood why some individuals recover more quickly or with better outcomes than others, but it is likely due to a number of factors, such as: the extent of the injury to the brain, the condition of the brain that was injured, previous cognitive functioning, ability to utilize and benefit from compensatory strategies, material support (e.g., financial resources, access to transportation, etc.) and social supports (e.g., family and friends), to name a few.



Factors that impact recovery after traumatic brain injury

- Severity of Injury
- The part/parts of the brain injured
- The strategies used to compensate for problems
- Available supports
- Pre-injury functioning

◆ To what extent is traumatic brain injury (TBI) a common health problem?

As mentioned in the introduction to this manual, TBI is a pervasive health problem in our society, with an estimated incidence of 1.4 million new injuries per year.¹ The incidence rate of TBI substantially exceeds that of other neurological conditions, including epilepsy, stroke, and multiple sclerosis.⁶ Most cases of traumatic brain injury (approximately 80-85%) would be considered mild in severity, with the remaining 15-20% comprising individuals with more severe injuries.

Epidemiological studies have shown that TBI results in severe disability for 30 to 40 per 100,000 individuals,⁶⁻⁷ which translates to approximately 75,000 to 80,000 new cases of disability each year.⁸ Recently, estimates suggest that there are 5.3 million people living with disability as a result of TBI.² These statistics underscore the large number of individuals, families, and communities that are affected by TBI.

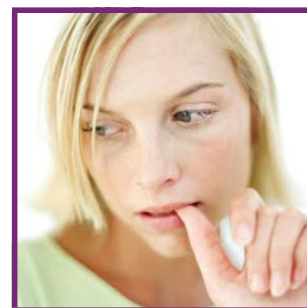


Reasons for Referral to a Clinical or Counseling Psychologist:



REASONS FOR REFERRAL

Patients with TBI may present with a wide variety of behavioral sequelae that vary from patient to patient depending on individual factors (e.g., age, gender, intelligence, personality profile, psychiatric history, etc.) and injury-related factors (e.g., injury mechanism, injury severity, lesion location, time post-injury, etc.) to name a few. There are a number of problematic behaviors that are associated with brain injury that may result in a patient with TBI being referred to you for diagnosis and/or treatment. In the following section, information regarding referral and diagnostic issues that you are likely to face as a treating clinician are presented. In addition to clients with TBI, family members or caregivers of a person with TBI may also be referred to you for evaluation or therapy due to the stress experienced from caregiving or due to strained relationship issues subsequent to TBI. Therefore, a brief discussion of issues for family and caregivers is also presented. For the interested reader, neuroanatomical correlates for each of the potential reasons for referral are presented in Appendix II.



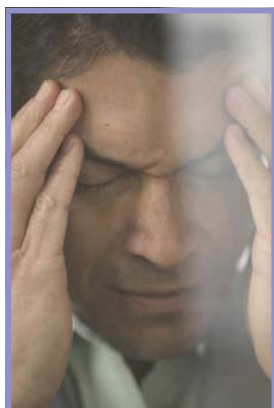
◆ Postconcussion syndrome:

The International Classification of Diseases, 10th edition (ICD-10) defines postconcussion syndrome (PCS; also known as *postconcussive disorder*) as a set of commonly reported emotional, cognitive, and somatosensory symptoms that occur in a loose cluster following TBI; it is most often associated with mild and sometimes moderate TBI. A second competing set of criteria have been presented in the Appendix of the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV) and are referred to as Postconcussional Disorder (PCD). While the theoretical perspectives and symptoms differ for each set of diagnostic criteria, for simplicity, both will be collectively referred to here as PCS. To assist you in thinking through the issues with regard to your individual client, the two competing sets of diagnostic criteria are presented here.

ICD-10 Criteria for Symptoms of PCS:

History of a head trauma, and at least three of the following must be present:

- Headache
- Dizziness
- Fatigue
- Irritability
- Difficulty concentrating on mental tasks
- Impairment of memory
- Insomnia
- Reduced tolerance for stress, emotional excitement, and alcohol
- May be accompanied by feelings of depression, anxiety, or fear of permanent brain damage.



DSM-IV Criteria for Symptoms of PCD:

- A. History of a head trauma resulting in significant cerebral concussion.
- B. Difficulty in attention (concentrating, shifting of focus of attention, performing simultaneous tasks) or memory (learning or recalling information) based on neuropsychological testing.
- C. Three or more of the following occur shortly after the trauma and must be present for three months:
 - Becoming fatigued easily
 - Disordered sleep (insomnia or hypersomnia)
 - Headache
 - Vertigo or dizziness
 - Irritability or aggression on little or no provocation
 - Anxiety, depression, or affective lability
 - Changes in personality
 - Apathy or lack of spontaneity
- D. The symptoms in Criteria B and C have their onset following head trauma or else represent a substantial worsening of preexisting symptoms.
- E. The disturbance causes significant impairment in social or occupational functioning and represents a significant decline from a previous level of functioning.
- F. The symptoms do not meet criteria for Dementia Due to Head Trauma and are not better accounted for by another mental disorder.



Points to consider:

- A client with symptoms suggestive of PCS may be referred to you for various reasons, including but not limited to: clarification of diagnosis, pain management, depression, anxiety, and anger management.
- Careful interview of the client and review of available medical records can help verify the history of concussion/mild TBI and determine whether symptoms may be related to TBI.
- The practice of inferring the history/presence of a mild TBI by a patient meeting the symptom criteria for PCS is not recommended because a substantial proportion of PCS symptoms have been reported in studies of persons sustaining orthopedic injuries due to general trauma without TBI³ and typically-developing adults.⁸⁻¹⁰



Gathering information about the duration of time since a mild TBI will contribute to increased understanding of your client's symptom presentation.

First 3 months after injury:

- Symptom presentation within the first three months post-injury is fairly typical following a mild TBI. The most commonly reported symptoms are: headache, fatigue, dizziness, and irritability.¹²⁻¹⁴
- It is estimated that 80%-100% of patients sustaining a mild TBI report one or more PCS symptoms during the period from immediately post-injury to one month later.¹¹
- It will be highly likely that a client referred to you in the very early stages after a mild TBI will have such symptoms. These symptoms are normal following a mild TBI, and tend to get better over time.
- Most patients recover completely within a few months at most. However, studies have shown that a minority of patients with an apparently mild TBI (roughly 10% to 20%) have poor outcomes.¹⁵



Greater than 3 months after injury:

- A client presenting with symptoms persisting for long periods of time post-injury is far less typical.
- Such cases of chronic symptom presentation following an apparently mild TBI are often considered to be associated with multiple factors (e.g., neurological, psychological, environmental) contributing to and helping sustain the symptoms.
- A recent study of a consecutive series of patients with mild TBI reported that 15%-45% of patients (depending on whether the DSM-IV or ICD-10 criteria were used, respectively) met criteria for PCS at 6 months post-injury.⁵ Recent research has shown that when using the ICD-10 criteria, the prevalence rate of PCS is 3.1 times higher than when using the DSM-IV criteria at three and six months post-injury.^{4, 5}
- Secondary gain (e.g., participation in litigation or receiving insurance or other compensation due to the injury) is often a concern in PCS. While some studies have found that presence of secondary gain increases the likelihood of meeting PCS criteria,^{5,16} a large percentage of those with persisting symptoms have no such incentive.

◆ Depression:

The diagnosis of depression following TBI can be somewhat complicated. One challenge is the lack of specificity of symptoms in major depression as they relate to TBI. For example, changes in sleep, libido, fatigue, difficulties with concentration and/or memory could be the result of the brain injury itself as opposed to a psychological reaction to changes in functional, financial, or physical status. Another challenge that may present is that clients with impaired self-awareness as a result of TBI, may be unaware of or actively deny the presence of depressed mood or other features of negative affect.^{17, 18} In the first scenario, depression could be over-diagnosed while in the second scenario, depression could be under-diagnosed.¹⁹ A further complication lies in the fact that some features of depression may be found in a number of other general medical conditions unrelated to a TBI.

- **Depression is the most common affective disturbance experienced after TBI.** Estimated rates range from 14 to 46% within the first year of injury, and from 11 to 61% at time points ranging up to 50 years after injury. The wide range of rates can likely be attributed to study differences including diagnostic criteria utilized, differences in patient populations, and time post-injury when assessed. In any case, incidence rates of depression in persons with TBI generally exceed those of community base rates.
- **There appears to be few differences between the features of major depression in the persons with TBI as compared with the general population.** Some of the most commonly reported depressive symptoms in persons with TBI include feeling tired, irritability, frustration, distractibility, rumination, boredom, and lack of positive affect. Symptoms that most differentiated depressed from non-depressed persons with TBI include feelings of hopelessness and worthlessness, difficulty enjoying activities, depressed mood, and suicidal ideation. Given the overlap in symptoms of depression and symptoms of TBI, you may wish to pay particular attention to affective symptoms in this population.
- **The DSM-IV-TR criteria have been shown to have high sensitivity and specificity for diagnosing major depression in patients with TBI from the acute phase until at least one year post-injury.**²⁶ While the use of the standard DSM criteria to diagnose major depression in patients with TBI is generally recommended, clinicians may wish to supplement this categorical diagnosis with self-report and significant other-reports. This may contribute to an increased understanding of the relative intensity of cognitive, affective, and vegetative sources of the patient's depressive experience, and a richer characterization of the patient's mood status.
- **The Center for Epidemiologic Studies Depression scale (CES-D) has also been found to be a good screening instrument for detecting depression following mild to moderate TBI.**²² However, the results from factor analytic studies using other dimensional self-report measures of depression have been mixed.²³ Given these findings, you may wish to consider utilizing the CES-D as a supplemental tool for detecting depression in clients with a history of TBI.



- Depressive symptoms may further exacerbate TBI-related cognitive impairments.
- There is no consistent relationship between severity of injury and the presence of depression following TBI.
- Depression has a negative impact on functional outcome following TBI. Post-TBI depression has been associated with difficulties with activities of daily living (ADLs),³² disruptions in social and family functioning, vocational difficulties, and decreased life satisfaction.
- Although post-TBI depression is common, further care must be taken to determine if the depression is part of a short-term adjustment disorder with depressed features (usually milder emotional disturbance that remits in approximately three months or so), a minor depression (characterized by the presence of two to four symptoms of depression in a two week period, one of which must be either depressed mood or anhedonia), or a major depressive episode (MDE).
- Many patients with TBI and depression also have a history of psychiatric conditions including dysthymia, cyclothymia, major depressive episodes, or major depressive disorder. A clear understanding of the patient's psychiatric history may greatly assist in the precise diagnosis of post-TBI depression.
- **The assessment of suicidality in patients with TBI is especially critical and should be conducted regularly as part of the assessment of mood in these patients.**
 - The presence of suicidal ideation, suicide attempts, and completed suicides in patients with TBI have been shown to be 2.7 to 4.1 times more likely than persons in the general population with major depression and no history of TBI.³⁶⁻³⁸
 - The connection between TBI and suicide is a complex one. While the strongest predictors of suicide attempts in patients with TBI were increased feelings of hostility and aggression³⁶ and substance use,³⁸ these are also risk factors for suicide in general. In fact, young age, male gender, aggressiveness, and substance abuse are risk factors for both TBI and suicide. It should be noted that increases in impulsivity and aggression following TBI further contribute to suicide risk.
 - Some studies have found greater injury severity^{38, 40} to be a risk factor, however, this has not been consistently found.⁴¹
 - Patients with post-TBI comorbid diagnosis of mood disorder and substance abuse were at 21 times higher odds of suicide attempt than persons without TBI.⁴²

- The identification of a high-risk time period post-injury has yielded varying results. While one study found that patients with a brain lesion had a median time between injury and suicide attempt of 8 years and patients with a concussion (mild TBI) had an 11-year interval following onset of injury to suicide,⁴³ another study found an interval of injury to suicide of approximately 3 years irrespective of TBI severity,³⁸ and another found no evidence of a specific risk period with a relatively constant risk in the first 15 years post-injury.



- PCS vs. Depression:

In some cases, you will be concerned with differential diagnostic issues, such as determining the distinction between postconcussive syndrome and major depression. As previously noted, the degree of specificity of symptoms for these two disorders is limited. Several PCS symptoms overlap with features of major depression, including:

- Depressed mood
- Sleep disturbance (insomnia or hypersomnia)
- Diminished interest or participation in significant activities
- Fatigue
- Diminished ability to think or concentrate
- Psychomotor retardation that may present similarly to apathy

- As noted previously, careful interview of the client and review of available medical records can help determine the relationship between onset of symptoms and injury.
- It is possible that your client may be suffering from both conditions and it is important to determine 1), which disorder is present as the treatments for PCS and major depression may differ, and 2) if both disorders are present, which is the primary focus of therapeutic intervention.
- PCS and MDE have been found to be frequently co-morbid disorders in patients with mild to moderate TBI³⁻⁵ and/or share a number of similar symptoms.^{6, 7} Rates of co-morbidity (those meeting criteria for PCS and who also meet criteria for a second disorder) range from 26% to 47% at three months post-injury and 26% to 70% at six months post-injury.



◆ Anxiety Disorders:

● Post-traumatic stress disorder:

The diagnosis of post-traumatic stress disorder (PTSD) in patients with TBI is somewhat controversial. One of the main tenets for the diagnosis of PTSD is the frequent re-experiencing of elements of the traumatic event. However, with TBI, periods of retrograde and anterograde amnesia are often present. Generally speaking, the more severe the injury, the longer the duration of this amnesic period. The question then centers on how someone with no memory of the circumstances surrounding the traumatic event can develop the features of and meet the diagnostic criteria for PTSD.



- Evidence suggesting that TBI (with any period of amnesia for the traumatic event) and PTSD are incompatible comes from both civilian and military sources.
 - McCarthy et al.⁴⁸ followed patients with TBI for one year and reported 2.5% of the patients met criteria for PTSD; however, these patients had little or no loss of consciousness and could recount details of their accident.
 - In a consecutive series of military patients with moderate to severe TBI, Warden et al.⁴⁹ reported that none of the patients met the full DSM criteria for PTSD, but if the re-experiencing criterion was waived, 13% would have met all of the other criteria.
- There is also convincing evidence that PTSD can develop in a patient with TBI severe enough to result in a period of amnesia surrounding the traumatic event.
 - Bryant and Harvey have reported that PTSD was formally diagnosed in 24% of patients with mild TBI⁵⁰ and in 27% of patients with severe TBI.⁵¹
 - In a prospective study of a consecutive series of patients with mild to moderate TBI, Levin et al.⁵² reported that PTSD was diagnosed in 12% of patients, which was the same rate as those who experienced general trauma without TBI. However, no patient with moderate TBI met criteria for PTSD.
 - van Reekum et al.⁵³ found a rate of 14.1% in a sample of patients with TBI patients which was approximately 5.8 times the relative risk observed in the general population.

- There are features of PTSD that are different in patients with TBI. PTSD is more common in patients who deny a loss of consciousness,⁵² women are overrepresented among those with TBI and PTSD,^{52, 54} and patients with TBI are less likely to report re-experiencing phenomena.^{49, 54}
- Several studies have found that found a pre-injury history of psychiatric disorder predicts the development of post-TBI PTSD.^{55, 56} A family psychiatric history also was modestly related to PTSD. In patients with PTSD without TBI, trauma severity, poor social support networks, and a high number of life stressors were stronger predictors of PTSD onset than pre-trauma factors.⁵⁶
- PCS vs. PTSD:

Several of the PCS symptoms overlap with or could be interpreted as features of posttraumatic stress disorder (PTSD) including:

- Feelings of anxiety
- Disordered sleep (insomnia or hypersomnia)
- Difficulty concentrating
- Irritability or angry outbursts
- Trouble recalling important details of the traumatic event
- Diminished interest or participation in significant activities
- Feelings of detachment from others

- In evaluating your client with TBI, you will want to consider whether features of PTSD are also present, keeping in mind that there are overlapping features between this diagnosis and post-concussion syndrome.
- For differential diagnosis, consideration of the severity of injury, duration of post-traumatic amnesia, and presenting symptoms may help you clarify the diagnosis for your client, keeping in mind that re-experiencing of the traumatic event may be less likely.
- PCS and PTSD have been found to be frequently co-morbid disorders in patients with mild to moderate TBI.³⁻⁵ Rates of co-morbidity (those meeting criteria for PCS and meet criteria for a second disorder) range from 18% to 35% at three month post-injury and 17% to 35% at six months post-injury.
- Treatments for PCS and PTSD differ considerably. If both disorders are present, determining which disorder is the greater source of distress may inform the main focus of therapeutic intervention.

Other forms of anxiety disorder are common following TBI; however, research identifying the specific connection between TBI and the onset of an anxiety disorder is not straightforward to interpret due to methodological flaws in many of the studies. For example, few studies follow a consecutive series of patients with an appropriate control group to determine whether or not the disorder is a chance finding or truly a direct result of TBI neuropathology. The sources of anxiety may differ from patient to patient and even over time within the same patient. Frequent themes underlying anxiety following TBI may include:



- Fears about not being able to do things they previously did with ease
 - Fears of social contact because of diminished capacity
 - Fears of permanent brain damage
 - Fears related to the loss of physical integrity
 - Fears about losing or having lost one's job
 - Fears about not being able to provide for oneself or one's family
- There is evidence to suggest that anxiety disorders may be more difficult to treat following TBI as post-TBI major depression and substance abuse have been shown to remit more quickly than anxiety disorders.⁵⁹
 - Co-morbidity between anxiety disorders and other Axis I disorders are high following TBI across the range of injury severity.^{3-5, 52, 59}
- Acute Stress Disorder (ASD):
 - Acute Stress Disorder (ASD) is a diagnosis similar to PTSD that occurs in the first month following exposure to a traumatic event. The primary difference between ASD and PTSD is the timing and duration of the disorder, with criteria for ASD involving a disturbance that lasts for a minimum of 2 days and a maximum of 4 weeks and occurs within 4 weeks of the traumatic event.
 - ASD has been shown to be predictive of the development of PTSD in patients with mild TBI at six months⁵⁰ and two years⁵¹ post-injury.
 - If you are seeing a client in the very acute phase post-injury and features of ASD are present, addressing those features and monitoring for the development of PTSD would be recommended.

