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ABSTRACT

These guidelines were developed for serving students with traumatic brain injury (TBI) in school settings. An introduction reviews the frequency of TBI, range of severity, and legal responsibility for special education services. Guidelines are offered for creating prevention and awareness programs and for implementing staff development. A section on service options discusses identification, re-entry into regular education, special education evaluation, and an Individualized Education Program for students diagnosed with TBI. Procedures for providing student transportation are outlined. Sample forms are offered, such as a re-entry preplanning worksheet, medication procedures, training requirements of staff, and suggestions for classroom accommodations. A resources list provides information on Utah and national agencies and support groups, books and articles, and videos. A glossary and list of acronyms are also presented. Contains six references. (JDD)

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GUIDELINES

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EC 303289

AUGUST 1993

EDUCATOR GUIDELINES

FOR

SERVING STUDENTS WITH TRAUMATIC BRAIN INJURIES

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Revised Edition, August 1993

EXECUTIVE SUMMARY: GUIDELINES FOR SERVING STUDENTS WITH TRAUMATIC BRAIN INJURY

The frequency of traumatic brain injury (TBI) in children and youth is staggering. Each year in the United States alone, as many as one million children and youth will sustain brain injuries from motor vehicle accidents, falls, sports, and abuse. Approximately 165,000 of these youngsters will be hospitalized, with 16,000 to 20,000 of them suffering moderate to severe symptoms. Statistically, the largest group of traumatic brain-injured people is in the 15- to 24- year-old range, but the frequency is nearly as high for youngsters under 15 years of age. Many other students experience injury to the brain which may result from infection, vascular lesions, anoxia, brain tumors, seizures disorders, or other neurologic diseases. (Savage, 1991)

Several factors occurring in today's society have caused education and health care professionals to realize that an increasing number of students with traumatic brain injuries are impacting the system. Unfortunately, accidents resulting in serious injuries continue to occur with alarming frequency. Improved rehabilitation has resulted in more students being able to continue their education.

Most teachers, special educators, and related service staff have not received training specifically concerning students with traumatic brain injury. With the recent changes in special education regulations, including the addition of traumatic brain injury as an eligibility category, educators need to have an understanding of the unique characteristics and educational programming implications for this group of students.

Faced with providing educational programs for students with traumatic brain injuries, school districts requested assistance from the Utah State Office of Education (USOE), parents, universities, and health care professionals to learn how to effectively educate students exhibiting unique problems caused by traumatic brain injury. The USOE, together with the Mountain Plains Regional Resource Center (MPRRC) located at Utah State University, facilitated the creation of a state-side task force composed of parents, USOE staff, MPRRC staff, school district supervisory staff, health care professionals, and special education personnel to develop these guidelines for serving student with traumatic brain injury in the school setting.

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INTRODUCTION

INTRODUCTION

Students with Traumatic Brain Injury

A growing problem for education, rehabilitation, and health care professionals is the treatment and education of students who have experienced traumatic brain injury. Medical technology has advanced more rapidly than the educational system's capacity to deal with the complex developmental and educational needs of these students.

When a student is discharged from a health care facility, he/she becomes the educational responsibility of a school district. Since recovery of students with traumatic brain injury goes on for many years, schools become part of the student's long-term rehabilitative process. In an effort to fulfill this responsibility, an interdisciplinary task force was convened to develop a set of guidelines and make recommendations for providing services both within the educational system and in cooperation with other public agencies. These guidelines and recommendations are suggestions related to the education of students with traumatic brain injuries and represent the combined knowledge of experts from the health care, rehabilitation, and education communities, and the experience of parents. In all cases, the Utah State Board of Education Special Education Rules prevail over all educational services to students with disabilities.

Frequency of Traumatic Brain Injury

Advancements in diagnostic tools and improvements in medication, treatment, and technology have all contributed to the enhancement of the lives of students. Students who would have died because of a traumatic brain injury now live because of recent medical innovations, but often with special health and educational program needs and compromised quality of life. Technological advancement is not limited to health care, but is also seen in the classroom, home, and community. The development of augmentative communication systems and adaptive equipment has increased the independence of individuals that in many ways has an impact on the IEP-driven placement and concepts of least restrictive environment.

The frequency of traumatic brain injury (TBI) in children and youth is staggering. Each year in the United States alone, as many as one million children and youth will sustain brain injuries from motor vehicle accidents, falls, sports, and abuse. Approximately 165,000 of these youngsters will be hospitalized, with 16,000 to 20,000 of them suffering moderate to severe symptoms. Statistically, the largest group of traumatically brain-injured people is in the 15- to 24- year-old range, but the frequency is nearly as high for youngsters under 15 years of age. Many other students experience injury to the brain which may result from infection, vascular lesions, anoxia, brain tumors, seizure disorders, or other neurologic diseases. (Savage, 1991)

Range of Severity

The traumatic brain injury and its attendant problems range from mild to very severe, and the course of recovery is very difficult to predict for any given student. Although some students with significant brain injuries make excellent recovery, others with an injury considered to be fairly mild appear to experience considerable permanent disruption. A perceived relatively minor head injury may generate both short- and long-term disruption to behavior, learning, and development, so it is critical that professionals be sensitive to possible change and/or disruption in order to identify the specific needs of the students. The initial effects of a traumatic brain injury may seem to improve very rapidly. This quick recovery may cause family and school staff to have false hopes that recovery will continue and be complete. Family and educators need to keep in mind that the effects of the injury are the permanent result of tissue damage--the brain does not have the capacity to heal itself like other parts of the body because the brain cell tissue cannot regenerate. In many cases, the student may never totally return to baseline and should be monitored over the long term.

Legal Responsibilities

Federal legislation and court cases have impacted services to students with traumatic brain injury. These laws include Section 504 of the Rehabilitation Act, Public Law 94-142 and its ensuing amendments, Public Law 99-457 in 1986, and Public Law 101-476 in 1990 (Individuals with Disabilities Education Act).

Regular Education

Regular education might be the most appropriate placement for many students with mild manifestations of traumatic brain injury. Ideally, the aim for each student should be a return to their regular education program. Some students might need only minor accommodations and an understanding staff in order to

find success in the regular classroom. If the student fails to meet individual expectations, a referral could be made for an evaluation under Section 504 or special education.

Section 504

Section 504 prohibits discrimination against any individual because of a disability, and additionally, requires programs, including schools, to make accommodations for individuals with disabilities. Section 504 requires the accessibility to all programs, services, and public buildings. Students with traumatic brain injury have the right to attend school and be educated, whenever possible, in the regular program. The school district must provide accommodations to allow the students to attend a neighborhood school, if appropriate. A student cannot be denied entry into the neighborhood school solely because of the specialized, physical, health care needs or the inaccessibility of the school. For additional information regarding Section 504, refer to the Utah State Office of Education, Section 50-4 Guidelines for Educators.

