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ABSTRACT

This paper examines issues in the postsecondary education of students with brain injuries. It defines the categories of brain injury and describes the impact on an individual's ability to learn and to live independently. Appropriate learning tools and strategies to help these students succeed in postsecondary education are discussed. The paper also offers specific suggestions to students, parents, instructors, academic advisors, therapists, and Disability Support Services administrators. Case studies of two specific students with brain injuries illustrate common pitfalls and obstacles encountered when adjusting to and developing beyond the effects of such injury. Individual sections address: types and causes of brain injury, effects of a brain injury, cognitive impairments, physical and sensory impairments, psychosocial impairments, impact on the learning process, financial impact, comparisons with other disability categories, and education and related services for students with brain injuries. A resource list of organizations, Web sites, and organizations completes the paper. (DB)

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THE STUDENT WITH A BRAIN INJURY: ACHIEVING GOALS FOR HIGHER EDUCATION

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The Student with a Brain Injury: Achieving Goals for Higher Education

Every 15 seconds, someone in the United States sustains a brain injury. Nearly 5.3 million Americans currently live with disabilities resulting from such injuries, the highest incidence occurring among youth and young adults between the ages of 15 and 24. Because individuals within this age group typically are preparing for postsecondary education or are of traditional college age, students with brain injuries are a growing presence on college and university campuses and within other postsecondary programs.

For students with brain injuries who are prepared to pursue postsecondary education, higher and continuing education provide wonderful opportunities for recovery and growth. Their daily challenges provide structure and cognitive retraining that can lead to maximum independence, appropriate and fulfilling employment, and improved self-esteem. Continuing education and participation in higher education provide opportunities for mental stimulation and age-appropriate socialization, factors that promote neurological and psychological recovery. With proper and continuous planning and support, and with determination on the part of the student, individuals with brain injuries can achieve their higher education goals.

Brain injuries are complex–each is unique, and their effects on an individual frequently change over time. Thus, postsecondary education following a brain injury presents challenges to students, their families, faculty, and counselors. This paper addresses these challenges by defining the categories of brain injury and describing their impact on an individual's ability to learn and to live independently. The paper describes learning tools and strategies to help students with brain injuries succeed in whatever postsecondary program they choose. This paper also offers specific suggestions for students, parents and other family members, instructors, academic advisors, therapists, and Disability Support Services (DSS) administrators. Case studies of two particular students with brain injuries illustrate common pitfalls and obstacles encountered when adjusting to and developing beyond the effects of injury. A resource list of publications and organizations completes the paper.

Types and Causes of Brain Injury

Vehicle crashes are the leading cause of brain injury, falls are the second leading cause, and violence-related brain injuries are a growing concern. Males are twice as likely to sustain brain injuries as females, and a person who sustains one brain injury is three times more likely to sustain a second injury and eight times more likely to sustain a third injury. (This increasing risk factor often is due to compromised cognitive function, impaired judgment, fatigue, and other physical disabilities that accompany brain injuries.)

Fifty thousand fatal brain injuries and one million nonfatal brain injuries are sustained each year; many of these are preventable. Drug and alcohol use are directly involved in approximately half of all vehicle-related accidents resulting in brain injuries. Increased seat belt and helmet use (while cycling, roller blading, rock climbing, and so forth) could drastically reduce the number of fatalities and severity of disabilities resulting from brain injuries.

Medical professionals frequently categorize brain injuries as **mild**, **moderate**, or **severe** based on the length of time an individual is unconscious and the severity of tissue damage to the brain. However, these medical categories do not necessarily reflect the **severity of impact** on that person's life. For example, even though the injury does not result in coma or lengthy hospitalization, a mild or moderate brain injury sometimes may create severe and long-lasting effects such as visual perceptual difficulties or chronic fatigue. Mild brain injuries may be deemed to require no rehabilitation at the time of the injury, and doctors may advise the patient that she is "just fine" when, in fact, neurological and behavior problems persist or develop. Visual or memory impairments, fatigue, confusion, headaches, and other effects of mild or moderate brain injuries may be misdiagnosed or remain untreated. This can cause a person who has sustained a mild brain injury to think he is "going crazy" or to be perceived as lazy or malingering, when in fact he is experiencing unexpected or delayed neurological problems.

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Researchers, policy makers, and social and vocational service providers define brain injuries in terms of their impact on a person's ability to function, rather than gauging the severity of injury to the brain. Within these professions, definitions of brain injuries also distinguish between those resulting from external versus internal causes.

Traumatic brain injury (TBI) is a term commonly used to describe injuries from external causes. TBIs include open head injuries (for example, open wounds, such as from a gunshot) and closed head injuries (for example, wounds without visible signs, such as those resulting from a blow to the head or from a fall). The Brain Injury Association (BIA), a leading national advocacy group for people with brain injuries, defines TBI as

> an insult to the brain, not of degenerative or congenital nature, caused by an external physical force that may produce a diminished or altered state of consciousness, and which results in an impairment of cognitive abilities or physical functioning. It can also result in the disturbance of behavioral or emotional functioning.

Acquired brain injury (ABI) is more broadly defined and includes brain injuries from internal causes. According to the BIA, acquired brain injury is an "injury to the brain which is not hereditary, not congenital (present at birth), or not degenerative (progressively worsening)." The BIA's definition of ABI encompasses brain injuries from stroke, anoxia (lack of oxygen, such as that resulting from a diving accident), or neurological disease, such as encephalitis, as well as those caused by external trauma. *Note: Unless otherwise indicated, the broader definition of ABI is implied throughout this paper.*

Though these varying definitions may appear confusing, their distinctions are important to understand. Elementary and secondary school officials often adhere to the definition of TBI rather than ABI when identifying students for special education and related services. Some state and local school districts follow an even more detailed definition of TBI, as written in the Individuals with Disabilities Education Act (IDEA) of 1990, when determining a student's eligibility for services:

> An acquired injury to the brain caused by an external physical force, resulting in total or partial functional disability or psychosocial impairment, or both, that adversely affects a child's educational performance. The term is applied to open or closed head injuries resulting in impairments in one or more areas such as cognition; language; memory; attention; reasoning; abstract thinking; judgment; problem-solving; sensory, perceptual, and motor abilities; psychosocial behavior; physical functions; information processing; and speech. The term does not apply to brain injuries that are congenital or degenerative, or brain injuries induced by birth trauma. (*Federal Register*, March 12, 1999, p. 12422.)

According to this federal definition, a student who suffered anoxia, for example, would not be identified as having a brain injury. Rather, this definition requires that the injury be caused by an external force–even though the neurological symptoms and recovery process of internally caused brain injuries may be the same or similar to those resulting from TBI.

Elementary and secondary school officials have identified many students with brain injuries as other health impaired, learning disabled (LD), or mentally retarded (MR), or they have grouped them under some other placement and reporting category, even though their disabilities are the direct result of brain injury. For example, a third-grade student who sustains a brain injury in a car accident is identified as MR. Upon graduating from high school, she enters a vocational program that is not appropriate to her particular needs or cognitive abilities, or, based on the MR label, she is advised against pursuing higher education of any kind. Erroneous reporting and placement categories, and the widely held fallacy that people with brain injuries lack intelligence, can follow a student into postsecondary education and complicate access to appropriate accommodations and services.