- Generalized Anxiety Disorder (GAD):

- Generalized anxiety disorder (GAD) is possibly the most common type of anxiety disorder diagnosed following TBI.^{60, 61}
- In a recent review of studies of GAD following TBI, Rogers et al.⁶¹ concluded that there was mixed evidence that greater injury severity was associated with a higher incidence or greater severity of GAD, but that there was strong support for a temporal relation between onset and injury.
- Understanding of a biological model explaining the relation between GAD and TBI is limited.
- **Prevalence of GAD:** GAD occurs in approximately 2.5% of patients with TBI at one year post-injury,⁶⁸ but occurred in a reported 1.7% at one year post-injury in a Finnish study of mild, moderate, and severe TBI.⁶² However, a rate of 24% was reported in patients with mostly mild TBI an average of three years post-injury in a convenience sample at a university clinic.⁶⁹ In a small study of patients participating in a TBI rehabilitation program, van Reekum et al.⁵³ reported a prevalence of 9.1%. Patients with TBI appear to be at an increased risk of developing GAD as suggested by the 44% prevalence rate of Hoofien et al.⁷⁰ when assessed at an average of 15 years post-injury



- Panic Disorder

- **Panic disorder (PD)** is a less commonly found anxiety disorder following TBI. The development of PD following TBI follows a much longer course as Koponen et al.⁶² reported an average of ten years post-TBI for the onset of PD (which may be due, in part, to other psychological factors related to the injury or to cultural differences).
- There is not enough evidence available at this point to support the presence of a relationship between injury severity and incidence of severity of PD.⁵³
- **Prevalence of PD:** The New Haven NIMH Epidemiologic Catchment Area Study (which relied on self-report of a history of TBI resulting in at least a loss of consciousness)³⁷ reported a rate of 3.2% which was statistically higher than the general population (1.3%) reported in this epidemiologic study. Fann et al.'s study⁶⁹ reported a prevalence rate of 2.0% which is not different from that of the general population. A rate of 8.3% was found in a Finnish study of a referred sample of mild, moderate, and severe TBI interviewed an average of one year post-injury.⁶²

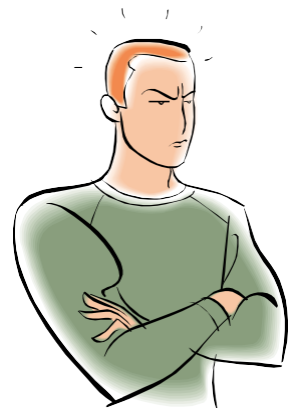
- Obsessive-compulsive disorder:

- Obsessive-compulsive disorder following TBI (termed acquired OCD or A-OCD) is rare.
- Case studies suggest that the post-injury onset of A-OCD after TBI can be quite variable, with onset ranging from 24 hours to 3 years post-injury. The symptom presentation was very similar among all of the patients with A-OCD.
- **Prevalence of A-OCD:** A-OCD occurs in approximately 1.6% of patients with TBI at one year post-injury.⁶⁸ The New Haven NIMH Epidemiologic Catchment Area Study³⁷ reported a rate of 4.7% which was statistically higher than the general population (2.3%) reported in this study.

Behavioral Issues

- ◆ Anger and aggression

- During acute recovery from TBI, an estimated 35% to 96% of patients with severe TBI may exhibit agitated behavior and as much as 33% may exhibit aggression and/or agitation at six months post-injury.⁷⁵
- Aggressive behavior has been shown to be more common following TBI than in patients sustaining similar levels of general trauma without brain injury.⁷⁶
- Long-term follow-up studies⁵⁹ have indicated that 31% to 71% of patients with severe TBI reported increased (compared to pre-injury levels) irritability, aggression, or agitated behavior from one to 15 years post-injury. Although the most striking increases in anger, agitation, and aggression occur in patients with severe TBI, similar behaviors have been reported in mild and moderate TBI in which irritability and a short temper (5% to 70%) were more common than agitation (19% to 40%) during the first year post-injury.
- Pre-injury history of poor social functioning, substance abuse, and the presence of major depression have been shown to significantly correlate with aggressive behavior in patients with TBI.⁷⁶



Clients with TBI may also be referred due to behavioral issues described in previous sections. Among these include:

- Poor initiation (e.g., abulia, bradykinesia)
- Inappropriate social communication skills
- Poor ability to stop an ongoing behavior
- Poor impulse control/disinhibition
- Emotional lability
- Impaired behavioral regulation

◆ **Lack of awareness (anosognosia):**

One of the major challenges that can be faced for healthcare professionals and family members is anosognosia (also referred to as a lack of awareness of deficits or impaired self-awareness). Lack of awareness can impact the referral question, and affect a client's self-report of problems and your treatment approach. As a direct result of injury to the brain, some individuals have a difficult time seeing themselves and their abilities/behaviors accurately. They may be unable to notice that they are experiencing certain problems and may act as though nothing has changed since the injury, despite evidence to the contrary. This kind of unawareness is different than denial. In denial, a person may be aware at some level that a problem exists, but uses defense systems to deny the problem. With anosognosia, the individual does not realize that any problem is present or is unaware that problems can affect their ability to perform tasks like driving and working. A client with impaired self-awareness may pose a challenge to the clinician, as such clients may or may not fully understand the reasons for referral.



Persons with TBI may experience different levels, or degrees, of impaired awareness.^{92, 93}

Some persons have very poor awareness and report that they are not experiencing any problems as a result of the injury. Some possess intellectual awareness, which means that they acknowledge that they are having problems (e.g., “my memory is bad now”) and may recognize the extent to which such problems can impact daily functioning, but are unable to recognize the problem when it occurs. Those with emergent awareness acknowledge a problem and how it can impact functioning, and can recognize when it is occurring, but are unable to anticipate when they might encounter such a problem in future activities. Those with anticipatory awareness are able to recognize a problem and its impact on activities, are aware when it is occurring, and can anticipate that the problem is likely to affect them in a future similar activity or in an activity that requires similar skills.



- Difficulties seen in a patient with a lack of awareness include:
 - Adamant that they can walk when they are hemiplegic and using a wheelchair for ambulation
 - Poor safety awareness (e.g., thinking it is safe to use power tools despite problems with vision and coordination)
- Lack of awareness is associated with:⁹⁰
 - Poor compliance in treatment and rehabilitation
 - Poor participation in rehabilitation therapies
 - Longer length of stay in post-acute rehabilitation
 - Increased caregiver distress
 - Poor functional status at discharge from rehabilitation
 - Poor vocational outcomes following post-acute rehabilitation discharge
- Characteristics of anosognosia include:¹⁸
 - The lack of awareness is more apparent when questions about functioning are general rather than specific
 - The lack of awareness is more pronounced regarding questions about nonphysical functioning (cognitive and affective) compared to physical functioning
- Prevalence:
 - Although estimates vary due to differences in the definition and measurement of anosognosia, nearly 45% of patients with moderate to severe TBI may have significant degrees of anosognosia from a few months to over a year post-injury.⁹¹
 - Specific suggestions about ways to address awareness issues in your assessment and intervention of clients with TBI are presented in later sections of this guidebook.

◆ Relationship issues:

Emotional and behavioral changes experienced by persons with TBI can have a negative impact on their interpersonal relationships. In general, these emotional and behavioral changes are more distressing for caregivers than changes in cognitive or physical functioning. After TBI, many partners of the person with injury may report that their significant other is not the same person that they were prior to injury. In many ways, this may be true. For example, the mate who was caring and thoughtful before the injury may have become irritable, coarse, and self-centered after the TBI. Consider the comment of one spouse, ‘...we have two children, but now I feel like I have three.’



- The toll of TBI, particularly severe TBI, on the uninjured spouse (typically a woman, since men are more frequently injured) cannot be underestimated. In one study,¹⁰⁸ nearly 25% of women reported that they had been either verbally abused and/or threatened with physical violence by their partners; while nearly 50% felt that they were married but did not really have a husband, and 32% felt as though they were ‘married to a stranger.’ For marital partners, TBI frequently yields diminished intimacy and relationship satisfaction.^{109, 125, 126}
- Increased levels of anxiety and depression have been reported in the spouses of TBI survivors¹⁰⁹ up to 6 years post-injury.¹¹⁰
- Several studies have reported that the divorce rate among survivors is nearly 50%¹⁰⁵ within a few years following the TBI.
- However, persons with TBI can establish new relationships after injury. One study reported, for example, that 55% of those with TBI had established new relationships when interviewed a median of nine years post-injury.¹⁰⁶

◆ Family/caregiver distress:

The family/support system of persons with TBI experiences significant emotional distress. High levels of emotional distress have been reported even 5 to 15 years after injury,²²⁻²⁴ especially in families of persons with more severe injuries. Such distress may result in a referral to a clinical or counseling psychologist, or other counseling professionals.



- Research has shown that relationships among family members often change in a negative way after injury.^{109, 121, 125}
- Prevalence rates of clinically significant anxiety among caregivers following a loved one's injury generally range from 30-45%.¹¹⁸⁻¹²²
- Reported rates of clinically significant depression range from 20-47% of caregivers.¹²⁰⁻¹²⁴
- For most family members, life is not the same after TBI. Caregivers tend to receive fewer services (or no services) than the client with TBI, yet caregivers are also likely coping with a number of changes and can benefit from support and assistance with stress management. It is important that caregivers, family members, and other involved members of your client's support system understand that they are not alone in what they may be feeling. While everyone's situation is a bit different, there are some common problems that many family members experience.
- High levels of distress within the family or home environment can negatively affect the ability of the family/support system to help the person with TBI resume activities, like housework, shopping, and visiting friends and family. For this reason, it is also important to be sensitive to potential stressors in the family or home environment and to be aware of resources that can be of help to family members of persons with TBI. Such resources may include educational materials about TBI, stress management techniques, referrals for supportive counseling or therapy, and referrals for assistance with practical supports, like transportation and childcare.

There are a number of specific ways in which changes after injury can contribute to stress among close others.

- **Less time for self:** Since the injury, family members and close others may find they have very little time for themselves or to do things for enjoyment or relaxation. Energy may be spent primarily on issues relating to taking care of the family member with injury. This can contribute to fatigue and may potentially impact immune responses. Yet, family members may feel as if there is no opportunity for rest.
- **Financial difficulties:** If the family member who has been injured is unable to return to work or returns to a job with a reduced salary, there will be fewer resources to support the household. Medical bills may also be piling up. Also, people frequently have difficulty applying for and getting disability income (SSDI).
- **Roles often change dramatically following TBI.** In one such study, patients with TBI reported 71% of the role changes involved losses and 64% of the respondents reported 3 to 4 areas of loss in their lives upon return to the community.¹⁰⁷ The results of the role changes can be dramatic and devastating. In some cases, it is a wife that is suddenly faced with not only caring for the children, but also finding work outside the home and trying to coordinate the care, supervision, and navigate state and local agencies regarding the disability status of their spouse with a TBI.
- **Problems with communication:** After the injury, communication within the family or support system may be affected. Family members may have trouble talking about their feelings. In addition, things may be so busy that there just doesn't seem to be much time to spend with other family members. The family may begin to get together solely to solve the next problem, rather than spending time just enjoying being together.
- **Lack of support from other family members and friends:** Soon after injury, the family probably got a lot of help from other people. But as time after injury goes on, the amount of help received frequently diminishes. Other family members and friends may come around less, and there may be little understanding of what the caregiver is going through. Others may not understand some of the changes in the injured family member and may seem to be critical of the way the caregiver is handling things.

◆ Sexuality, sexual functioning, and intimacy:

Clients with TBI may be referred to you due to issues related to sexual functioning and/or intimacy issues within relationships. Although limited research has been done in the area of sexuality, sexual functioning, and intimacy after TBI, the most common findings reported involve a decrease in sexual functioning, including decreased drive, sexual arousal, and orgasm. However, in a comparative minority of cases, hypersexuality may occur. The following is a brief review of the extant research on this important area of functioning in order to guide the treating professional pursuing therapy with patients presenting with issues in this area.

Persons with TBI often exhibit:

- Decreased libido
 - Problems with sexual performance and erectile dysfunction
 - Reduced foreplay duration
 - Reduced frequency of intercourse
 - Reduced self-esteem in sexuality
 - Reduced sense of sex appeal
 - Poorer quality of sexual relationships and alienation of their spouse/partner
 - Increased depression leading to exacerbation of sexual functioning
- While much less commonly reported after TBI, individuals with brain lesions in specific areas may result in:
 - Hypersexuality
 - Public masturbation and/or exhibitionism
 - Promiscuity
 - Obsessive behavior related to pornographic materials or frequent masturbation
 - Sexually acting out and/or physically aggressive attempts at engaging in sex with spouse/partner, acquaintances, or complete strangers
 - Committing sexual offenses (up to 6.5% in a sample of patients participating in an outpatient rehabilitation program)⁹⁹
 - And rarely, a change in sexual orientation (following damage to limbic structures)¹⁰⁰

A take-home message regarding sexuality, sexual functioning, and intimacy is that this is an area of functioning that may be impacted by TBI. Furthermore, it is an area of functioning that may have been relatively neglected in many medical and rehabilitation settings. It may be helpful to explore issues regarding sexuality and sexual functioning with your client, especially if other contributing factors are present, such as the presence of depression, prescription medications that affect functioning, and the like.

There are few resources for the lay public regarding TBI and sexuality, but one such book that could be recommended is *“Sexuality and the Person with Traumatic Brain Injury: A Guide for Families.”*¹⁰¹

◆ Alcohol and Substance Abuse/Dependence:

- The likelihood of confronting issues related to substance use/abuse in clients with TBI is high. While it may not be the *main* focus of the referral for psychological services, it may be a complicating factor that should be addressed as both pre-injury¹²⁷⁻¹³⁰ and post-injury¹³¹⁻¹³⁴ substance use/abuse have been shown to result in poorer outcomes.
- Pre-injury drug and alcohol abuse in patients with TBI appears to be common.
 - Studies have found a pre-injury history of alcohol abuse in 37 to 66% of persons with TBI.
 - suggests that pre-injury drug abuse was reported in 34%-39%, and illicit drug use in 29%.
 - Based on blood alcohol levels, approximately 36-51% of persons with TBI are intoxicated at the time of injury.
 - Patients with a substance abuse disorder are at increased risk of a TBI requiring hospitalization.
- A prior history of alcohol abuse is related to higher mortality, greater frequency of mass lesions (e.g., hematomas), poorer neuropsychological functioning both acutely and at one year post-injury, and poorer global outcome.¹²⁹
- If a TBI occurs as a result of alcohol intoxication, that person has been shown to be at over a four-fold increased relative risk of sustaining a second TBI¹⁴² (often alcohol related as well) making this an important area for aggressive clinical intervention.
- Although research has found that substance use/abuse often declines in the near-term following TBI,¹³⁵⁻¹³⁷ longer-term follow-up studies have suggested that substance use, especially alcohol consumption, increases over time.¹³⁷⁻¹⁴¹ Although less frequently reported, it has been found that approximately 15-20% of persons with TBI who were abstinent or light drinkers before their injury subsequently became heavy drinkers afterwards.¹⁴⁰
- Post-injury substance use carries significant morbidity. This is particularly true for persons with greater TBI severity, in that alcohol and other intoxicating substances can have a greater effect on cognition and judgment than they may have previously had on the same person before injury. This is highly problematic in the person with poor insight, reasoning, and judgment who becomes even more impaired while drinking or using illicit drugs.
- Illicit drug use has been less frequently included in studies of persons with TBI. In one of the few to do so, 29% of the sample reported drug use while this dropped to 6% at one year and 8% at two year follow-up.¹³⁹

Assessment Issues:



Assessment Issues



There are many factors to consider when conducting assessments of individuals with TBI, including cognitive deficits, physical limitations, level of social support, coping skills, emotional/behavioral functioning, access to resources, and level of pre-injury functioning. Gaining an appreciation of these factors will be instrumental in developing intervention strategies for your clients with TBI. You may need to modify your assessment and intervention techniques on an individualized basis according to the consequences of the person's injury on their functioning. In addition to your own clinical assessment, you may find it beneficial to request the input of a neuropsychologist regarding your client's sensorimotor and cognitive functioning. Tips on how to maximize the benefit from such a referral are also presented.

◆ Identification of TBI

Your referral sources may not always inform you that they are referring an individual with TBI to you. For example, before the first appointment, you may know only that the client is experiencing difficulties with depression, anxiety, anger, etc. Therefore, when conducting your intake interview, it would be helpful to inquire about any history of TBI when gathering medical history information. Since many clients, including some who have sustained TBIs, may not be aware of what defines a TBI, inclusion of the following questions is recommended:

1. Have you ever had an injury to your head because of a car accident, fall, fight, blow to the head, or gunshot? If so, when did this happen?
2. Did you get “knocked out” or lose consciousness? If so, how long did this last?
3. Did you experience confusion after the injury? Is there a gap in your memory for events that happened around the time of the injury? If so, what was your last memory before the injury? What was your first memory after the injury?
4. Did you go to the hospital for treatment? If so, was a CT or MRI scan of your head performed? Did you have any surgeries? What were you told by your doctor?
5. Did you receive treatment? If so, what type of treatment? Were you referred for rehabilitation because of problems with your thinking abilities or physical abilities?
6. Have you noticed changes in your emotional functioning since the injury? If so, what changes have you noticed?

- ◆ If the client answers “yes” to question 1 and “no” to questions 2 and 3, then they most likely did not experience a TBI, but sustained a head injury (please refer back to Section 1 for information on the distinction between head injury and TBI). If you believe that they had a head injury, but not a TBI, then it is unlikely that you will need to modify your assessment and intervention strategies since head injuries do not usually cause lasting problems. However, if the client has difficulty providing this information and you are unsure as to whether they had a TBI, then it is recommended that you: 1) obtain permission to talk to a family member/friend; and 2) obtain a signed authorization of release of medical records in order to get the client’s medical records for clarification of TBI status.
- ◆ In contrast, if the client answers “yes” to question 2 or 3, then it is likely that they experienced a TBI, and you may need to modify your assessment and intervention techniques, as described in the following sections. Referring to the section on common sequelae/consequences of TBI in Section 1 may be helpful. Additionally, you may need to obtain permission to talk to a family member/friend in the event that the client is unable to fully answer the above questions. For clients who have had moderate to severe TBIs, it is highly likely that you will need to gather a substantial amount of information from a collateral informant, given the frequent cognitive difficulties resulting from more severe injuries.

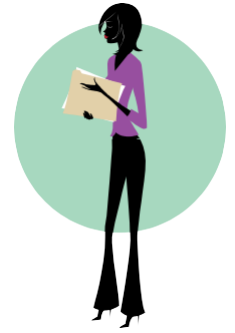
◆ Obtaining Relevant Information from the Medical Record:

An additional source of valuable information is the client’s medical record, if this is possible to obtain. For clients with a mild TBI, limited medical records may be available. Some individuals with mild TBI never seek medical attention after their injury. Others are seen in the emergency department and discharged shortly thereafter. Very few persons with mild TBI are hospitalized. Most who do get admitted to a hospital have either sustained a complicated mild TBI or have had other injuries (such as fractures, etc.) that lead to admission. However, if the person with mild TBI has received medical attention or has been seen by other healthcare professionals, such as a neuropsychologist, obtaining those records will be helpful in guiding your assessment and intervention.

For those with moderate to severe TBI, most will have been hospitalized and many will have extensive medical records. Since most clients will be referred to you after a period of recovery, they may have had both acute medical care and rehabilitative care. Keep in mind when reviewing the information at what point in recovery the data was obtained. Acute medical record data may not accurately represent your client’s current level of functioning, if he or she is referred to you several months or years post-injury.



The following list may help to structure your medical record search:



◆ **Date of injury**

This should be readily obtainable in the chart, and may even appear on the referral you receive. It is important to know the date of injury so that you get an idea as to what point the client is in the recovery process. If the injury occurred recently, there will be very different expectations than if the injury occurred several years ago.