A PERSON IS CONSIDERED DISABLED UNDER THE DEFINITION OF SECTION 504 IF THE INDIVIDUAL:

- 1. Has a mental or physical impairment which substantially limits one or more of such person's major life activities.**
- 2. Has a record of such impairments.**
- 3. Is regarded as having such an impairment.**

***"Major life activities"* include functions such as caring for one's self, performing manual tasks, walking, seeing, hearing, speaking, breathing, learning, and working. When a condition does not substantially limit a major life activity, the individual does not qualify for services under Section 504.**

Individuals with Disabilities Education Act (IDEA)

IDEA includes students with traumatic brain injury. Evaluation and eligibility criteria must be applied before a student can be provided special education, and the student's disability must adversely affect his/her educational performance. The educational impact criterion requires that the student's disability be one that, without specially designed instruction, would hinder the student's progress in the regular education program. Thus, a student with traumatic brain injury whose disability poses no hindrance to academic skill acquisition may not be eligible for special education services. However, under Section 504 of the Rehabilitation Act, this student is still entitled to accommodations and access to the public school setting from funds other than special education.

The following is the federal special education definition of Traumatic Brain Injury taken from the

Individuals with Disabilities Education Act (IDEA). The same definition is used in Utah State Special Education Rules.

ELIGIBILITY CRITERIA: *Eligibility requires presence of a Traumatic Brain Injury and adverse effect on education. A Traumatic Brain Injury may be caused by one or more of the following:*

- *Traumas from accidents, falls, assaults, and surgical procedures.*
- *Infections (e.g., meningitis, encephalitis).*
- *Strokes and other vascular accidents.*
- *Anoxia injuries caused by a reduction in the oxygen supply to the brain from anesthetic accidents, cardiac arrest, choking, and near drowning.*
- *Tumors of the brain.*
- *Toxic exposure (e.g., lead and chemical poisoning).*

School District Responsibility

The traumatic brain injury population represents a large number of students with not only educational, but psychosocial, emotional, communicative, and/or health needs. While the injury itself will directly impair function, perhaps the greatest disruption of traumatic brain injury in students results from the impairment of ongoing intellectual, cognitive, social, emotional, or other development in the progression from childhood to young adulthood. These students are entitled to appropriate assessment, planning, and other services required to identify and/or accommodate individual needs within the system's limits of providing for those needs. For students, the most readily accessible and available resource is the public school system, which also has the responsibility to identify and collaborate with other state agencies and programs. It is critical that the educational system work in conjunction with other community and government agencies to identify programs for such students and to provide continuity of care and treatment.

Currently, many students sustaining traumatic brain injury return to school following hospital discharge with minimal community support services, without notification to the school of the injury, and with the needs of the student often underestimated. Classroom teachers may be the first to recognize changes in learning and behavior patterns. The symptoms for many students are rather individual and not always predictable in that the effects of the injury commonly interact with any pre-existing difficulties the student might have. For example, a student who tended to be somewhat hyperactive prior to an injury very commonly might become more hyperactive subsequent to the injury, or a student with a reading disorder might experience an even greater difficulty after the injury.

Many students with mild brain injury may never see a health care professional at the time of the accident. It is critical that educators recognize that these students frequently require support of some special assistance upon their return to school. This support may range from minimal adaptations of the curriculum to integration of a variety of support services. Special education is available if the student has received a diagnosis from a medical doctor and is determined eligible through a multidisciplinary team process. Some students with relatively mild injuries will not qualify for special education services and will best be served by a flexible, sympathetic classroom teacher working in collaboration with the parents and health care provider. Others needing more structure and a less confusing classroom environment may require special education services for a year or less.

There are other students who may require special education services for many years. One unique feature of students with traumatic brain injury as compared to students of other categories served in special education is that most of them recover considerable function, depending upon the nature and severity of injury. Interventions may be relatively short-term, but they are critical to the student's recovery. Such students may require more frequent reviews of progress. It is critical that the programs be adapted to the individual student and that these programs assist students through:

- Continuum of educational services.
- Identification of appropriate educational environments (regular classroom, Section 504, and/or special education) and services within the public education setting.
- Evaluation and determination of services required.
- Maintenance of suitable levels of performance throughout the academic program.
- Development of the greatest possible degree of independence.
- Establishment and maintenance of positive social relationships.

PRESERVICE INSERVICE

PRESERVICE-INSERVICE

Awareness

A national initiative is currently underway to increase the awareness of the effects of traumatic brain injury on students and to identify services necessary to meet their needs. Before services can be developed and expanded, it is necessary that health care providers, human service personnel, educators, students, and general public develop a knowledge base concerning traumatic brain injury. It is only through such awareness that programs of prevention can be implemented to reduce the frequency of traumatic brain injuries. While traumatic brain injury cannot be entirely eliminated, a number of injuries can be prevented through education and awareness.

Recommendations

- School districts should help all students become aware of the consequences of traumatic brain injury, not only as it relates to their understanding and acceptance of classmates who have experienced traumatic brain injury, but also to increase their awareness of the need to exercise caution and preventive strategies to reduce the risk of traumatic brain injury for themselves and others. Developing or accessing community agency specific educational materials and programs for all students is suggested (e.g., helmet programs, car/seatbelt safety, etc.).
- An awareness program should be developed to assist classroom teachers in identifying students with mild or moderate traumatic brain injury in the school setting and to refer those students for help. Such a program would assist teachers to recognize a student with a head injury that may be functionally significant to his/her educational learning potential. This process includes students who sustained traumatic brain injury and did not receive medical attention or require hospitalization.
- Programs should be available to educate and support the parents of a child who has experienced a traumatic brain injury. Parent guides are available to help increase awareness and knowledge of educational options for children with a traumatic brain injury.
- The school should inform and involve health care professionals on the referral and placement of all students with traumatic brain injury.
- School districts can access the Utah State Office of Education for educational books, articles, and training that will provide ongoing education and reference to assist parents and teachers.

Continuing Education

Many students returning to school after a traumatic brain injury require some special programming and/or special education services for a limited or extended period of time. Schools are often called upon to provide the continued cognitive, vocational, and social rehabilitation to students with traumatic brain injuries. Schools are an important part of the rehabilitation team and are equipped to provide educational support services and special education services; however, the majority of educational personnel have not received training specifically related to students with a traumatic brain injury. Professionals in both regular and special education, parents, and peers require training and information in order to help meet the needs of these students. School districts should inform educational professionals about the effects, consequences, and long-term implications of traumatic brain injuries.

Staff development efforts must be ongoing, reflect local needs, and provide opportunities for follow-up. Training and staff development must be integrated in Utah's current delivery system and should not be fragmented and separate from other training.

Preservice

1. Higher Education teacher training programs will be encouraged to include information on traumatic brain injury in their courses regarding students with disabilities. All special education certifications will require training regarding educational implications of traumatic brain injury.
2. The Utah State Office of Education will initiate changes in certification of teachers and administrators in the State of Utah to include curriculum regarding traumatic brain injury in the introductory course on students with disabilities.
3. The Special Education Consortium will regularly disseminate information on traumatic brain injury to all institutions training future educators.

Inservice

1. The Utah State Office of Education has prepared a comprehensive training program for school districts in serving students with traumatic brain injury. Please contact the Special Education Unit for more information.