The Effects of a Brain Injury

An injury to the brain disrupts the injured person's entire universe. Each brain injury is unique, and the effect of injury is as varied as the brain's many functions. Resulting damage may occur in any aspect of brain function: cognitive, physical, or sensory. Brain injury also may affect psychosocial abilities, which include observing appropriate social boundaries when meeting new people or acting in a manner that is age appropriate rather than childlike. Although aspects of a student's condition may continuously improve, many disabilities produced by a brain injury are permanent.

The brain's complexity, and its relationship to everything that a person does and is, cannot be overstated. Brain function is not compartmentalized, with different areas controlling discrete functions, as was once believed. Rather, brain function is highly interconnected: Damage to the brain can sever or disrupt established pathways, requiring time to heal and new connections to form.

Brain injuries resulting in coma (a condition of suspended consciousness that may last from a single day to months or even years) are uniquely challenging, both physically and emotionally, for the injured person, their family, and friends. The particular experience of loss that family members undergo when a loved one is comatose can further complicate future separations and the coma survivor's strides toward increasing independence.

Even with mild brain injury (as from concussion), persisting problems may result such as headaches, fatigue, fluctuation in cognitive ability, loss of vision or hearing, and perceptual impairments. Moderate-to-severe brain injuries resulting in unconsciousness or coma may require hospitalization and rehabilitation, and many students with brain injuries, whether coming directly from high school or from medical rehabilitation, will likely require assistance with their transition into postsecondary education.

The services of a knowledgeable case manager may facilitate a student's transition from high school or from a medical/rehabilitation setting into higher education. Case managers should be familiar with resources available in the community to brain injury survivors and their families and should remain informed about how to access such resources. Case managers also may coordinate communication between the many players in a brain injury survivor's recovery and higher education, including medical personnel, educational faculty and administrators, and other service providers. However, case managers who operate within a particular medical or rehabilitation facility may serve the recovering person only to the point of discharge or treatment completion, upon which time that person can explore private case management. Any state BIA chapter can provide a list of qualified case managers in a given region of the state.

The main functional disabilities resulting from brain injuries include cognitive, physical, sensory, and psychosocial impairments. Impairments in executive function–such as daily and long-term planning; management of schedule, money, and time; and self-monitoring–frequently are associated with injury to the frontal lobes of the brain. Although many students enter postsecondary education with much to learn about managing multiple time demands, most develop these important skills independently. The student with a brain injury, however, may need extra help to develop time management and other personal management skills, and some may never fully develop them, instead relying on accommodations, strategies, and planning devices.

Cognitive Impairments

Cognitive impairments resulting from a brain injury are the most significant and often the hardest to recognize–a fact that can confound a student's adjustment to postsecondary life and learning. A student with a brain injury may experience some or all of the following cognitive impairments:

- Impaired memory or retrieval of information.
- Impaired comprehension.
- Gaps in prior learning.
- Slow thought processing.
- Reduced attention span.
- Geographic or temporal disorientation.
- Apraxia (total or partial memory loss of how to perform complex muscular movements).
- Difficulty understanding cause and effect.
- Lack of awareness of impairments and needs.
- Inability to prioritize thoughts or determine the main idea.
- Difficulty following a sequence or schedule.
- Misunderstandings or misperceptions of subtle, abstract, conceptual, or complex information.

Cognitive impairments also may lead individuals to exhibit identifiable behavioral problems such as impulsive decision making, missed classes or appointments, misunderstanding of course material or assignments, anger or depression that appears unwarranted or exaggerated, difficulty managing others' frustrations with them (particularly when no visible disabilities are present), and social inappropriateness.

Recovery from brain injury is a long journey. While some impairments gradually may improve over time, they are just as likely to fluctuate from day to day with fatigue, stress, or overstimulation. Constant change in severity and types of impairment are facts of life for the student with a brain injury; but however anticipated they may be, these fluctuations will challenge and occasionally frustrate the student's family, friends, instructors, and advisors.

Physical and Sensory Impairments

Students with brain injuries may experience a host of physical or sensory disabilities, including neurological disabilities resulting directly from injury to the brain and other disabilities only indirectly related. The following physical and sensory problems frequently occur with brain injuries:

- Fatigue or decreased stamina.
- Broken or paralyzed limbs.
- Blindness or visual impairments.
- Hearing loss.
- Cranial-facial injuries.
- Quadriplegia and other mobility impairments.
- Impaired motor skills (delayed reaction times, tremors, and apraxia).

- Chronic pain.
- Slurred speech and other speech impairments.
- Seizures.
- Hormonal changes (for example, temporary or permanent interruption of menstruation).
- Metabolic disturbances.

Whatever the cause and whatever the combination of cognitive, physical, and sensory impairments, cognitive impairments complicate the ability to accommodate physical and sensory impairments. For example, a student learning to wear hearing aids after a TBI (to offset a hearing loss that occurred with the TBI) may experience memory deficits and difficulty learning new concepts, and may therefore be unable to operate and maintain the hearing aids or to develop new speech reading skills.

Psychosocial Impairments

Higher education offers significant opportunities for cognitive stimulation and age-appropriate socializing–opportunities that enable a person with a brain injury to reconnect with the world, rediscover abilities, understand new limitations while developing compensatory strategies, and regain confidence and self-esteem. Yet, the combined academic and social demands of higher education may prove psychologically stressful for students with brain injuries. In fact, these students commonly experience some or all of the following feelings when adjusting to the challenges of higher education:

- Loneliness.
- Isolation.
- Depression.
- Loss of self-esteem and confidence.
- Decreased lability (in other words, an inability to control emotions).
- A sense of disconnection from peers.
- A sense of having lost their old selves and not liking the new people they have become.
- Frustration adjusting to and balancing the multiple demands of postecondary study and independence.
- Inability to manage stress.
- Embarrassment about forgetting important things such as assignments, schedules, dates, and names of faculty and other students.

Impact on the Learning Process

Erratic academic performance should not be interpreted as failure or a sign that the student with a brain injury cannot learn or lacks intelligence. Rather, difficulty performing a particular task gives the student with a brain injury important information about his new capabilities and learning style, thus informing future choices about what and how to study. Through repeated trial and error, the student can devise the optimal combination of class schedule, supports, accommodations, and perhaps medical interventions for success.

Essential to achieving that balance is understanding how brain injury affects learning. After injury, once-routine ways of thinking become difficult and tiring, and once-easy tasks now may be impossible. Some individuals with brain injuries have extreme difficulty processing and remembering complex information. Academic tasks, such as the precise sequencing of steps required in a chemistry experiment or applying theoretical math formulas to solve word problems, can prove very challenging. The student may require special accommodations, such as access to lecture content in easy-to-read written format prior to class or a note-taker to highlight main ideas discussed during class, to execute key learning objectives.