◆ **Severity of injury**

Look for the GCS score or physician's notes regarding level of injury severity. This information may be located in the history and physical, the emergency room intake form, or the discharge summary.

◆ **Surgeries**

Look to see if your client has undergone neurological surgery or surgeries, and try to find out if there are any planned future surgeries that could impact the ability to work toward treatment goals.

◆ **Physical, Cognitive, Emotional, and Behavioral Changes**

The history and physical, discharge summary, and therapy notes are all good sources of information about the strengths and weaknesses that may exist after injury. A very good source of information can be the neuropsychological report, in the event that the client was seen by a neuropsychologist. This test report can often be found in the consultation section of a medical record. Alternatively, if it was conducted outside of a hospital stay, you may need to find out from the client or family members whether such an evaluation was conducted and then try to obtain the report. When reviewing these records, always be mindful of **when** the information was obtained relative to the date of injury and date of your contact with the client. For example, if the evaluation was conducted two months after the client's severe TBI and you are seeing the individual three years after injury, the information may be of limited utility. The relatively acute nature of that evaluation means that the person has likely improved since that time. Consequently, you will want to look for a more recent evaluation, or you may want to request a re-evaluation. If this is not possible, you will need to rely more on your clinical interview to have an idea about the client's current status.

◆ **Therapies Received/Progress**

Has your client received any physical, occupational, speech/language, recreational, or other therapies? If so, notes from the therapist or assessment and discharge notes may provide information about the client's functional abilities.

◆ **Assistive Devices**

Does your client have assistive devices to help with daily functioning (i.e., uses a memory notebook to help keep track of appointments, uses a cane for walking, etc.)? If such devices were recommended and your client does not use them, what is the reason? For example, is the barrier lack of funding, dislike of the device, or lack of knowledge about how to best utilize the device?

◆ **Social and Material Resources**

Who are the primary people in the client's support system? What roles do they play? What kinds of support does the client have for transportation needs, medical needs, housing needs, etc.?

◆ **Limitations and Recommendations**

Are there activities, such as driving and use of firearms, that the physician recommended be restricted? If so, are those activities being conducted? Has time passed such that the recommendation should be re-evaluated? Were there specific follow-up recommendations made for additional services? Have those been obtained or pursued? If not, what are the barriers?

◆ **Issues to consider and possible modifications needed in conducting assessments:**



So, you have learned that your client has sustained a TBI – now what? How will this alter your assessment procedures? Important factors that will contribute to determining the modifications you need to make include the nature and severity of deficits experienced after injury. You may need to make no or only minor modifications for clients with mild deficits, whereas substantial alterations may be required for those with moderate to severe deficits. However, as noted previously, every brain injury is different and every individual is different; thus, the specific changes you make to your assessment procedures will vary from client to client. As a brief review, some of the most common emotional/behavioral consequences of TBI are depression, irritability/anger, and anxiety. As for cognitive consequences following TBI, disruptions in attention, memory, information processing speed, and organizational skills are commonly observed. The presence of one, a few, or many of these difficulties in your client will necessitate adaptation of your assessment techniques. When you begin to work with your client, keep the following key points in mind:



- You may need to **repeat information and speak more slowly** if your client has memory problems or slowed information processing speed.
- You may need to **ask the client to repeat himself/herself** if slurred speech is problematic. Keep in mind that this may be a source of frustration for your client and that the speech problems are the result of the TBI, not intoxication
- Your client may need to **take breaks during the assessment** due to fatigue, trouble maintaining attention, or physical discomfort, such as headaches.

- You may need to **present information in written form** (unless client has blurred/double vision) due to memory problems, attention difficulties, or slowed processing speed.

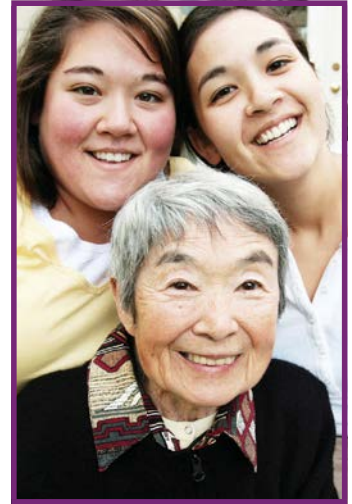
- **Depending on the client's extent of cognitive problems, you may or may not be able to conduct psychological testing.** Visual problems, such as blurred vision, double vision, or a visual field cut may also interfere with conducting psychological testing. Testing may need to be limited to the auditory modality if the client has visual or motor problems.

- **Some behaviors that may appear to suggest that the client is acting in an oppositional or resistant manner may actually be the direct result of the TBI.** For example, issues such as diminished initiation, inattention, or a tendency to respond, "I don't know" to interview questions are often caused directly by the injury itself.

You may need to reduce the complexity and length of questions for persons with more severe cognitive deficits after injury



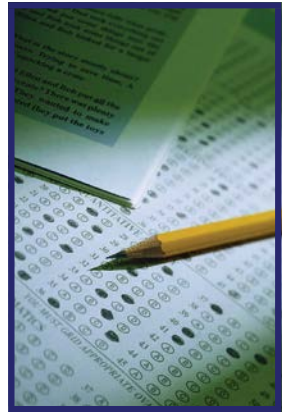
- Collateral informants may need to play a larger role than in your typical psychological assessment because of the client's cognitive deficits and potential lack of awareness of deficits. As noted earlier, reduced awareness of deficits is very common following moderate to severe TBI, and is a direct result of the brain injury. As a reminder, impaired awareness of deficits is not the same as denial.
- You will need to thoroughly assess the client's support system, since there are often substantial changes after TBI, including loss of friendships, changes in family roles, and dependence on family members. Look for signs of social isolation, which is very common after TBI.
- Remember that you must be vigilant for potential suicidality when evaluating clients with TBI, just as you would be with other clients presenting to your office.



- Obtaining information about pre-morbid functioning is very important. Pre-morbid coping styles can contribute to post-injury functioning. Additionally, you will need to determine whether the reason for referral (depression, anger, etc.) was problematic prior to the TBI. Also, be sure to get a full history of substance use/abuse (both pre- and post-injury) Substance use/abuse is often associated with TBI, and continued use of substances post-injury can be problematic because of heightened sensitivity.
- You will need to find out who is/are your client's treating physician(s). It is important to know if more than one physician is prescribing medication for the client and, if so, whether the efforts are coordinated such that each physician is aware of what the other is prescribing, given potential medication interactions.

◆ The neuropsychological assessment:

A neuropsychological evaluation involves the use of interview, observation, and behavioral measures to systematically examine the relationship between brain functioning and behavior. Measures of sensorimotor, cognitive, emotional, and behavioral functioning are conducted. A client will be referred for neuropsychological assessment if they have had or are suspected to have neurological disorder or dysfunction of some type. Clients with a history of stroke, brain tumor, or progressive dementing condition are often seen for neuropsychological assessment.



Clients with a history of moderate to severe TBI are typically referred for neuropsychological evaluation at some point in the initial year after injury, since cognitive difficulties are very common in moderate to severe TBI. Unfortunately, those without healthcare resources may not have been referred for or completed such an evaluation. Nearly all clients who sustain moderate to severe TBI and subsequently participate in a comprehensive rehabilitation program will have undergone neuropsychological testing. However, clients who have had mild TBIs, particularly those who were not hospitalized, are less likely to have had a neuropsychological evaluation prior to coming to see you.

As noted in the Medical Record Review section above, neuropsychological reports are often located in the consultation section of a medical record. If the client had a neuropsychological assessment on an outpatient basis following hospital discharge, it would be helpful for you to obtain the report directly from the neuropsychologist after having obtained a written authorization for record release from the client.

● Why is it helpful to have the client's neuropsychological report?

You can learn important information about the client from the neuropsychological report, which can guide you in the modifications you may need to make to your assessment. As a reminder, be sure to note when the evaluation was conducted. If it was performed many months or years ago, then the information in the report may no longer be accurate. A re-evaluation may be warranted if you observe that the client has cognitive difficulties, or if cognitive difficulties are reported to you by the client or family members. Below are some examples of the types of data you can make use of from the neuropsychological report:

- **Areas of cognitive weakness** – the report will describe areas of difficulty, such as memory, attention, processing speed, language, visuospatial functioning, and problem-solving. You can use this information to determine the extent to which you will need to modify your assessment. For example, if the report states that the client has significant memory problems, then you will want to consider using strategies such as presenting information in written format (not just in verbal format), repeating information in short chunks, asking the client to repeat information back to you to ensure understanding, and providing information to family member(s) if the client has given consent to do so.



- **Areas of cognitive strength** – the report will also describe areas of cognitive strength that the client may possess, which you can try to capitalize on in your assessment. If, for example, the client has good expressive language in the context of motor weakness that interferes with the ability to write, you may want to complete assessment questionnaires orally rather than in written format.
- **Emotional functioning** – the neuropsychological report will likely include a section on emotional functioning, which will describe the results of emotional screening questionnaires that were administered. It will be helpful to review this section of the report to get a sense of emotional difficulties the client may be experiencing; this will be particularly helpful if you are able to obtain the neuropsychological report prior to meeting with the client.
- **Recommendations** – the report will contain recommendations that are based on the neuropsychological findings. These recommendations will vary greatly across individuals with TBI, and the level of specificity of the recommendations will also vary. A close look at this section of the report will likely be very helpful to you in determining the needs of the client as you conduct your assessment.



The extent to which each of these sections is emphasized in the neuropsychological evaluation will largely depend on the referral question. Evaluations can be conducted for various reasons:

- **To address diagnostic issues** (e.g., Is there a likelihood that brain injury is present? What areas of the brain are likely injured?),
- **To provide treatment recommendations** (e.g., Would cognitive remediation be helpful? What cognitive functions should be addressed? Would the client benefit from psychotherapy?)
- **To assist with discharge planning:** (e.g., Is the client able to live safely on his/her own? To what extent should the client be able to participate in financial or medical decision-making? What additional services are recommended for this client?)
- **To address community functioning** (e.g., What supports are needed to assist this client in returning to paid employment? Is referral for behind the wheel driving evaluation recommended?)

- Referring your client for neuropsychological testing:

In many cases, your client may come to your office for an initial evaluation or treatment without having had a previous neuropsychological evaluation. Or, alternatively, the evaluation that had been conducted was done either so acutely after injury or so long ago that you question whether the results would accurately reflect your client's current level of functioning. As you conduct your assessment, be sure to ask the client (and family members, if you have access to them) if they are experiencing any problems with their thinking abilities, such as memory, attention, processing speed, language, visuospatial skills, and problem-solving. If the client has prominent cognitive difficulties, you will be able to detect this during your assessment as you pose questions. However, if more subtle problems are present, you may not be able to detect them while conducting your assessment, and will need to rely more on the report of the client (and family members, if applicable). In these cases, and when cognitive issues are likely to have an impact on your evaluation and/or treatment of the client, you may wish to refer your client for a neuropsychological evaluation.



A referral for formal neuropsychological assessment can be very important because specification of the nature of the cognitive difficulties can provide guidance regarding the feasibility of work and community goals that the client may have. For example, if the client worked as an office manager prior to injury and wishes to return to this job, but has significant problems with memory, processing speed, and problem-solving, then it is likely that substantial workplace modifications will need to be implemented to help the client compensate for these problems, or, alternatively, job goals will need to be altered.



There are several things to consider in order to maximize the utility of the neuropsychological evaluation that is conducted.

- **Ask colleagues, contact local rehabilitation facilities, inquire through national professional organizations, or contact your state Brain Injury Association to identify neuropsychologists who are qualified to do the evaluation.** If you do not already have a neuropsychologist with whom you have worked before, you will want to do a little research to determine that your referral will go to a qualified professional, ideally with experience in conducting neuropsychological evaluations for clients with TBI.
- **Formulate the questions you would like addressed clearly and provide the list of questions to the evaluating neuropsychologist.** As described previously, a neuropsychological evaluation may focus on various issues, such as diagnosis, treatment or rehabilitation recommendations, and medicolegal evaluation. If the purpose of your evaluation is to assist you with treatment recommendations, you will want to let the consulting neuropsychologist understand what information you are hoping to obtain. This will likely impact various aspects of the evaluation, from the selection of test instrument to the structure of the resulting report, and the recommendations provided. Be sure to provide a list of questions in writing to ensure that the consultant will address all of your concerns. You will want to be very specific to your client's situation, however, some key areas you may want to consider asking the consultant to address include:
 - **What are my client's areas of limitation and how might they impact psychotherapy participation and the client's overall goals?**
 - **How stable are the areas of limitation likely to be?**
 - **What areas of strength does my client exhibit and how might these be used to assist in therapy participation and the client's overall goals?**
 - **What are some specific modifications that would be recommended to the provision of psychotherapy (i.e. type of approach, method of delivery of information, length/frequency of sessions, participation of family/significant others in treatment, etc.)**
 - **How would factors like fatigue, substance use, pain, etc. impact participation in therapy and functioning in the community?**
- Provision of information about school performance, pre-injury medical and social history, injury history, post-injury treatments, and the presenting problem will facilitate the neuropsychological evaluation. Having this information available will enrich the quality of the resulting report and may increase the speed with which the results can be provided to you.
- **Specify a time frame within which you want to obtain the evaluation results and recommendations.** To ensure that you have the information that you need in a timely manner, be sure to clearly communicate your expectations regarding when you need the results.

◆ Understanding Disability

There are several different ways to define and assess outcome following TBI. A useful framework that may be helpful for the clinical or counseling psychologist to consider when planning an evaluation is provided by the **International Classification of Functioning, Disability, and Health (ICF)**, which is a classification system developed by the World Health Organization to measure components of health, functioning, and disability in all persons. The ICF model provides a conceptual framework for health-related information that can be used to assess outcome and factors that impact outcome in both clinical and research settings. The ICF has also been used in population studies, social policy development, and health care program evaluation. The organization and structure of the ICF permits a clinician or researcher to describe an individual's functioning, disability, and health in multiple domains. The model may be helpful to you in designing evaluations not only for your clients with TBI, but can be broadly applied to all clients in your professional setting. The following sections will provide a brief description of this model.

International Classification of Functioning, Disability, and Health (ICF):

The ICF model is comprised of two parts:

1. Functioning and Disability
2. Contextual Factors



Each part consists of two components, and each component includes four levels that are used to record the health and health-related conditions of an individual. The four levels are:

1. Domains
2. Constructs
3. Positive Aspects
4. Negative Aspects

We will briefly discuss the ICF and its associated levels below and then provide an example using a hypothetical client with a TBI. Further information about the ICF can be found at the following website:

<http://www.who.int/classifications/icf/en/>

Part 1 - Functioning and Disability

COMPONENTS:	Body Functions and Structures	Activities and Participation
DOMAINS:	Body Functions Body Structures	Life Areas (Tasks, Actions)
CONSTRUCTS:	Changes in Body Functions and Structures	Capacity Performance
POSITIVE ASPECTS (Functioning):	Functional and Structural Integrity	Activities Participation
NEGATIVE ASPECTS (Disability):	Impairment	Activity Limitation Participant Restriction

Body Functions and Structures:

- **Body Functions:** physiological functions of body systems, including psychological functions such as language and memory.
- **Body Structures:** anatomical parts of the body such as organs, limbs, and their components.
- **Impairments:** problem(s) in body function or structures (e.g., an anomaly, defect, or loss) that is/are a deviation from generally accepted population standards of body functions and structures. Impairments may be temporary or permanent, mild or severe, fluctuating or constant. The presence of an impairment can be a result of a health condition, however, it does not always mean that an individual is sick or suffers from a disease. For example, blindness is considered an impairment, but a person who is blind does not necessarily suffer from a particular disease.

Activities and Participation:

- **Activity:** the execution of a task or an action by an individual.
- **Participation:** involvement in a life situation. This component includes several domains including learning and applying knowledge, communication, mobility, self-care, domestic life, interpersonal relationships, and community life. Each domain can be described in terms of capacity and performance.
- **Capacity:** execution of tasks in a “standardized” environment that would reflect the best level of functioning.
- **Performance:** execution of tasks in the individual’s current environment, which may or may not be associated with the best level of functioning. Evaluating differences between capacity and performance may provide information regarding environmental modifications that may improve an individual’s performance.
- **Activity limitations:** difficulties an individual may experience when executing activities as compared to persons without a similar health condition.
- **Participation restriction:** problem(s) an individual may experience in involvement in life situations as compared to persons without a similar health condition.

Part 2 – Contextual Factors

COMPONENTS:	Environmental Factors	Personal Factors
DOMAINS:	External Influences on Functioning and Disability	External Influences on Functioning and Disability
CONSTRUCTS:	Facilitating or Hindering Impact of Features of Physical, Social, and Attitudinal World	Impact of Attributes of the Person
POSITIVE ASPECTS (Functioning):	Facilitators	Not Applicable
NEGATIVE ASPECTS (Disability):	Barriers/Hindrances	Not Applicable

Environmental Factors:

- **Environmental factors:** the physical, social, and attitudinal environments in which people live. Such factors can have positive or negative impacts on body functions and structures, capacity, and performance. There are both *individual* and *societal* environmental factors.
 - **Individual environmental factors:** the individual’s immediate environment (e.g., home, work) and includes the physical features of the environment and personal interactions with friends, family, and others.
 - **Societal environmental factors:** formal and informal social structures, community services, laws, attitudes, and formal and informal rules.

Personal Factors:

- **Personal factors:** age, gender, ethnicity, education, lifestyle, coping style, and other background characteristics. These personal factors are not viewed as a part of one’s health, but may impact disability and/or outcome.



Disability is conceptualized as the interaction between the individual’s health condition, personal factors, and environmental factors. As a result, a certain health-related condition may have a relatively mild impact on participation in a facilitating environment, but a significant impact on participation in an obstructive environment. For example, a person with TBI who uses a wheelchair may experience minimal disability in an environment that is wheelchair accessible (e.g., environment with ramps to get up curbs, wide doorways, electronic doors). The same person may experience greater disability in an environment that is not wheelchair accessible.

◆ **Evaluation of family/caregivers:**

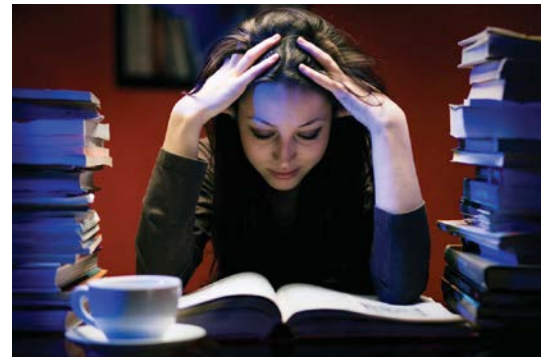
It is very common for family members to serve as primary caregivers for persons with TBI, and they often have many new responsibilities after the injury, particularly when the loved one has suffered a moderate to severe injury. Given the multi-faceted and prominent role that family members typically play after TBI, it is as important to evaluate their functioning as it is to evaluate the functioning of the person with injury. If the caregiver is struggling with difficulties that remain unidentified, such as mood disturbance or caregiver burn-out, then the functioning of the whole family system is likely to be compromised. As part of your assessment of caregivers of persons who have sustained moderate to severe TBI, it is important to evaluate the following areas of caregiver functioning:

- **Level of knowledge about TBI:** Assess whether the caregiver has realistic expectations about issues relating to recovery course, the cognitive capabilities of the person with injury, contributors to their loved one's behavior, etc. Since misconceptions can lead to discord as well as increased frustration on the part of both the caregiver and person with injury, it is critical to address any misconceptions that the caregiver may have as soon as possible. For example, it is common for caregivers who have not received adequate psychoeducation to attribute a loved one's lack of initiation as laziness, when, in fact, initiation problems frequently occur as a direct result of the TBI. Additionally, some caregivers expect that their loved one will be "back to normal" in an unrealistic time frame. Correction of misconceptions such as these through psychoeducation can go a long way toward alleviating stress and frustration.

