



**I was hit by a drunk driver.**



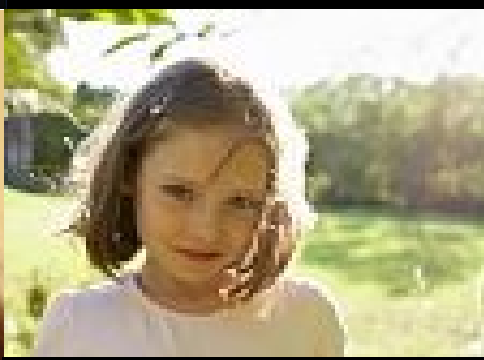
**I fell off a ladder cleaning the gutters.**



**I tripped and hit my head.**



**I had encephalitis.**



**I was shaken by the babysitter.**



**I was assaulted leaving work.**

# **The Brain Injury Handbook**

## **An Introductory Guide to Understanding Brain Injury for Vocational Rehabilitation Professionals**

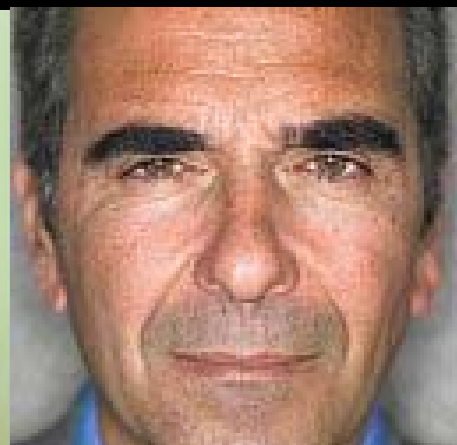
Brain Injury Association of Oregon, Inc. [www.biaoregon.org](http://www.biaoregon.org) 1-800-5445-243



**I sustained a blast injury in Iraq.**



**My ex-boyfriend beat me up.**



**I had a heart attack.**

The Brain Injury Handbook—2011

An Introductory Guide to Understanding Brain Injury for Vocational  
Rehabilitation Professionals

Brain Injury Association of Oregon, Inc.

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800-544-5243 [www.biaoregon.org](http://www.biaoregon.org)

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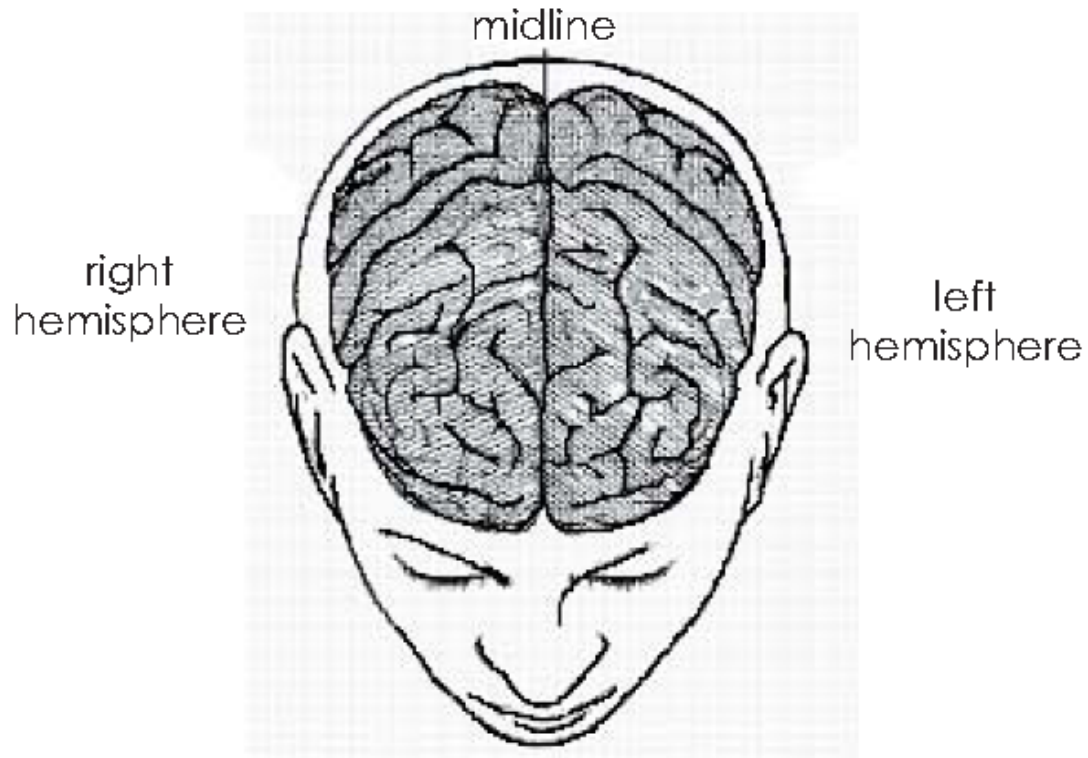
# I. THE NATURE OF BRAIN INJURY

Persons with brain injury are a challenging group to serve within the vocational rehabilitation (VR) system. These individuals have needs that are unique to their disability and symptoms that are frequently baffling. This handbook provides an overview of brain injury and its consequences, as well as strategies and resources that may be beneficial in working with people who have brain injuries. This handbook was created to help VR counselors provide appropriate services for people with brain injuries in their efforts to return to work.

Individuals with brain injury are unique as service recipients. Their particular disability differs from any other disability group the counselor may have encountered. Persons with brain injuries simply do not exhibit disabling conditions in the same way as other disability groups, and it is this nonconformity that sets them apart. When counselors attempt to use traditional methods to assess the vocational potential of members of this challenging group, their efforts can result in a failure to serve these clients. In order to effectively provide services to this population, the rehabilitation counselor must first acquire a basic knowledge of how the brain functions. Only then can the counselor adequately appreciate the complexity of the client with brain injury. It is of paramount importance that the counselor develop a familiarity with the nature and consequences of brain injury and begins to understand the interaction among the myriad of problems a person may encounter. Once having gained familiarity with brain mechanisms and the client's locus of injury from medical reports, the counselor still should exercise extreme caution in placing labels on anticipated areas of dysfunction. There are individual differences in the organization of each human brain, and these differences may in part account for unanticipated functional achievements in some clients, even though severe deficits and, therefore, limited potential, had been observed in a neuropsychological examination. Conversely, subtle deficits noted during testing procedures may be quite serious obstacles to success in a variety of vocational spheres. Vocational counselors should be aware that disparities between test results and actual task performance will surface continually.

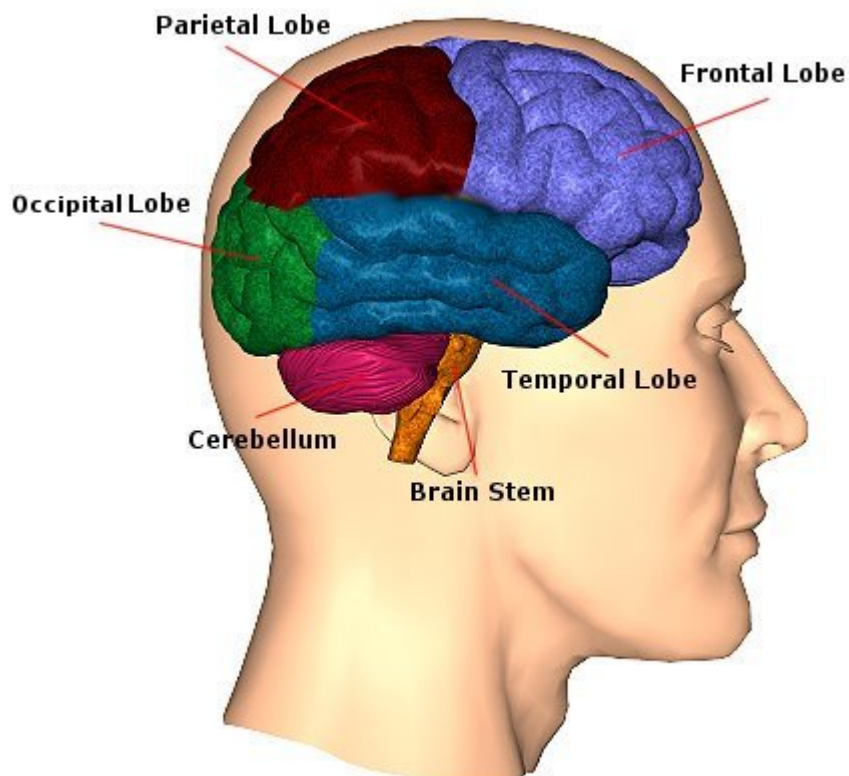
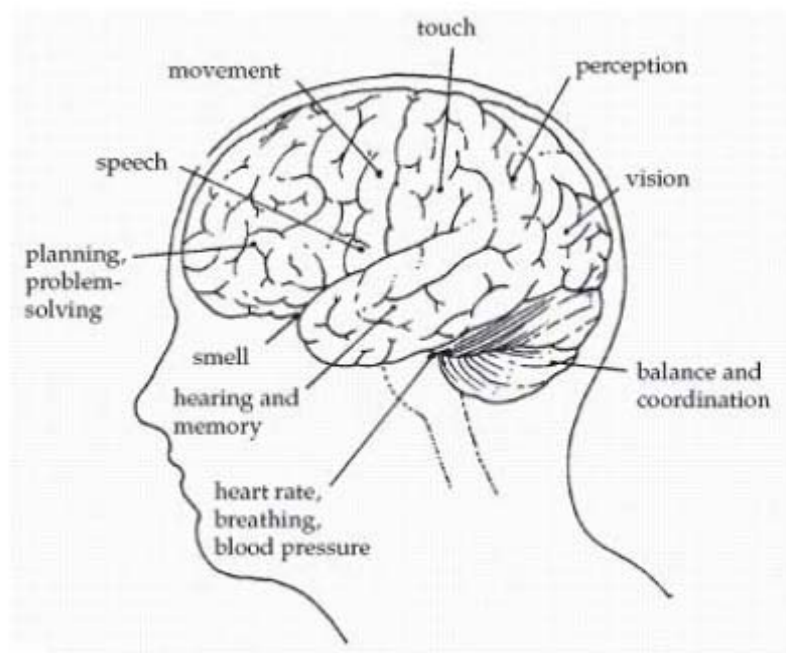
In summary, providing services to people with brain injuries requires creativity and flexibility. It is hoped that as the reader goes through this handbook, issues touched upon briefly in this introductory section will grow in clarity.

***How Does the Brain Work?*** The human brain controls the actions of the body and allows us to think, learn and remember. It is made up of billions of nerve cells that work together to control emotion, behavior, movement and sensation. To better understand what can happen to an individual when the brain is injured, it is helpful to know about the different parts of the brain and what they do. There are three main sections of the brain - the cerebral hemispheres, cerebellum and brain stem. The brain is divided into two halves. These halves are the left and right cerebral hemispheres.