After experiencing a brain injury, the person may lose prior learning of important concepts. For example, a student may continue to earn good grades in high school after brain injury, yet she may not remember the basic math or history facts learned in earlier grades. A brain injury may also impair the student's ability to retrieve information when needed, even though the student otherwise remembers the information. Many students with brain injuries frequently experience difficulty conveying thoughts in writing or speech, as well. In fact, brain injury can alter a person's entire cognitive process. Relearning to think following a brain injury is comparable to transitioning to a manual shift car following a lifetime of driving an automatic: tasks once deemed easy become tiring and frustrating.

A student's learning habits prior to injury can either positively or negatively influence future learning. Those with good study skills, who completed work legibly and on time and who communicated well with teachers prior to their injury, will be well served by these habits afterwards. Those who learned easily with minimal studying may have difficulty accepting, understanding, or even remembering that learning now is slower or that they need help accomplishing tasks once managed independently. Students who were average or even exceptional before their injury may have difficulty succeeding when applying their prior level of effort.

Like most students, those with brain injuries best learn whatever is most meaningful to them–a student interested in history before the injury may find it to be her easiest subject afterwards. (Students with more severe brain injuries may need help remembering their prior interests when considering their higher education goals.) Yet, the impact on cognition resulting from a brain injury may force a student to adjust learning goals despite aptitude or interest in a given

subject before injury. For example, an exceptional math student, prior to injury, may no longer be able to perform abstract reasoning or remember formulas. While certain accommodations may help, the student may have to pursue another major.

Financial Impact

The financial impact of a brain injury can be substantial. Hospitalization and rehabilitation expenses can ravage a family budget, making the associated costs of higher education–such as tuition, books, and room and board–unaffordable. And, in many instances, families of people with brain injuries often are new to the world of disability and, therefore, unfamiliar with available resources and financial aid or with the various government agencies that serve people with disabilities.

Requirements for scholarship money, such as a high grade-point average, inadvertently may exclude students with brain injuries. Federal financial aid programs that require students to maintain full courseloads may extend beyond the reach of even high-achieving students with brain injuries, as fatigue or other impairments prevent them from carrying the required number of credit hours. Complex paperwork and myriad deadlines also are common obstacles to the student with a brain injury who has financial need; such students will require one-on-one guidance and assistance with the financial aid application process.

While the authors of this paper do not know of any nationally awarded grants or scholarships specifically intended for students with brain injuries, the HEATH resource paper, *Creating Options: A Resource on Financial Aid for Students with Disabilities*, contains current information about federal and state aid programs and describes other disability-related scholarships. The paper also provides helpful links to web-based scholarship search engines. (Contact HEATH to receive a free print copy of the paper, or download it directly from the HEATH web site at http://www.heath-resource-center.org.)

Comparisons with Other Disability Categories

Although federal civil rights laws require all higher education programs to provide support services for students with documented disabilities, many programs have limited experience accommodating students with brain injuries. As colleges and universities become accustomed to serving students with learning disabilities (LD)–a growing population on many campuses–the danger is that institutions will give students with brain injuries standard LD accommodations, without regard for the unique and unpredictable nature of their injuries.

Each brain injury is unique. Teaching approaches that work for specific LDs may or may not work for the student with a brain injury. While the two groups share some similarities in learning needs and styles, students with brain injuries have markedly different needs from those with LDs, including their adjustment to the disability, types of memory or other cognitive difficulties, medical complications, presence of physical impairments, and the day-to-day fluctuation of impairments commonly experienced during recovery from brain injury.

Students with brain injuries frequently must relearn concepts, skills, and information not retained after the injury, or perhaps not yet regained during recovery. Any physical, sensory, or communication disabilities they have in addition to cognitive difficulties also must be addressed. **Students with brain injuries have different needs than students with LD or other types of disabilities, and therefore frequently require different support services.**

But students with brain injuries and those with LDs do share *some* similarities in how they learn. Both frequently demonstrate uneven cognitive profiles–some cognitive skills are strong, others are considerably weaker. And both types of students frequently experience problems with one or more of the following cognitive processes that affect learning: attention, impulse control, problem solving, reading comprehension, understanding abstract associations and relationships, noticing subtleties or absurdities in social situations, and visual or auditory processing. Classroom and testing accommodations that institutions may effectively use with both groups of students include preferential seating, extra time on tests, and individualized instructions for tests and assignments.

Certain behaviors of students with brain injuries may mirror those of students with emotional disabilities or substance abuse problems. For example, a student with emotional/psychiatric problems may be withdrawn, may overreact emotionally to misunderstandings about class expectations or academic criticism, or may act inappropriately around peers. Such behaviors exhibited by a student with a brain injury may result from a neurological inability to control emotions, memory deficits (such as forgetting important aspects of an assignment), or social isolation caused by fatigue or uncertainty about relating to peers.

Cognitive impairments from a brain injury are the result of neurological trauma; the injured person has no voluntary control over them. Brain injuries may slow cognitive processes, such as verbal and physical responses to questions or demands. While students with mental health needs may react, or not react, due to passive-aggressive natures, those with brain injuries may require more time for a response. Because of these differences, some medications, behavior modification programs, and counseling approaches commonly used for mental health problems may not be effective for the student who has sustained a brain injury.

Education and Related Services for Students with Brain Injuries

Serving students with brain injuries still is relatively new for elementary and secondary education systems and may be enormously challenging for all involved. Many students with traumatic brain injuries have, in fact, received special education and related services under placement categories other than TBI. (Prior to the passage of IDEA in 1990, a special education disability category did not exist specifically for brain injury.) Studies indicate that only about half of all students with brain injuries receive any special education services; instead, many receive primarily homebound instruction and others simply receive a 504 Plan.

A 504 Plan is a written agreement between the school and the student with a disability, and his or her family, to provide accommodations for the student regardless of special education placement; this plan is provided under Section 504 of the Rehabilitation Act of 1973. For example, a student who requires only monitoring and administering of medication related to a disability (such as seizures) could receive that accommodation but would not be served under a special education reporting category. A student with a brain injury may be appropriately served with simple schedule modifications, or classroom and instructional accommodations such as in-class notetaking assistance, taped lectures, reduced environmental distractions, or individualized instructions for assignments.

In other instances, students who should have received special education services may not have been identified due to a lack of knowledge about the impact of brain injury on the part of educators, family members, and even medical or rehabilitation professionals. These students frequently complete secondary schooling without accommodations or assistance for their disability; therefore, they may not know of strategies or tools that can help them to succeed in postsecondary education.

Miscommunication among school, medical, and rehabilitation personnel, and between students and their families, is common during the transition from medical or rehabilitation facilities to school. Such miscommunication can delay assessment and placement or can result in the assignment of inappropriate services. Students with brain injuries and their families often have no experience advocating for and receiving accommodations, and many newly injured students do not yet understand their disability-related needs. Depending on the length of time since the injury, the injury's severity, and the individual's needs and experiences, these problems may persist throughout the student's higher education career.