2. The Utah State Office of Education and Utah Learning Resource Center will prepare and maintain a roster of qualified presenters and trainers regarding traumatic brain injury.
3. The Utah State Office of Education and Utah Learning Resource Center will provide subject matter and inservice material on traumatic brain injury to assist teachers in identification and service options.
4. School districts will be encouraged to develop procedures to provide inservice to district staff regarding traumatic brain injury, including symptoms, consequences, prevention strategies, and the educational implications. It is suggested that Head Injury Teams be trained in each school district or regional area. This team could act as a resource whenever the school needs assistance for a student with traumatic brain injury.

SERVICE OPTIONS

SERVICE OPTIONS

IDENTIFICATION

The identification of students with traumatic brain injury can occur from a variety of methods including the ongoing Child Find efforts as required by IDEA and Section 504. In many cases, traumatic brain injury will be identified by parents, health care professionals, rehabilitation staff, and education professionals.

The following points illustrate the common characteristics often shared by students with traumatic brain injury and may assist educators in the identification process. (Cohen, Rhodes, Welkes, and Ylviskaer, 1985)

1. Students with TBI can be more impulsive, hyperactive, distractible, and/or verbally intrusive because of confusion or lack of internal control.
2. Discrepancies in ability levels may be more extreme. Learning problems may exist even though some skills remain relatively unaffected by the brain injury. The level of reading comprehension, for instance, might be four years lower than that of spelling ability.
3. Students with TBI often learn more rapidly than learning disabled students. If they are re-learning material, they may need only to be re-acquainted with the process or concept to integrate the information and use it effectively. Their knowledge of the spoken and written code is frequently superior to that of a student with learning disabilities.
4. There may be more problems in generalizing and integrating skills or information. These problems may require more individualized teaching, or re-teaching of the same skills, as the content of lessons change.
5. They often do not become independent thinkers.
6. They may not be able to process even limited amounts of information; their comprehension deteriorates markedly as the amount and complexity of material increases.

7. More strategies need to be taught and used to compensate for impaired memory and word retrieval problems, to aid retention of information, and to improve the quality of communication.
8. Problems with organization of thoughts, cause/effect relationships, and problem solving may be more severe.
9. They may rely on pre-traumatically habituated learning strategies that are no longer effective and may resist or reject new techniques presented by the teacher.
10. They may retain the premorbid self-concept of a perfectly normal child whose automatic responses are usually appropriate. Consequently, they may have difficulty realizing that their behavior patterns are inappropriate and need to be adjusted.
11. Markedly uneven and unpredictable progress can occur because of continuing recovery. Programs must remain flexible so that possibly sharp and frequent changes can be accommodated.

RE-ENTRY/PREPLANNING

As students with TBI progress through the levels of recovery from acute care to rehabilitation and return to school, professionals and parents must communicate to prevent service gaps and to ensure continuity in programming. Planning must be a four-way process to be effective; networks need to be established involving the health care, rehabilitation, and home setting. Successful re-entry of students with head injuries into schools requires effective communication and planning. (See Pre/Planning Worksheet - White.)

When a student receives an injury and is admitted to a hospital, a health care team is formed to facilitate medical needs of the patient with TBI. This team could include parents, student (when appropriate), physician, occupational therapist, physical therapist, speech/language pathologist, psychologist, social worker, case manager, nurse, and other specialists as appropriate. School re-entry planning begins before the student is discharged from the hospital; school and health care professionals should communicate during the student's in-patient rehabilitation.

Prior to hospital discharge, the school principal or designee should contact the parents to set up a meeting to discuss school re-entry. (See Referral Checklist - Green.) In collaboration with the school principal/designee, school nurse, and health care professionals, (See Case Management - Tan), a pre-planning meeting is scheduled. The main purpose of such a meeting is for the family and the school personnel to meet, become acquainted, and determine what information is needed to develop an appropriate program. The meeting will begin the process of determining the safety and appropriateness of the educational setting based on the student's needs. During a preplanning meeting, the following should be considered:

1. The parents will inform the school of their child's injury.
2. The parents will identify the primary health care providers who have information regarding the student.
3. Confidential release forms and permission to evaluate forms should be completed to assist in gathering information.
4. The placement process and parental rights will be explained.
5. The team members who will be a part of the evaluation process will be identified. As a minimum, this team should consist of a parent, teacher, school nurse, and school administrator.
6. Upon discharge, the school needs to know the student's status in several areas:
 - Medical status
 - Seizure management
 - Medication
 - Physical limitations
 - Motor skills
 - Neurological status
 - Self-care skills
 - Communication skills
 - Behavior patterns
 - Cognitive recovery
 - Needed assistive devices
 - Continuing rehabilitation needs

(See School Information Checklist - Yellow.)

NOTE: It is important to note that the Utah State Board of Education Special Education Rules must be followed in all cases of evaluating and serving any student with disabilities. Please refer to the schematic on page 19 that outlines procedural steps in placing students in regular education, Section 504 services, or special education.

REGULAR EDUCATION

Many students with traumatic brain injury will be able to resume a relatively normal educational program with few, if any, classroom accommodations. This decision will be based upon the recommendations at the preplanning meeting and evaluations that have already been conducted. If the

team determines a student's need for a health care service to be provided at school, it will be necessary to develop a health care plan. (See Health Care Plan - Ivory.) If this is the case, please refer to the Guidelines for Serving Students with Special Health Care Needs for the development of an appropriate service plan.

SECTION 504

If the student appears to need support in his/her educational program, a referral should be made to the Section 504 coordinator or special education staff.

The following is a referral/identification/planning/review process for Section 504:

Referral

1. Referrals are received from parent(s), individual teachers, adult-age students and/or community agencies.
2. The presenting problem(s) and previous remedies should be considered and reviewed. The summary should include all current information and recommendations for additional evaluations.