Level of support: The amount of social support that caregivers have has been shown to be related to their distress level (Douglas & Spellacy, 1996; Ergh et al., 2002). If the caregiver has a limited support system, or perhaps no support system at all, then they may be a good candidate for counseling/therapy and/or participation in a support group. A referral for additional resources, such as attendant care, may also be helpful (please see Resource section in Appendix 2).



- ◆ **Level of stress and sense of burden:** Studies have shown significant levels of stress and sense of burden among caregivers (Kreutzer et al., 1994, p.197-210; Marsh et al., 1998, p. 225-238; Marsh et al., 1998, p. 1045-1059). Factors discussed previously, such as increased responsibilities, role changes, and financial stressors, can contribute to high levels of stress and perceived burden in the caregiver. Careful evaluation is needed to determine the risk of caregiver burn-out.



- ◆ **Coping strategies utilized:** Coping style has been shown to be related to caregiver distress level (Sander et al., 1997; Minnes et al., 2000). The stress often associated with the caregiving role can lead to the use of maladaptive coping strategies that, in turn, can increase caregiver distress as well as distress in the person with TBI.
- ◆ **Levels of depression and/or anxiety:** As noted previously, depression and anxiety are common among caregivers of persons with TBI (Kreutzer et al., 1994, p.197-210; Marsh et al., 1998, p. 225-238; Marsh et al., 1998, p. 1045-1059) , and can persist for many years after the injury has occurred. A thorough interview is needed to assess whether the caregiver has depressive or anxious symptomatology that requires treatment. Effective management of these common affective difficulties will not only yield benefits for the caregiver, but will positively impact the entire family system.
- ◆ **Level of anger:** Many caregivers feel some degree of anger after their loved one's injury, which can be directed in many different directions (Sander, 2002). Some are angry at physicians or other healthcare professionals who are perceived as providing insufficient care. Other caregivers may be angry at other family members or friends who may offer advice, but do not appear to understand the caregiver's situation. Still others feel anger toward the injured loved one for appearing to not try hard enough or for seeming to fail to appreciate efforts to help them. There are also those who may feel a more generalized sense of anger about why the injury occurred in the first place. Thus, the extent to which the caregiver feels angry needs to be determined, with a referral for intervention if it is deemed problematic.



- ◆ **Level of guilt:** Guilt is commonly experienced by caregivers (Sander, 2002), who may, for example, blame themselves for the injury and believe that they could have somehow prevented it. Others may feel guilty about having difficulty in keeping up with day-to-day tasks/responsibilities. Some caregivers feel guilty about the anger they feel.
- ◆ **Level of frustration:** You should assess the extent to which the caregiver feels frustrated; frustration is a very common feeling among caregivers, and can have numerous causes (Sander, 2002). Some common sources of frustration include: being unable to access needed services; not having enough time to get things done; feeling that others do not understand what they are experiencing; and having difficulty adjusting to the fact that their loved one can no longer do the things they did before the injury.
- ◆ **Relationship with person with TBI:** Since family roles frequently change after TBI, you should evaluate the following: whether there has been a change in the relationship between the caregiver and the person with TBI; if there has been a change, what is the nature of the change; and how the caregiver feels about the change. It is often very difficult for caregivers to adjust to role changes, particularly in the acute stage after the injury.

For those caregivers who are experiencing significant problems with these or other issues, psychoeducation, counseling/therapy, and/or participation in a support group may be beneficial.



Issues Related to Interventions:



- **Making use of the neuropsychological report:**

A client with TBI has been referred to you for evaluation and treatment. You have received a copy of the neuropsychological report and/or are referring the client to have such an evaluation completed. How might you best utilize the information that you will eventually obtain from the neuropsychological evaluation? There are at least two major types of information that you hope to obtain from the neuropsychological evaluation: identification of the client's areas of functional strength and weaknesses and recommendations about how to assist the client. If the information is unclear to you, consider phoning the evaluating neuropsychologist to obtain further information.

- **Identification of client's functional strengths and weaknesses:**

As described on pages 18-28 of this guidebook, clients with TBI may present with sensory, physical, cognitive, emotional, and behavioral sequelae after injury. However, persons with TBI are also likely to have a number of areas of relative strength after injury. In fact, the vast majority of individuals with mild to moderate TBI have many areas of residual physical, cognitive, emotional, and behavioral strengths. In general, for persons with more severe TBI, the likelihood is that more areas of functioning may have been affected, yet still a number of strengths exist.

In conceptualizing the treatment plan, identification of areas of strength will be invaluable. Consider the following as you begin your review of the neuropsychological report as well as your own initial evaluation:



- Cognitive Strengths:

Even if your client has difficulty with some areas of thinking, they may have very few problems with other areas. For example, your client may have problems remembering things, but have few problems with attention or organization. If this is the case, you may be able to help them come up with a way to use their organizational strengths to help them keep track of information they will need. Here are some thinking abilities to consider:



- Attention/concentration
- Memory for new information
- Speed of thinking
- Organization
- Communication
- Learning
- Memory for old information
- Problem-solving
- Speech
- Writing

- Emotional/Behavioral Strengths:

Identification of your client’s emotional and behavioral strengths will also be important for effective treatment planning. Consider the following areas of potential strength:

- Initiation
- Judgment
- Calmness
- Sense of Humor
- Happiness
- Friendliness



- Social, Emotional, and Material Resources:

In addition to areas of strengths possessed by the person with TBI, it will be beneficial to determine the resources that your client has available to him/her. Examples of resources to consider



- Number of friends
- Pre-injury coping strengths
- Financial resources
- Number of family members
- Current coping strengths
- Transportation availability

In working with your client with TBI, it will be important to help the individual leverage their areas of strength to “get around” problem areas. For a client with impairments in a number of areas, one may need to be more creative in utilizing areas of relative strength to compensate for problem areas. For example, a client that may have severe memory problems, poor organization, and distractibility may be able to use intact reading and writing skills to help them effectively follow and use a checklist to complete daily tasks or complete homework assignments. In helping your client work toward goals, you will likely need to be creative in helping come up with various ways that strengths can overcome weaknesses.

◆ **Common Recommendations:**

At the conclusion of the neuropsychological evaluation report that you receive, there will be a number of recommendations that may regard:

Once your client’s areas of relative strength and weakness are identified, there are several tips that you can utilize in this guidebook:

- On pages 86-93, a number of practical suggestions have been offered that address ways various problem areas can be addressed. Such practical suggestions may directly facilitate your treatment sessions, or may provide useful tips that the client might implement to improve functioning in his/her daily life.
- In addition, on pages 94-110 several suggestions are provided that directly indicate ways in which you can alter your clinical practice given specific deficits that might facilitate the client’s ability to benefit from treatment.

- Methods of compensating for cognitive limitations, given client’s residual strengths.
- Suggestions of ways to present information during treatment that may facilitate client understanding and benefit.
- Approaches to treatment that may be most beneficial given the client’s strengths and limitations.
- Suggestions regarding client’s ability to manage various aspects of community living.
- Ways to address client’s awareness to enhance compliance and therapeutic alliance.
- Recommendations for adjunct healthcare, rehabilitation, or community services that may be beneficial for the client.

The following section will address some of the common recommendations that might be provided and how you might best implement such recommendations within your clinical interactions with the client. While not an exhaustive list, these illustrate some of the common issues that you may face as a treating psychologist. Subsequent sections will further address some of these areas.

- **Use of memory notebooks:** Probably one of the most common recommendations for persons with TBI who have memory, initiation, or organizational difficulties is that they would benefit from use of a memory notebook system. This external memory aid can help clients with memory difficulties keep track of various appointments, tasks to complete, and contact information. Systematic use of such a system can help a client to manage his or her daily affairs.



A memory notebook system is often problematic for persons with brain injury to utilize because they forget to refer to the notebook when needed. Successful implementation of a memory notebook system requires systematic training, and the likelihood that the person with TBI who needs a memory aid will do so without training is small. This type of training is typically done by professionals with specialized training in cognitive rehabilitation.

If a memory notebook was recommended for your client, be sure to assist your client with writing down important information in the book,

- **Use of self-regulation and self-monitoring techniques:** The use of self-regulatory strategies, sometimes called metacognitive strategies, have been used successfully as a component of interventions that address attention training, memory, learning, and problem-solving in individuals with TBI [Sohlberg, 2003 #2888; Kennedy, 2005 #2887; Kennedy, 2008 #3394 [Ylvisaker, 2007 #3468; Kennedy, 2008 #3394]. The neuropsychologist may recommend that you consider training in self-regulation techniques to help compensate for cognitive impairments in attention, memory, problem-solving, and the like.

Self-regulation strategies include some of the following techniques:

- **Verbal mediation:** whereby clients talk themselves through tasks (e.g., verbalize the stimulus dimension to which they are responding on an alternating attention task)
- **Rehearsal of specific strategies:** such as repeating that they are looking for
- **Self-pacing:** to reduce the impact of information overload caused by decreased processing speed: teach clients to pause between tasks.
- **Teach the use of positive self-statements:** to reduce frustration and fatigue

These metacognitive strategies can be used to assist your client across a number of activities within the therapy setting that might then be implemented in the home and community setting. Regular use of rest breaks or replenishing activities can help an individual with attentional difficulties to refocus attention in order to follow a conversation or to focus on a work task. Use of a self-instructional script might be helpful in assisting your client with following through on therapy homework assignments as well as following through on activities in his/her daily life. Self-pacing has the potential to provide benefit across a broad range of situations and the potential for use with a variety of behaviors.





- **Use of paging systems:** Another recommendation that may be made by the neuropsychologist is that the client might benefit from the use of electronic paging systems to help with compensating for initiation or memory impairments. Electronic devices, such as palm pilots and pagers, can be used to remind persons with these impairments to perform certain activities, such as taking medications or completing a homework assignment, at a certain time. This might be useful to assist your client in following through with therapy activities.

Encourage use of external devices to recall homework assignments, to recall information discussed in previous sessions, You may need to assist your client with TBI in determining the types of activities and other information that should be included in the reminders. For persons with severe cognitive impairment, the therapist should involve a caregiver in determining the activities and reminders to be included. You may need to assist your client with entering in important information in the device.

- **Use of techniques to facilitate visual scanning:** If your client has difficulty with attending to part of space due to his or her TBI, the neuropsychologist may recommend that you utilize various techniques to facilitate the client's scanning of his/her environment so that information is not missed and that safety is enhanced. These scanning strategies may be useful if you plan to utilize written materials in your sessions. In addition to recommending ways to facilitate scanning, it is likely that the neuropsychologist may also recommend certain activity restrictions, such as recommending no driving, no use of firearms, etc. due to safety concerns.

- Evidence suggests that the use of **anchoring** is helpful, which provides a spatial (or sometimes verbal) cue indicating where to begin scanning. This might involve placing a red line, for example, on the left margin of the page to be read. Clients are instructed to find the red line before beginning to read each line.
- **Pacing** may also be recommended. For example, your client could be taught to recite targets out loud to reduce impulsive responding and to deliberately slow his/her scanning to avoid the tendency for their attention to be pulled to the unimpaired side of space.
- **Practice** is critical in order to make this initially effortful behavior become automatic.
- **Feedback** should be given regularly to verify accuracy and help develop confidence.



- **Use of videotaping to provide feedback to clients regarding social communication or interpersonal skills:** The neuropsychologist may suggest that you consider utilizing videotaping of conversation segments to facilitate increasing your client's awareness of strengths and difficulties in interpersonal interactions. Such videotaping can be helpful in compensating for attention, memory, and processing speed deficits, which may make “online” recollection and processing of conversations a challenge. Use of videotape-



facilitated feedback has been shown to be effective for clients with TBI and has the advantage of allowing for multiple repetitions of the information.(cite) Videotaping can also be used to help teach the client to self-monitor and to practice role-playing alternative communication behaviors.

- **Recommendations regarding need for supervision:** Frequently, the neuropsychologist may make recommendations about the perceived supervision needs for a client. Suggestions that a client may need 24-hour supervision are often made if the individual has severe cognitive or behavioral impairments that might place his/her safety at risk. A range of suggested levels of supervision might be provided. For example, the neuropsychologist may suggest that a client is likely to be capable of being left on his or her own for most of the day, but might need assistance with making complex financial or medical decisions. Such recommendations are not binding (as in the situation of legal guardianship), but may be used as a basis for either encouraging the family to be aware of the potential risks or to provide support for the obtaining of a legal guardianship situation. To the treating psychologist, such recommendations regarding supervision needs will need to be considered in light of the current supervision status of the client. It may be important for the psychologist to interact with the client and his or her family support system to come up with a plan to ensure safety while balancing the needs for maximal independence.
- **Use of a job coach/vocational rehabilitation services:** For clients that are either seeking employment or who are having difficulties with maintaining employment, the neuropsychologist may often recommend that vocational rehabilitation and/or job coaching services may be helpful. Vocational rehabilitation counselors work with clients to identify jobs that meet the client’s interests and abilities, assist with developing strategies to help clients compensate for limitations, interact with employers to facilitate client success, and supervise job coaches, if utilized, in assisting the client to implement strategies within the workplace. The job coach is an individual who is “on site” at the job, helping the client to implement compensatory strategies, making adjustments to such strategies as needed, and observing the client’s performance. If vocational rehabilitation or job coaching services are not available or accessible to the client, the treating psychologist may wish to take on some of these roles, if return to work is a major goal of the client.



- Practical tips to assist your client with compensating for common TBI sequelae:

The following section will list several practical suggestions that you might be able to provide to your client with TBI or that you might use in your own interactions with your client. Remember that not all ideas will work for everyone. Some of these suggestions are more suited for persons with mild problems, while others are more appropriate for persons with more severe difficulties. While some of these suggestions are geared toward your clinical interactions, these practical suggestions can be shared with the family members as well for use in the client's home setting. In addition to these suggestions, you can always try to refer your client to their physician to request a referral to a specialist (like a speech language therapist, occupational therapist, physical therapist, neuropsychologist, etc.) who can provide additional services.

What to do about movement problems:

- Accept that your client will take longer to walk and to move around.
- Allow extra time to get ready for and to get to activities and appointments.
- Consider movement problems when evaluating transportation needs.
- If walking or balance problems are very problematic, find out if there are any activity limitations recommended by the client's physician (for example, not being able to climb ladders or perform certain physical job demands, etc.).
- Encourage client to place things within easy reach so he or she can access them easily.
- Encourage your client to talk with their physician about possible referrals for physical therapy, occupational therapy, or for equipment (for example, walker or cane).



What to do about visual problems:

- Encourage client to talk with his or her doctor about the problem, if this has not already been done.
- Find out if your client has any activity restrictions due to visual problems (for example, restriction from driving or some sporting activities).

What you can do to help get around problems with taste and smell:

- Your client may wish to add extra spices to food or select restaurants with spicy or flavorful food choices.
- Encourage your client to have a smoke alarm in their house so they do not have to rely on smell to know that there's a fire. A carbon monoxide detector would also be a good idea.



What to do about tiredness:

- Understand that feeling tired is normal after injury.
- Allow extra time for rest between activities.
- Schedule shorter activities at first and gradually build up to increasing numbers and lengths of activities as your client gets stronger and able to tolerate them.
- If your client reports trouble with sleeping at night, encourage them to talk to their doctor about medications that could help.
- Encourage your client to schedule appointments and activities for times of day when he or she is most awake and alert OR if fatigue is a problem, encourage them to rest prior to appointments or activities.



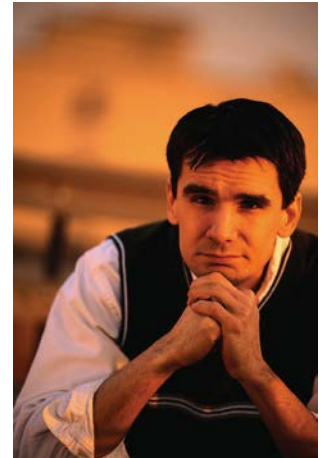
What to do about memory problems:

- Encourage your client to use a “memory system” to help keep track of appointments and planned social activities, phone numbers, and so forth. This can be as simple as a notebook divided into sections or a day planner, or it may be as fancy as an electronic organizer. Possible sections include: a calendar, a daily list of things to do, and an address book with important phone numbers and addresses. Everyone’s needs are different, so your client will need to personalize the system to address his/her needs. Make sure that the client begins to use the system as part of his/her daily routine.
- Allow extra time for your client to learn new things. Keep in mind that they may learn more slowly than they did before the injury.
- Repeat things that you want them to remember more than once. Repeating things over and over makes it more likely that they will remember.
- Have your client write down important information in their notebook, to-do list, or calendar. Or, if writing is a problem for your client, you or a family member can write the information down. For example, if you want them to remember instructions on how to reach an office for an appointment, have them write the directions down. If there are tasks that the client needs to complete during the day, these can be written on a “to-do” list.
 - If your client repeats himself or herself during conversations by retelling the same story, you might want to cue them by saying something like, “Yes, you had just told me about that.”
 - Encourage your client to keep household items in specific places. For example, have a hook for keys or a special file for medical papers. Label drawers or cabinets with their contents. You can also work with your client to keep a list of the locations of items within the memory book.
 - Your client may benefit from the use of a pill box with sections for the days/times to help with taking medications.



What you can do to improve attention:

- Encourage your client to keep their home and work setting free of clutter. Your client will benefit from keeping things organized and in the same place.
- When working on a task, your client may want to put away everything except the items they are working with at the time. That way, there will be limited distractions.
- Encourage your client to work on only one thing at a time.
- When telling your client something you want them to pay attention to, turn the TV or radio down or off. Encourage your client to do the same (limit background noises like TV or radio) when talking with others, like friends or family members. Encourage your client to turn off the TV or radio when not watching or listening to them. The fewer sources of distraction, the easier it is to pay attention to conversations.
- If attention is a problem, it might be important for your client to limit the number of people that are around at one time. Large crowds may make it more difficult for your client to attend to conversations. Searching for quieter settings with fewer people may make it easier for your client to participate in the talk and activities of the group. This may also mean trying to modify the work setting to be in a quieter area of the office, for example.
- If your client gets stuck on one idea or task, you and the client's family members can gently direct attention to a new task or idea. For example, say "We are no longer talking about that; we are now talking about...."