SUGGESTIONS FOR SUCCESS

Suggestions for Students

Higher education can prove to be enormously beneficial to your recovery from a brain injury. In the right situation and with the right supports, further education and increased independence will challenge and expand the limits of your potential while helping you to recover abilities and develop a renewed sense of identity. Regular practice at performing myriad daily tasks, such as preparing assignments, maintaining a calendar, establishing and sustaining friendships, and living independently, can accelerate and maximize rehabilitation.

You can choose from many higher education options, and any one of them may best match your present needs, interests, and recovery. You may wish to begin by taking vocational training classes in disciplines such as auto mechanics, computing, child care, or skilled trades. Such classes may provide the foundation for satisfying and challenging employment or lead you into a two- or four-year degree program.

Whatever path you choose, you will find resources and professionals to guide you toward and through your university, college, community college, or technical school endeavors and to help answer questions and resolve challenges as they arise. The following list will help you consider your options for postsecondary study. Allow yourself plenty of time to reflect on and periodically reconsider these fundamental questions:

- What are your goals for higher education? Do you want to earn a degree or a certificate?
- How might higher education aid in reaching your goals for rehabilitation?
- What do you want to study? You may need help remembering subjects or activities that you most enjoyed before your injury. Ask friends and family to discuss these areas of study.
- Where do you want to go to school? Do you want to stay close to home at first or are you ready to live farther away?
- What do you need to do to get accepted to the school(s) of your choice (for example, applications, transcripts, high school diploma, or equivalent)?
- What are your new strengths and weaknesses in learning, managing a schedule, balancing activities, and remembering details?

Choosing the right postsecondary program is challenging for any student, but especially for students with special needs resulting from disabilities. Many higher education institutions maintain a separate office through which they administer to the special needs of students with disabilities. These offices

usually operate under the name of Office of Special Services (OSS), Office of Disability Support Services (DSS), or other similar titles. (Throughout the remainder of this paper, the abbreviation DSS indicates the campus office for students with disabilities.) It is imperative that you speak directly with DSS administrators, faculty, and students at any program that you are seriously considering. If possible, you should arrange to visit a campus or facility before enrolling, to gauge the "feel" and culture and to assess campus accessibility. Also, contact HEATH (see resource listing at the end of this paper) to receive a free copy of *How to Choose a College: Guide for the Student with a Disability*. This booklet helps students with disabilities carefully consider their individual postsecondary needs and goals, and helps identify and evaluate suitable programs. Ask the following important questions when searching for the best possible postsecondary program for you:

- Does the campus have a DSS office and at least one staff member who is familiar with the effects of brain injury?
- Is there a support group for students with brain injuries on campus or nearby?
- If needed, are all buildings accessible to students with physical disabilities? Is the campus navigable for students with mobility impairments?
- Does the institution offer priority registration (for example, registering early and individually) or at least a strong program of assistance with registration and scheduling of classes?
- Does the institution offer tutoring services? How are such services obtained? Who pays?
- Is institution-sponsored financial aid adequate? Is assistance available for filling out forms or answering questions?
- Are medical and rehabilitation services for people with brain injuries available nearby?
- Can students receive the syllabus for each class prior to the first meeting?
- Does the institution provide notetakers and assistance obtaining a notetaker?
- Is the campus manageable in size, layout, complexity, and distractions?
- Can a student take a reduced courseload and still receive all associated student benefits, if needed (such as health care and financial aid)?
- Does the institution offer academic advising with a faculty member who understands the needs of students with brain injuries?
- Does the institution offer career guidance?
- Does the institution offer a broad range of accommodations and special services?
- Have other students with brain injuries been successful at this insitution?

Once you have been admitted to the programs of your choice, you will likely need to develop a plan for researching and applying for financial assistance. Such a plan will include consulting books and web sites about financial aid, as well as the institution's financial aid office to learn about any campus-based or state-based funding that may be available. Also contact state agencies, such as the Division of Rehabilitative Services, Council for Developmental Disabilities, and your state BIA chapter (see http://www.biausa.org/states.htm for contact information on each state chapter).

In addition to making plans to finance your education, you should consider the following list to help you prepare for this new experience:

- Find out how and with whom you must register (in most cases, it is the DSS office) to become eligible for services as a student with a disability. Reasonable accommodations become available only after you have declared your disability and presented documentation of the disability.
- Seek assistance identifying the specific resources that are available to help you with the areas you find most challenging (for example, math or writing labs on campus, or community-based professionals such as physical therapists or speech-language pathologists). Talk to someone within those programs or who administers these services before you enroll.
- Seek advice from a DSS counselor, faculty member, or student advisor about which courses to take and in what combinations and sequence, and how many courses you can comfortably manage at one time.
- Seek assistance resolving your housing or transportation needs well in advance of the beginning of classes.
- Practice the route from your housing to your classrooms, library, and other frequented destinations.
- Ask the DSS office to recommend and coordinate faculty, therapists, and anyone else who can help you achieve success.
- Keep multiple copies of academic plans, schedules, and other important papers in different places (such as your files or bulletin board, your parents' files, a friend's room, and with your DSS counselors) for ready access.

- Experiment with daily and weekly planners and other time-management tools to help you remember class schedules, appointments, and deadlines.
- Identify any assistive devices, such as learning software, that are helpful to you. The campus computer center or library may already have some assistive hardware or software suitable to your particular needs. The Office for Technology-Related Assistance in your home state and in the state where your institution is located can recommend strategies for obtaining and paying for assistive devices. (To locate these offices, contact the Rehabilitation Engineering and Assistive Technology Society of North America, or go to http://www.resna.org/taproject/at/statecontacts.html, where links to each state office are provided. The Resources section at the back of this paper lists other organizations that focus on adaptive technology and telecommunications for people with disabilities.)

Remember, don't give up, even if you encounter setbacks or are forced to change direction. The process of discovering your new strengths and weaknesses will take time. Through persistence, you will create your own path to success. Speak regularly with family members, DSS personnel, or other students about your experiences, your successes, and your frustrations. Get in the habit of asking for help whenever you need it. Over time, you may find a favorite professor, respected classmate, or close relative who will be willing to act as your mentor–someone who inspires, supports, and challenges you as you make your way through postsecondary education and on to rewarding work and maximum independence.

Also remember that you should not rely on faculty members, counselors, and administrators to come to you and tell you what you need. Rather, **you are responsible for being your own advocate**. In order to become eligible for services and accommodations, a student with a brain injury must identify himself to the DSS office as a student with a disability and must present documentation of that disability. Once registered as a student with a disability on your campus, federal disability laws entitle you to request and receive "reasonable accommodations." Such accommodations merely provide equal access and opportunity to the same programs and activities enjoyed by students without disabilities; they are not designed to guarantee your success. Therefore, you must continue to talk with faculty and advisors about your needs and problems.

The following list identifies accommodations that have helped many students with brain injuries to succeed in higher education. Consult with DSS staff or an appropriate administrator to determine if any of these are warranted or available based on your needs. (Some of these strategies may accede the legal standard of "reasonable accommodation;" others may be unfamiliar to faculty. Thus, you may not always receive the particular accommodation that you want. If a disagreement about a requested accommodation arises, be flexible, work with your DSS provider to identify a "next-best" alternative, and recognize when to pursue a new direction.)