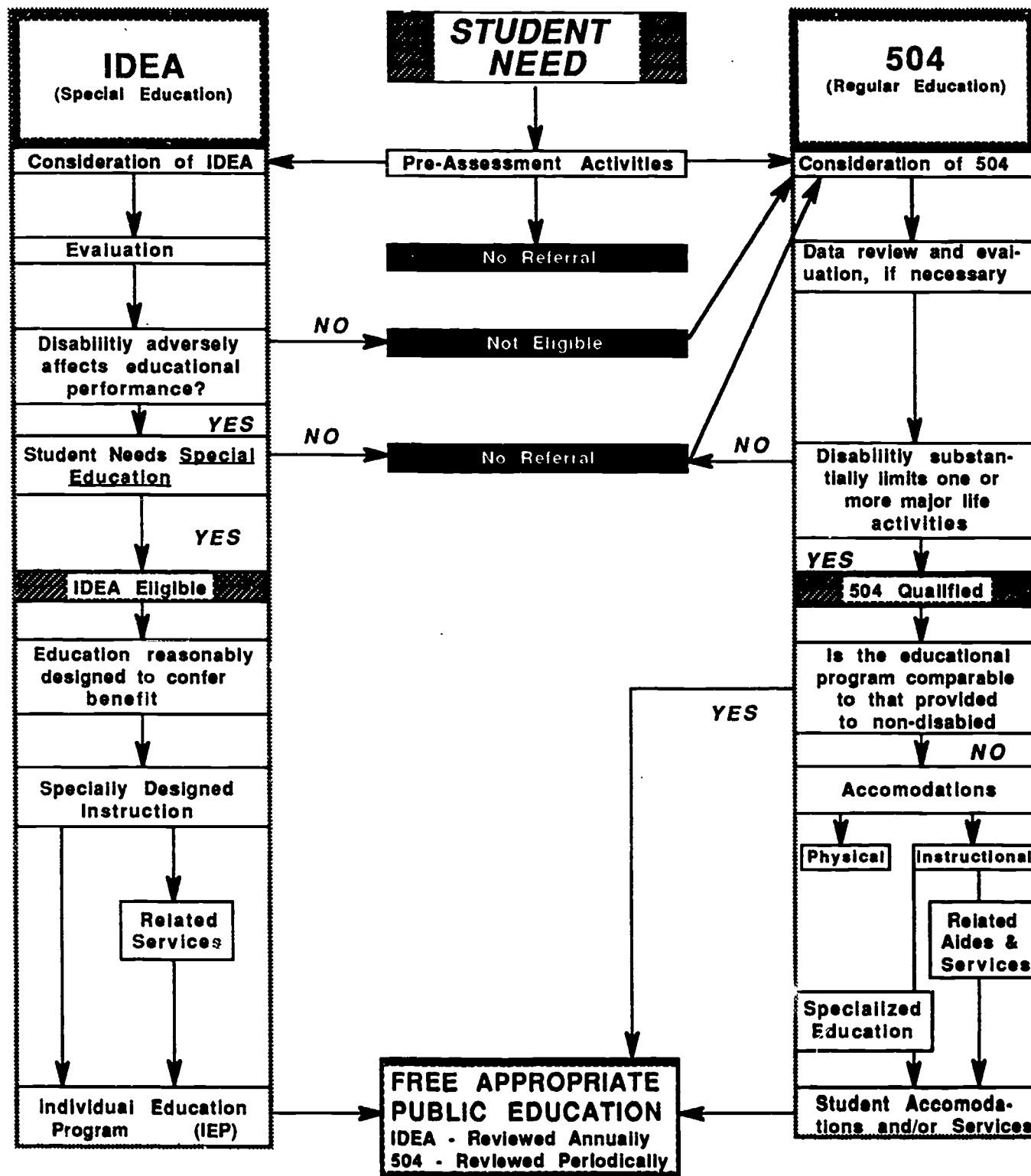
Evaluation

4. Section 504 requires that a school district evaluate all students with disabilities before making an initial placement or any subsequent, significant change in his/her placement.

Eligibility

5. In cases where major services and/or accommodations are necessary, the coordinator plans a 504 conference committee meeting and identifies all staff and parent(s) who should be included in the meeting.
6. The following factors should be considered:
 - a. Evaluation results
 - b. Section 504 eligibility
 - c. The student's unmet needs
 - d. Services and/or accommodations based on eligibility
 - e. Possible staff inservice needs

Guidelines for Serving Students with Traumatic Brain Injury



Implementation

7. The classroom teacher(s) and/or school staff make the necessary accommodations to allow for the student's disability. This might include the development of Individual Health Care Plan for those students requiring health care services at school. Parents should be consulted and give input regarding the accommodations. In many cases, this process will not need a formal team meeting.
8. The accommodations and/or services are implemented.

Review

9. Each student's accommodations and/or services will be reviewed periodically.

For further information of Section 504 please refer to the Utah State Office of Education's Section 504, Guidelines for Educators.

SPECIAL EDUCATION***Referral and Evaluation***

If a special education referral is deemed appropriate, the school principal or staff member will complete a referral and arrange for an evaluation with the school special education coordinator. Parental consent will be obtained prior to conducting the initial evaluation, and required prior notice and provision of parental rights will be followed.

A comprehensive evaluation will be conducted to answer questions relevant to the student's educational needs. These questions should direct the design of the comprehensive evaluation. Although other evaluations could be considered, the following are recommended:

- Vision
- Health care records
- Augmentative communication
- Academic
- Speech--Language
- Social--Emotional
- Hearing
- Rehabilitative team evaluations
- Self-help/Adaptive behavior
- Intellectual/Cognitive
- Career--Vocational (Secondary students)
- Gross motor skills
- Fine motor skills

Because of the dynamic nature of traumatic brain injury, it is recommended that the evaluation format include informal assessment and diagnostic teaching to complement formal testing. One characteristic of many students with traumatic brain injury is that they tend to regain previously learned material but remain deficient in learning new knowledge and concepts. Thus, it is important to consider the student's pre-injury learning style and knowledge base. Previous history becomes a baseline to compare pre-injury skills with post-injury performance.

"The purpose of evaluation is to find the point at which learning breaks down, since that is the point at which teaching should begin. The scores of psychological and academic evaluations administered to students with head injuries must be interpreted differently from scores of other students. These test results reflect only that the students with head injuries could perform the task demanded by the specific test items; they do not predict future performance." (Cohen, Rhodes, Welkes, and Ylviskaer, 1985)

It is important to remember that only a physician can diagnose brain injury; therefore, any evaluation should begin with the medical diagnosis.

A well-developed and thought out evaluation is of foremost importance to the successful reintegration of the student with TBI. Telzrow (1991) suggested that such an evaluation accomplishes several objectives, including:

1. Establishing baseline levels and patterns of performance to monitor future recovery.
2. Describing the student's functioning in critical areas to assist in educational planning.
3. Providing a means of evaluating recovery of functioning and monitoring the effectiveness of interventions.

AN EVALUATION COULD CONSIST OF THE FOLLOWING INFORMATION AND AREAS:

- a. **Medical Diagnosis of Brain Injury** - A written diagnosis from a doctor that the student has a traumatic brain injury. This is a requirement to receive special education services under the disability category TBI.
- b. **Cognitive and Information Processing Strengths and Deficits** - Measurement of intellectual processes, such as perception, memory, thinking, judgment, and reasoning.
- c. **Behavior/Emotional Status** - Evaluation of a student's behavior and what effects the behaviors have on educational performances.
- d. **Adaptive Skills** - Evaluation of the extent to which the student is able to interact effectively and appropriately with the environment.

- e. **Speech and Language Abilities** - Evaluation of articulation and verbal/written language skills. The speech/language therapist working in the school should be qualified to evaluate a number of cognitive/linguistic functions of the student with traumatic brain injury.
- f. **Fine and Gross Motor Skills** - An evaluation to determine the physical strengths and weaknesses of the student.
- g. **Academic Functioning** - It is important to remember that current academic performance is not a valid prediction of future academic success for students with traumatic brain injury. Conducting formal and informal evaluation and comparing those with pre-injury academic records will provide a pre-post comparison. This will also establish a baseline for future measurements.
- h. **Neuropsychological Evaluation** - The school district should request a copy of the neuropsychological report from the health care professionals and/or parents. This assessment would include a physical description of the injury and up-to-date medical status.
- i. **Ongoing Evaluation** -

NOTE: The Gray sheet which is an Evaluation Checklist, contains a list of specific testing instruments that could be used for students with traumatic brain injury. The nature of TBI is one of change and unpredictability, hence the annual or triennial evaluation is sometimes inadequate for this condition. The student should be constantly monitored. As teachers interact with the student daily they will be required to reconvene an IEP team in order to reassess goals and/or objectives frequently

Listed below are recommended testing conditions for evaluating students with traumatic brain injury, (Savage, 1988):

- A controlled and/or distraction-free environment, which may help compensate for the student's attention deficits.
- The use of short tests and relatively brief testing sessions, which may help compensate for the student's attention deficits.
- Very clear test instructions and examples, which may help compensate for reduced task orientation and impaired flexibility in shifting from task to task.
- Highly structured tasks, which may help compensate for reduced initiation and spontaneous problem solving.
- An encouraging interactive style of a skilled examiner, which may help compensate for the student's inability to cope with interpersonal or situational stress.