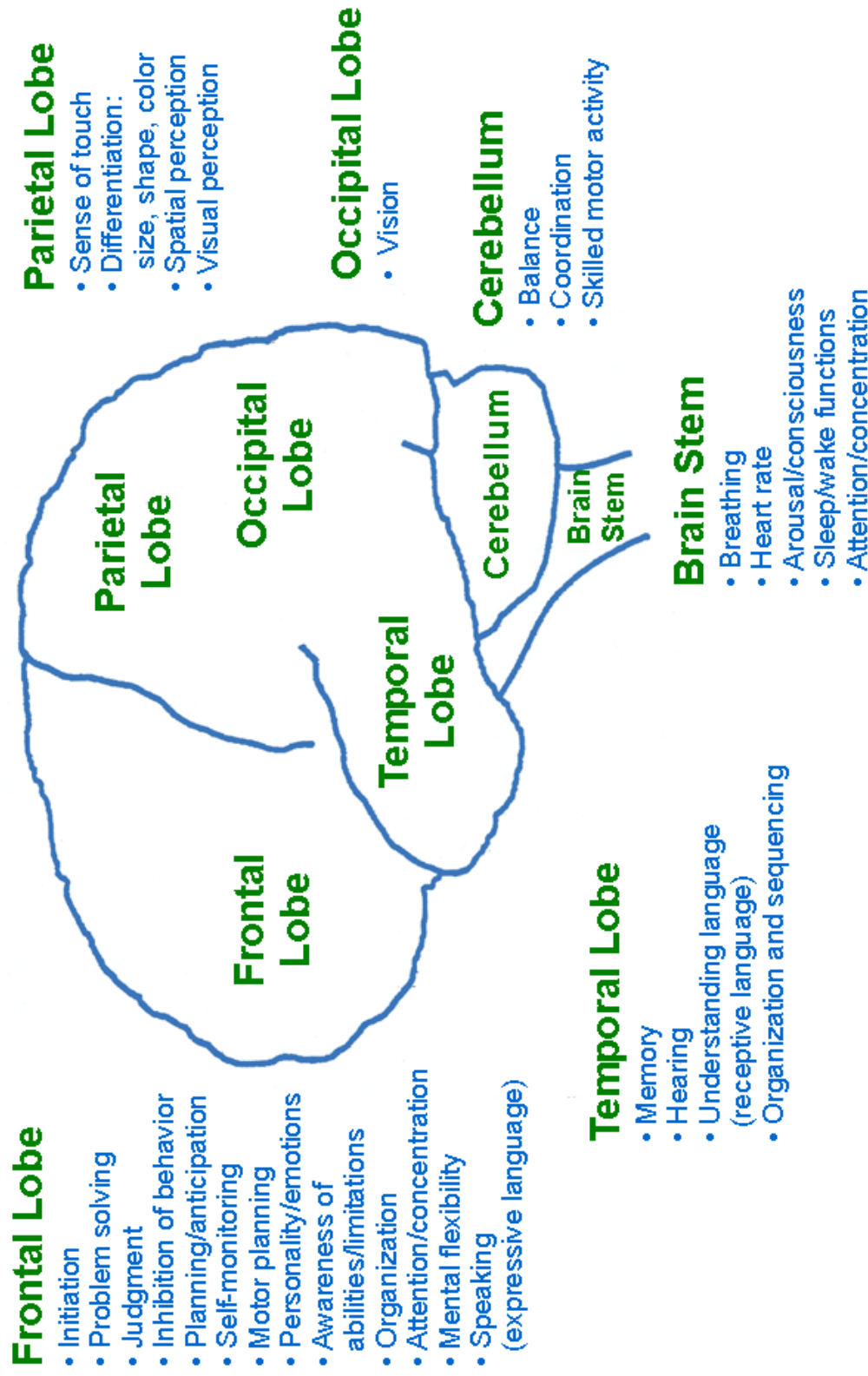


Each part of the brain is responsible for specific functions. The left cerebral hemisphere controls the right side of the body and is responsible for speech, analytical thought and memory. The right cerebral hemisphere controls the left side of the body and is responsible for creative thinking, expression of emotions and visuospatial abilities. Specific parts of the brain control specific functions, like vision (Occipital Lobe), balance and coordination (Cerebellum), heart rate and breathing (Brain Stem), smell (under the frontal lobe), or hearing (temporal lobe). Thus, what happens to a person when the brain is injured will differ depending on the part of the brain that was affected.





# Simplified Brain Behavior Relationships



***What is Brain Injury?*** Brain injuries that occur after birth are called acquired brain injuries. An acquired brain injury can be the result of a medical condition. Some of these conditions include stroke, encephalitis, aneurysm, anoxia (lack of oxygen during surgery, drug overdose, or near drowning), metabolic disorders, meningitis, or brain tumors. Acquired brain injuries can also occur when an outside force strikes the head hard enough to cause the brain to move inside of the skull and damage the brain. This type of injury is called a traumatic brain injury, and can be caused by car crashes, falls, being hit on the head, or any physical violence. This type of brain injury is referred to as a closed brain injury, meaning that the brain has not been externally penetrated. When the brain is penetrated, such as with a gunshot wound, the injury is called an open brain injury.

The severity of such a traumatic brain injury may range from “mild”, i.e., a brief change in mental status or consciousness, to “severe” i.e., an extended period of unconsciousness or coma after the injury. Often there is some period of unconsciousness following a trauma to the brain. However, there are those individuals who do not lose consciousness but will nonetheless exhibit symptoms of brain injury. As a result of traumatic brain injury, the brain sustains damage that may be either temporary or permanent.

The consistency of the brain has been compared to gelatin or custard. Under normal conditions, this soft mass, gently cushioned by cerebral spinal fluid, floats within the vaults formed by the membranes that line the skull and the protective bone of the skull itself. When the brain is injured, three primary types of damage may occur: diffuse, concussive and coup/contre-coup. These three types of injury are discussed in detail below.

## Diffuse Injury

The first type, diffuse axonal brain injury, results from the stretching and tearing of nerve fibers (axons) throughout the brain. This diffuse, widespread damage to the brain is the type that frequently results from a motor vehicle crash. When the momentum of a rapidly moving vehicle is suddenly halted, with the head striking a stationary object inside the car such as a dashboard or the windshield, the impact results in rotational forces twisting and dislocating or shifting the brain mass.

When the brain is subjected to these violent motions, there is enormous stretching and pulling of the threadlike nerve connections (axons) that form the network for brain functioning. As the axons are stretched, biochemical functioning ceases and the nerves stop functioning. Axons that are severely stretched sometimes snap, and the likelihood of these nerves ever functioning again is remote. The more severe and widespread the damage, the greater the probability of an ensuing loss of consciousness (coma). Practically all people emerge from coma. However, the type of injury described above virtually always leads to permanent and generally severe damage to the brain.

# Diffuse Axonal Injury

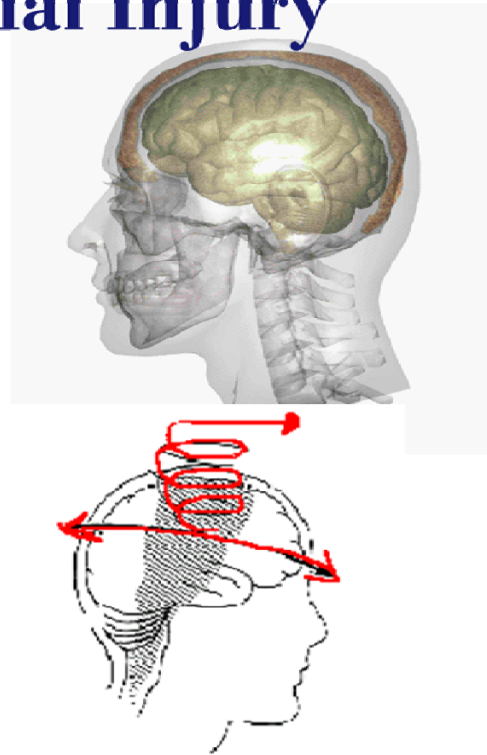
Brain injury does not require a direct head impact. During rapid acceleration of the head, some parts of the brain can move separately from other parts. This type of motion creates shear forces that can destroy axons necessary for brain functioning.

These shear forces can stretch the nerve bundles of the brain.

The brain is a complex network of interconnections. Critical nerve tracts can be sheared and stressed during an acceleration-type of injury.

Rotational forces on the brain cause stretching and snapping of axons.

Diffuse axonal injury is a very serious injury, as it directly impacts the major pathways of the brain.



## Concussive Damage

Concussive damage is the result of the brain colliding with the sharp ridges on the inside front of the skull. The resulting bruises or contusions are most likely to occur in the base of the frontal and temporal lobes of the brain. These localized contusions produce two of the most frequently encountered deficits following closed brain injury. They are executive dysfunction and impaired memory functions.

Since the temporal lobes are essential to the system that registers, stores and retrieves information, damage to this area affects the ability to learn new material.

Damage to the frontal lobes may seriously impair the wide range of abilities known as executive functions. Individuals with frontal lobe injuries are unable to think abstractly, conceptualize, or be effective problem solvers. They are generally inflexible thinkers who remain concretely bound to a presenting situation. They are unable to take a self-critical view and are therefore frequently unaware of how their behavior may affect others. Because of a pronounced inability to develop a plan and initiate an activity, these individuals are frequently labeled unmotivated. Frontal lobe injuries are the most prevalent in automobile crashes. Individuals with frontal lobe injuries are often the most difficult to serve in vocational rehabilitation.

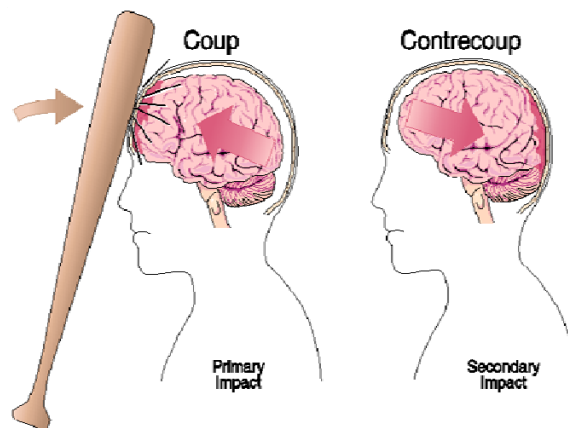
## Coup/Contre-coup Injury

The third type of primary damage seen in closed brain injury occurs when the head is struck with such intensity that it literally bends the skull in at the point of impact, injuring the brain beneath it (the initial blow or coup), and then propelling the brain against the opposite side of the brain (the counter blow or contre-coup). This type of damage is most likely when a moving object strikes the stationary head. It does not necessarily occur in all closed brain injuries. When it does happen, the impairments that result depend on which specific brain areas have been damaged. A range of functional areas may become selectively impaired following a coup/contre-coup injury. These may be in the motor, sensory, perceptual and language domains.