- Using "memory aids" such as organizational software, notetaking aids, hand-held pocket organizers, notepads, or tape recorders.
- Using thought-organizing aids and strategies such as graphic organizers or information diagramming to sort out the most important points of lectures or readings and to prepare written assignments.
- Developing written strategies for taking tests, writing term papers, or managing lab assignments before attempting these tasks.
- Requesting the help of tutors to aid in understanding class material and to keep up with assignments.
- Gaining access to advance copies of clearly written class syllabi, including a description of all class requirements.
- Using index cards to "chunk" (or group small bits of) information, key concepts, or new vocabulary.
- Taking more frequent tests that cover smaller amounts of material than the rest of the class.
- Receiving extra time to prepare for oral presentations, to take exams, or to complete papers.
- Requesting frequent feedback from the instructor regarding performance expectations, information to be tested, and course learning objectives.
- Taking lengthy exams in intervals with short breaks.
- Scheduling weekly appointments with the campus writing center, if available, to obtain help in organizing and outlining papers and proofreading drafts. Similarly, math labs offer additional instruction and tutorial assistance.

Suggestions for Parents and Other Family Members

Although all postsecondary programs must provide services for students with disabilities, few institutions have extensive experience serving students with brain injuries, or offer special programs or services for brain injury. You should expect a longer pathway to academic goals for the student with a brain injury than for other family members who attended similar postsecondary institutions. The student may need to change programs several times in a trial-and-error manner before finding a good fit. Others may need to change majors several times, or adjust their acade-

mic goals by switching from a four-year program to a two-year college or technical school. The following strategies have helped other family members of students with brain injuries throughout their higher education career:

- Stay as informed as possible about brain injury, its effects, and any support that the student may need. (Consult the organizations, books, web sites, and articles in the Resources section at the end of this paper.)
- Assist the student in clarifying her interests and needs by discussing her goals for higher education, as well as her personal preferences for such things as region of the country, climate, proximity to home, navigability of campus, or size of school. These discussions will help the student identify the type of program–whether part of a college or university, community college, or technical school–that fits her needs.
- Assist the student in developing plans that consider financial need, desired academic supports, living arrangements, and transportation.
- Attend meetings, if appropriate, for orientation to the campus or other parent/family activities so that you familiarize yourself with the campus environment and with DSS personnel.
- Assist the student, as much as possible, with keeping accurate and up-to-date academic records, plans, transcripts, course schedules, and syllabi.
- Remain positive and supportive if the student experiences setbacks.
- Support the student's decision to change majors or institutions if such a change seems warranted.

Suggestions for Instructors

There is a growing body of literature on the education and learning of people with brain injuries to inform instructors about the particular challenges confronting these students and how to teach them more effectively. The Resources section at the back of this paper suggests a few such titles.

The following list describes some techniques for you as an instructor to consider when teaching students with brain injuries. While many of these techniques are not strictly required, incorporating them into your teaching method might enable easier access of content for all students.

- Provide all accommodations, support, and assistive devices indicated by the student's DSS counselor.
- Present information, training, or experiences that are age appropriate and pertinent at that time (and remember that interests may change during the recovery process).
- Make learning experiences meaningful and present material in a context that helps reinforce the student's memory of that material.
- Reinforce and provide feedback to the student about the process of thinking, rather than targeting rote memorization techniques, to encourage metacognition (or, thinking about thinking). Offer comments that reinforce the importance of the thinking process, such as "that's good thinking" or "that's an interesting thought," and ask questions beginning with "how," "why," or "what if."
- Provide cognitive mediation: In other words, discuss thought-organization strategies and provide your own examples that practice this technique, such as how to construct a research paper from the development of key ideas.
- Teach or practice requisite skills for new tasks or tasks that were difficult before injury.
- Teach skills and concepts in small, manageable "chunks" and review each before moving on to the next skill or concept.
- Provide opportunities for the student to paraphrase what he has learned or give her specific instructions for assigned tasks. This technique helps to avoid misunderstanding and clarifies any potential pitfalls the student may encounter while performing the task.
- Where possible and appropriate, integrate theory with practice and practice with theory.
- Be patient. Offer multiple trials for the student to make errors and help them see the value in learning from their mistakes.
- Use task analysis–the strategy of breaking down a task or activity into small steps–where appropriate.
- Use a diagnostic-prescriptive approach to teaching, by targeting teaching methods to a particular student's strengths and disability-related needs.

Suggestions for Academic Advisors

Studies that address the general learning process of students with brain injuries and their experiences at the elementary and secondary levels suggest that following a brain injury, the learning process is altered and some aspects of normal learning are permanently impaired. The injured brain can heal, however, and make remarkable adaptations and effective use of compensatory strategies. As an advisor to a student with a brain injury, you may wish to consider the following suggestions:

- Familiarize yourself with the effects of a brain injury, especially in the areas of cognition and emotional adjustment.
- Request information from the student and family, if appropriate, about the student's history of recovery from brain injury and about her special needs (for example, partial loss of vision or hearing may accompany the injury but may not be readily apparent).
- Work with the student to assess the educational environment, to identify needed accommodations, and to determine a courseload that is not overly demanding.
- Maintain regular communication with the student and monitor the current plan's effectiveness or need of modification.
- Refer the student to support resources on or near campus, if needed, or to a counselor who can determine what type of support the student might need.
- Consider recommending a reduced courseload, instructors with whom you feel the student might work most successfully, and courses that match the student's abilities at that time.
- Provide written information in easy-to-remember formats that are not overwhelming to the student, and provide duplicate copies to the parents or DSS personnel, if appropriate. (Remember to be mindful of a student's guaranteed right to confidentiality. By law, you may not disclose information to parents without the student's permission. Visit the web site of *Disability Access Information and Support* at http://www.janejarrow.com for a detailed discussion of confidentiality.)

Suggestions for Disability Support Services Providers and Therapists

In your roles as DSS providers and therapists for students with brain injuries, you may need to be more proactive in identifying required support than you typically are for students with other disabilities. The only thing constant about brain injury is that it changes all the time. The effects of a brain injury often fluctuate from day to day, and in the course of recovery the brain moves through stages in healing and acquiring new coping strategies. As a result, those with brain injuries may become confused about their abilities and limitations. (Service providers and therapists should not simply accept at face value what students with brain injuries report about their progress.)

Students also may be confused about or unaware of the accommodations and supports they need, in which case the service provider may recommend that a neuropsychologist or speech-language pathologist assess the student's needs. Such assessment provides a detailed profile of a student's cognitive strengths and weaknesses. DSS staff can then help the student understand the results of the assessment and use them to plan majors, select courses and schedules, and identify effective compensatory strategies. Assessment results may indicate that the student needs to adopt new approaches.