It is important to remember that all formal evaluations be interpreted within the framework of the actual environment in which the student has functioned and will function in the future. A criterion-based evaluation of the student should include assessing his/her performance in the following settings:

- In a large (5 or more) structured group.
- In a large unstructured group.
- In a small (less than 5) structured group.
- In a small unstructured group.
- In one-to-one planned teaching settings.
- In one-to-one incidental teaching settings.

The multi-disciplinary team determines whether the student has a disability requiring special education services. Typically, students who are considered eligible under the category of TBI will have one or more of the following eligibility characteristics:

- The student has suffered a sudden onset of impairment due to direct brain trauma (e.g., skull fracture, Cerebral Vascular Accident (CVA), contusions, and/or bullet wound, etc.).
- The student has suffered a slow change in cognitive abilities due to change in medical status (tumor, and/or encephalitis, etc.).
- The student has suffered an anoxic insult to the brain (cardiac arrest, and/or near drowning, etc.).

In order to qualify and be eligible for services under the category of traumatic brain injury, the above condition(s) must (1) adversely affect educational performance, and (2) require special education services.

It is important to keep in mind that before TBI became a category under the Individuals with Disabilities Act, many students with traumatic brain injury were classified under a variety of special education classifications. The IEP Team should review these cases to determine if a change of eligibility classification is warranted.

If the student does not qualify for special education services, the team determines if the student might be best served by continuing in regular classroom placement with some recognition or awareness on the part of the teacher under the "at risk" programs for those who have special needs but are not classified "disabled" or served under Section 504 of the Rehabilitation Act of 1973. If the student meets special education classification criteria, an IEP team is formed and the IEP meeting is scheduled.

Individualized Education Program

The IEP team will develop an Individualized Education Program (IEP) for the student diagnosed with TBI. Participants in the IEP meeting will include the following persons: a) representative of the school district qualified to provide, or supervise the provision of, special education; b) the student's teacher; c) one or both of the student's legal guardians or the educational surrogate parent; d) the student, where appropriate; e) other individuals, at the discretion of the parent(s) or agency (possibly including members of the health-care team--speech and language therapist, occupational therapist, physical therapist, etc.).

If this is an initial IEP meeting, the IEP team must include a member of the evaluation team or an individual knowledgeable about the student's evaluation procedures and familiar with the results of the evaluation. Either the teacher or other staff must be knowledgeable about the student's suspected disability. Also present at such meetings should be a representative of other public or private agencies, as appropriate. The IEP specifies the type and amount of special education and related service to be provided and the initial placement for the delivery of those services. In addition to the IEP, certain students may require a health care and/or emergency plan. (See Health Care Plan - Ivory, Emergency Plan - Salmon.)

The IEP of a preschool student who has experienced a traumatic brain injury must also address goals for planning transition activities from the preschool setting to the regular school environment. The IEP of a student with TBI in a secondary school will address goals for planning transition from public education into appropriate post-school activities agencies, and services. Available family and community resources should be explored.

NOTE: Check pages 58 and 60 for suggestions for making accommodations in the elementary and secondary school for students with traumatic brain injury.

Placement and Implementation

When determining the appropriate placement for special educational services, the team must consider that the student with traumatic brain injury should be placed in the least restrictive environment. A continuum of alternative placements should be considered. These include: consultant services provided in regular classrooms with appropriate supplemental instruction, itinerant resource services, resource rooms, self-contained placement in a resource room, self-contained classes in regular schools, special day schools, residential learning centers, and home and/or hospital based instruction.

The school special education director should arrange inservice for teachers of the school serving the student with traumatic brain injury. When possible, this is done prior to the student's return to school in order to prepare parents, administrators, teachers, staff, and peers regarding the student's expected academic and social needs.

The school principal should designate a school liaison to maintain communication with the student's school, the health care team, special education services, and the parent(s).

Review

While all IEPs are reviewed annually, it is recommended that the initial IEP for a student with traumatic brain injury be written on a short-term basis (6-8 weeks) and revised often. Since the student with traumatic brain injury often makes rapid changes in the first year following a brain injury, he/she should be re-evaluated more frequently.

Transition

Exiting the public education system is particularly difficult for students who have TBI because of the resulting physical and psychological adjustments as well as the transition from adolescence to adulthood. Transition planning, utilizing an interdisciplinary team, is the most effective way to establish and accomplish goals for these students. Transition services are required by IDEA for all students with disabilities, beginning at age 16, or younger, as determined by the IEP team.

Definition of Transition

Transition services for students with disabilities shall be addressed in the IEP. For students whose needs require transition planning, such planning must be based upon the results of individual student evaluations completed by the multidisciplinary assessment team. Transition services means a coordinated set of activities for a student, designed within an outcome-oriented process, that promotes movement from school to post-school activities including: post-secondary education, vocational training, integrated employment (including supported employment), continuing and adult education, adult services, independent living, or community participation.

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USOE Special Education Rules

Areas which must be addressed during transition planning include: instruction, community experiences, the development of employment or other post-school adult living objectives, and if appropriate, acquisition of daily living skills and functional vocational evaluation. It is important for the student to be involved in this process, as well as representatives of any agency likely to be responsible for providing future transition services. A statement of each agency's agreed upon responsibilities or linkages which need to occur before the student leaves the school setting must be included.

The Utah State Office of Rehabilitation Services, Division of Rehabilitation Services, and the State of Utah Division of Services for People with Disabilities also provides services to persons with TBI and/or their family members. Unlike public education which mandates services for students with disabilities, these services are based on the availability of funding. Funding for these programs is appropriated by the Utah State Legislature and is limited; therefore, lengthy waiting lists may exist.

Services to assist families to maintain a youth who has TBI include: case management, family support, and respite. Services for consumers include counseling, case management, vocational training, supported employment, personal assistance services, and residential services. As soon as planning for the student to re-enter school begins, parents of students who have TBI should be encouraged to contact their local Office of Rehabilitation Services and Office of Social Services for information and to apply for any services they desire. This is particularly important for students at the secondary level.

A Multi-Agency Intake Questionnaire developed by the State of Utah Department of Health, Utah State Office of Education, and Department of Human Services can be requested. This should reduce the need for families to provide the same information repeatedly if a family member requires services from more than one agency. Contact the Utah State Office of Education for information about this questionnaire. (801-538-7700)

TRANSPORTATION

TRANSPORTATION

The Individuals with Disabilities Education Act requires the development of an Individualized Education Program (IEP) for each student with disabilities, and requires that each person involved in any aspect of a student's special education program be adequately trained. This includes bus drivers when transportation is a related service.