## Coup/Contre-coup Injury

A French phrase that describes bruises that occur at two sites in the brain.

When the head is struck, the impact causes the brain to bump the opposite side of the skull. Damage occurs at the area of impact and on the opposite side of the brain.

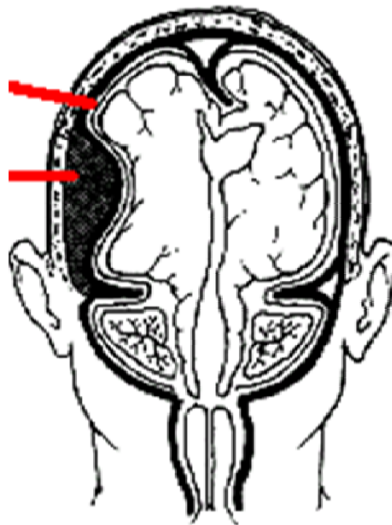


## Secondary Damage in Closed Brain Injury

In addition to the three types of primary damage described previously, secondary damage is a common occurrence in brain injury. This can include bleeding within the brain itself (intracerebral hematoma); or between the skull and the brain covering (epidural hematoma); and/or between the brain and brain cover, (subdural hematoma). There is further damage to the brain tissue as blood collects and builds up pressure that compresses the brain. Intracranial pressure increases as the brain swells with fluid (edema, hydrocephalus) or becomes engorged with blood. Since the rigidity of the skull allows no room for the brain to expand, surgery is frequently necessary to repair, stop bleeding, remove clots, relieve pressure and/or prevent herniation. When secondary damage occurs, usually in severe brain injury, it can produce functional limitations more severe than originally anticipated.

# Epidural Hematoma

**Dura**  
**Hematoma**  
**or Blood**  
**clot forms**  
**on top of**  
**the dura**



An epidural hematoma is a blood clot that forms between the skull and the top lining of the brain (dura).

This blood clot can cause fast changes in the pressure inside the brain.

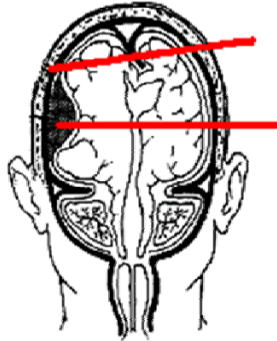
When the brain tissue is compressed, it can quickly result in compromised blood flow and neuron damage.

# Subdural Hematoma

A subdural hematoma is a blood clot that forms between the dura and the brain tissue.

The clot may cause increased pressure and may need to be removed surgically.

When the brain tissue is compressed, it can quickly result in compromised blood flow and tissue damage.



**Dura**

**Hematoma or  
blood clot  
forms under  
the dura**

## Blast Injury

A blast injury is a complex type of physical trauma resulting from direct or indirect exposure to an explosion. Blast injuries occur with the detonation of high-order explosives as well as the deflagration of low order explosives. These injuries are compounded when the explosion occurs in a confined space. From 2000 to 2010, the Defense and Veterans Brain Injury Center has counted 178,876 cases of Traumatic Brain Injury (TBI) among U.S. Military personnel. Seventy-seven percent of those cases were determined to be mild. Based on these numbers, the number of confirmed cases of TBIs has surpassed recorded cases of Post Traumatic Stress Disorder (PTSD) by nearly 100,000.

There are four types of Blast Injuries: Primary (direct effects of pressure, either overpressurization and underpressurization, such as rupture of tympanic membranes, pulmonary damage, and rupture of hollow viscera); Secondary (effects of projectiles, causing penetrating trauma and fragmentation injuries); Tertiary (effects of structural collapse and of persons being thrown by the blast wind, causing crush injuries and blunt trauma, penetrating trauma, fractures and traumatic amputations, open or closed brain injuries); and Quaternary (burns, asphyxia, and exposure to toxic inhalants).

## Primary Injuries

Primary injuries are caused by blast overpressure waves, or shock waves. These are especially likely when a person is close to an exploding munition, such as a land mine. The ears are most often affected by the overpressure, followed by the lungs and the hollow organs of the gastrointestinal tract. Gastrointestinal injuries may present after a delay of hours or even days. Injury from blast overpressure is a pressure and time dependent function. By increasing the pressure or its duration, the severity of injury will also increase.

In general, primary blast injuries are characterized by the absence of external injuries; thus internal injuries are frequently unrecognized and their severity underestimated. According to the latest experimental results, the extent and types of primary blast-induced injuries depend not only on the peak of the overpressure, but also other parameters such as number of overpressure peaks, time-lag between overpressure peaks, characteristics of the shear fronts between overpressure peaks, frequency resonance, and electromagnetic pulse, among others. The majority of prior research focused on the mechanisms of blast injuries within gas-containing organs/organ systems such as the lungs, while primary blast-induced traumatic brain injury has remained underestimated.

## Secondary Injuries

Secondary injuries are due to bomb fragments and other objects propelled by the explosion. These injuries may affect any part of the body and sometimes result in penetrating trauma with visible bleeding. At times the propelled object may become embedded in the body, obstructing the loss of blood to the outside. However, there may be extensive blood loss within the body cavities. Shrapnel wounds may be lethal and therefore many anti-personnel bombs are designed to generate shrapnel and fragments.

## Tertiary Injuries

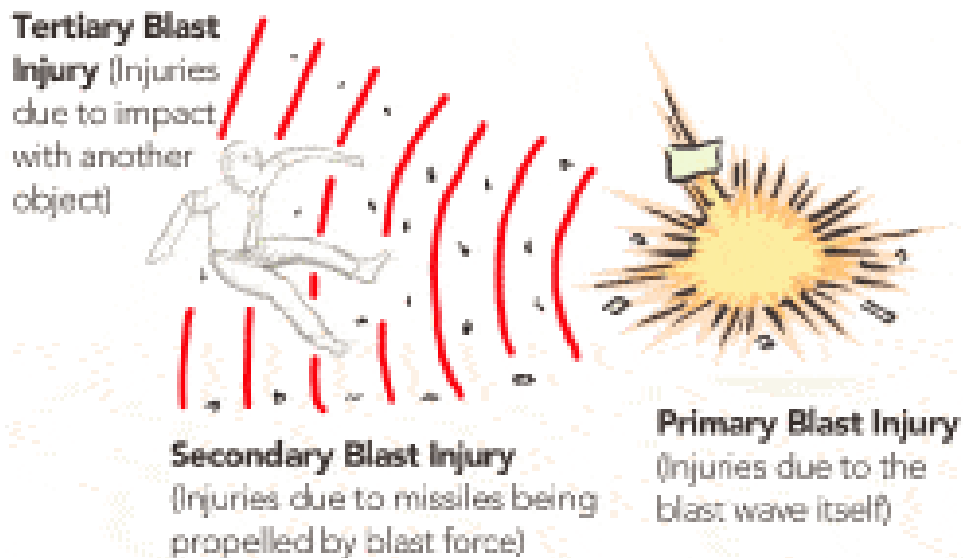
Displacement of air by the explosion creates a blast wind that can throw victims against solid objects. Injuries resulting from this type of traumatic impact are referred to as tertiary blast injuries. Tertiary injuries may present as some combination of blunt and penetrating trauma, including bone fractures and coup contre-coup injuries.

Blast injuries can cause hidden brain damage and potential neurological consequences. Its complex clinical syndrome is caused by the combination of all blast effects, i.e., primary, secondary, tertiary and quaternary blast mechanisms. It is noteworthy that blast injuries usually manifest in a form of polytrauma, i.e. injury involving multiple organs or organ systems. Bleeding from injured organs such as lungs or bowel causes a lack of oxygen in all vital organs, including the brain. Damage of the lungs reduces the surface for oxygen uptake from the air, reducing the amount of the oxygen delivered to the brain. Tissue destruction initiates the synthesis and release of hormones or mediators into the blood which, when delivered to the brain, change its



function. Irritation of the nerve endings in injured peripheral tissue and/or organs also significantly contributes to blast-induced neurotrauma.

Individuals exposed to blast frequently manifest loss of memory for events before and after explosion, confusion, headache, impaired sense of reality, and reduced decision-making ability. Patients with brain injuries acquired in explosions often develop sudden, unexpected brain swelling and cerebral vasospasm despite continuous monitoring. However, the first symptoms of blast-induced neurotrauma (BINT) may occur months or even years after the initial event, and are therefore categorized as secondary brain injuries. The broad variety of symptoms includes weight loss, hormone imbalance, chronic fatigue, headache, and problems in memory, speech and balance. These changes are often debilitating, interfering with daily activities. Because BINT in blast victims is underestimated, valuable time is often lost for preventive therapy and/or timely rehabilitation.



## II. FUNCTIONAL CHANGES AFTER BRAIN INJURY

Many clients with a brain injury appear to be ideal vocational candidates. They typically possess substantial pre-injury work records; former employers willingly attest to their good work adjustments; and self-reports of pre-injury employment or educational attainments are usually in keeping with the reports of others. It is important to emphasize, however, that the person being described in these reports is not necessarily the same person after the injury. Physical, cognitive and psychosocial changes as a result of the brain injury may have significant impact on the individual's ability to work.

### Physical Changes

Physical deficits, if they exist, are always the most obvious or noticeable limitations in individuals with brain injury. Unlike the more subtle cognitive impairments, physical deficits are generally visible and frequently become the central issue upon which an individual places all responsibility (blame) for his/her inability to return to pre-injury activities and lifestyle.

Physical impairments are usually the result of damage to the brain centers that control motor functions rather than direct injury to the extremities. Deficits may include loss of motor coordination, spasticity, poor balance, an inability to walk unassisted, and a loss of eye-hand coordination. Hemiplegia (paralysis affecting one side of the body) and hemiparesis (weakness of one side of the body or part of it) may further complicate vocational issues, particularly when these conditions affect the use of the pre-injury dominant hand.

Within this category, one must note the potential for seizure disorders, and, if they are prescribed, medications taken to control seizures. The stability of the seizure disorder and the potential side effects of the seizure medications may further compromise vocational rehabilitation efforts.

**Cognitive Changes** Persons with brain injury may exhibit problems in a variety of cognitive areas such as basic arousal, alertness, attention, concentration, memory, abstract thinking and conceptualization, planning, organizing, problem solving, and judgment. People also may have difficulty processing verbal and visual information.

### Arousal

Signs of arousal problems include an inability to attend to the environment; a lack of (or reduced) alertness; an inability to accurately observe environmental details and occurrences; and a severely slowed capacity for information processing. People with arousal impairments are often slow in reacting and responding to others and are highly susceptible to fatigue following cognitive or physical exertion. They may appear almost "lost in space" or "not in touch."