Some brain injuries also impair a student's ability to initiate action, making it difficult for them to seek help or to be effective self-advocates. Therapists and DSS personnel should encourage students to develop these skills, which are so critical to the postsecondary success of students with all types of disabilities. Furthermore, students with recent injuries may be unfamiliar with available supports; DSS personnel can provide this important information.

DSS professionals help students identify needed accommodations. They also can rehearse with students how to request these accommodations from faculty and other instructors. Role-playing is an effective tool for teaching these skills. For example, the DSS professional assumes the role of instructor while the student practices describing the brain injury and requesting needed accommodations. Service providers also should encourage frequent meetings with students and provide information in a concise, easy-to-remember format.

Students with brain injuries also may need help reacquiring many of the skills necessary for independent daily living, such as doing laundry; maintaining a well-balanced diet; prioritizing tasks; opening bank accounts and balancing checkbooks; keeping track of scheduled work, school, and social activities; recordkeeping; and using informational sources such as libraries, the Internet, maps, and dictionaries.

When working with students with brain injuries, remember that their ambitions remain unchanged despite the injury: They still desire meaningful work, satisfying relationships, good health, and a sense of making a positive contribution to the world.

CASE STUDIES

The following scenarios provide real-world illustrations of the many and varied ways that brain injuries impact the lives of survivors, their family members and friends, and the professionals who teach, advise, and care for them.

Catherine

Scenario: Catherine is a 22-year-old freshman at the local community college. She sustained a brain injury as a result of a car crash at age 18, just after graduating from high school. She has spent the last three years in hospitals and rehabilitation programs. During her first semester, Catherine took a reduced courseload of two academic classes and one elective (swimming), received registration assistance, and used notetakers in her classes. She met weekly with her DSS provider and did fairly well in all classes. She also began dating for the first time since her accident, and during the winter break went to several parties. Now in her second semester, Catherine's confidence has grown–she refuses any special help, saying she wants to "make it on her own" and "be independent"–however, she is failing all of her classes and feeling quite depressed.

Problems: Catherine thought that doing so well the first semester meant she did not need help after all. Due to a neurological-based lack of insight into the cause-and-effect relationship, she was unable to understand that the assistance she received helped her to succeed. Furthermore, she has been isolated and lonely for much of the time since the injury, and frontal lobe damage from her brain injury has impacted her self-monitoring skills, making her unable to realize when her social activities are negatively impacting her other responsibilities. Students with brain injuries often experience difficulty fitting in socially, and the demands of college life may be too hard to handle independently. Catherine is having trouble managing the multiple demands on her time and setting priorities.

Recommendations: While Catherine's desire for increased independence and determination to succeed alone indicate positive and healthy behavior, Catherine still needs assistance with self-monitoring, managing her schedules, and assessing her priorities. In addition, her college may need to improve its communication and coordination among DSS staff, faculty, and administrators to assist students with brain injury. While not a mandated responsibility, attuned DSS professionals might recognize and address Catherine's difficulties handling social pressures. It might be helpful for Catherine to join a support group of other college students or adults with brain injuries. Many people with brain injuries say that they trust the advice of their peers over that of professionals.

Eric

Scenario: Eric is a 19-year-old sophomore at a small university where he has an athletic scholarship and plays on the football team. During the homecoming game, just before Thanksgiving, he was tackled and suffered a severe concussion. He was admitted to the nearby hospital for observation, but remained out of school for the rest of the semester due to headaches and fatigue. Eric received "incompletes" in all of his fall-semester classes, and his doctor instructed him not to play football the following season. Eric returned to school in January and remains popular in his fraternity and at parties. Now Eric rarely turns in any of his classwork, and the work he does complete is inadequate. His instructors complain that his handwriting is practically illegible. Because Eric attends a small university where everyone knows him, his friends notice his behavior and report him to the coach, who then talks to Eric. Based on Eric's behavior, the coach suggests that Eric's problems are the result of drinking or drugs. Eric responds that he drinks very little and does not use drugs, and he promises to turn in all of his work very soon. The coach notices when they talk that Eric's speech seems slurred, he walks with a limp, and his eyes appear unfocused. He writes in his report that Eric frequently appears to be intoxicated.

Problems: Sports accidents are a common cause of brain injuries and should be taken seriously. Doctors labeled Eric's injury as moderate and he remained unconscious for just one hour, but even brain injuries that are labeled mild or postconcussive can cause long-term effects. Someone with a brain injury should not be rushed into activities for which they may not be ready. This does not mean that Eric cannot expect to resume many of his normal activities later. Eric is experiencing academic difficulties that have not been assessed properly, and he is reacting by focusing entirely on his social life, an area in which he feels most competent and comfortable.

Recommendations: Eric may have returned to school too soon and does not yet understand or accept the effects of his brain injury. He may need rehabilitation services and perhaps a drastically reduced courseload. As he progresses in his recovery, he will be more likely to achieve success and will be better able to handle the peer pressure and demands of his classes, although he still may require supportive ser-

vices. Eric needs immediate referral to the DSS office and coordinated advising from both rehabilitation professionals and academic advisors. He also needs speech-language and neuropsychological assessments to help with his communication skills and to determine the areas of learning that are causing difficulty. Based on assessment results, and further observation and interviews, Eric will need help identifying and arranging for appropriate accommodations. A pocket organizer, or some other memory aid, might be useful for Eric to keep up with his class schedules, assignments, and test dates. Eric, his coach, and possibly Eric's family may need to seek more comprehensive information about brain injury, its effects, and the resulting recovery process. They should be referred to their state BIA office for assistance.

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RESOURCES

Monographs, Pamphlets, Periodicals, and Reports

Brain Injury: Causes and Consequences for Students. 1999. McKay Moore Sohlberg, Bonnie Todis, Ann Glang, and Marilyn Lash. 28 pages. $10. Order from Lash and Associates Publishing/Training, (919) 562-0015 (V/FAX), lapublishing@earthlink.net, or http://www.lapublishing.com.

Brain Injury: A Guide for Families and Friends. 1995. The University of Iowa Hospitals and Clinics. View the guide online at http://www.vh.org.

Brain Injury Source (quarterly journal of the Brain Injury Association). Annual subscription $38. Contact BIA at (800) 444-6443, (703) 236-6000, familyhelpline@biausa.org, or http://www.biausa.org.

Creating Options: A Resource on Financial Aid for Students with Disabilities–2001 Edition. HEATH Resource Center. Free. Contact HEATH at (202) 939-9320 (V/TTY), (800) 544-3284 (V/TTY), (202) 833-5696 (FAX), heath@ace.nche.edu, or http://www.heath-resource-center.org.

Directory of Disability Support Services in Community Colleges. 1996. American Association of Community Colleges (AACC). 1996. Contact AACC at (202) 728-8000, or http://www.aacc.nche.edu.

Going to College: When a Student Has a Brain Injury. 1999. Jane Goodwin and Linda Larson. Part of the Lash and Associates "Tip Cards" series. Each pamphlet is available for $1.50 or at a reduced rate for orders of 10 or more. Contact Lash and Associates at (919) 562-0015 (V/FAX), lapublishing@earthlink.net, or http://www.lapublishing.com.