What you can do to get around communication problems:

- Allow more time for your client to answer you or explain what he or she wants. Encourage them to speak slowly and not to be nervous about finding the right word.
- Encourage your client to use gestures or signals (for example, hand motions and facial expressions) to help express themselves.
- Develop a signal that will let your client know when they have gotten off topic. For example, you could hold up your index finger to let them know they are off topic. Encourage the family to use the same signal. If signals don't work, try saying, "We were talking about..." Encourage the family to use kind words and a gentle tone of voice. This will make it easier for your client to accept what they have to say.
 - When talking to your client, you and the family can ask them every so often if they understand what's been said. When telling them something important, you may ask them to repeat the information.
 - Encourage your client to ask for information to be repeated if they don't understand. Reassure your client that they needn't be embarrassed about asking others to repeat things; we all have to do this sometimes.



- When possible, encourage your client to try to have only one person at a time speaking to them.
- Praise your client when they start appropriate conversations on their own.
- If your client starts talking about something that is too personal or may be offensive to others, you may want to develop a signal to help let them know that this is occurring. You might hold up your hand or use some other signal that you and your client have agreed upon. Again, you will want to encourage the family to use the same kind of signal. Later, you might discuss the situation with your client and discuss what made you uncomfortable and how this could affect relationships with others. You can encourage your client to stick to “safe” topics, like talking about sports, the news, or the weather with persons they do not know well.

How to help with visuospatial problems:

- Arrange things in your interactions to make it easier on your client. If he/she has trouble attending to things on their left, place objects in the right side of space and approach them on the right side. If they have trouble looking toward the left side of the page when reading, draw a red line down the left side of the page and encourage your client to find the red line before reading each line of text.
- If there is a concern about safety due to visuospatial problems, like for cooking, playing sports, or using tools, make sure that you or another adult is available to observe or assist with such activities.
- Find out if your client has problems with their visuospatial abilities that affect their ability to get around in the community. Sometimes, visuospatial problems will prevent a person from being able to return to driving, etc. Reinforce with your client that he/she should not drive unless they have been released to drive by their doctor. If they are interested in finding out more about driving, ask them to speak with their physicians. There are special driving evaluation and training programs that are available to assess driving safety.
- Show them around new places many times. Do not send them to new places alone if visuospatial skills are a problem.



What to do about slowed thinking and responding:

- Allow your client extra time to answer questions, read things, or learn new information.
- Your client may have trouble thinking quickly in an emergency situation. Have your client carry emergency contact information with them at all times. Write down emergency procedures and encourage them to stick the notes on their refrigerator at home.
- Encourage your client to ask others to slow down or repeat information if they have trouble understanding what has been said.
- Slowed thinking and responding have implications for driving safety. If your client has problems with slowed reactions, is currently driving, and has not been evaluated for driving safety, encourage them to stop driving and to seek a driving evaluation.

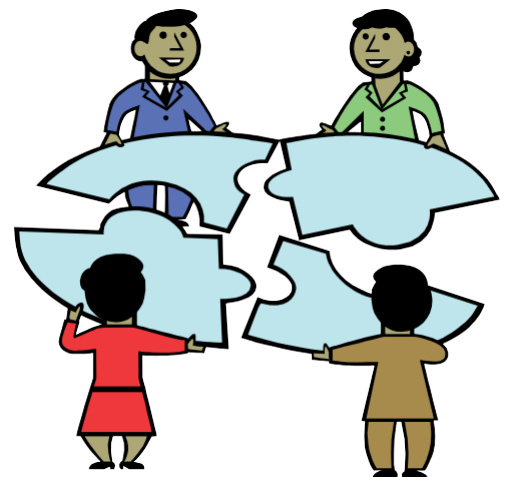
How to help with organization problems:



- The memory book described in the memory section could help your client with organization problems as well. Have them use it to keep track of their daily schedule and things that they need to do. Encourage them to check it every day. Make checking the book a part of their routine.
- Work with your client to break tasks down into smaller steps. For example, getting ready to leave the house in the morning can be broken down into: taking a shower, getting dressed, eating breakfast, getting stuff together, and leaving the house. For some people, just major steps will be enough, for others, tasks may need to be broken down into detailed steps.
- Use checklists to help your client organize activities. The checklist can be adapted for use for everything from daily household chores to tasks that need to be completed in a work setting. It can be finely detailed, or just cover the overall goals. Your client can get in the habit of referring to the checklist and marking off each task or step that has been accomplished.
- If your client has trouble getting organized to leave the house for activities or appointments, encourage them to get some things ready the night before. For example, they can choose what they will wear the night before and lay the clothes out. They can also use a checklist to help them get ready. All the things they have to do should be put on the list.

How to help with problem solving:

- Help your client learn to use a system to work through problem solving, such as one containing the following steps:
 - Identify the problem.
 - Generate options.
 - Evaluate the pros and cons for each option.
 - Choose and evaluate outcome.
- Encourage your client to use this strategy whenever they have a problem to solve. Sharing this strategy with family members/friends may help the client to use this approach in their daily life.
- Talk with your client about ways that they can ask for help from trusted others when needing to make decisions.



How to help with poor initiation:

- Understand that this problem is a result of the brain injury—your client is not being lazy. It will be especially important to help the family and/or support system understand that initiation problems are often seen after TBI and are not due to motivational issues.
- Help your client come up with daily social activities that they like or need to do. You may ask them what activities they would like to do, but don't be surprised if they say they don't want to do anything. You may have to choose activities for them at first. Give them a choice among 2 or 3 different activities. Make the activities a part of their routine, so that it will become a habit for them.
- Make checklists for this set of activities to help them initiate and plan.
- Find something that your client really enjoys, like a television program or a certain kind of food. Have the family use this as a reward for being more active. For example, if your client takes a walk around the block in the afternoon, they can watch the television program.
- Help your client get involved in a support group for persons with TBI or an activity or group that meets on a regular schedule. Having a social activity that can become part of a routine may help your client increase their activity.



How to handle poor awareness or denial:

- Be patient. Your client is not ignoring problems on purpose. In some cases, the brain injury makes a person unable to recognize problems. In other cases, denial is a way of dealing with the losses they've experienced.
- Point out problems when they occur, but do this in a kind and calm way. Do not yell or get angry with them.
- When it is safe, let them make mistakes on their own. This may sometimes be the only way to make them see what problems they have. Remember to talk things over with them after they make the mistake. Help them think of a way to get around their problems next time.

What you can do to help manage impulsivity:

- Gently stop your client when they are acting without thinking. Talk calmly to them about the consequences of what they are doing.
- Develop a special signal that can be used to let them know when they are doing something inappropriate (for example, holding up a finger or saying a special word).
- Encourage family members to remove items that could be used dangerously, if impulsivity is a problem for your client. For example, a family member may need to hide the car keys to prevent the client from driving, if safety issues are present.



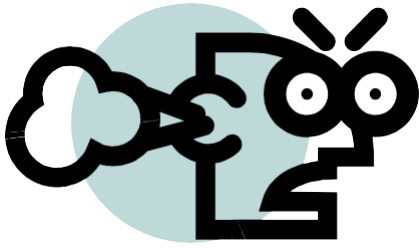
How to handle overly emotional behavior:

- Encourage the family not to get upset with your client—such behavior is not their fault.
- Do not pay too much attention to this kind of behavior. For example, if they begin crying loudly while watching a television show, try to ignore it. Paying lots of attention to these emotional behaviors may increase the behavior.
- If possible, remove the thing that they are reacting to. Persons with this problem are often distracted fairly easily. For example, changing the topic of the conversation, changing the television station, etc. can change their emotional behavior.
- This problem will be worse in times of stress. Help your client to avoid stressful situations by encouraging them to plan ahead.

How to handle anger and temper tantrums:

- Understand that being irritable and getting angry easily can be due to brain injury, and try not to take it personally. Help the family to understand this as well.
- Lay down some communication rules. Help your client know that it is not acceptable to yell at, threaten, or physically hurt others. Let your client know that you will not talk to them when they act this way. Let them know that it is okay to let you know when they are upset about something, but that they need to do it in a calm way.





- Develop a signal that you can use to help your client recognize when their anger is getting to be a problem. Encourage your client to use this signal as a cue to take a “time out” to calm down.
- Utilize “time outs” to address angry outbursts. Let the client know that you will request a “time out” when they are yelling or throwing a temper tantrum. You will either leave the room or not engage in conversation for a period of 5-10 minutes and will be coming back to talk to them if they’ve calmed down, but that you will leave again if they are not. When they’ve calmed down, you can discuss the matter that made them angry if it is still important to them. Help your client learn to initiate “time outs” when they feel that their temper is rising.
- Reward your client for discussing the problem that upset them in a calm and pleasant way. Let them know that you think their point-of-view is important. Encourage family members to do likewise.
- If you are concerned that your client might act out physically, you may need to help come up with a plan for dealing with the situation. If violent acting out is occurring in the home setting, you may need to discuss with the family options for handling this situation, including potential treatment, alternative living settings, etc.

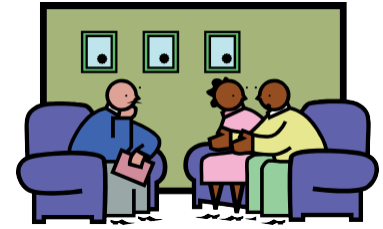
What to do about inappropriate or embarrassing behavior:

- In a calm way, let your client know that this behavior is wrong and bothers other people. Do not yell or lose your temper because that may actually lead to more inappropriate behavior.
- Come up with a signal you can use to let your client know when he or she is acting inappropriately. For example, you could hold up your hand to signal “stop,” shake your head no, or say a special word you have both agreed on. Make sure you practice this with your client so they know what the signal means.
- Remember that the injury can make it hard for some individuals to always act appropriately, so the first goal should not be to have no inappropriate actions at all. You can start off with the goal of not more than one. Or you may make the goal that your client will stop inappropriate talk or actions when you give the special signal. As time goes on you can increase the goal, so that it is eventually no inappropriate talk or actions. Be sure to compliment your client when they go on an outing and act appropriately.
- If there is a situation where your client is embarrassing you by acting inappropriately, stop whatever activity you are doing. This could mean taking a “time out,” similar to what was described in the section on anger.



- Or, if inappropriate or embarrassing behavior continues or is extreme, you might need to end the activity. If that happens, state in a calm voice that you will have to end the activity because of the specific behavior. This will help your client learn that they can only participate in activities within the community if they act appropriately.

- Psychotherapy and clients with TBI:



- Modification of the therapy approach:

When faced with a client who has experienced cognitive impairments as a result of injury, the clinical or counseling psychologist may question how best to provide psychotherapy and what modifications might be necessary to facilitate the participation of a client with TBI. Whatever the presenting problem might be, clients with sequelae from a TBI are likely to face challenges to their own sense of self, as well as their personal sufficiency. Cicerone and Fraser (2000) define the concept of personal sufficiency as the person's ability to function and achieve goals with various levels of assistance or reliance on others, and with the aim of acknowledging a need for interdependence. Many clients with TBI have had to face at some level or another the need to reset expectancies for their own future functioning, despite having a background of personal achievement and decision-making. Confronting the notion that he or she may not be able to return to the same level of functioning that had been the case prior to injury can be a painful experience, and this confrontation may take place in some manner or another over time. The distress that can be experienced as a result of trying to adjust to a new set of strengths and weaknesses and new personal and career objectives can contribute to depression, anxiety, or other primary presenting problems for psychotherapy.

While this basic issue of realigning one's expectations is a common theme for individuals with TBI, another common issue is the presence of cognitive impairments that may make some of the basic aspects of psychotherapy more challenging. We have already reviewed some of the common sensory, motor, cognitive, behavioral, and emotional sequelae of TBI. Understanding how these sequelae might impact your clinical interactions may assist you in modifying your clinical approach to best facilitate your client's ability to benefit from treatment. One common area of difficulty that may be challenging to the therapy process is poor self-awareness. This reduced ability for personal insight can contribute to misalignment of the client and therapist expectancies for treatment, poor therapeutic alliance, and poor compliance.

In this section, several suggestions are made about how you might alter your clinical approach or treatment interactions to facilitate a successful therapeutic relationship for your clients with TBI. Included are:

- General tips on ways to modify your interactions with clients depending on the areas of impairment.
- Tips on training your clinic staff to enhance the clinical experience for your clients with TBI
- Ways to incorporate structure in your treatment approach to help compensate for various cognitive or behavioral issues that can impact participation.
- Ideas about how to enhance client commitment and to address compliance issues.

- Suggestions regarding general modifications that may impact your clinical interactions:

Clients with TBI may have unique sensory, motor, cognitive, behavioral, and emotional difficulties that need to be considered as you conduct your clinical interaction with them. To review, these difficulties are described on pages 16-23. Some suggestions about ways that you might accommodate your clients with TBI are listed here. While this list is not an exhaustive one, it should give you some basics that you can utilize and/or modify as needed, depending on your client's situation.

Sensory:



Vision: As previously mentioned, clients with TBI may have lost part of their field of vision (visual field cut) or may have double or blurred vision.

- If vision has been affected, you will want to limit the use of written material for these clients, as their ability to see such material and/or to read it may be affected.
- You may need to read written forms to the client or have a family member or friend read such materials to the client.

Sensitivity to noise/light: Some individuals experience sensitivity to noise and/or light after TBI.

- Keep room lights low and lower blinds in the office.
- Reduce sound distractions, and keep your voice tone in a low (yet audible) level.

Motor:

Hemiparesis or hemiplegia: As previously mentioned, clients with TBI may have experienced partial or total paralysis of one side of the body. This can affect their ability to write, shake hands, walk, and perform other personal care functions. If the client's dominant hand has been affected, their ability to complete written forms will be extremely slowed and effortful, as they must rely on the nondominant hand.



- You may wish to limit the amount of writing that such clients would be expected to do during your clinical interactions.
- In addition, such clients may not be able to shake hands using their right hand, as is a typical custom in the United States. Rather, you may offer your non-dominant hand or gently touch or grasp the client's arm as an alternate sign of greeting.

Slowed performance: Clients with TBI may exhibit slowed motor movements. It may take such individuals longer to walk, to turn pages of a document, to speak, and to perform self-care tasks.

- You will want to allow for additional time in your session, if such tasks will need to be performed.
- Showing patience for a client's slowed speech can be an especially helpful accommodation, and will go a long way in building rapport.

Cognitive:

- **Memory difficulties:** Clients with TBI may have difficulty remembering information. These memory difficulties may include trouble recalling information from minute to minute, or may involve forgetting information over time. Some clients may be better at recognizing information with cues than they are at recalling the information on their own. To help your clients with memory difficulties:



- Provide all information in writing.
 - Repeat important information
 - Ask client to repeat back important information
 - Depending on the severity of the impairment, consultation with caregivers may be needed.
 - You or your staff should remind client of the appointment the day before, and perhaps the morning of the appointment as well.
 - If memory is a known difficulty for your client, you may wish to inform a family member or friend about the appointment time to assure that the information has been relayed.
 - Prepare a written summary of information that you have presented to the client that they can refer to over time.
 - Be sure to provide written instructions of requests for future appointments and/or responsibilities that the client may have as part of your clinical interactions.
- **Attentional problems:** Clients with TBI may have difficulty sustaining attention for long periods of time, they may have trouble with being easily distracted, or they may have trouble shifting attention from one thing to another. Some suggestions on ways to help your client with attentional difficulties include:
 - Conduct the session in a quiet environment with minimal distractions
 - Focus on one topic at a time
 - Ask client to repeat back important information
 - If client is getting off topic, provide redirection and cueing to return to topic at hand
 - Schedule a few short sessions, rather than one longer session.
 - Limit other sources of distraction (e.g., close door to limit hallway noise, etc.)
 - Use short sentences and express only one idea at a time.
 - Ask questions and/or gently prompt client to attend.



Slowed processing speed: One of the most common difficulties for persons with TBI is that processing speed is slowed. Such slowing can affect the client's ability to follow a conversation, to formulate a response, and to express that response. Long latencies may be noticed in speech. That is, you might ask the client a question, and it may take several seconds for the individual to answer. There are several ways in which you can assist your client in maximizing his or her participation if cognitive slowing is a problem.

- Allow extra time for the person to process information and to respond
- Present information at a slower rate of speed, and focus on one issue at a time
- Use short sentences.
- Express only one idea at a time.
- Encourage only one speaker at a time to talk.
- Use patience in waiting for a client's response.
- Encourage client to paraphrase information to ensure that the message has been understood.
- Repeat information as necessary.
- Provide a written summary of information to be presented that can be used to supplement your verbal communication.



Problems with social communication skills: Social communication abilities are commonly affected following moderate to severe TBI. Changes in communication may be relatively subtle, such as word-finding difficulty, or may be more severe resulting in the perception of personality change. To assist clients with social communication difficulties:

- Persons with TBI may have difficulty reading more subtle social cues, so it may be necessary to provide direct immediate feedback regarding the behavior.
 - Feedback might be provided using the “sandwich” technique. Start off by saying something positive and then provide feedback regarding the behavior. Follow this with a reemphasis on the positive. Remember to maintain a kind and gentle tone.
- Formal social skills intervention techniques may be a focus of your intervention with the client. You may wish to use videotaping to assist with increasing awareness of communication behaviors.
 - Encourage the person to practice interpersonal skills with family members and friends.



Visuospatial difficulties: As mentioned previously, some clients have a condition called hemispatial neglect, in which they may not pay attention to one side of space. There are several things you can do to help assist your client with neglect to maximize your clinical interaction:

- Approach the client on the side of space to which he/she attends. This will avoid startling the client.
- Place materials that you would like the client to see or read in the side of space to which he/she attends.
- You may wish to use a red pen to draw a line along the edge of the paper for written material that you present. The red line should be on the side of the paper that corresponds to the side that the client neglects. This line can serve as an “anchor” to help the client scan the material fully.

Problem-Solving difficulties: Some clients with TBI may have difficulty in solving problems, in organizing an approach to address a problem, and in executing the steps to solve problems. In your initial contact with a client with TBI, you may not have significant opportunities to observe such difficulties. However, you may wish to consider that such problems could exist in planning any future activities you will expect the client to undertake. For example, if a goal of your initial session is to encourage the client to request and complete an application for vocational services, you may need to provide additional structure in order for such a task to be successfully completed. Some ideas that you might consider include:

- Providing a written list of steps that need to be taken to complete a given task.
- Including a family member or friend in the discussion, so the client will have “back-up” to assist him or her in getting the job done.
- Teaching a structured problem-solving approach may be a useful focus of treatment



Poor Abstract Reasoning: For some clients with TBI, the ability to use abstract reasoning may be compromised. Such clients will have difficulty with understanding metaphors and may interpret statements in a concrete manner. As already described, individuals with these kinds of difficulties may have difficulty with insight-oriented approaches and may do best with a behavioral approach to intervention. Some tips to consider within your treatment session:

- Try to avoid the use of metaphorical language in treatment sessions to reduce client confusion. Stick with simple sentences that avoid unnecessarily complex elaborations or metaphors.
- Ask client to paraphrase your statements to ensure understanding of the intent of your communication with them.