## Attention and Concentration

Impaired attention and concentration can exhibit as easy distractibility. This may be a response to interference either by external or internal stimuli. For the person with brain injury, the inability to “screen out” external noises makes it difficult to sustain concentration.

Environmental noise is found in most work settings, e.g., conversation of others, usual office “traffic,” humming of machines and the general related “buzz” of activity. Intrusions by external noise can often be controlled or minimized, and the capacity for concentration will usually improve.

For the person with brain injury, another possible source of distracting noise is the internal conversation within his/her own mind. Intrusive inner thoughts that limit productivity are exceedingly harder to manage. They become visible (observable) only when they interrupt performance.

## Memory

Loss of adequate memory function and the inability to immediately recall new information (anterograde amnesia) are common symptoms following brain injury. While significant improvement in memory function may be noted during the initial period of recovery, this deficit is often observed in varying degrees for most people with brain injury.

Inadequate memory function is one of the primary complaints reported by people who have sustained brain injuries. Often it is their social environment that causes them to develop an awareness of this particular problem area. The reprimands of acquaintances and significant others for missed appointments, appliances left on or bills left unpaid compel the person with brain injury to acknowledge that he/she forgets important things. Inadequate memory function remains, unfortunately, unresponsive to remedial intervention. However, memory impairments can be compensated for by a variety of mnemonic devices (memory aids) such as those described later.

Practically all persons with brain injury retain a clear memory of themselves as they were pre-injury. Intact old memories and over-learned information (for example, riding a bike or performing a sequence of job tasks) frequently represent areas of strength. These preserved skills can often be drawn upon when helping a client with brain injury redevelop vocational goals.

Sometimes an individual may appear to have a memory impairment, when in fact the person has difficulty paying attention when presented with new information and is thus unable to remember this information. It is essential for the client and the counselor to know the difference. The inability to remember, as a response to lack of effective attention, can be remediated frequently, or at least substantially improved, by cognitive rehabilitation.

## Abstract Thinking and Conceptualization

An important concern for vocational counselors is whether the client with brain injury is able to engage in abstract thought. Clients can remain stuck in one view of a situation. They may find it difficult to shift to other aspects of a problem or to readily search for alternatives. They may lack the capacity for imaginative thought and remain poor problem solvers. Problems with abstract reasoning limits the types of productive activity an individual can pursue autonomously and impacts on the range, complexity, and variety of tasks they can successfully attempt.

Conceptualization, which is dependent on the capacity to think abstractly, is another area in which the individual may exhibit cognitive deficits. The ability to effectively conceptualize lies within the realm of higher-level cognition. One must possess a store of learned material that is reliably and readily drawn upon in order to “imagine” or form a mental picture, organize these mental events, and be able to translate this cognitive activity into an observable behavior/skill. Problems in the ability to conceptualize can significantly impact the types of jobs a person is able to pursue.

## Executive Functioning

Deficits in executive functioning are the direct result of frontal lobe damage. Intact executive functions allow an individual to engage in autonomous, independent, well planned, effectively organized, sufficiently monitored, self-regulated, purposeful or goal-directed enterprises. When these capabilities are diminished as the result of brain injury, the individual has difficulty sustaining gainful employment, maintaining satisfactory social relationships and, at times, maintaining adequate self-care, regardless of how well other cognitive capacities are retained.

The person who looks and sounds good and whose test results on examinations of skills and knowledge are unimpaired will have difficulty functioning productively when executive skills are impaired. Such clients remain poor self-managers. These clients who so often appear capable are probably the most difficult to treat or evaluate vocationally. They have lost the mechanism to accurately monitor their abilities and need frequent feedback in order to understand the impact their areas of weakness have on their ability to return to work.

The counselor should also carefully assess a client’s ability to formulate goals. While capable of engaging in complex activities, those impaired in executive functioning may lack the capacity to develop plans or initiate purposeful activity. In extreme cases, these individuals may appear apathetic and unable to initiate activity except in response to external stimuli. The ability to become engaged dynamically in interactive and intentional behavior is basic to executive skills. As mentioned earlier, when this capacity falters, persons with brain injury can erroneously be labeled lazy or unmotivated.

## Interpersonal and Psychosocial Changes

Interpersonal and psychosocial changes following brain injury may present the most serious impediment to vocational reintegration. A client may possess intact, high level, functional work skills but will be prevented from sustaining employment because, in most employment settings, job retention depends on maintaining the good will of coworkers and supervisory staff. In other words, a client needs to be able to interact with co-workers and supervisory staff in a work-appropriate manner; maintaining a pleasant, approachable affect, or at least a neutral one. People with brain injury may be left with marked changes in their behavioral repertoire and exhibit verbal and physical disinhibition, poor social judgment and a general decrease in “social graces.” Some clients may exhibit dysfunctional social behaviors of such magnitude that they are prevented from engaging in any consistent task performance. When even lengthy treatment and clinical intervention cannot modify undesirable social behavior, competitive employment may not be achievable.

A high degree of egocentricity is often another consequence of brain injury. Many clients have difficulty in adopting a flexible stance and remain fixed in their view that the world only relates to and revolves around them. Clients may lack the capacity to “read” social cues accurately. Some fail to read it at all; they seem oblivious to nuances of speech and body language of others. They confuse the impact of socially relayed messages and consistently interpret them as being personally directed. For example, clients may misinterpret a coworker’s or supervisor’s anger or disappointment over work problems as a strong negative message about their personal performance. In addition, constructive criticism may be interpreted as a personal assault. The unfortunate by-product of this type of misinterpretation is that the client, who perceives the anger as directed at him/her, generally responds with anger.

One of the least understood dysfunctional interpersonal skills is the loss of emotional control. Clients can overreact or become immobilized by a type of emotional flooding rarely observed in other disability groups. The type and extent of their emotional response, often the direct result of some internal dialogue, is not merited by the situation. Loss of emotional control will usually surface unexpectedly and sometimes be of such magnitude that it precludes any productive activity.

This emotional instability is characterized by rapid, exaggerated mood or affect swings. Known as emotional lability, the condition is the result of weakened or impaired control in emotionally charged situations. Because the client’s physical appearance may give no indication of a disability, observers tend to misinterpret his/her strong emotional responses.

Another issue facing people following brain injury is a decreased tolerance for alcohol and drugs. Smaller doses produce more rapid effects. Social drinking can be difficult to control and will interfere with a person’s cognitive, physical and psychosocial functioning.

Relationships within the family, the community and the workplace will be compromised when a person is unable to effectively control their use of alcohol or drugs. The vocational rehabilitation process will be at jeopardy as well. The client should be made aware of the harmful effects of these substances and the VR counselor should aggressively monitor and intervene if there is a question of impairment due to alcohol or drug use.

### **Common Issues Following Brain Injury**

#### **Cognitive Changes**

Memory  
Problem solving  
Decision making  
Persistence  
Planning  
Organization  
Sequencing  
Processing speed  
Judgment  
Inflexibility  
Concentration  
Attention span

#### **Physical Changes**

Motor coordination  
Taste and smell  
Hearing and/or visual changes  
Spasticity and tremors  
Fatigue and/or weakness  
Balance  
Mobility  
Speech  
Seizure disorder  
Paralysis on one or both sides

#### **Personality and Behavioral Changes**

|                                 |                                      |
|---------------------------------|--------------------------------------|
| Depression                      | Reduced self-esteem                  |
| Social skills problems          | Difficulty relating with others      |
| Mood swings                     | Self-centeredness                    |
| Emotional lack of control       | Difficulty forming new relationships |
| Inappropriate behavior          | Stress, Anxiety, Frustration         |
| Impulsivity                     | Denial                               |
| Lack of response to social cues | Lack of motivation                   |
| Irritability                    | Excessive laughing                   |

## **Mild Brain Injuries**

The VR counselor will be called upon to provide services for persons who possess a wide range of capabilities and limitations as the result of brain injury. Along with those who have moderate or severe brain damage, there are those classified as having mild brain injuries. Because people with so-called mild or minor brain injury do not exhibit obvious deficits, they are not referred for rehabilitation services until long after the actual injury. Following a visit to the emergency room, doctor's office, or a brief period in an acute care facility, individuals with mild brain injuries generally return home and subsequently to work. While they often have no awareness of altered

abilities, their job performance is markedly diminished and the ability to retain employment suffers. This group of people appear unchanged from pre-injury status and their difficulties are further compounded by the expectations placed upon them by their social environment. Because they appear so intact, these expectations are high and usually incongruent with their reduced capacities. When the employment problems become obvious and the individual is finally referred for vocational counseling or rehabilitation, the original cause of the problem may remain unrecognized. If this is the case, the VR counselor can be instrumental in determining whether a mild brain injury may be a factor in the employment problems the individual is experiencing and in arranging for appropriate testing by a neuropsychologist to address these problems. It should be noted that mild brain injury is a complex problem and is often addressed in the rehabilitation literature as a separate and unique topic. Resource information about mild brain injury can be found on the Brain Injury Association of Oregon's website ([www.biaoregon.org](http://www.biaoregon.org)).

## Diagnostics

During the early stages of treatment and rehabilitation of people with brain injury, a number of neurodiagnostic measures and mental status examinations are performed. The main purpose of such testing is to measure cognitive functioning and chart improvements as they occur. These tests are not immediately relevant to the vocational rehabilitation process. However, later neuropsychological testing, which is best administered when the person with a brain injury has become medically stable, bears direct relevance to vocational rehabilitation.

## Neuropsychological Consult/Evaluation

A neuropsychological evaluation may be part of the case records the vocational counselor reviews at the time of referral. The significance of the results may not be readily apparent, and therefore, may be difficult to translate into meaningful application. Test scores are typically reported as they compare to established norms, and a client's performance or level of functioning may be described in terms that tell us only that he/she is "deficient", "impaired" or below the "average." These terms mean little when they have to be applied to a job analysis. Additionally, these reports may be written in jargon that further confuses the vocational counselor.

On the other hand, a well written neuropsychological evaluation can serve as an invaluable tool to understanding the cognitive strengths and weaknesses of a client as it applies to returning to work. If the vocational counselor is making the referral for the neuropsychological evaluation, asking specific referral questions about work functioning, accommodations, and treatment recommendations can enhance the information that is provided in the report. Discussing the results of the testing with the neuropsychologist, whose expertise is in brain-behavior relationships, is another way to obtain vocationally specific information.

## Vocationally Relevant Questions for the Neuropsychologist

- What functional limitations are evident with respect to memory, information processing, visual and auditory comprehension?
- What is the potential for further remediation?
- What is the prognosis for length of treatment?
- Can you comment on specific strengths noted in the testing situation, e.g., ease in receiving oral instruction, persistence, concentration?
- Is the client distractible? Externally? Internally?
- Can you comment on those aspects of pre-injury learning (i.e., firmly entrenched, over-rehearsed, repertoire of skills) that have surfaced during the current testing?
- Is there potential for new learning?
- How much supervision and environmental support will be needed at the current level of functioning?
- What is the client's best method of learning?
- What type of compensatory strategies would be beneficial to enhance job performance?
- What type of job accommodations would be helpful?
- What are the effects of interpersonal deficits on vocational goals?