How to Choose a College: Guide for the Student with a Disability. 1997. HEATH Resource Center. Free. Contact HEATH at (202) 939-9320 (V/TTY), (800) 544-3284 (V/TTY), (202) 833-5696 (FAX), heath@ace.nche.edu, or http://www.heath-resource-center.org.

A Profile of Students with Disabilities Attending Baccalaureate Colleges and Universities in 2000. 2001. Cathy Henderson. Free. Contact the HEATH Resource Center at (202) 939-9320 (V/TTY), (800) 544-3284 (V/TTY), (202) 833-5696 (FAX), heath@ace.nche.edu, or http://www.heath-resource-center.org.

Rehabilitation of Persons with Traumatic Brain Injury. 1998. National Institutes of Health. Free by contacting NIH, Consensus Program Information Center, at (888) 644-2667 or http://consensus.nih.gov.

Section 504: The Law and Its Impact on Postsecondary Education. 1999. HEATH Resource Center. Free. Contact HEATH at (202) 939-9320 (V/TTY), (800) 544-3284 (V/TTY), (202) 833-5696 (FAX), heath@ace.nche.edu, or http://www.heath-resource-center.org.

Books

Children with Traumatic Brain Injury: A Parent's Guide. 2001. Lisa Schoenbrodt, ed. $17.95. Discusses the basics of head injury, medical and rehabilitation questions and concerns, and other impairments that frequently accompany head injuries. Contact Woodbine House at (800) 843-7323, (301) 897-3570, (301) 897-5838 (FAX), info@woodbinehouse.com, or http://www.woodbinehouse.org.

Head Injury, The Facts: A Guide for Families and Caregivers. 1998. Dorothy Gronwall, Philip Wrightson, and Peter Waddell. $19.95 plus shipping. Describes the impact of head injuries and the various stages of recovery in layman's terms and offers guidance on managing the transition from rehabilitation to work or school. Contact Oxford University Press at (800) 451-7556, (919) 677-1303 (FAX), or http://www.oup-usa.org. Also available from Amazon at http://www.amazon.com.

Living with Brain Injury: A Guide for Families. 1998. Richard C. Senelick, MD. $10.95. Describes the causes and physiological effects of brain injury, their physical, cognitive, and behavioral symptoms, and how brain injuries can be treated and rehabilitation maximized. Contact the HealthSouth Press at (210) 691-0737 (x300), (210) 558-1297 (FAX), or http://www.healthsouthpress.com.

Traumatic Brain Injury Survival Guide. 1998. Glen Johnson, MD. Free (but cost-recovery donations of up to $5 encouraged). Describes the major disabilities and common problems resulting from brain injury, brain anatomy and function, and the stages of emotional recovery. The book can be viewed online at http://www.tbiguide.com or contact the author for a print copy: Dr. Glen Johnson, Clinical Director, Neuro-Recovery Head Injury Program, at (231) 929-1313 or neuro@traverse.net.

Organizations

ABLEDATA, a project of the National Rehabilitation Information Center, is a database of information and descriptions of more than 27,000 commercially available products designed to facilitate the rehabilitation and independent living of people with disabilities.
ABLEDATA, 8630 Fenton Street, Suite 930, Silver Spring, MD 20910, (800) 227-0216 (V/TTY), (301) 608-8998, (301) 608-8958 (FAX), abledata@macroint.com, or http://www.abledata.com.

The **American Speech-Language-Hearing Association (ASHA)** is the professional, scientific, and credentialing association for speech-language pathologists and audiologists. ASHA provides brochures, information packets, and professional referrals to consumers about communication disabilities and professional treatment.
ASHA, 10801 Rockville Pike, Rockville, MD 20852, (800) 638-8255 (V/TTY), (301) 897-5700 (V/TTY), (301) 571-0457 (FAX), actioncenter@asha.org, or http://www.asha.org.

The **Association on Higher Education And Disability (AHEAD)** is an international, multicultural organization of professionals committed to full participation in higher education for persons with disabilities. Founded in 1977, AHEAD seeks to raise the quality of services and support available to people with disabilities in higher education.
AHEAD, University of Massachusetts–Boston, 100 Morrissey Boulevard, Boston, MA 02125-3393, (617) 287-3880, (617) 287-3882 (TTY), (617) 287-3881(FAX), ahead@umb.edu, or http://www.ahead.org.

The **Brain Injury Association (BIA)** is a national membership organization providing advocacy, information, and support to people with brain injury and their families. Forty-five state associations and more than 400 support groups operate nationwide.
BIA, 105 North Alfred Street, Alexandria, VA 22314-3010, (800) 444-6443, (703) 236-6000, familyhelpline@biausa.org, or http://www.biausa.org.

The **Brain Injury Society** works with individuals with brain injuries, their families, and caregivers to identify strategies and techniques to maximize the potential for a stronger recovery from injury.
Brain Injury Society, 1901 Avenue N, Suite 5E, Brooklyn, NY 11230, (718) 645-4401, (718) 469-4100, bisociety@aol.com, or http://www.bisociety.org.

The **Center for Education and Human Service in Acquired Brain Injury** applies research about the impact of brain injury on children, youth, adults, and families with current knowledge and practice in the fields of education and human services provision. The center offers a master's degree program in Transition Special Education: Emphasis in Acquired Brain Injury, as well as other professional development activities and publications.
Center for Education and Human Service in Acquired Brain Injury, Graduate School of Education and Human Development, George Washington University, 2134 G Street, Washington, DC 20052, (202) 973-1032, (202) 973-1075 (FAX), jruoff@gwu.edu, or http://gwis.circ.gwu.edu.

Disability Access, Information, and Support (DAIS) provides information for those concerned with disability and access in higher education. Institutions and organizations can contract for help from DAIS for a variety of services. DAIS publications include resource materials to assist in interpreting legal mandates, reviewing policies and procedures, and understanding the philosophical underpinnings of providing quality service to people with disabilities in a post-secondary environment.
DAIS, 2938 Northwest Boulevard, Columbus, OH 43221, (614) 481-9450 (V/TTY), (614) 481-9451 (FAX), janejarrow@aol.com, or http://www.janejarrow.com.

Equal Access to Software and Information (EASI), a project of the Teaching, Learning, and Technology (TLT) Group, provides information and guidance to the education community about access-to-information technologies for individuals with disabilities. EASI monitors and disseminates news of developments in adaptive computer technology to colleges, universities, K-12 schools, libraries, and the workplace.
EASI, c/o TLT Group, P.O. Box 18928, Rochester, NY 14618, (716) 244-9065, easi@tltgroup.org, or http://www.rit.edu/~easi.

The **Family Caregiver Alliance** addresses the needs of families and friends who are providing long-term care to people with disabilities. The alliance provides specialized information and assistance; consultation on long-term care, legal, and financial planning; service linkage and arrangement; respite services; counseling; and education.
Family Caregiver Alliance, 690 Market Street, Suite 600, San Francisco, CA 94104, (800) 445-8106, (415) 434-3388, (415) 434-3508 (FAX), info@caregiver.org, or http://www.caregiver.org.