IDEA requires that transportation be provided as a related services if a student requires such service in order to benefit from special education and must be written into the IEP. Transportation is defined as:

- a. "Travel to and from school and between schools.
- b. Travel in and around school buildings.
- c. Specialized equipment (such as special or adapted buses, lifts, and ramps), if required, to provide special transportation for a student."

Since transportation is a related service, the following guidelines are recommended for decision making:

1. Transportation could be a related service under IDEA or Section 504.
2. If a student is identified as needing special education and transportation as a related service, then this service must be without cost to the parent(s) or guardian(s).
3. The need for special education does not automatically authorize the need for transportation. This is an IEP or Section 504 committee's decision.
4. Each transportation service situation should be examined independently by an IEP or Section 504 committee. School district procedures should be developed in line with Federal and State requirements.

Driver Responsibilities

The interaction with the bus driver is usually the first contact each school day for the student with disabilities. A smile and friendly greeting will often set the student's attitude for the entire day. Many students with traumatic brain injury will require special accommodations on the school bus, especially in the areas of health care and behavior management.

The bus driver should be involved with developing a transportation plan and be responsible for the implementation of that part of the IEP. (See Transportation Plan - Blue.)

The driver's main responsibility is to get students to and from school safely in spite of weather conditions and traffic problems. Students with traumatic brain injury may forget rules, fight, and misbehave. The following suggestions may be helpful in transporting students with traumatic brain injuries:

1. Keep instructions simple, using short sentences.
2. Repetition of instructions will be necessary.
3. Keep the same routines.
4. If a change in routine is expected, such as a substitute driver, tell the student ahead of time.
5. Explain the bus rules, make sure the student understands directions and consequences for behavior problems.
6. Follow the transportation plan as outlined by the IEP or Section 504 Committee.

SAMPLE FORMS

SAMPLE FORM SUMMARY

Each student with a traumatic brain injury is unique. One student might only need a Health Care Plan, while others, with complex problems, may require detailed procedures that require extensive documentation.

The following are examples of suggested forms that could be used to meet the unique requirements of students with TBI. Remember, if a student is placed in special education or receives Section 504 services, additional paperwork will be required.

1. **REFERRAL CHECKLIST (Green)** - Completed by school staff, information is gathered from parents and health care professionals.
2. **CASE MANAGEMENT (Tan)** - Listing of all individuals working with the student.
3. **PREPLANNING WORKSHEET (White)** - Issues, concerns, and plans for the student's re-entry to the school environment.
4. **SCHOOL INFORMATION CHECKLIST (Yellow)** - Summary of important information necessary for effective planning.
5. **HEALTH CARE PLAN (Ivory)** - Detailed summary of the student's health care procedures and indication of which staff will be responsible for the student's care. Includes goals and actions. For more information, refer to USOE Guidelines for Serving Students with Special Health Care Needs.
6. **MEDICATION PROCEDURES (Pink)** - Document and authorize the administration of medication at school.
7. **MEDICATION/TREATMENT/ADMINISTRATION RECORD (Pink)** - Record of daily administration of medication.
8. **EMERGENCY PLAN FOR BEHAVIORAL/MEDICAL PROBLEMS (Salmon)** - Procedures and responsibilities if an emergency occurs.
9. **TRANSPORTATION PLAN (Blue)** - Issues and procedures for transporting the student. The bus driver, transportation aide, and substitute should have copies of this plan.
10. **TRAINING PLAN (Golden)** - Training requirements of school district staff and when follow-up is required.
11. **EVALUATION CHECKLIST (Gray)** - Listing of testing instruments that could be used with students with traumatic brain injury.

12. **MODIFYING THE ELEMENTARY CLASSROOM (Gray)** - Suggestions for making accommodations at the elementary level.
13. **MODIFYING THE SECONDARY CLASSROOM (Gray)** - Suggestions for making accommodations at the secondary level.

REFERRAL CHECKLIST

STUDENT _____

DATE OF BIRTH _____

SCHOOL _____

DATE _____

DOES THE STUDENT:

YES NO

COMMENTS

1. Have a diagnosis by a medical doctor as having a traumatic brain injury? Condition _____			
2. Require accommodations in teaching strategies and curriculum, such as compensation for short-term memory loss, graphic organizers, etc.?			
3. Require task organization accommodations in behavioral management techniques, such as the use of daily planners, use of peer tutor or self-monitoring techniques?			
4. Require re-teaching of basic communication skills, such as word retrieval, articulation, expressive language?			
5. Require re-training of gross and fine motor skills, such as ambulation and writing, computer skills, self-care, daily living skills, etc.?			
6. Receive ongoing medication for physical or emotional problems such as seizures, depression, impulsivity or agitation? Medications _____			
7. Require adjustments of the school environment or schedule due to a health condition such as rest following a seizure, limitation in physical activity, periodic breaks for endurance, part-time schedule, building modifications for access, additional time allotted for passing between classes or preferential seating?			
8. Require major safety considerations such as special transportation, emergency plan, additional supervision or helmet?			

Person Referring _____

Title _____

CASE MANAGEMENT

STUDENT _____ DATE OF BIRTH _____
SCHOOL _____ DATE _____

	Name	Phone
Parent(s)	_____	_____
Case Manager	_____	_____
Physician	_____	_____
Administrator	_____	_____
Classroom Teacher	_____	_____
Special Education Teacher	_____	_____
Occupational Therapist	_____	_____
Speech Therapist	_____	_____
Physical Therapist	_____	_____
Nurse	_____	_____
Psychologist	_____	_____
Neuropsychologist	_____	_____
Vocational Professional	_____	_____
Other	_____	_____

PRE-PLANNING WORKSHEET

Instructions: Use this sheet to develop an integrated plan to accommodate the student with traumatic brain injury.

STUDENT _____

GRADE _____

DATE OF INJURY _____

DATE OF TEAM MEETING _____

SCHOOL _____

DATE OF BIRTH _____

I. PRE-INJURY HISTORY:

II. HISTORY OF TRAUMATIC BRAIN INJURY:

III. MEDICAL INFORMATION:

IV. PHYSICAL AND DAILY LIVING SKILLS:

V. COGNITIVE:

OVER 

VI. BEHAVIOR/PSYCHOSOCIAL:

VII. COMMUNICATION:

VIII. PRE-INJURY FUNCTIONING:

I have participated in the development of the integrated plan for _____

NAME

TITLE

SCHOOL INFORMATION CHECKLIST

STUDENT _____ GRADE _____ DATE OF BIRTH _____

INFORMATION REQUIRED	Information Requested	Information Obtained	Contact Person	Contact Phone
PRESENT PHYSICAL CONDITION				
MOTOR SKILLS				
PHYSICAL LIMITATIONS				
ACTIVITY LIMITATIONS				
ONGOING THERAPY REQUIREMENTS				
PRESCRIBED MEDICATIONS				
SELF-CARE ABILITIES				
REQUIRED ASSISTIVE DEVICES				
BEHAVIOR CONCERNS				
COMMUNICATION ABILITIES				
COGNITIVE / ACADEMIC				
PRE-INJURY INFORMATION				

HEALTH CARE PLAN

(Please attach forms if space is insufficient.)