The results of a well-focused neuropsychological evaluation can translate into practical recommendations for the vocational assessment process. These results allow the counselor to make preparations and take anticipatory steps to ensure a successful experience for the client. The vocational counselor can then begin to design the types of environmental support systems that the client, given his/her strengths and limitations, will require during the vocational rehabilitation process.



### III. COGNITIVE REHABILITATION

Clients with brain injuries may need cognitive rehabilitation as they are preparing for the vocational rehabilitation process. Cognitive rehabilitation is the systematic, goal-oriented therapeutic intervention designed to remediate (improve) a range of cognitive abilities. Areas addressed in a program of remediation are highly individualized and may include attention, concentration, and impulse control.

Cognitive programs also address lack of awareness of injury-imposed limitations and social and emotional needs. Memory impairments are attended to and compensatory strategies are taught. Cognitive remediation is carried out in carefully planned stages or steps. Clients move through a variety of highly structured training exercises. Skill acquisition and skill stabilization are stressed. For most people possessing true functional memory deficits, compensatory aids must be established if they are to return to any level of occupational productivity. Compensatory measures often take the form of environmental cueing systems. Cueing can be as simple as an index card listing the alphabet for the client who is involved in a filing task or a written list of sequential steps for a given task that the client uses as a visual reference. Sometimes these cueing methods require only common sense and a bit of creativity to create.

It is important to remember that environmental cueing systems must incorporate the steps to be taken in a logical sequence. This is true whether they are being designed for the work place or for activities of daily living accomplished at home. These might be written guidelines for procedural operations; calendars and journals for personal appointments; job logs, maps, written step-by-step procedures for gaining access to a particular place; and a daily schedule which helps the client transition from one aspect of the day or job task to the next.

#### Indicators of Need

Sometimes a client with a brain injury is determined to be eligible for vocational rehabilitation yet demonstrates functional deficits in cognitive skills. If these deficits limit the client's potential for independence and vocational success, then cognitive rehabilitation may be indicated. If there is a discrepancy between what the client is able to do and what will be required of him/her on the job or vocational placement, cognitive rehabilitation may be appropriate. If the job requires skills that the client has already demonstrated, either on a consistent or erratic basis, or has the potential to learn, then cognitive retraining should be initiated. The following guidelines are also relevant:

- The client should demonstrate the motivation and ability to actively participate in the learning situation and display a capacity for consistent improvement on new learning.

- The client's own goals should be both realistic and congruent with the final goals of the remediation and ultimate job placement.
- There should be evidence that the skill deficits exhibited by the client are retrainable in therapy. If not, the focus of the therapy should be on development of compensatory strategies, use of external aids, providing more structure in the environment, and job support.

## Role of Cognitive Rehabilitation in Vocational Training

Goals for cognitive rehabilitation should be made with regard to the specific skills needed in the client's vocational setting. Since these needs may change with different vocational placements or development of the client's skills, it is important to update the goals regularly. For example, the goals for cognitive rehabilitation may be relevant for a supported employment situation. After working in supported employment, the client may demonstrate the potential for employment without supports. The need for additional cognitive rehabilitation may be indicated with new goals for self-sufficiency.

## Compensating for Cognitive Deficits on the Job

People with brain injuries are usually taught a variety of compensatory mechanisms during the course of cognitive remediation. At issue here is whether they are capable of incorporating the learned compensatory strategies into home, community, and workplace settings.

People with brain injury often have difficulty transferring the compensatory strategies they learn in the clinic to real world situations. Memory deficits and problems with abstract reasoning make it difficult to generalize information learned in one setting to another situation. The best way to teach work-relevant compensatory strategies is in a work context. It is only in a work setting that these strategies have real meaning to most people with brain injuries.

## Critical Features of Cognitive Rehabilitation

1. Adequate evaluation, planning and ongoing supervision by a trained professional.
2. Daily structured tasks that include:
  - Supervision / Minimal distractions
  - Step-by-step acquisition of skills
  - Constant systematic feedback
  - Maximal stimulation

- Built-in success
  - Repeated learning
  - Transfer of training to functional settings
3. Written instructions and notes by supervisor of daily tasks:
- Cognitive rehabilitation therapist/technician
  - Attendant
  - Family member
4. Regular (e.g. weekly) review of program by neuropsychologist.
5. Coordination of program with other rehabilitation team personnel.

## IV. THE VOCATIONAL REHABILITATION PROCESS

The vocational rehabilitation process begins with the referral and the collection of information to learn as much as possible about the vocational candidate. The VR counselor creates a profile of the potential client by gathering information through written and verbal reports and interviewing the client.

### Determining the Appropriateness of the Referral

Before beginning the assessment of readiness to engage in the vocational rehabilitation process, the counselor should be sure that the client has been appropriately referred. One of the first considerations is to recognize the reason for the referral. Professionals in both medical and rehabilitation settings sometimes push patients with brain injury into untimely, and therefore inappropriate, vocational rehabilitation in their efforts to engage their patients in productive activity. The referral may also be viewed as a possible way to continue rehabilitation when other funding sources have been exhausted. If the person being referred for vocational rehabilitation is at a stage of recovery where additional improvement is expected, then the initiation of the vocational rehabilitation process is best deferred. In assessing readiness to engage in work, careful consideration of the stage and stability of both current and potential improvement must be made. Ideally, the time to begin vocational rehabilitation is when the potential client with brain injury is completing the rehabilitation process, has reintegrated into the home and community, and expresses motivation to work. Sometimes, clients do not appreciate the need for vocational services. They may be unable to assess their own capabilities and frequently are unaware of their injury-imposed limitations. It is helpful for clients to have a basic awareness and acknowledgement of residual changes in a range of capacities before beginning vocational rehabilitation.

## Intake Interview

The intake interview is actually the first step in the process of assessing readiness to engage in the VR process and is probably the best initial assessment tool available. It is recommended that the VR counselor allow more time for initial interviews with individuals with brain injuries than other clients. The intake interview serves a variety of purposes, including fact-finding and to establishing rapport with the client. Additionally, it allows the counselor to make clinical observations, which is another form of data collection. If the client presents with behaviors that are so dysfunctional that the counselor has concerns about working with him/her, there is a strong possibility that the person is not ready for the VR process. First and foremost, the interview provides the counselor with an opportunity to evaluate the client's ability to participate at a very basic level; in other words, to test his/her capacity to engage reliably in a two-way communication. Did the client remember to keep the appointment? Was the client punctual? Can the client supply information about him/herself? During the course of conversation, is the client focused? Is he/she attentive, or highly distractible? Is the client oriented to time and place? Is the client impulsive? Is the client interested in vocational rehabilitation services?

## Vocational Candidate's Arrival

Two things to be noted during this first meeting are:

- 1) by what means of transportation did the candidate arrive, and
- 2) did he/she arrive alone or accompanied by a significant other.

The inclusion of this additional person as a source of background information and details of injury is recommended when the client cannot reliably provide this important information. However, the counselor must find out whether the presence of this additional person (s) is in response to a need of the client or to that of the significant other.

In addition, the issue of independent mobility and the availability of transportation must be addressed during the vocational assessment process.

## Readily Observed Behaviors

The list of behaviors that are readily observed during the interviewing process is lengthy, and the counselor must be aware of all those that will have a positive or negative impact in a work situation. The counselor should gain knowledge of specific behavioral deficits that, unless they can be compensated for or sufficiently remediated, will preclude certain jobs. For example, note signs of disinhibition. The client who is extremely uninhibited may not fare well in maintaining employment because a high degree of disinhibition makes it difficult to establish adequate

interpersonal relationships in the workplace. One should also note whether a potential client has physical disabilities or problems with communication.

## Significant Others

During this initial phase of fact-finding, the counselor should obtain information concerning the constellation of significant others who can be relied upon for supplying support. The lack of this type of support system can make the process more difficult. Family members and familial role models make a measurable contribution in vocational rehabilitation.

## Forming a Vocational Profile

### Medical Information

Relevant medical reports should describe the injury, its severity, and the circumstances under which the injury occurred. Descriptions of medical treatment, complications during convalescence, and efforts at rehabilitation should also be part of this data collection. Cognitive and physical disabilities should be noted. The circumstances surrounding the injury may also provide information such as the presence of alcohol or drugs as contributing factors.

The presence of a surgically implanted shunt should be noted. These shunts are inserted to relieve buildup of fluid in the brain (creating increased intracranial pressure) during the acute care stage. They usually remain in place and generally offer no problems. However, if the shunt becomes clogged, there must be a surgical revision or replacement to correct the malfunction. A malfunctioning shunt will contribute noticeably to a sudden decline in performance.

Prescribed drugs for seizure control or behavioral management must also be noted. These drugs, while helpful in maintaining medical and/or behavioral stability, may have side effects that impede job performance.

### Leisure Time Activities

Leisure time activities should be examined. If the client is fortunate and has remained socially active following the brain injury, the counselor should consider how he/she maintains leisure time activities. The skills needed to maintain social contacts can be a good indicator of success in the job market. The counselor should also explore at this point whether the individual is involved in brain injury support groups. ([www.biaoregon.org/supportgrp.html](http://www.biaoregon.org/supportgrp.html))

### Post-Injury Work History

During the interview, the counselor should find out whether there is a post-injury work history or whether attempts to return to school or work were made. The quality of the work effort should be explored in detail when possible. Since the client has been referred for vocational services,

previous attempts at reintegration may not have been successful. It is important to determine how realistic the client's perception is of what transpired, and his/her self-report of work functioning should be confirmed in consultation with significant others, former employers or teachers whenever possible.

## Post-Injury Education

Academic credits or degrees earned post injury merit special attention. However, the degree awarded sometimes has no applicability in the "real" world and may have been earned under highly structured conditions.

## Goals and Self-Perception

It is important during this process to ask the vocational candidate about self-perceptions regarding specific injury induced problems. The counselor should gather information on the qualities the client possesses that might represent strengths. Usually people with brain injury will mention problems in memory because their social circle has forced them to acknowledge this deficit. Memory impairments become self-evident, as do physical limitations, which clients are able to report readily and identify as the primary reason for their inability to gain employment.

This interview would also be well spent in discussing the client's personal goals and assessing how realistic they are when compared with the client's abilities. The counselor should be able to observe whether the self-report is biased by anxiety due to the interview situation or whether the client who presents as unrealistic is simply responding to a social need for approval, that is, to look good in the eyes of the counselor.