Friends and Survivors Standing Together (FASST) offers information, support, and encouragement to people with brain injuries and their caregivers. In addition to providing technical information and support for those wishing to start brain injury support groups, FASST's web site contains considerable information about brain injury, rehabilitation, and independent living.
FASST, 2808 South Whisper Drive, Douglasville, GA 30135, (770) 949-5848, or http://www.fasst.org.

The **Head Injury Hotline** provides callers with information about recovery from brain injuries and referrals to related health care and legal professionals and support groups.
Head Injury Hotline, 212 Pioneer Building, Seattle, WA 98104-2221, (206) 621-8558, brain@headinjury.com, or http://www.headinjury.com.

The **Job Accommodation Network (JAN)** is an international information network and consulting resource about employment, the Americans with Disabilities Act, and job-related accommodations.
JAN, West Virginia University, P.O. Box 6080, 918 Chestnut Ridge Road, Morgantown, WV 26506-6080, (800) 232-9675 (V/TTY), (304) 293-7186 (V/TTY), (304) 293-5407 (FAX), jan@jan.icdi.wvu.edu, or http://jan.wvu.edu.

The **National Center on Secondary Education and Transition (NCSET)** assists the efforts of national, state, and local organizations to ensure that youth with disabilities leave high school prepared to successfully enter the world of work. The center gathers and disseminates research findings and models for best practices in facilitating the transition from secondary education to employment for young adults with disabilities and their families.
NCSET, Institute on Community Integration, University of Minnesota, 102 Pattee Hall, 150 Pillsbury Drive SE, Minneapolis MN 55455, (612) 624-2097, (612) 624-9344 (FAX), ncset@icimail.coled.umn.edu, or http://ici.umn.edu/ncset.

National Institute on Deafness and Other Communication Disorders (NIDCD) provides health information about human communication and disorders of hearing, balance, smell, taste, voice, speech, and language. Fact sheets, brochures, reports, directories, database searches, and other resources are available.
NIDCD, National Institutes of Health, 31 Center Drive, MSC 2320, Bethesda, MD 20892-3456, (800) 241-1044, (800) 241-1055 (TTY), (301) 402-0018 (FAX), nidcdinfo@nidcd.nih.gov, or http://www.nidcd.nih.gov.

National Rehabilitation Information Center (NARIC) is a library of information about disability and rehabilitation research. Information specialists provide quick reference and referrals to organizations, customized database searches, and document delivery. The NARIC databases also may be accessed through the center's web site.
NARIC, 1010 Wayne Avenue, Silver Spring, MD 20910-5633, (800) 346-2742 (V/TTY), (301) 562-2400 (V/TTY), (301) 562-2401 (FAX), naricinfo@kra.org, or http://www.naric.com.

The **National Resource Center for Traumatic Brain Injury,** a project of the National Institute for Disability and Rehabilitation Research, provides information for individuals with brain injury, their family members, and professionals. The center develops intervention programs, assessment tools, videotapes, and pamphlets about the special needs of people with brain injuries and their families. The web site provides a searchable database, FAQs, and a downloadable product order form.
National Resource Center for Traumatic Brain Injury, P.O. Box 980542, Richmond, VA 23298, (804) 828-9055, or http://www.nuero.pmr.vcu.edu.

The Perspectives Network, Inc. (TPN) was founded by a survivor of acquired brain injury. A quarterly magazine, peer communication networks, fact brochures, a lending library, and empathy workshops are available to brain injury survivors and their families. TPN, P.O. Box 1859, Cumming, GA 30028-1859, (800) 685-6302, (770) 844-6898 (V/FAX), Tpn@tbi.org, or http://www.tbi.org.

Rehabilitation, Engineering, and Assistive Technology Society of North America (RESNA) seeks to improve the potential of people with disabilities via the use of technology by addressing the research and development, and the dissemination, integration, and utilization of knowledge about rehabilitation and assistive technology. RESNA also maintains a database of state offices for technology-related assistance. RESNA, 1700 North Moore Street, Suite 15400, Arlington, VA 22209-1903, (703) 524-6686, (703) 524-6639 (TTY), (703) 52406630 (FAX), info@resna.org, or http://www.resna.org.

Research and Training Center on the Community Integration of Individuals with TBI (RTC/TBI) is funded by the National Institute for Disability and Rehabilitation Research to conduct and disseminate research that improves the domestic, educational, social, and vocational lives of people with TBI. The web site provides answers to frequently asked questions, links to related organizations, and a searchable database of TBI-related articles from professional journals and books.
RTC/TBI, Mount Sinai School of Medicine, One Gustave L. Levy Place, Box 1240, New York, NY 10029, (212) 241-7917, (212) 241-8978, or http://www.mssm.edu/tbinet.

TASH (formerly The Association for Persons with Severe Handicaps) is an international advocacy association of people with disabilities, their family members, and other advocates. Through individual and legislative advocacy and public policy, TASH seeks the elimination of physical and social barriers to equity, diversity, and a high quality of life for all people, irrespective of disability.
TASH, 29 West Susquehanna Avenue, Suite 210, Baltimore, MD 21204, (410) 828-8274, (410) 828-6706 (FAX), (410) 828-1306 (TTY), info@tash.org, or http://www.tash.org.

The **TRACE Research and Development Center** seeks to remove the barriers to emerging communication and telecommunication technologies for people with disabilities.
TRACE Research and Development Center, University of Wisconsin-Madison, 5901 Research Park Boulevard, Madison WI 53719-1252, (608) 262-6966, (608) 263-5408 (TTY), (608) 262-8848 (FAX), Web@trace.wisc.edu, or http://trace.wisc.edu.

Online Resources

http://www.cmrg.com
The Case Management Resource Guide is a free, searchable online database and directory of rehabilitation facilities, health care providers, and independent case managers.

http://www.neuroskills.com
The Traumatic Brain Injury Resource Guide, operated by the Centre for Neuro Skills, is a central Internet source of information, services, and products relating to traumatic brain injury, brain injury recovery, and post-acute rehabilitation. Books, videos, pamphlets, new research, and newsletters related to brain injury, recovery, and rehabilitation also are available.

http://www.TBI-help.org
The TBI Help Desk for Caregivers provides resources to people with TBIs, their families, and professional caregivers. The site offers advice from rehabilitation and medical specialists, as well as from people with brain injuries themselves. A glossary of terms related to brain injury, chat sessions with brain injury experts, and links to other TBI-related sites are available.

http://www.tbilaw.com
The Brain Injury Information Page is maintained by the Brain Injury Law Group to provide general information about brain injury, concussion, coma, and head injury for TBI survivors, spouses, and caregivers. This page features articles, information, and graphics about traumatic brain injury.

http://www.unc.edu/depts/recreate/spot/The Brain Spot teaches the basics of Internet browsing to people with brain injury with varying abilities for processing written and visual content. Memory enhancement games, a discussion board, and descriptions of community-based rehabilitation facilities also are included.

Spring 2001, Janis Ruoff, Ph.D.

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