Student Identification

Student Name _____ Date of Birth _____

Background Information

Nursing Assessment (Complete all necessary sections.)

Brief Medical History / Specific Health Care *(Check box if additional information is attached.)*

Psychosocial Concerns *(Check box if additional information is attached.)*

Student and Family Strengths *(Check box if additional information is attached.)*

Academic / Achievement Profile *(Check box if additional information is attached.)*

Goals and Actions

Skills checklist *Attach physician's order and other standards for care.*

Procedures and Interventions (student specific)

<u>Procedure</u>	<u>Administered by</u>	<u>Equipment</u>	<u>Maintained by</u>	<u>Auth / trained by</u>
1)				
2)				
3)				

Medications *(Attach medication guideline and administration log.)*

OVER 

Diet (Check box if additional information is attached.)

Transportation (Check box if additional information is attached.)

Classroom School Modifications including adapted PE (Check box if additional information is attached.)

Equipment and Supplies: Provided by Parent(s) Provided by School District (Not necessary.)

List Equipment: _____

Training, Education (staff, CPR, skills checklist), (peers, students)

Student Participation in Procedures (student skills checklist) (Check box if additional information is attached.)

Safety Measures (Check box if additional information is attached.)

Contingencies

Emergency Plan Attached Transportation Plan Attached Training Plan Attached

Substitute Backup Staff (when primary staff not available)

Possible Problems to be Expected

Authorizations

I have participated in the development of the Health Care Plan and agree with the contents.

	Date		Date
Parent(s) _____	_____	Teacher _____	_____
School Liaison _____	_____	Teacher _____	_____
School Nurse _____	_____	Other _____	_____
LEA Representative _____	_____	Other _____	_____
Physician: order for medication / specialized procedure (if pertinent) _____			

Administrative Comments

Effective Beginning Date _____ Date Health Care Checklist Completed _____
IEP if Appropriate _____ Date _____
Next Review Date _____

MEDICATION PROCEDURES

STUDENT _____ GRADE _____ DATE OF BIRTH _____

Medication _____

Dose _____

Time _____

Procedures _____

Expected effects on learning _____

Expected effects on behavior _____

Other side effects _____

Medication _____

Dose _____

Time _____

Procedures _____

Expected effects on learning _____

Expected effects on behavior _____

Other side effects _____

PARENT AUTHORIZATION

I, _____, request the above health care procedures and/or medication treatment be administered to my child at school. I understand that qualified, designated person(s) will be performing these health care services. I will notify the school immediately if my child's health status changes, or if there is a change or cancelation of the procedure/medication(s).

Parent/Guardian Signature

Date

PHYSICIAN AUTHORIZATION

- I have reviewed the Health Care Plan and approve it as written.
- I have reviewed the Health Care Plan and approve it with the attached amendments.
- I do not approve the Health Care Plan. A substitute plan is attached.

Physician Signature

Date

MEDICATION / TREATMENT / ADMINISTRATION RECORD

Student _____ School _____

Physician _____ Grade _____ Date Of Birth _____ Date _____

Employee designated and trained to administer medication

Employee Name(s) _____

MEDICATIONS				
Medication	Time / Frequency	Dosage	How Given	Possible Effects on Learning and Physical Functioning
1)				
2)				
3)				
4)				
5)				

Medication / Treatment Administration / Supervision		Medication / Treatment Administration / Supervision By Signature	Medication / Treatment Administration / Supervision	Medication / Treatment Administration / Supervision By Signature	
Date	Time	Signature	Date	Time	Signature

EMERGENCY PLAN FOR BEHAVIOR / MEDICAL PROBLEMS

Student _____ Date _____

Preferred hospital in case of emergency _____

Physician _____ Phone _____

STUDENT-SPECIFIC EMERGENCIES

If You See This	Do This

IF AN EMERGENCY OCCURS:

1. If the emergency is life-threatening, immediately call 911.
2. Stay with student or designate another adult to do so.
3. Call or designate someone to call the principal and/or health care coordinator.
 - a. State who you are.
 - b. State where you are.
 - c. State problem.
4. If the school nurse is unavailable, the following staff members are trained to deal with behavior/medical emergency, and to initiate the appropriate procedures: _____

Signature _____

Date _____



TRANSPORTATION PLAN

Bus Number _____ a.m p.m.

Bus Driver _____

Student _____

Address _____

Home Phone _____ Zip Code _____

Father's Work Phone _____

Mother's Work Phone _____

After School Caregiver _____ Phone _____

School _____ Teacher/Case Manager _____

Disability / Diagnosis _____

Medications _____

Side Effects _____

1. Mode of transportation on bus. (check one)

wheelchair car seat seat belt chest harness other _____

2. Walks up bus stairs independently:

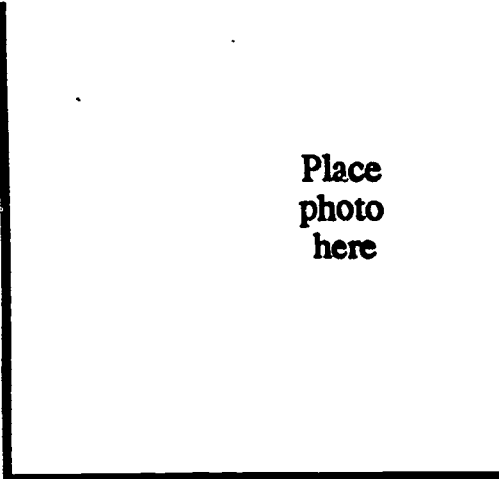
Yes No

3. Student's method of communication: _____

4. Behavioral difficulties student displays: _____

5. Equipment that must be transported on bus (including oxygen, life-sustaining equipment, wheelchair equipment, climate control, etc.) _____

6. Training requirements: _____



TRAINING PLAN

_____ Date _____ Instructor _____ Person Trained

TYPE OF TRAINING _____

Recommendations for follow-up and further training _____

Re-check recommended _____

_____ Date _____ Instructor _____ Person Trained

TYPE OF TRAINING _____

Recommendations for follow-up and further training _____

Re-check recommended _____

_____ Date _____ Instructor _____ Person Trained

TYPE OF TRAINING _____

Recommendations for follow-up and further training _____

Re-check recommended _____

EVALUATION CHECKLIST
Test Instruments/Procedures Sensitive to Neuropsychologic Evaluation Domains