## History Prior to Injury

Information gathered during the intake interview may be incomplete or, in some cases, not totally accurate. The counselor must now assemble those elements of pre-injury history that can be documented by written record. In this way, the counselor continues to create a portrait of the person who is about to begin the vocational rehabilitation process.

Counselors must be aware of the injury-produced physical, cognitive, and psychosocial changes, but must also keep in mind that who a person was before injury is often a key determinant of who he/ she will become. The tragic circumstance of a brain injury may blunt aspects of behavior or, conversely, exacerbate them. Armed with pre-injury information, the well-prepared counselor can begin to anticipate styles of behavior that may bring success in particular work situations.

## Pre-Injury Health History

It is important to obtain a pre-injury health history because preexisting medical ailments often complicate brain injury. Both earlier injuries to the central nervous system and congenital anomalies may implicate the rehabilitation process. The person prohibited since birth from the

development of a full range of functional capacities presents a special challenge, different from that of one who had no significant problems prior to injury.

A history of substance abuse or psychiatric disability also may compromise prospects for successful vocational rehabilitation. Pre-injury drug abuse and alcoholism address a person's style of social adjustment. The mere suggestion of this predilection should alert the counselor to the fact that the potential for this behavior will have to be closely monitored throughout the VR process.

## Pre-Injury Education

Level of pre-injury educational attainment must be obtained and, when possible, the quality of educational performance. Any indication of a learning disability that interfered with the normal progression of educational achievement should be noted. The presence of a learning disability may complicate the VR process.

Clients with advanced academic or professional degrees will often possess a greater range of vocational options. Since individuals with brain injuries frequently exhibit problems with recent memory, the length of time that has passed since the degree was obtained and the amount of time spent in applying what was learned may be very relevant. Most people retain memory for a repertoire of over learned skills developed before the injury.

## Pre-Injury Work History

In compiling a pre-injury work history, the counselor should note the skills that were demanded in pre-injury occupations. These skills, often retained, suggest further areas for vocational exploration. The counselor should also look to the job training experiences as well as formal training required for pre-injury work. Retrievable skills from such training may exist and may suggest further areas for vocational rehabilitation.

## Course of Rehabilitation/Reports

With awareness that the course of rehabilitation is highly individualized and dependent upon a range of variables, the VR counselor should gather all available records from the various reporting disciplines. In most cases, this means nursing, physical therapy, occupational therapy, psychology and neuropsychology, speech and language service, social services and recreational therapy. These reports typically document functional skills across a gamut of community and work-related domains. When it is determined that the client has the appropriate degree of readiness to begin, the counselor, in consultation with a neuropsychologist if possible, should design the individualized vocational rehabilitation plan.

Some individuals may never have participated in conventional rehabilitation programs prior to the VR interview. If this is the case, the only means of evaluating the current status of neurological and physical improvements is to acquire the most recent reports of the medical

professionals who cared for them. The counselor's primary concern in reviewing these records should be the stability of gains made. The stability of improvement, both neurologically and physically, is a determining factor in judging the timeliness of vocational intervention.

## Referral for Pre-Vocationally Relevant Services

When written and orally delivered reports as well as observation made during the course of a personal interview do not indicate readiness to engage in the VR process, the VR counselor should have the option of referring the client for further services that would enhance vocational readiness. These services might include therapies in any of the rehabilitation disciplines, programs that would enhance community independence, volunteering experiences, or alternate choices as necessary.

The type of program or service to which the client is being referred should be at the discretion of the vocational counselor who has made the determination that the client is not ready. For example, the client with problems in attention may profit from a period of cognitive remediation designed to ameliorate this specific deficit. Efforts made to engage people with brain injuries in the VR process before they are ready are never cost effective and may serve to discourage the client unnecessarily.

## Working with the Vocational Rehabilitation Client

In order for a client with brain injury to get the most benefit from the VR process, the counselor may need to provide accommodations for some of the cognitive and psychosocial challenges faced by the client. A point to remember is that the client's attention span is short and they may have limited memory. Their processing is delayed. There a rule of five to follow: have your sentences be no longer than five words, pause for five seconds between each sentence, and have the list be no longer than five sentences. The following issues and strategies may assist the client in getting the most out of the services offered.

### Issue: Difficulty remembering information

A client may have difficulty remembering tasks from day to day or instructions provided by the VR counselor. He/she may also have difficulty remembering new information, which impacts learning. He/she might forget scheduled interviews or follow-up appointments with the VR staff.

#### **Strategies:**

- Provide written information whenever possible.
- Encourage the client to write down information in a "vocational rehabilitation notebook".
- Remind the client to refer to the notebook often.



- Encourage the use of a day planner or calendar for recording appointment dates and tasks to be performed.
- Encourage the client to have a family member or friend provide a reminder about appointments.
- Call the client on the morning of a scheduled appointment.

### **Issue: Difficulty focusing and paying attention**

A VR agency or program is a busy place with lots of distractions. It is easy for a client with a brain injury to have difficulty paying attention in this kind of environment. The client may appear uninterested, but in fact is having problems following conversations.

#### **Strategies:**

- Work in an area with limited distractions.
- Be aware of surrounding noises that may interfere with concentration, such as radios, other people talking, etc. Try to limit these noises as much as possible.
- Ask the client to repeat information that was just heard to make sure the conversation or instructions were understood.
- Be sure to have the client write instructions down in a notebook or journal.
- Be sure to have the client's attention before starting a conversation.
- Refocus the client's attention if he/she becomes distracted. (For example, "John, let me repeat that point again. It's important.")
- Reschedule the session for another time; perhaps early in the day when the client has more energy.
- Ask the client if there is some way you can help. For example, "John, you appear distracted. Is there something I can do to help?"

### **Issue: Difficulty with initiation**

As a result of a brain injury, a client may have difficulty beginning activities. It may appear that he/she is not interested or motivated, but instead he/she needs assistance to begin working on tasks.

#### **Strategies:**

- Establish a structured routine of daily activities.

- Break down activities into simpler steps. Encourage the client to complete one task at a time before beginning the next.
- Make a checklist of activities that need to be completed each day. Check off each task that is completed.
- Establish time frames in which each task should be completed.
- Use a clock or watch that can be programmed to ring or vibrate to indicate the start of a task.
- Provide reminders and encouragement.

### **Issue: Difficulty with organization and planning**

In order to be successful in the VR process, a client must be able to successfully carry out the plan. This may be difficult for a person with a brain injury who has problems with organization and planning.

#### **Strategies:**

- Develop a written plan and include the client in the development of the plan.
- Break down the plan into simpler steps, with clear and detailed instructions of how to complete each step.
- Assign different activities for each day of the week. For example, on Sunday look in the want ads and circle job leads, on Monday make phone calls, on Tuesday send out resumes, etc.
- Develop a checklist to ensure that each step of the plan gets accomplished.
- Review the plan often to make sure that it is understood and that it is working.
- Offer praise for a job well done.

### **Issue: Difficulty with decision making.**

Following a brain injury, a client may have difficulty making decisions. Identifying which job to pursue, deciding what to wear for an interview, or answering interviewer's questions may be difficult. A client may act impulsively and not think through the relevant options.

#### **Strategies:**

- Help the client identify what the options are to a particular problem.
- Discuss with the client the advantages and disadvantages of each option.

- Have the client write down (or assist him in writing) the possible options, along with the pros and cons to each.
- Encourage the client to “stop and think” before making a decision.

### **Issue: Difficulty in social situations**

Getting along with coworkers and bosses is as important to keeping a job as being able to perform the job tasks. After a brain injury, clients may not have a clear understanding of the impact their behavior has on others. They may have difficulty engaging in conversation and may not always be sensitive to social boundaries. This may be a roadblock to doing well on the job.

#### **Strategies:**

- Provide clear expectations for appropriate behaviors at the VR program. Provide positive feedback for expected behavior.
- Encourage the client to consider the consequences of his/her actions.
- If undesired behavior occurs, discuss the issue privately, in a calm, reassuring manner. Review expected behaviors.
- Before an interview or appointment, discuss with the client the types of questions that can be expected and figure out with the client the best answers to these questions. Similarly, prepare with the client questions that she wants to ask.
- Role-play the interview situation with the client and give honest feedback. Rehearse until the client appears comfortable answering and asking a variety of questions.

### **Issue: Difficulty controlling emotions**

The VR process can be particularly stressful for a person with a brain injury. Accepting one’s limitations, understanding one’s strengths, and developing new vocational goals can be overwhelming. In addition, attending new programs, meeting new people, and learning new routines is a challenge. As a result of the brain injury, a person may have difficulty controlling emotions in these stressful situations.

#### **Strategies:**

- Expect the unexpected. Always be prepared to deal with a situation, even if it is at an inopportune time.
- Try to remain calm. By modeling calm behavior, it can help the client modify his/her behavior and might prevent the situation from escalating.

- Take the person to a quiet, more private, area. Give him/her a few minutes to calm down and regain control.
- Redirect the client to a different topic or activity.
- Understand that the effects of brain injury may prevent the client from feeling guilt or empathy.
- Provide constructive feedback after a person has regained control.
- Use humor in a positive, supportive way.

### Issue: Difficulty with self-awareness

A person with a brain injury may have difficulty accurately perceiving his/her strengths and weaknesses, particularly those areas that have changed since the brain injury.

#### Strategies:

- Anticipate possibly skewed self-perceptions.
- Ask the client to discuss her strengths and weaknesses with people who know his/her (family members, friends and rehabilitation professionals).
- If the client lost his/her job after the brain injury, discuss with her the problems that led up to the dismissal. If the client is unsure, ask the client if he/she would be comfortable returning to the previous employer and discussing the issues.
- As the client gains more insight into her strengths and weaknesses, discuss this information with the client. Encourage the client to keep a journal of these insights.
- Provide positive, constructive feedback.

## V. EMPLOYMENT OPTIONS

### Traditional Vocational Rehabilitation Setting

The traditional VR service delivery model for the majority of clients consists of vocational evaluation, vocational training and job placement, in that order. This model assumes that the client is capable of independently transferring what has been learned from one setting to another, e.g., transferring skills learned from the rehabilitation facility or training program to the job. However, the deficits of many clients with brain injury include impaired memory, slow

information-processing skills, and impaired ability to generalize newly learned information - the very skills necessary to complete a traditional vocational rehabilitation program successfully. Clients with brain injury often are better served by a Place – Train model, as opposed to the traditional Train – Place vocational model.