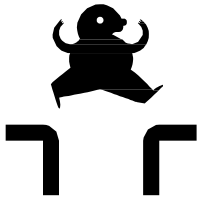
Behavioral/Emotional Issues:

Poor Initiation: Some individuals with TBI have difficulty getting started with things. This may mean that they have difficulty in beginning a conversation, have trouble coming up with questions in conversation, have trouble getting started with completing tasks, and the like. Here are some suggestions about how to facilitate your initial interaction for clients with initiation difficulties:



- Provide prompts to client to determine if they have questions.
- Engage a family member or friend to help cue the individual to begin and complete task requirements.
- Develop a cueing system that may work to help the client follow through with tasks (e.g., having office staff phone with reminders, having nursing and therapy staff use calendar or memory book, using Yahoo calendars to prompt client over email, etc.)

Disinhibition/Impulsivity: Clients with TBI may have difficulties with inhibiting behaviors or may “leap before they look” in daily life. Such impulsivity can have significant safety implications, but can also make interpersonal communication difficult to follow or even uncomfortable. Some clients may choose inappropriate topics in conversation, may rapidly shift from one topic to another, or may get frustrated easily. Safety can also be an issue here, as such clients may attempt physical tasks that they are not ready to accomplish (e.g., getting up from bed when not able to walk independently yet) or may spend money that they cannot afford, etc. In your initial contact with a client with TBI, you can attempt to address impulsivity issues by:



- Gently redirecting client to current topic of conversation.
- Keeping your voice tone calm and steady.
- When safety is not a concern, ignoring problem behaviors and reinforcing desired behaviors with attention and praise.

Emotional lability: Some clients, typically those with more severe injuries, may have difficulty with lability of mood. They may rapidly change emotional expression from laughter to tears. Often, very minor stressors can induce a major affective response. This can be disconcerting to the unprepared clinician. However, when such lability of mood exists, you can try the following:

- Gently redirect the client. Often, distracting the client with another topic will extinguish the affective response.
- Try not to over-attend to such affective displays, as this may actually exacerbate the response.

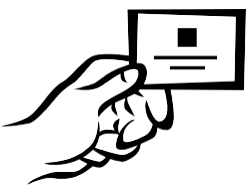


- Suggestions regarding modifications of your clinical practice that may impact your client's clinical experience:

One of the areas in which you can make a substantial change in your client with TBI's clinical experience is to conduct staff training to ensure that clients are treated with courtesy and flexibility. Training should include all staff members that might interact with clients, including receptionists, billing clerks, etc. Increasing staff knowledge about the potential difficulties that clients with TBI may have can prevent negative interactions from occurring. This not only will likely enhance the experience for your clients with TBI, but will likely enhance the practice experience for most of your clients. Some areas of difficulty that may be encountered and tips for staff members include:



- **Dysarthria:** Some clients with TBI may have slurred speech. This can be misinterpreted as sounding as intoxication, and clients may be misperceived as being “drunk.” Increasing staff awareness about this potential problem may prevent a negative interaction from occurring. In addition, staff will need to pay very close attention to clients with slurred speech, as they may be difficult to understand. If a problem, the staff member may ask the client to write down the information that is being communicated.
- **Slowed speed of processing/response:** Frequently clients with TBI may take longer to respond to questions or may take longer to get their ideas out. Encourage staff to be patient and wait for the client to complete their statement. Talking around the client by speaking only with the family member can be upsetting to the person with TBI. If clarification is needed, staff can either ask the client or the family member to clarify.
- **Memory problems:** Clients with TBI are likely to have difficulty remembering things like appointments. To facilitate client attendance, encourage your staff to do the following:



- Provide appointment date and time in writing.
- Call client with reminder the day before the appointment.
- Potentially call the client on the day of appointment with reminder.
- Provide any additional instructions needed for appointment in writing.

These are but a few of the issues that may result in staff/client misunderstandings. Take the time to let staff know if there are any modifications that you would recommend in the way that they interact with specific clients to facilitate a good clinical experience. In general, encourage your staff to use courtesy with all clients, and to come to you if they are having any particular challenge in interacting with a specific client.

- Incorporating structure in your treatment approach to help compensate for client cognitive or behavioral issues:

Whatever your therapeutic orientation might be, you will likely need to incorporate greater structure and be more directive when working with clients with cognitive impairments. Insight-oriented or client-directed approaches may not be useful when working with clients with poor self-awareness or poor initiation secondary to injury effects. Clients with significant attention or memory impairments may also have a difficult time with less structured approaches as the need for use of written reminders, therapist repetition, and so forth necessitate a more structured approach.



In planning your treatment approach with a client with TBI, you will want to consider the specific areas of impairment and relative strengths that the client possesses as this will direct the degree and types of structure that you will want to utilize. The following section will address some ways in which you might add structure to your treatment approach that may facilitate your clinical experience with clients with TBI. Suggestions will include tips on how to add structure to:

- **Setting treatment expectations**
- **Goal-setting**
- **Session structure and therapeutic interactions**

This guidebook will address a number of modification that may be helpful in your work with clients with TBI. For an additional helpful discussion about counseling interactions for persons with TBI, the reader is directed to the following chapter, from which many of the suggestions presented in this guidebook have been adapted:

Cicerone KD, Fraser RT. Counseling interactions for clients with traumatic brain injury. In RT Fraser and DC Clemmons (Eds.) Traumatic Brain Injury Rehabilitation: Practical Vocational, Neuropsychological, and Psychotherapy Interventions. CRC Press, Boca Raton, pp. 95-128.

Setting Treatment Expectations:

A client with TBI referred to you for treatment may or may not understand the reason for the referral and/or may not have expectations regarding the treatment that match what will actually be provided. While this may be true of other clients as well, for those with cognitive impairments, you will likely need to be especially careful in ensuring that the client has an accurate understanding and realistic expectations about therapy. Therefore, it is important to address these expectations up front to facilitate client participation and likelihood of benefit from treatment.



- Provide written and verbal information about the nature of the therapy, so that clients can anticipate what is to be expected from them and from the therapist.

This may be especially helpful for clients with poor awareness or memory impairments. Those with limited self-awareness may have unrealistic expectations about the nature of therapy. Those with memory difficulties may have trouble recalling what the therapy will address or how it will be conducted. Information that might be presented should include:

- The number of sessions
 - The frequency with which sessions will occur (for those with learning and memory impairments may need to be more frequent)
 - The length of the treatment session (for those with attentional difficulties, sessions may need to be shorter)
 - The type of service that will be provided (for those with poor insight, poor self-awareness may need to utilize more explicit types of feedback, i.e., videotaping, modeling, role-play)
 - Types of homework assignments
 - Types of behaviors or goals that might be addressed
 - Types of behaviors that client might be expected to engage in
- **Use of therapy contract:**
To facilitate client understanding and compliance, it may be useful to establish a therapy contract. This contract is designed to make explicit the goals and structure of treatment. The use of contracts can help clients to focus on a specific treatment goal, which may help the client in setting realistic expectancies and will enhance the likelihood that the goal may be achieved. Oftentimes, clients with TBI will have a number of issues that will need to be addressed and using a contract to specify the goal that will be prioritized to address during the context of therapy will help focus the therapy. While therapeutic contracts are frequently utilized for many clients, this will be especially helpful for clients with attention, memory, or self-awareness impairments due to TBI.

The contract should be developed and presented in writing, with signatures by both the client and therapist. This contract can be referred to when needed throughout the period of treatment to help refocus treatment. The contract may be adapted and extended as needed. Components of the contract should include:

- The goals of treatment
- Expected roles and behaviors of client
- Expected roles and behaviors of therapist
- Number, frequency, and duration of sessions
- Consequences for failing to comply with the contract



Goal-Setting:

One of the challenges that you may face in working with your client with TBI is assisting your client and your client's family in identifying realistic treatment goals that meet the abilities and desires of your client. Goal-setting with your client with brain injury involves some of the same skills that are utilized in goal identification and goal-setting with any client. That is, it requires listening to the client's perceptions of their strengths and weaknesses and the short-term and long-term goals that they would hope to achieve. This same information should be obtained from the family support system as well. These perceptions and identified goals must then be considered in relationship to the objective evidence of the client's abilities to help determine the targets for treatment.

Self-Awareness and Goal-Setting:

For persons with more severe TBI, clients' perceptions of their abilities may differ from the abilities that are demonstrated. As discussed previously, impaired self-awareness is not uncommon after TBI. Therefore, a client's appreciation of their current strengths and weaknesses and how such abilities might affect their everyday functioning and goals can be affected. Rather than ruling out any goals that a client may have for himself or herself due to abilities demonstrated currently, a more fruitful approach is to validate the client's goals and work to identify a short-term or intermediate step that might help them in reaching that goal or in reaching a related goal. For example, your client may wish to return to their job as a manager in a store. However, he or she may have significant cognitive issues that would make his or her ability to perform the duties of that job problematic at this time. You may be able to work with your client to identify intermediate steps to help with this return to work goal (e.g., participating in a volunteer position with some similar job tasks, arrange to have a more limited type of job assignment (such as performing only one or two aspects of the manager job) initially with a job coach to assist, etc. The main point here is to help find a middle ground that works to keep the client's hope alive while helping them to begin practical step-by-step changes to meet goals. Remember that we do not know how much functional change a person may make after TBI, so you should try to avoid any statement that suggests a client will never meet a goal. Such statements can decrease hope and harm your clinical rapport, both of which are detrimental to the potential of your clinical intervention.

Consideration of Recovery Course in Goal-Setting:

With a single uncomplicated mild TBI, most individuals will feel close to "normal" within the first three months after injury. Some of the most rapid improvements occur within the first few weeks after injury. However, a subset of individuals with such injuries may continue to experience physical, cognitive, or emotional difficulties for a longer period of time after injury. Symptoms are usually worse acutely. However, sometimes clients may not notice problems until they attempt to resume their normal daily activities (like returning to work or school). Symptoms will tend to get better over time for most people.

Improvements are thought to be facilitated if clients have sufficient rest and take a gradual approach to resumption of pre-injury activities. It is important to remember that not everyone gets better at the same rate. Every injury is different and likewise, recovery from the injury can differ as well. Recovery can be slower in people who are older or in those who have had one or more brain injuries in the past.



Therefore, if you are referred a client who has sustained an uncomplicated mild TBI within the first few days, weeks or months after injury, you would expect that your client will be likely to experience fairly rapid improvements in functioning within that early time window. Your case planning may wish to focus on helping the client manage current symptoms, while setting expectancies for likely continued recovery. Emphasizing the principle of gradual resumption of activities may also facilitate your client's recovery.



However, if your client with an uncomplicated mild TBI is referred to you at a later time post-injury, it may be that the problems experienced are of a more chronic nature. The reasons that persons with uncomplicated mild TBI may have prolonged difficulties are thought to be multifactorial, and may reflect aspects of the injury itself, pre-existing functioning, psychological reactions related to changes experienced as a result of injury, as well as environmental factors (e.g., stressors related to things such as loss of income, etc.). While some symptoms may be present in a subset of individuals, it is atypical for an individual with a single uncomplicated mild TBI to have severe physical and cognitive symptoms (such as hemiparesis, severe memory difficulties, etc.), especially if they are present after the acute stage of recovery. If such symptoms are present, you will want to have a good understanding of factors that might be contributing to the symptom presentation and how these may need to be addressed.

For those with more severe injuries, the typical recovery course is generally longer in duration. In general, those with complicated mild or moderate injuries will have a shorter recovery period and will have fewer persisting problems than will individuals with severe injuries. However, every individual is different, and every recovery after TBI is different as well. It is not well understood why some individuals recover more quickly or with better outcomes than others, but is likely due to a number of factors, such as: the extent of injury to the brain, the condition of the brain that was injured, previous cognitive functioning, ability to utilize and benefit from compensatory strategies, material supports (e.g., financial resources, access to transportation, etc.) and social supports (e.g., family and friends), to name a few.

If you are referred a client within the first few months after TBI, you should realize that his/her functional status is likely to change dramatically over the first year after injury. Therefore, goal setting will need to consider both short-term needs to address current functional status and longer-term needs where functional abilities may have greatly improved.

That is, your target for treatment may need to be adapted as your client's functioning changes. You should realize that follow-up will be important, since recommendations that are made earlier in the course of recovery may need to be adjusted significantly over time. On the other hand, if you are referred a client with moderate to severe TBI at one year or more after injury, the individual is likely to demonstrate a more long-standing pattern of needs. Although additional recovery and functional changes are possible, such changes are likely to be more gradual and your recommendations are likely to be relevant for a longer period of time.



Practical Suggestions to Facilitate Goal-Setting:



- Determine a well-defined focus for treatment. The goals for treatment should be clearly defined and preferably should focus on specific behavioral targets rather than abstract or complex interpersonal dynamics. Goals should be recorded and presented to the client in writing, either in the context of a therapy contract, treatment plan, or both.
 - For clients with attentional difficulties or disinhibition, setting a specific goal that is clearly articulated will help the client from getting distracted by other issues that are likely to be present in his or her situation. Avoiding the shifting from one focus to another will enhance the likelihood that gains can be made on the goal that is prioritized for treatment.
 - For clients with problems with initiation, memory, and cognitive flexibility, it may be useful to present clients with a list of potential treatment foci, from which they can select a specific goal for treatment that has the highest priority. Without provision of choices, such clients may have difficulties generating issues for treatment. Adding structure to the goal identification process can preserve the client-centered nature of your approach while reducing the cognitive complexity of goal-selection and improving the chances that goals will be successfully identified.
- Set intermediate goals. Assist the client in identifying intermediate steps that can be achieved on the pathway to their ultimate goal can assist the client in maintaining focus. For clients with limitations in abstract reasoning, attention, memory, disinhibition, or self-awareness the process of specifying initial steps toward a goal may help the client to link the content of individual sessions and homework assignments to the overall goals that are being sought. Such a linkage may improve the client's motivation and commitment to treatment.
- Use repetition and paraphrasing. To facilitate the maintenance of the client's focus on the overall treatment goal and to ensure that the client fully understand these goals, it will be useful to incorporate repetition and paraphrasing into your treatment sessions. Ideally, the treatment session should begin with a review of the treatment goals (both intermediate and overall goals). This repetition might include review of the treatment plan or contract. In addition to listing the goals, it would be useful for the client to describe what the goals entail and how the prior treatment session(s) and/or homework assignment(s) related to such goals. Written therapy logs that record observations, insights, and/or homework assignments may be another method that can help the client increase awareness and maintain focus on the treatment goals.



Session Structure and Therapeutic Interactions:

As already described, one of the tips that you may wish to utilize in working with clients with TBI that have significant cognitive sequelae is to begin each session with a review of the intermediate and overall goals of treatment. While such a review may be your practice with all clients, it will be especially important for clients with impairments in attention, memory, inhibition, and self-awareness. Some other tips that you may wish to consider in your structure of sessions or in your clinical interactions include:



- Utilize a reduced session duration for clients with reduced attentional capacity.
- Repetition of goals and clinical insights may be helpful for those with attention or memory problems.
- Provide information in writing and/or encourage the client to record significant information in writing (including homework assignments).
- Encourage client to paraphrase any instructions or concepts that you have presented to him/her to ensure clear understanding.
- Try to utilize simple sentence structure and avoid overly long or complex statements.
- Avoid the use of metaphor or overall abstract language. Clients with TBI can have difficulty with abstraction and may interpret your statements literally, leading to confusion and miscommunication.
- For some clients, you may need to assist the client in drawing conclusions and in following the behaviors that lead to such conclusions. In other words, you may need to be more directive within the therapy session.
- Develop a method for interrupting and redirecting clients who are verbose or tangential in their communication. Difficulties with topic maintenance and verbosity are fairly common after TBI. Therapy time is limited and politely listening to off-topic or lengthy remarks that are not relevant to the treatment goals will not be very helpful to the client.
- You may need to include family members or other significant persons in the client's support system within specific sessions to help facilitate completion of homework assignments or generalizability of changes to the client's home and community setting.
- Use of videotaping, modeling, and role-play may be important means of providing feedback and practicing new behaviors. Reliance on verbal discussion may not lead to substantive behavior changes for clients with limitations in initiation, memory, or self-awareness.
- For clients with deficits in visual perception, it may be useful to utilize audiotape recordings in place of written therapy logs, therapy contracts, and the like, since the client may have difficulty in accessing information that is presented visually.

- Enhancing client commitment and addressing compliance issues:

Poor awareness of deficits can affect outcome in persons with TBI, and is relatively common after moderate to severe injury. Impaired awareness has been associated with poorer compliance and participation in treatment (Malec, 1991) and longer stays in post-acute rehabilitation settings (Malec 2000). It has also been related to employment status at one-year following discharge from a post-acute brain injury rehabilitation program (cite) and to decreased motivation for treatment (Lam). Persons with impaired awareness of deficits may not be motivated or compliant with treatment as they do not perceive that they have problems or need treatment. In this section, issues related to awareness and motivation for treatment will be addressed. An apparent lack of motivation to participate in therapy or to following along with suggested homework assignments may result due to a client's lack of understanding about the reasons for his/her involvement in treatment or about how the particular exercise or session relates to his or her overall treatment goals.



Although awareness issues may or may not be noted in medical records that you receive at the time of referral, ascertaining the extent to which the client's perceptions of his or her strengths and weaknesses are accurate will be an important part of engaging the client and planning treatment. Impaired self-awareness is a direct result of the injury. Problems with awareness usually occur most frequently early in the recovery process and tend to improve over time after injury. Awareness problems can affect how well a person is able to describe their own strengths and weaknesses. But, it also affects one's ability to determine what kind of activities would be difficult for them or to set realistic goals.

For clients with mild TBI, a different problem may be encountered. Sometimes clients with mild TBI may be more sensitive to the changes that have occurred than will family members or friends. Individuals with mild TBI may report greater severity of symptoms than their close others report. There are various reasons that can explain these differences. Since changes after a mild TBI may be more subtle, it is possible that others will not be aware that the client is having difficulties. Or, for some individuals, the experience of having subtle difficulties in thinking abilities can be very distressing, which can increase the cognitive problems experienced.

In any case, when a client's perception of his or her own strengths and weaknesses does not match up with the perception of others or with his or her actual performance, commitment to treatment and compliance are likely to be affected. When impaired self-awareness is present there are several ways in which you can attempt to foster awareness and hence, reduce resistance to therapy. In this section, suggestions about methods in which you might foster awareness while preserving the therapeutic alliance are presented.

The following suggestions may help you to engage the client with impaired self-awareness by enhancing understanding of the reasons for therapy. Improved understanding will likely lead to increased active participation within therapy with the result of improving the likelihood of obtaining treatment goals.