## Limitations of Traditional Vocational Evaluation

Traditional vocational evaluation systems have been ill equipped to meet the special needs of people with brain injuries. Standardized tests of intelligence, personality, aptitude, interest and achievement typically provide scores that indicate how an individual compares with “norm” groups. People with brain injuries are often capable of displaying areas or “pockets” of high achievement on those structured tests of discrete skills. The results yielded by many of these tests are predicated on old learning, i.e., a well-rehearsed repertoire of pre-injury skills. An excellent example of a score that can misrepresent the potential of a client is verbal IQ, derived from intact material learned before the injury. Unfortunately, these traditional tools and the evaluators who use them assume a systemic integrity, and people with brain injuries do not conform to the normal populations upon which these tests were standardized. The component that prevents these instruments from being valid predictors of success is the inability of those with brain injuries to integrate, apply and generalize many of the skills that are tested. Most standardized examinations do not address (other than the administrator’s observations) or make allowances for the problem areas that pose the major barriers to social, educational and vocational reintegration. That is, they provide quantifiable data but make no provision for including in reports of scores an assessment of the quality of performance.

Traditional VR systems, with a growing awareness that individuals with brain injuries are unable to respond to these tests in ways that accurately translate to functional skills, are now recognizing the need for alternative methods of testing and evaluation.

Standardized vocational testing measures are useful if they are carefully adapted to address the skill capacities of clients with brain injuries. Examining test results while recognizing how the client completes the test and what cognitive strengths and weaknesses are evident can provide invaluable information about learning and performance issues. When administered creatively by a counselor familiar with functional behaviors commonly found in this population, the results can be used to determine appropriate types of entry-level job placements.

The introduction of traditional hands-on, situational assessments (a short term monitoring of work performance in an actual setting as opposed to a standardized testing environment) as a means of measuring vocational potential has met with limited success in this population when applied in the manner used by most vocational work evaluation programs. It is limited because most clients with brain injuries are ill equipped to engage in on-the-job work situations without some preparatory guidance.

Most clients retain a picture of themselves functioning at pre-injury levels. It is unrealistic to anticipate wholehearted participation in a situational assessment, which usually begins at entry level, by clients who may cling to a view of themselves as functioning at their capacity before the injury. Such participation is possible only following a personal adjustment to disability; an adjustment that includes a beginning awareness and acknowledgement of injury-imposed functional limitations. Developing this essential basic degree of awareness must be accomplished before engaging the client with a brain injury in any vocational evaluation process.

Once the individual has a sense of awareness of his/her functional limitations and a willingness to accommodate these limitations in a work setting, a more realistic evaluation can be conducted. Implementation of a skillfully designed situational assessment followed by a preparatory period to help the individual become aware of limitations can provide the VR counselor with an excellent opportunity to observe the qualitative aspects of work behaviors. It is the vehicle that can allow the VR counselor to design compensatory measures, provide structure and support systems, test autonomy, gently confront in areas that require modification, and, if provided when the client is ready, can be the optimal guide toward vocational reintegration.

## Graduated Placements

The demands of a competitive job are significantly greater than those found in most rehabilitation facilities and are almost a quantum leap for many clients with a brain injury. However, many clients can make the transition if it occurs slowly. For example, one method might begin by placing the client in a volunteer position on a part-time basis, then gradually transferring him/her to a part time job, and ultimately to a full-time job, all under the direction of a community re-entry specialist. Any number of variations of this technique is possible. The key is to introduce new demands in small enough increments for the client to handle. Another advantage of graduated placements is to increase a client's awareness that additional skills are needed before full-time competitive employment can be seriously considered. Professionals have found that clients who work on a trial basis in the community often return with new awareness of the objectives of the rehabilitation program. They become aware that treatment suggestions made by the rehabilitation professional may indeed be necessary for successful vocational functioning. A temporary placement can be used to improve appropriate work behaviors. Frequently, clients will demonstrate marketable vocational skills but will display behaviors that would result in job loss. For these clients, a volunteer work site with "real-world" supervisors has proven beneficial. Often the client more readily accepts supervisory criticism from someone outside the rehabilitation facility.

## Supported Employment

Supported employment is a special type of placement that allows for continued treatment throughout the VR process and has proven beneficial for clients with brain injury. It is defined as competitive work in an integrated work setting with ongoing support services. The advantages of using a supported employment approach with clients with a brain injury are many:

- It restores the client's identity as a worker and provides financial compensation for real work.
- The "place and train" approach, as opposed to the more traditional "train and place" VR model, allows for immediate reentry into a real work setting and is the best way for the client with a brain injury to learn work skills and appropriate work behaviors.
- It enables VR staff to assess and remediate cognitive and behavioral deficits in the real work setting.
- It allows VR staff to develop compensatory strategies for the specific job tasks that are assigned.
- It allows on-site advocacy and intervention with the client's supervisor when problems occur.

Many people with brain injury need the long term, ongoing support that supported employment provides to be successful on the job. When starting a new job, the client needs assistance learning job tasks, developing compensatory strategies, and adjusting to the new routine. As time goes on, job responsibilities, supervisors and/or coworkers change. The person with a brain injury may have significant difficulty adjusting to the new situation or learning new routines. Without periodic oversight from the supported employment team, the person may be terminated before realizing that a problem exists.

## Use of a Job Coach

A principle underlying theme of supported employment is to provide ongoing support at the job site to help clients function in an integrated work setting. The person who provides this support is often called a "job coach" or "job coordinator." This individual provides ongoing support as long as needed. As the client learns the job, the coach will spend less time in on-the-job support. Ongoing support may include retraining, job modifications and meetings with supervisors and co-workers.

A job coach is often vital to the successful placement of clients with brain injuries. He/she must be aware of the strengths and weaknesses of the client and what, if any, compensatory techniques are used by the client to overcome cognitive deficits. The job coach may need to develop specific strategies at the job site to assist the client in performing the essential components of the job and monitoring work behaviors. He/she must also be able to intervene if problems arise at the job site.

It is essential the job coach function as an educator of the employer and other employees at the site. One cannot emphasize too strongly the need to educate employers about brain injury in general and about the specialized needs of the individual client in particular. For example, the

employer has to be aware of the strengths and needs of the client to avoid unrealistic expectations or requiring more than the client's capabilities will allow.

The job coach is also in an ideal position to set up "natural supports" at the job site to increase the client's chance for success. The job coach, with the approval of the client, can enlist the help of willing coworkers and managers to provide support to the client as needed. This involves educating the selected coworker and/or manager about the types of compensatory strategies that can help the client best perform his job, and teaching them how to cue the client to implement these strategies as needed. These individuals should also know to contact the job coach with any questions or concerns, particularly if they see a decline in the client's job performance.

## The Role of the Job Coach

### 1. Establish trust

Establish relationships with the client, the family, and the employer that are based on trust and honesty.

### 2. Respect others

Respect the values and interests of the client, the family, and the employer. Always maintain a respectful demeanor.

### 3. Communicate

Constant communication, both oral and written, with the client, family and employer is key to success. Don't take anything for granted – write everything down and share the information with all parties.

### 4. Evaluate skills and behaviors

Perform situational assessments in a variety of environments and using a variety of tasks to understand the client's strengths and weaknesses. Evaluate what type of compensatory strategies work best.

### 5. Make good job matches

Find a job that meets the interests, abilities, and tolerance level of the client.

### 6. Do a thorough job analysis

Learn everything about the demands of the jobs before placement. Review your findings with the employer to ensure that the job tasks are understood. Provide everything to the employer in writing.



#### 7. Establish a structured work day and dependable routine

Unplanned changes in job duties can prove disastrous for a person with a brain injury. Educate employers about the need to make changes slowly and in consultation with the job coach.

#### 8. Develop compensatory strategies

Develop compensatory strategies that work for the client in performing the job tasks. As the client becomes familiar with the job or as job tasks change, make adjustments to the strategies.

#### 9. Be watchful of behavioral issues

Inappropriate behaviors can cause major problems on the job. Use a collaborative approach to identify behaviors that need to be modified and enlist the cooperation of the client to make necessary changes.

#### 10. Monitor stamina

Fatigue can interfere with job performance, memory and behaviors, especially on a new job. Work with the employer to adjust work schedules as needed.

#### 11. Provide long term supports

Long term follow along services for clients with brain injury are essential to monitor performance level and provide intervention as needed. Encourage the client and the employer to contact the job coach at the first sign of a problem.

## Job Placement Considerations

The following steps should be taken by the VR counselor prior to placing a client with a brain injury on a work site to avoid an inappropriate match and a situation that potentially sets the client up for failure.

### Selectivity

The placement must be consistent with the client's cognitive, physical, and psychosocial strengths and weaknesses. Moreover, the client's interests, abilities and aptitudes must also be considered.

### Job Analysis

There are a variety of techniques designed to organize and evaluate information relevant to the performance of a job. For the client with a brain injury, that analysis must contain information

with respect to the physical, emotional, and cognitive elements necessary to perform the job at the observed site. The demands of the job can then be compared with the strengths and weaknesses of the client prior to placement.

## Placement with Education and Training

The employer and work-site supervisors must be fully aware of a client's strengths and weaknesses. An informed supervisor is less likely to misunderstand behaviors that on the surface may appear to be willful and deliberate. For example, a flat affect due to neurological factors may be misinterpreted as a lack of motivation. Equally important is educating the employer that satisfactory performance on one type of job does not necessarily imply that the client should be promoted to higher-level jobs. Again, the new job should be analyzed to determine whether the client is capable of performing its individual components.

## On-going Supports

Effective placement assumes the availability of an on-going support system. Long term coordination between the VR team, the employer and the client is essential to ensure that necessary supports for the client are in place.

## Job Accommodations

The key to a successful job placement is the provision of necessary job accommodations and the development of compensatory strategies at the time the placement is made. Each client with a brain injury is unique and will require strategies that address the specific strengths and limitations that he/she presents. Whenever possible, consult with the rehabilitation team and the neuropsychologist to assist in establishing the best possible accommodations. Below is a list of accommodations that can serve as a starting point in considering what a client might need.

### Memory:

- Use notebooks, calendars, or sticky notes to record information for easy retrieval.
- Provide written as well as verbal instructions.
- Allow additional training time.
- Provide written checklists.
- Provide environmental cues for locations of items, such as labels, color coding, or bulletin boards.
- Post instructions over all frequently used equipment.
- Tape record meetings, conversations, and instructions.
- Use electronic organizers (PDAs, handheld computers, voice organizers, watches, and cell phones). An online Catalog of Portable Electronic Devices for Memory and Organization can be found on the Brain Injury Association of America's website at [www.biausa.org/](http://www.biausa.org/)

pda.html. The best results come from using the iTouch which uses pictures rather than more complex instructions that frequently are not remembered causing frustration.

#### Other memory strategies:

- Use mnemonic techniques (an organizational structure on verbal information to cue recall of several elements.)

Example: A clerical assistant recalls her sequence of job duties by remembering the word – CODE.

C = clock in

O = open mail

D = deliver mail

E = enter data

- Use imagery techniques (the process of using mental pictures/ images for information to be recalled.)

Example: A clerical assistant visualizes herself walking a specific route to assist in remembering the route for delivering the mail.