- As previously presented, be sure to provide a written and verbal explanation of the general purposes and nature of therapy, assisting the client with forming realistic expectations for treatment.
 - Develop, in collaboration with the client, a therapy contract with agreement on goals for treatment a key component.
 - Enlist the client's participation in determining the focus for treatment using active questioning, including asking the client to try to determine what are the similar features of problem situations that they are experiencing.
 - Encourage the client to explore the validity of symptoms or deficits, to disagree with the therapist or perceptions of others, and to develop alternative explanation of such symptoms or behaviors as part of this process.
-
- Use self-monitoring as a method to help the client make observations that might support or disprove the validity of symptoms. Such self-monitoring could include a written or audiotaped recording of instances of the behavior, use of checklists, or a counter to indicate frequency of behaviors. Depending on the client's cognitive limitations, you may wish to limit monitoring to 1-2 times per day targeting only one behavior at a time, or may increase the frequency of the monitoring period and the number of symptoms or behaviors to be monitored. Encouraging the client to select the behavior to be monitored may also facilitate engagement in the process, although you may need to provide a list of choices to the client from which to select if difficulty generating alternatives is a problem cognitive function for the client. You may also need to develop a method of reminding the client to follow-through with self-monitoring, such as making reminder phone calls, for those with memory impairments.
 - Gentle confrontation about lack of collaboration or participation. Whether or not the client follows through on the self-monitoring assignment or other exercises, information obtained will still be useful in helping to determine barriers to involvement in treatment. In the context of a therapeutic environment, where there is a rapport established including trust and a shared set of expectancies, gentle confrontation about the lack of participation may be crucial to engaging the client. Helping the client to view and explore the differences between his or her view of the treatment and the therapist's view may help encourage client participation.



For clients whose impaired self-awareness results in difficulties in making a commitment to treatment, you may need to consider the initial goal of psychotherapy to be increasing the client's ability to accurately view his or her abilities. Once self-awareness has improved, there may be less resistance to addressing other treatment targets. There are several ways in which you can assist your client in increasing their self-awareness.

- Provision of specific feedback.
- As already described, use of videotaping can be an effective method of providing feedback to clients regarding social communication skills, but could be helpful in providing feedback regarding other abilities as well. The advantages of having a record of behavior that can be referred to later on, can be reviewed multiple times, and can be stopped to highlight behaviors can be very valuable. Also, use of the videotape allows for both the client and others to view and provide feedback about the client's interactions.
- In addition to using videotaping during sessions, you may ask the client to engage other trusted individuals (family members or friends) to provide feedback regarding target behaviors, as a method of gathering information about the validity of such behaviors. Using trusted others to provide feedback may result in the client viewing such data as more credible than the therapist viewpoint alone. Training these trusted others in how to provide specific feedback may result in even more useful information for the client.
- Use of situational assessments. Some clients may experience enhanced awareness if they have the opportunity to attempt activities in the real-world. A setting and activity are selected in an environment where the real-world consequences of potential failure are minimized. The client should have a role in determining what activity should be attempted, given their previous experience and future goals. Engaging in a "trial-run" of a given activity in a real-world environment is often seen as having more face validity than do activities conducted strictly in the context of the therapy setting. Furthermore, having the activity occur outside of the therapy setting may the client a sense of personal control and hence, may increase his or her engagement in the activity. For example, a client that states that he/she would have no problems in returning to a role as an office assistant might be asked to volunteer at a non-profit organization doing some aspects of that job (e.g., filing, taking phone calls, etc.) while under supervision. Processing feedback from the "supervisor" of the job setting, along with personal observations of work performance may allow for a discussion regarding discrepancies, which may lead to increased awareness of strengths and limitations.

- Predicting future performance. Another way to enhance awareness is to ask the client to predict how well they are going to perform on a given task prior to performing the task. For example, one might ask the client to predict how many words they will remember out of a list of ten words. The estimate is recorded, then the task is completed. A comparison of actual performance with the client's prediction can then be made, and any discrepancies are noted. Then the process can be repeated, with the goal of decreasing the discrepancy between predicted and actual performances. This can assist in increasing the client's accuracy of perception regarding an area of functioning, (in this case, memory functioning).

In cases where impaired self-awareness persists despite various attempts to gently increase appreciation of limitations, it may still be possible to engage the client in therapy by when a positive therapeutic alliance has been established. If a client believes that you are working for his or her greater good and has agreed to the expectations regarding treatment that you have presented to him or her at the outset of treatment.

In many cases, impaired self-awareness as a direct result of injury may also be accompanied by a degree of self-protective denial. In practice, it can be difficult to disentangle an organically-based impaired awareness from denial. In any case, the methods utilized to increase awareness are essentially the same. However, in some cases, maintenance of this denial may be acceptable, particularly if it is not interfering with therapy or daily community functioning. You will need to utilize your clinical skills to determine whether awareness is a necessary goal for a particular client, keeping in mind this client's experiences.



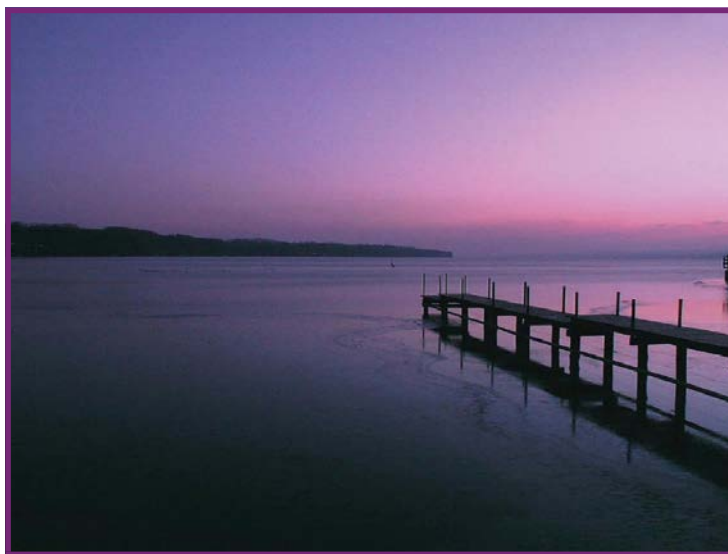
- **Psychotherapy with Family/Caregivers:**

Given the prominent role that family members/caregivers play in the life of the person with injury, it is important to include them in the therapy process. The manner in which they cope with the multiple changes that typically occur after the injury impacts not only their functioning and well-being, but also that of the loved one with TBI and the broader family unit. An effective model for intervention with family members/caregivers consists of a combination of psychoeducational and cognitive-behavioral approaches, developed by Sander (2002). You may find the following specific approaches helpful:



- **Management of relationship changes:** Family members/caregivers often have difficulty adjusting to the changes in family roles that frequently occur after injury. Thus, it will likely be helpful to: 1) normalize their feelings; and 2) provide education that relationship changes are a natural occurrence after TBI, which will facilitate acceptance. Helping them to process their feelings about these changes will likely be beneficial, as will assisting them with the development of improved communication skills among family members.
- **Stress management techniques:**
 - **Relaxation training:** You may want to consider providing family members/caregivers with relaxation training techniques, such as progressive muscle relaxation or focused breathing, which is an exercise adapted from the workbook *Managing Pain Before It Manages You* by Caudill (1995). The focused breathing technique involves imagery in combination with deep breathing. Specifically, participants are instructed to close their eyes and imagine a balloon in their abdomen. Then they are told to breathe deeply and slowly and imagine the balloon filling with air. Next, they are instructed to exhale slowly and fully, while imagining the air leaving the balloon. Finally, they are to imagine the stress leaving their body like the air leaving the balloon. It is suggested that they practice this exercise at least twice per day for a week and to rate their level of stress both before and after each exercise.
 - **Education and coping skill enhancement:** Family members/caregivers should be educated about the negative effects of stress on the mind and body. Help them to identify the coping strategies they use and their effectiveness, while pointing out that the coping strategies that they have used in other situations may not work well in the context of TBI, which presents challenges they have never faced before. Work with them to develop adaptive coping strategies to replace maladaptive strategies. You may want to present the following coping strategies, which have been shown to be helpful for family members (Willer, 1991): taking time out for yourself, maintaining a sense of humor, being more assertive, trying to view the situation more realistically, being careful to avoid blaming everything on the injury, and renegotiating roles and responsibilities.

- **Problem-solving training:** Explain that when family members/caregivers become overwhelmed, making even small decisions can be hard. Therefore, learning a systematic way to solve problems can be very useful to help reduce stress and boost confidence when it comes to solving larger problems. This approach involves teaching family members/caregivers to: 1) identify the problem and break complex problems down into smaller pieces; 2) brainstorm possible solutions; 3) evaluate the alternatives; 4) choose a solution; 5) try the solution; and 6) in the event that the chosen solution does not work, try another one and repeat the evaluation procedure.
- **Positive reframing of negative thoughts training:** Help the family member/caregiver become aware of the impact that thoughts can have on feelings and behaviors. You may wish to make this explicit by using the ABC model of the relationship among thoughts, feelings, and actions (Ellis, 1962). So, events lead to thoughts, which, in turn, affect feelings and actions. Emphasize that while family members/caregivers may not be able to alter the consequences of the injury, they do have the ability to change the way they think about things. It may be helpful to educate them about common thinking errors that lead to irrational thoughts, such as overgeneralization, dichotomous thinking, etc. Then, they can be taught to reframe negative thoughts into positive thoughts.
- **Education about resources:** Let the family members/caregivers know that there are local and national resources to which they can turn for help, including support groups. Please see Appendix II for a listing of resources.



◆ **Cultural Issues:**

According to the US Census Bureau, racial and ethnic minorities comprised approximately one-third of the US population in the year 2002.¹⁴ Disability rates varied among racial and ethnic populations, with disproportionate impact found among racial and ethnic minority groups.¹⁵ It is estimated that racial and ethnic minorities will comprise approximately one-half of the US population by the year 2050.¹⁶ The increasing diversity of our communities demands cultural competence among all healthcare professionals, including those who work with persons with disabilities. In working with clients with brain injury, cultural factors may contribute to differences in how such injuries and/or disability are viewed by that individual and his/her family and community. While little has been published regarding the impact of cultural differences in perceptions of disability and community integration issues for persons with TBI, it would be advisable to explore the impact of culture on expectations of healthcare delivery, community participation, and the like.



The Center for Capacity Building on Minorities with Disabilities Research (CCBMDR) at the University of Illinois at Chicago may serve as a resource that could assist the practicing clinical or counseling psychologist. The Center defines cultural competence as “the application of gained cultural awareness, knowledge and skills that allows service providers to work effectively with individuals from different cultures and recognize and challenge racism and other forms of discrimination and ethnocentric segregation.” The model used by the Center conceptualizes cultural competence as a developmental and ongoing process that involves awareness of our own biases and knowledge of the factors that influence cultural differences and similarities. The practice and application of cultural competence includes openness and acceptance of persons from other cultures and groups, a willingness to try non-traditional interventions, active participation in other cultural events, and a willingness to examine the institutional biases of traditional practices and services. Further information about this model and the CCBMDR can be found at:

<http://www.disabilityempowerment.org>

In gathering information about areas of functional change and role perceptions, you will want to be aware of potential cultural values that might affect a family system’s comfort level with disability and receptiveness to the shift in roles and responsibilities that might be presented. Attitudes toward disability and what roles are viewed as “appropriate” may differ depending on one’s social/cultural background. Spend some time ascertaining family expectations, as well as the social/cultural norms that might be present in their community. You may wish to seek outside consultation to assist with sensitivity in working with families from cultures with which you are less familiar.

In asking questions or in gathering information via questionnaire or other format, it is important to be aware of the client’s educational background and preferred language. It may be necessary to reword questions or read items aloud to ensure that the client receives accurate information and will answer appropriately.

In delivering interventions, consideration of the cultural and educational background of the client with whom you are working is always important. For some clients, that may mean that interventions might be most optimally delivered in an alternate setting, such as within the community, rather than in a clinic setting. Inclusion of family or other support system members may assist in understanding cultural expectations and addressing such issues. Collaboration and/or communication with alternative healthcare providers may be another way in which the needs of clients from various cultural background may be addressed. In general, the best way to address the needs of clients from other cultural backgrounds is to be mindful that cultural factors may be affecting your clinical interactions. In particular, mindfulness about the meaning of disability in your client's culture may be helpful in working with your client. Simply taking the time to ask questions and listening to your client and their family members or support system may make all the difference in your ability to provide quality services to your client.

◆ Referrals and Resources:



Based on information gleaned from your assessment, you may feel that your client can benefit from referral to other healthcare professionals or resources. Many clients with TBI are unaware that these resources exist. When providing referral/resource information, be sure to present it in written form to both clients and their family members, when appropriate.

Identification and maintenance of a listing of resources is necessary for appropriate community referrals for persons with TBI and their caregivers. A sample listing of community, state, and national resources for the local site in Houston, Texas, is located in Appendix II. You may wish to assemble a similar list for your own local practice environment. In addition to local and state services, a number of potential websites and national organizations may be useful sources of information and are presented in Appendix II.

In addition to these community resources, you may wish to pull together a list of local or regional healthcare providers that may be able to assist your clients with TBI. The following is a list of types of healthcare professionals that may be of use when considering referral options for clients with TBI, including a brief description of their areas of expertise. While this list is not exhaustive, it outlines a number of professionals who may be useful to your clients:

- **Physiatrist:** Physiatrists are physicians who specialize in the rehabilitation of neurological conditions including TBI, stroke, and spinal cord injury. They also treat musculoskeletal injuries, pain syndromes, and sports injuries. Other specialists who may be helpful to your clients include behavioral neurologists and neuropsychiatrists.
- **Neuropsychologist:** Neuropsychologists are clinical psychologists with advanced training in brain-behavior relationships. They specialize in the assessment of cognitive functioning. Neuropsychologists often evaluate persons with neurological disorders, including TBI, stroke, and dementia. Neuropsychological evaluations will include a description of the client's cognitive strengths and weaknesses, and recommendations about intervention strategies and referrals that may be of benefit to the client.
- **Speech Language Pathologist:** Speech language pathologists specialize in the assessment, diagnosis, and treatment of language and cognitive communication disorders. They also evaluate and treat swallowing problems.
- **Occupational therapist:** Occupational therapists work with clients to maximize performance of activities of daily living and to compensate for any residual deficits that may negatively impact task performance.
- **Physical therapist:** Physical therapists work with clients to improve their ability to move and function within their environment, and to restore and maintain fitness and health.
- **Rehabilitation counselors:** Rehabilitation counselors specialize in working with clients with disabilities. They provide personal and vocational counseling and coordinate vocational training and job placement services for their clients.
- **Recreation therapist:** Recreation therapists provide recreation resources and opportunities to improve health and well-being in persons with illnesses or disabilities.



Several resources and potential organizations/providers that you may wish to refer your client to are listed here. This is not an exhaustive list, and it would be useful to gather information about providers of various services in your local region. One organization that may be helpful in identifying available local, state, regional, and national services is the [Brain Injury Association of America \(BIAA\)](#) and another is the [North American Brain Injury Society \(NABIS\)](#). A brief description of these organizations follows:



- [Brain Injury Association of America](https://www.biausa.org/): The Brain Injury Association of America (BIAA) is the oldest and largest brain injury advocacy organization. The objectives of the organization are to provide information, education, and support to assist the 5.3 million Americans currently living with TBI and their families. You can contact the BIAA at 1.800.444.6443 for information and resources and/or visit: <https://www.biausa.org/>.



- [North American Brain Injury Society](https://www.internationalbrain.org/membership/groups/north-american-brain-injury-society): The North American Brain Injury Society (NABIS) was founded in 2003 as the American chapter for the International Brain Injury Association (IBIA). NABIS is a society made up of professional members who are involved in the care or services of persons with brain injury. The main focus of NABIS is to work toward the translation of brain injury research into clinical practice. This focus is specifically addressed through the provision of educational programs and scientific updates. You can contact NABIS at 1.713.526.6900 or 1.703.960.6500, and/or visit: <https://www.internationalbrain.org/membership/groups/north-american-brain-injury-society>

In addition, you may wish to consult with the school systems for assisting your student client's with TBI. College and university students with TBI and/or their parents can be encouraged to contact their school's disabilities office to discuss possible accommodations that may ease the return to an academic environment. Parents of students with TBI who are in grades kindergarten through 12 can be encouraged to contact the school's special education department to plan their child's transition back to school.

Other possible agencies or contacts that might be useful for your clients with TBI include:

- [Social Security Administration](https://www.ssa.gov/) (SSI & SSDI) (800-772-1213) Your client with TBI may be eligible for disability benefits if the impact of the injury interferes with his/her ability to return to work.
- [Medicaid](https://www.medicare.gov/) (resources vary by state, as this is a federal-state program)
- [Medicare Hotline](https://www.medicare.gov/) (800-633-4227; <https://www.medicare.gov/>)
These organizations can provide financial assistance to clients with TBI who meet eligibility criteria.
- [Centers for Disease Control and Prevention](https://www.cdc.gov/ncipc/tbi/TBI.htm) (CDC; 800-232-4636; www.cdc.gov/ncipc/tbi/TBI.htm) – provides information, publications, and resources relating to TBI.

- **Vocational services** – are provided by state agencies. You may wish to refer if your client is looking for employment or assistance with job training. Vocational rehabilitation funding may also help support other adjunct services (psychotherapy, rehabilitation services, medical treatments) if these would be helpful in facilitating a client’s return to work.
- **Physical/occupational/speech/recreational therapy** – Some clients may not have received these services despite needing them. If difficulties are reported in any of these areas, or you notice problems during your assessment, you should consider referring the client to a local rehabilitation program. If your client’s sensory, physical, or cognitive issues are a major focus of your treatment session, it may be useful to refer out to one of these rehabilitation specialist or to refer to a rehabilitation neuropsychologist or rehabilitation psychologist who has expertise in working with these issues.

Other services that you may wish to refer your client include:

- **Driving evaluation** – If your client has been restricted from driving and would like to resume driving, a formal driving evaluation is recommended. Or, if he/she is presently driving, but difficulties are reported, a driving evaluation is recommended.
- **Psychiatric evaluation** – should be considered if you feel that your client could benefit from psychiatric medication(s).
- **Physiatrist evaluation** – If your client is not being followed medically, referral to a physiatrist is recommended.
- **Neuropsychological evaluation** – is recommended if your client or his/her family members are reporting cognitive problems.
- **Brain injury support groups** – may be helpful for clients and family members to get exposure to others who have had TBIs. Such exposure can help them feel that they are not alone, and can also be an opportunity for social interaction. Your state Brain Injury Association office can provide you with a list of support groups in your area.
- **Transportation services** – many cities have special discounted programs for individuals with disabilities, which can be invaluable for those who do not have access to transportation after their injury



In Appendix II of this manual is a sample list of resources that you may wish to use as a template to help you put together a list of resources/referrals in your local area. Such a list can be invaluable, not only for clients with TBI, but for all clients you see in clinical practice.