- Use number grouping (recalling numbers by reorganizing them into fewer elements.)

Example: A clerk working at an auto supply company needs to remember to pull items based on a four-digit code. He looks at a coding book and sees four numbers such as 9, 5, 3, 2. Instead of remembering the numbers individually, he recalls the information as 95 and 32.

- Use of verbal rehearsal (repeating out loud key information to help recalling the information.)

Example: A data entry operator comes to work and sets up her work station by saying aloud: Turn on computer. Turn on monitor. Enter my password. Hit enter 3 times, etc.

#### Maintaining Concentration:

- Reduce distractions in work areas (white noise sound machines or listening to instrumental music may be helpful).
- Provide space enclosures or a private office.

- Reduce clutter in the work environment.
- Simplify large assignments by breaking them into smaller tasks.
- Change lighting in work area (either more or less light depending on needs).
- Arrange for uninterrupted work time.

#### Organization:

- Make daily to-do lists and check off items as completed.
- Use a calendar system to mark meetings and task deadlines.
- Use electronic organizers (PDAs, handheld computers, voice organizers, watches, and cell phones). An online Catalog of Portable Electronic Devices for Memory and Organization can be found on the Brain Injury Association of America's website: [www.biausa.org/pda.html](http://www.biausa.org/pda.html).
- Establish an effective filing system.
- Plan routine meetings with the supervisor, review work progress.

#### Problem Solving:

- Provide written schematics of problem solving techniques (i.e. flow charts).
- Restructure the job to decrease the amount of problem solving required.
- Assign a supervisor or co-worker who is available to answer questions and review work progress.
- Allow extra time to accomplish job tasks.

#### Fatigue/Stamina:

- Schedule periodic rest breaks.
- Allow a flexible work schedule and use of leave time.
- Allow work from home.
- Reduce workplace stress, reduce physical exertion.

#### Stress:

- Provide sensitivity training to coworkers and supervisors.
- Allow breaks to use stress management techniques.
- Provide praise and encouragement.
- Refer to counseling or available employee assistance programs.
- Evaluate whether job demands can be changed to reduce stress level.

#### Vision Impairment:

- Provide written information in large print.
- Change lighting and increase natural lighting whenever possible.
- Provide glare guard for computer monitors.
- Consult with the rehabilitation team or a vision specialist for specific recommendations.

#### Working Effectively with Supervisors:

- Provide written job descriptions with clearly defined responsibilities that are reviewed frequently.
- Review job performance frequently.
- Provide positive feedback and praise for good work.
- Clearly define in writing the consequences of poor job performance or inappropriate work behaviors.

#### Placement Redefined

Full-time, competitive employment may be the ideal objective, but the reality is that many clients with a brain injury are incapable of achieving it. Therefore, a broader definition of placement is helpful when addressing the needs of this population. Job placement can be redefined as community re-entry, including full-time or part-time competitive employment, supported employment, and volunteer employment. Integration of the client into the community and the provision of supportive services are ongoing needs throughout the duration of the client's placement. Job placement cannot be a final, non-supported step for this population. Specialized treatment throughout the entire rehabilitation process, including long-term, follow-along services after placement, must be made available to clients who have sustained brain injuries.

## VI. INVOLVING THE FAMILY IN THE VOCATIONAL PROCESS

While family involvement in the vocational process is an important factor, it must be pointed out that not all families produce a positive influence in the vocational process of their loved one. Families may push for unrealistic vocational goals or be unable to carry out a plan of action to produce the best vocational outcome for the individual. Family dynamics as well as the family's value system play important roles in determining the response to projected vocational goals.

### Family Expectations and Values

The answer to the question, "What are your expectations?" will often reveal a great deal of information about the family system: their needs, values, adjustment to and accommodation of the family member with the brain injury. Often an individual's identity within his/her community and family is directly related to employment. Many people form assumptions about the level of education, income, living environment and lifestyle of an individual based upon that person's type of employment. This attitude reflects the importance work holds for people in terms of addressing strong, deeply felt needs and values and eliciting psychological protective mechanisms. It follows that work serves to justify one's value and identify one's worth in society. While the most obvious purpose of working is providing financial support, most people do not work for financial support alone, nor is this necessarily the major reason for choice of work. Rather, most people choose certain jobs because they fulfill certain needs and address values that the individual and his/her family have developed over a lifetime. It is important to consider the roles provided by families in the process of adjustment to work. At one end of the spectrum are families determined to be productive and self-supporting (described as possessing a work ethic). At the other end are families with little or no investment in work as a way of life. These latter families may subtly (or obviously) transfer their attitude toward work as non-essential and valueless to the member of their family that has a brain injury. Certainly an individual who comes from a family with firmly established work ethics may be a better vocational rehabilitation candidate than the one whose family is not motivated to work. While professionals should not judge the value systems of individual families, including those who place other rewards above the value of conventional work, it is of pragmatic importance to recognize the influence of such value systems on a person with a brain injury and adjust vocational rehabilitation accordingly.

### Effects on Family Structure

Families of individuals with brain injuries must realize the inescapable effects on and changes within the family structure. If the person with a brain injury is the income provider, there will likely be changes in marriage/family relationships, income, economic stability and social status. One or more family members may be forced to assume the role of provider. It is important to remember that sudden, unexpected shifts in roles, goals and responsibilities after traumatic brain injury affect all family members.

## Denial

During the vocational rehabilitation process, many families appear to be “stuck” in a phase of denial. If the family has extreme difficulty accepting the reality of the reduced vocational reintegration plans, this message is often passed on to the person with the brain injury. This may hamper the beginning of the vocational process at the entry level. People with brain injuries remember clearly how they performed prior to their injury and are often reluctant to take on a task that is viewed as boring or non-challenging. Families will often support this attitude and at the same time reinforce idealized vocational goals.

## Bargaining and Splintered Skills

At the stage of adjustment when the individual is making substantial physical improvement, he/she often feels ready to return to his/her previous life style, including work. It is frequently observed that the individual at this point often disregards or minimizes the impairment of skills such as problem solving, reasoning, judgment and organization, all of which are critical for vocational adaptation and community re-entry. While the person may recognize some limitations, he/she feels deserving of a reward for achievement in physical rehabilitation.

Frequently, family members who desire to see the individual function at a higher level will support this type of thinking. This is the point at which “bargaining” takes place, i.e., when the client and the vocational counselor must reach an agreement about the skills that can be realistically performed by the individual. Often the family does not see that the skills of its family member with a brain injury are “splintered.” The previously interconnected skills are no longer coordinated and work in isolation rather than the complete set of skills they possessed prior to the brain injury.

Vocational counselors face the dilemma that jobs relying on splintered skills do not exist and that there are few, if any, employers who are willing to redesign jobs that rely on one or two limited skills. Even if the vocational counselor located a perfect job, the individual would still need problem solving, communication and interpersonal skills in order to get along with co-workers and supervisors.

Placing a client in a job for which he/she does not possess the requisite skills may cause embarrassment or ridicule at the job site or eventually cause the person to be ostracized. The individual risks a loss of self-esteem, which may take time to rebuild. Also, certain jobs could expose the individual to harm. In a dangerous environment, cognitive limitations, especially a vulnerability to distraction or reduced safety judgment, could result in an accident or injury.

Another detrimental result of placing an individual on a job when he/she possess only splintered skills is the possibility of a critical mistake costing the employer much time, effort and/or money.

This would also reflect poorly on the VR program or professional. Moreover, a valuable employment resource could be lost.

VR counselors must remain neutral and objective to manage effectively the delicate situations of families' attempted bargaining. The first step in the right direction is to help the family gain an appropriate perspective on the progress that has been made. The second step might be to encourage them to list the pros and cons of continued rehabilitation or attempting a job placement. Through discussion, the counselor can facilitate movement toward acceptance of the situation while maintaining an objective and supportive role. Identifying jobs that require the skills the individual currently possesses can be a group effort. The individual, the family members and the rest of the rehabilitation team can help the counselor. The VR professional may also be preparing a list of jobs in which the individual might be successful with an expanded repertoire of skills. A list of potential job options can help all parties refocus and remain hopeful that additional job options may be appropriate in the future. Setting up short-term and long-term vocational goals can help both the client and the family establish an appropriate return to work plan while still holding onto the hope of continued improvement in abilities.

## Depression

People with brain injury often experience a drop in self-esteem stemming from the loss of a career or employment, a loss of social identity generally defined by one's work, and guilt created by reduced earning capacity and becoming a financial burden on the family. Family members as well as the client may become depressed as they each anticipate a loss of independence and individually realize that their own future goals and plans will have to be adjusted to accommodate the needs of the family member with a brain injury. Vocational counselors need to use both supportive and exploratory counseling approaches with the depressed client and his/her family members. Counselors should help these individuals reexamine and challenge their long-held ideas about personal aspirations and goals they have established to feel worthwhile. Counselors may also need to explore the individual's pre-injury feelings and attitudes toward persons with a disability. Frequently, these feelings are based on stereotypical ideas such as equating disability with helplessness and the sick/patient identity. Helping both the individual and family members to identify their feelings of losing control can diminish depressive reactions, and support the development of worthwhile, contributing roles in the home and community.

Above all, vocational counselors will need to provide active listening support and validation as the client and family members express their sadness about their losses.

## Adjustment

The vocational process can be viewed and used by professionals as both the culmination of a successful rehabilitation program and a psychotherapeutic tool to facilitate movement through stages of emotional adjustment. The skillful use of vocational tools and situations in the rehabilitation process should facilitate emotional adjustments to limitations resulting from brain



injury while encouraging the use of practical accommodation strategies. To successfully assist individuals with brain injury in becoming gainfully employed, vocational counselors need both to focus on the desired outcome and also to become knowledgeable and sensitive to the adjustment process that must first occur. The VR counselor will encounter many different types of family involvement through the vocational process. Different levels of family involvement may include the involved and supportive family; the involved and unsupportive family; or the uninvolved and unsupportive family. It is important for the vocational counselor to consider, understand and include all aspects of the family during the vocational process. Professionals need to be sensitive and skilled in order to design interventions that are helpful, timely and culturally and environmentally appropriate to the family and the individual. Success in the vocational rehabilitation process is often commensurate with the degree to which professionals successfully involve family members as a needed and valued part of this process.

## VII. CONCLUSION

Working with a client with a brain injury can be extremely challenging yet rewarding for the vocational rehabilitation professional. The counselor must understand who the client was prior to injury, recognize the physical, emotional, and psychosocial challenges the client faces after injury, and establish a realistic vocational plan. This takes time, knowledge of brain injury, and experience. In addition to working with the client, the VR counselor must be sensitive to the needs of the family and the employer in carrying out the vocational plan. Finally, the skilled VR professional must recognize that vocational rehabilitation for the person with brain injury is a slow and oftentimes complicated process, requiring patience, creativity and thoughtfulness.

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