Appendix I:

Clarification of Issues
Regarding Injury Severity:

	Uncomplicated Mild	Complicated Mild	Moderate/Severe
Injury Characteristics			
Duration of Impaired Consciousness	30 minutes or less	30 minutes or less	ranges from over 30 minutes to several days or weeks
Glasgow Coma Scale Score	13 to 15	13 to 15	9 to 12 = 'moderate' 3 to 8 = 'severe'
Imaging	No bruising or bleeding noted on brain scans	Bruising, bleeding, or swelling noted on brain scans	Bruising, bleeding, or swelling noted on brain scans
Duration of Post-Traumatic Amnesia	Generally brief; often lasts several minutes to several hours, but can be longer	Varies; can be relatively brief (e.g., several hours), but can also last several days	Longer duration; may last several days to several weeks or months
Recovery Course	Most improving to near pre-injury levels within first 3 months	Varies	Most rapid recovery within the first year after injury, with more gradual improvements noted within the first 1 to 2 years
Cognitive and behavioral deficits 1 year or more after injury	Generally no	Varies	Residual cognitive and behavioral deficits are common

	Uncomplicated Mild	Complicated Mild	Moderate/Severe
Acute stage of recovery			
Initial Contact	Assess responsiveness and orientation	Assess responsiveness and orientation	Assess responsiveness and orientation; generally, most interactions will be with family
Problem Identification, Data Collection, and Assessment	If oriented, most information can be obtained from person with injury. It may be helpful to supplement with information obtained from family if available.	If oriented, most information can be obtained from person with injury, but may be helpful to supplement with information obtained from family if available.	Most will be in coma or post-traumatic amnesia so will not be able to participate fully in a clinical interaction. Therefore, information will most likely be obtained from family.
Case Planning	Feedback from the person with injury will be the primary source of goal development, although family input may also be helpful. Goals should be balanced with current client strengths and limitations, although dynamic nature of such difficulties should be considered.	Feedback from the person with injury will be the primary source of goal development, although family input may also be helpful. Goals should be balanced with current client strengths and limitations, although dynamic nature of such difficulties should be considered.	Feedback from person with injury regarding goals should be used when possible; however, such input should be viewed along with family goals and in light of client strengths and limitations. The dynamic nature of such difficulties should be considered, as should the client's awareness.
Intervention	For most, emphasis will be on setting realistic expectations about recovery, reassurance about normality of symptoms, providing advice about methods of compensating for difficulties, and encouraging gradual resumption of pre-injury activities. Intervention will generally be brief.	For many, emphasis will be on setting realistic expectations about recovery and encouraging gradual resumption of pre-injury activities. In addition, more emphasis on methods of compensating for difficulties will be needed. For many, intervention will be brief; however, depending on symptoms experienced, others may require a greater intensity/duration of services.	A primary emphasis will be on addressing methods of compensating for difficulties in a functional context. Addressing activities of daily living will often be the primary task. Setting realistic goals and developing a satisfying sense of self after injury often are primary tasks. Intervention will likely be more intensive and longer in duration.

	Uncomplicated Mild	Complicated Mild	Moderate/Severe
Post-Acute stage of recovery			
Initial Contact	Information can be obtained from person with injury; however, inclusion of family members or close others will be important.	Information can be obtained from person with injury; however, inclusion of family members would be helpful.	Assess responsiveness and orientation. Generally, most interactions will be with the person with injury as well as family members.
Problem Identification, Data Collection, and Assessment	Information can be obtained from person with injury. It will be helpful to supplement with information obtained from family or close others to help understand the factors contributing to persisting difficulties.	Information can be obtained from person with injury. It will be helpful to supplement with information obtained from family or close others to help identify persisting areas of difficulty and set goals.	For most clients, Information can be obtained from person with injury. It will be important to also obtain information from family or close others to help identify current strengths, limitations, and goals.
Case Planning	Feedback from the person with injury will be the primary source of goal development, although family input will be important. Utilizing information regarding all factors related to current client strengths and weaknesses helpful will be helpful to identifying goals. A focus on maximizing function should be emphasized.	Feedback from the person with injury will be the primary source of goal development, although family input will be important. Goals should be balanced with current client strengths and limitations, with a focus on maximizing function.	Feedback from person with injury regarding goals should be used when possible; however, such input should be viewed along with family goals and in light of client strengths and limitations. Consideration that some areas of difficulty may be longer-lasting, emphasis should be on compensating for difficulties to achieve client's goals.
Intervention	For those with persisting problems, a focus on developing strategies to compensate for areas of difficulty will be the focus, while continuing to emphasize increasing function despite difficulties. Interventions should be focused on all factors (cognitive, emotional, environmental) that contribute to the current client difficulties. Intensity and duration of intervention will vary according to individual needs.	For those with persisting problems, a focus on developing strategies to compensate for areas of difficulty will be the focus, while continuing to emphasize increasing function despite difficulties. Interventions should be focused on all factors (cognitive, emotional, environmental) that contribute to the current client difficulties. Intensity and duration of intervention will vary according to individual needs.	A primary emphasis will be on addressing methods of compensating for difficulties in a functional context. Interventions should be focused on all factors (cognitive, emotional, environmental) that contribute to the current client difficulties. Addressing basic activities of daily living (ADLs) will often be the primary task, although a focus on setting realistic goals and developing a satisfying sense of self after injury will also be emphasized. For many, this phase will emphasize instrumental ADLs and goals such as returning to work or school. Intervention will likely be more intensive and longer in duration, with greater emphasis on community-based services.

Appendix II:

Neuroanatomical Correlates of Common Referral Issues:



- **Post-Concussive Syndrome (PCS):**
As the vast majority of cases of mild TBI are uncomplicated (an absence of trauma-related lesions on acute CT or MRI), diffuse axonal injury (DAI; the shearing and stretching of axons resulting in impaired neuronal function or even cell death) has been suggested as a probable cause of some PCS symptoms, although other symptom etiologies are possible other than central nervous system trauma (e.g., headaches due to cervical muscle strain, dizziness due to labyrinthine trauma, etc.).
- **Depression:**
Similar to patients with stroke, anterior lesions and metabolic abnormalities are most often associated with the presence of major depression including dorsolateral prefrontal,⁴³ orbitofrontal,⁴⁴ and anterior cingulate cortices.⁴⁵ Volumetric MRI studies of patients with TBI and depression have found that reductions in left prefrontal gray matter and losses in ventrolateral and dorsolateral frontal cortices were also associated with post-TBI depression.²⁷ However, the relation between left anterior lesions and depression in TBI is generally limited to the acute recovery period (approximately 3 months post-injury) as this association diminishes with increasing time post-injury. It is thought that acute-onset depression is more directly associated with the presence of left anterior lesions whereas delayed-onset depression (definitions differ, but at least over three months post-TBI) may be more generally associated with factors such as pre-injury psychiatric status, history of previous MDEs, psychosocial factors, lack of an adequate social support network, and psychological responses to financial and social difficulties and cognitive and physical deficits, or other negative consequences as a result of the TBI.^{46, 47}
- **Anxiety Disorders:**
 - The precise neuroanatomic circuitry of PTSD is not well characterized in TBI. There is reason to speculate that damage to the limbic system and the amygdala specifically may result in subsequent anxiety disorders and PTSD in particular.⁷¹ However, neuroimaging of typically-developing adults with PTSD has suggested increased activation of the amygdala⁷² and lower than normal activation of the anterior cingulate gyrus.⁷³ It is reasonable to anticipate that damage to these structures may increase the probability of developing an anxiety disorder following TBI. However, the clinician should be advised that there is not a clear-cut linkage between lesion location and anxiety disorders following TBI; it is likely that the etiology of these disorders depends on biological, neuropsychological/psychological, and social origins in combination.
 - While there has been speculation that there is an overlap of structures frequently damaged following TBI and the onset of anxiety disorders such as GAD and PD,⁶⁰ the precise circuitry remains to be more clearly elucidated.⁶¹
 - OCD and A-OCD (from etiologies other than TBI) have been linked to dysfunction and lesions in the subcortical nuclei (basal ganglia) including the caudate, globus pallidus, putamen, and lentiform nuclei. However, as illustrated in case studies of patients with TBI, A-OCD can occur with lesions in the frontotemporal areas and deep frontal white matter without apparent lesion to the basal ganglia^{64, 65, 74} which suggests that frontal-

- Anger, Agitation, Aggression, and Violence

The limbic system adds emotional valence to cognition and modulates drives from the prefrontal cortex. Lesions to the limbic system and the amygdala⁷⁷ (an anterior temporal lobe structure) in particular may be responsible for emotional overreactions or sudden violent behavior.⁷⁸ Lesions in the anterior temporal lobe (a common area of damage in TBI particularly from motor vehicle accidents or blunt trauma to the face or temples) may also result in emotional lability and poor impulse control.⁷⁹ Restlessness and agitation is frequently associated with frontotemporal lesions.⁸⁰ Persons with lesions in the orbitofrontal cortex are at significantly increased odds of committing a violent act⁸¹ and conversely, persons committing violent acts frequently have frontal lesions.⁸² Several areas of the prefrontal cortex are involved in processing social cues and modulating emotional behavior. The orbitofrontal cortex is most often associated with quick temper following little or no provocation (or the misperception of provocation) and places the person at higher risk for committing possibly violent acts.⁷⁶ It is hypothesized that damage to the ventromedial prefrontal cortex disinhibits limbic areas that would otherwise modulate or suppress aggressive or angry emotions.^{76, 83}

- Behavioral Disregulation

Impulsive behavior is frequently associated with lesions (e.g., coup, lacerations, contusions, and hematomas) in the orbital frontal region (e.g., gyrus rectus, orbital gyri).⁸⁴ This area is prone to damage particularly in motor vehicle accidents as the brain slides forward during the rapid deceleration in a collision or other blunt trauma to the forehead impacting the inner table of the skull and/or scraping bony protuberances on the inside of the skull. Lesions to the dorsolateral frontal cortex (e.g., inferior, middle, and superior frontal gyri, frontal pole) may also lead to impulsive responding patterns.

Diminished motivation and poor initiation behaviors are frequently associated with lesions in the inferior mesial areas of the frontal lobes (e.g., subcallosal gyrus and mesial gyrus rectus).⁸⁴ These areas are prone to damage particularly in motor vehicle accidents, and blunt traumas to the forehead and periorbital areas of the face. Reduced motivation is frequently associated with lesions in the basal forebrain (e.g., septal nuclei, precommissural fornix, and nucleus accumbens) and loss of motivation is often associated with lesions in the superior mesial frontal cortex (e.g., anterior cingulate gyrus, supplementary motor area).

Socially inappropriate behavior is frequently associated with lesions in the orbital frontal region (e.g., gyrus rectus, orbital gyri). This area is prone to damage particularly in motor vehicle accidents and blunt traumas to the forehead and periorbital areas of the face. A famous case of such behavior following damage to orbital frontal areas is Phineas Gage who, as a result of a railway explosion, had an iron rod shot through this brain region.⁸⁵ Unbelievably, he survived and began exhibiting what is now thought of as classic signs of orbital frontal damage. His behavior had changed so radically that his friends and acquaintances no longer thought of him as being the same person at all.

Again, the case of Phineas Gage is a classic example of the radical change in personality that can occur following prefrontal damage.⁸⁵ These behaviors may quickly lead to social isolation and are a primary source of stress among friends and family members. As is often the case, the male patient with TBI may be living with parents or remaining at home due to disability. Because of the disruptive and socially inappropriate behavior, not only will the person with the TBI be isolated as friends and other family members avoid contact, the caregiver family itself will be isolated, further adding to the caregiver's stress from the lack of an adequate social support network.

Personality changes occurring after TBI are associated with lesions in the orbital frontal cortex, frontal convexities, and deep white matter tracts (areas rostral and lateral to the frontal horns of the lateral ventricles) including cortical-subcortical (e.g., frontostriatal, frontothalamic, and frontolimbic) fiber tracts.⁸⁴ Personality is likely an amalgam of a number of interrelated neural systems, subsystems and cortical regions making precise localization of personality changes difficult. For instance, functional MRI studies have reported that moral judgments activate the right anterior temporal lobe, lenticular nucleus, and cerebellum while frontopolar and medial frontal gyrus areas were activated in a task of non-emotional judgment.⁸⁷

Emotional lability is frequently associated with damage to the limbic system, anterior temporal lobe, and the amygdala specifically.⁸⁴

In a review of cases of secondary mania following acquired brain injury (i.e., mixed etiologies of TBI, stroke, and tumors), Starkstein et al.⁸⁹ reported that orbitofrontal, inferior temporal, and diencephalic lesions were associated with the onset of secondary mania.

- **Lack of Awareness (anosognosia):** Greater injury severity (as measured by the Glasgow Coma Scale or GCS score) has been associated with more severe anosognosia. Right hemisphere lesions have been thought to be associated with anosognosia, but results have been mixed. A recent study has found that the degree of anosognosia is not related to the location or volume of brain lesions (as identified on CT scan performed on hospital arrival), but instead by the number of brain lesions.⁹² This suggests that it is the degree of damage to large interconnected neural networks rather than focal damage to specific cortical or subcortical areas that is associated with the presence and severity of anosognosia.
- **Sexuality, sexual functioning, and intimacy:** Damage to frontal and frontotemporal areas, including the medial septal and basal forebrain areas¹⁰⁰, have been shown to result in sexual disinhibition and hypersexuality.¹⁰² Hyposexuality is related to lesions in the frontal convexities.¹⁰² There is evidence to suggest that some male sexual dysfunction after TBI may be related to androgen insufficiency¹⁰³ or dysregulation of testosterone. Erectile dysfunction has been linked to damage in areas of the limbic system, frontal cortex (e.g., medial orbital gyrus) and the septo-fornico-hypothalamic circuit.¹⁰⁴

- Alcohol and Substance Abuse/Dependence:
As a primary effect, alcohol abuse frequently results in generalized cortical atrophy. Long-term alcohol abuse can result in the disorder known as Korsakoff's syndrome which is the result of poor nutrition and a specific deficiency of vitamin B₁ (thiamine). Brain areas associated with damage from Korsakoff's include the medial thalamus, mammillary bodies (a primary cause of memory dysfunction), and general atrophy.

Several studies have demonstrated perfusion abnormalities in frontal and frontotemporal regions in cocaine abusers as detected by SPECT.¹⁴⁹⁻¹⁵¹ Similarly, frontal neurons may be preferentially affected by certain substances of abuse as demonstrated by PET imaging¹⁵². Tuck and Jackson¹⁵³, in a review of over 600 cases of suspected alcohol-related brain damage, found that 58% of these patients had demonstrable frontal lobe dysfunction. Other studies¹⁵⁴ also suggest the possibility of a disproportionate effect of substances of abuse on frontotemporal brain regions. This is particularly important in TBI because of the increased likelihood of frontotemporal pathology¹⁵⁵ frequently sustained in motor vehicle accidents.

There is evidence to suggest that intoxication has a negative effect on neuropsychological variables such as memory and intelligence.^{132, 146} Sparadeo and Gill¹⁵⁶ showed that patients who were intoxicated prior to their brain injury had a significantly lower global cognitive status at the time of hospital discharge than those who were not intoxicated. Problems with recall and recognition memory¹⁵⁷ psychomotor speed¹⁵⁸, and visual-spatial perception¹⁵⁹ have also been reported.

Brain damage due to TBI is often exacerbated by a history of pre-injury substance use. Dikmen and her colleagues¹⁴⁶ found that patients with a history of alcohol abuse and TBI had significant neuropsychological impairments early after the injury and when evaluated at two years post-injury. However, Barker et al.¹⁶⁰ reported that in men aged 16-30 years, that although there were no differences in neuropsychological performance, persons with TBI and a history of polysubstance abuse had greater atrophic brain changes (after controlling for TBI severity) than those with either polysubstance abuse or TBI only. Bigler and colleagues¹⁶¹ found that in a quantitative MRI study of persons with TBI, those with a substance abuse disorder history had greater general brain atrophy (as measured by the ventricle to brain ratio or VBR) than those with similar TBI severity without substance abuse history. Event-related evoked potentials (e.g., N200 latency and the P300 amplitude) have been showed to be impaired in heavy social drinkers with TBI.¹⁶² Interestingly, these persons scored no worse than those with TBI and without a history of heavy drinking suggesting that the significant effects of alcohol abuse on neurophysiologic functioning related to working memory may be more sensitive than some neuropsychological measures. In summary, it appears that while neuropsychological testing may not always be sensitive enough to detect the purported additive effects of substance abuse and TBI, MR imaging and measures of neurophysiologic functioning may be able to detect these effects.

Appendix III:

Sample Resource List

(Houston/Galveston Metropolitan area)



Houston/Galveston Metropolitan area

Information and General Assistance:

[Brain Injury Association of Texas](#)

National Brain Injury Information Center800-444-6443

[Brain Injury Association of America](#)

[Houston Center for Independent Living](#).....713-974-4621

[Disability Services of the Southwest](#).....713-888-0522

Medical Care:

[Harris Health Care – Eligibility](#)

[Harris Health Care – Appointments](#)

[University of Texas Medical Branch—Galveston](#)

[Veteran’s Administration Medical Center](#)

Assistive Technology:

[Texas Technology Access Program](#)



Attendant Care:

- [Sheltering Arms](#).....713-956-1888
- [Family Services of Greater Houston](#).....713-861-4849
- [Texas Department of Human Services](#).....512-424-6500
- [Visiting Angels](#).....800-365-4189

Driving:

- [Strowmatt Rehabilitation Services](#)..... 866-394-5920

Emotional, Psychological, & Substance Abuse:

- [Mental or Behavioral Health Authority](#).....800-735-2989
- [The Harris Center for Mental Health](#)713-970-7070
- [Family Service Center](#).....713-861-4849
- [Houston Area Women’s Center](#).....713-528-6798
- [Harris County Psychiatric Center](#).....713-741-5000
- [The Council on Alcohol & Drugs Houston](#).....713-942-4100

Education & Employment:

- [Texas Workforce Commission](#).....512-463-2222
- [Texas Blind and Visually Impaired](#).....713-880-0721
- [Social Security Work Incentives](#).....800-772-1213
- [Texas Work Force Commission](#).....800-628-5115
- [Texas Education Agency](#).....512-463-9734

Education & Employment (continued):

Imagine Enterprises	888-437-4213
Career & Recovery Resources	713-754-7000
Goodwill Industries	713-692-6221
MHMRA Vocational Services	979-822-6467
University of Houston Center for Students with Disabilities	713-743-5400

Financial:

Social Security Administration (SSI & SSDI)	800-772-1213
Medicaid	800-252-8263
Medicare	800-252-9240
Crime Victims Compensation Program	512-463-2100
Texas Department of Insurance	800-578-4677
Texas Health Insurance Risk Pool	512-441-7665
Texas Food Benefits	800-735-2989
	800-252-8263
Houston Food Bank	713-223-3700
Meals on Wheels	940-325-7919

Energy Assistance Programs:

Reliant EcoSHARE Program	866-222-7100
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RRTC on Community Integration of Persons with TBI

Transportation:

[Texas METRO - Half Fare for the Disabled](#).....713-635-4000

[Texas METROLift](#)713-225-0119

Leisure & Recreation:

Metropolitan Multi-Service Center.....832-395-7333

[TIRR Sports](#).....800-447-3422



Guidebook for Psychologists: Working with Clients with Traumatic Brain Injury

Rehabilitation Research and Training Center on Community Integration of Persons with Traumatic Brain Injury Brain Injury
Research Center at Memorial Hermann|TIRR
2323 Shepherd, Suite 907
Houston, Texas 77019

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