DOMAIN	INSTRUMENTS AND PROCEDURES	DOMAIN	INSTRUMENTS AND PROCEDURES
Intelligence	<ul style="list-style-type: none"> • Age-appropriate Wechsler Scale (WAS-R, WISC-III-R) • Differential Ability Scales (DAS) • Kaufman Assessment Battery for Children (K-ABC) • Stanford-Binet, 4th Edition • Woodcock-Johnson Psycho-Education Battery-Revised (WJPE-R) • Tests of Cognitive Ability 	Attentional Resources	<ul style="list-style-type: none"> • Attention Deficit Disorders Evaluation Scale • Connors Parent Rating Scale • Connors Teacher Rating Scale • Stanford-Binet, 4th Edition (Memory Area) • Contextual Assessments such as behavioral observations conducted in academic and nonacademic school settings • Continuous Performance Test (CPT)
Language Abilities	<ul style="list-style-type: none"> • Aphasia Screening Test (AST) • Clinical Evaluation of Language Fundamentals--Revised (CELF-R) • Peabody Picture Vocabulary Test Revised (PPVT-R) • Test of Auditory Comprehension of Language-Revised (TACL-R) • Test of Language Competence--Expanded Edition (TLC-Expanded) • Test of Word Findings (TWF) • Token Test for Children • Contextual assessments such as language samples conducted in academic and nonacademic school settings • Detroit Tests of Learning Aptitude (DTLA) • Test of Adolescent/Adult Word Finding • Test of Problem Solving Elem. and Adolescent 	Achievement	<ul style="list-style-type: none"> • Basic Achievement Skills Individual Screener (Basis) • Kaufman Assessment Battery for Children (K-ABC) • Achievement Scale • Kaufman Test of Education Achievement (K-TEA) • Peabody Individual Achievement Test-Revised • Woodcock-Johnson Psycho-Educational Battery--Revised (WJPE-R) • Contextual assessments such as informal and teacher-made tests in academic subject areas.
Visual-Spatial and Constructional Performance	<ul style="list-style-type: none"> • Constructional Praxis Tests • Developmental Test of Visual Motor Integration • Stanford-Binet, 4th Edition (Abstract Visual Reasoning Area) • Contextual assessments such as samples of handwriting and art projects 	Problem Solving and Abstract Reasoning	<ul style="list-style-type: none"> • Category Test • Tactual Performance Test • Trail Making Test • Wisconsin Card Sorting Test • Stroop Neurological Screening Test (SNST)
Somatosensory and Motor Functions	<ul style="list-style-type: none"> • Bruninks-Osteretky Test of Motor Proficiency • Finger localization • Finger oscillation • Purdue Pegboard Test • Somatosensory Test • Contextual assessment such as observations in physical education and during "activities for daily living" • Learning Efficient Test (LET) tests the ability to learn new material 	Social Behavior	<ul style="list-style-type: none"> • Child Behavior Checklist (parent and teacher forms) • Vineland Adaptive Behavior Scale • Contextual assessments such as behavioral observations in social or home settings • The skill of social competence school adjustment (SSCS) • Personality Inventory for Children (PIC) • Wide Range Assessment of Memory and Learning (WRAML) • Denman • Rivermead <p>Adapted from: Journal of Head Trauma Rehabilitation, March 1991</p>



MODIFYING THE ELEMENTARY CLASSROOM

For a Student with Traumatic Brain Injury

Student: _____ Date: _____
 Presenting Concern: _____
 Teacher: _____ Date of Birth: _____

<p>Change the Teaching Mode:</p> <p>Repeat directions _____</p> <p>Increase active participation _____</p> <p>Teacher circulate around room _____</p> <p>Provide visual prompts (board/desk) _____</p> <p>Provide immediate feedback (student corrects own work) _____</p> <p>Teach semantic mapping _____</p> <p>Use frequent review of key concepts _____</p> <p>Teach to current level of ability _____</p> <p>Speak more slowly or loudly _____</p> <p>Re-teach _____</p> <p>Use peer tutor _____</p> <p>Use small group instruction _____</p> <p>Use simple sentences _____</p> <p>Use individualized instruction _____</p> <p>Pause frequently _____</p> <p>Discuss errors and how made _____</p> <p>Use cooperative learning _____</p> <p>Utilize instructional assistant _____</p> <p>Other: _____</p>	<p>Adapt Instructional Materials:</p> <p>Reduce length of assignments _____</p> <p>Use easier materials _____</p> <p>Use aids (calculator, word processor) _____</p> <p>Underline or highlight words _____</p> <p>Change skill/task _____</p> <p>Use manipulative materials _____</p> <p>Use color-coded text _____</p> <p>Use books-on-tape _____</p> <p>Use graphic organizers (visual/spatial displays) _____</p> <p>Modify testing mode/setting _____</p> <p>Other: _____</p>	<p>Resources Needed:</p> <p>Fine motor training _____</p> <p>Gross motor training _____</p> <p>Speech and language specialist _____</p> <p>Other (including past) teachers _____</p> <p>Resource teachers _____</p> <p>Resource specialist _____</p> <p>School psychologist _____</p> <p>Student study team _____</p> <p>Child Development Specialist _____</p> <p>Principal/assistant principal _____</p> <p>Rehab facility _____</p> <p>Other: _____</p>
<p>Modify the School Settings:</p> <p>Post class rules _____</p> <p>Give preferential seating _____</p> <p>Change to another class _____</p> <p>Change schedule (more difficult classes in the morning) _____</p> <p>Post daily schedule _____</p> <p>Reduce distractions _____</p> <p>Modify length of school day _____</p> <p>Provide time for frequent breaks _____</p> <p>Provide place for quiet time _____</p> <p>Maintain consistent schedule _____</p> <p>Other: _____</p>	<p>Enhance Home/School Relations:</p> <p>Parent conference every _____</p> <p>Daily/weekly reports home _____</p> <p>Parent contract _____</p> <p>Home visits on _____</p> <p>Other: _____</p>	<p>Provide Support (buddy system):</p> <p>Explain disabilities to other students _____</p> <p>Teach peers how to be helpful _____</p> <p>Position appropriately _____</p> <p>Point out similarities to previous work _____</p> <p>Teach sequencing skills _____</p> <p>Teach study skills _____</p> <p>Teach visual imagery _____</p> <p>Write assignments in daily log _____</p> <p>Encourage requests for clarification, repetition, etc. _____</p> <p>Teach memory strategies _____</p> <p>Elicit responses when you know student knows the answer _____</p> <p>Allow extra time _____</p> <p>Other: _____</p>
<p>Modify Student's Behavior:</p> <p>Re-teach expected behavior _____</p> <p>Increase student success rate _____</p> <p>Learn to recognize signs of stress _____</p> <p>Give nonverbal cues to discontinue behavior _____</p> <p>Reinforce positive behavior (4:1) _____</p> <p>Use mild, consistent consequences _____</p> <p>Set goals with student _____</p> <p>Use schoolwide reinforcement with target student _____</p> <p>Use group or individual counseling _____</p> <p>Teach student to attend to advance organizers at beginning of lesson _____</p> <p>Provide opportunities to role play _____</p> <p>Other: _____</p>		



MODIFYING THE SECONDARY CLASSROOM
For a Student with Traumatic Brain Injury

Student: _____ Date of Birth: _____ Date: _____
 Presenting Concern: _____
 Teacher: _____

<p>Change the Teaching Mode:</p> <p>Repeat directions _____</p> <p>Increase active participation _____</p> <p>Teacher circulate around room _____</p> <p>Provide visual prompts (board/desk) _____</p> <p>Provide immediate feedback (student corrects own work) _____</p> <p>Teach semantic mapping _____</p> <p>Use frequent review of key concepts _____</p> <p>Teach to current level of ability _____</p> <p>Speak more slowly or loudly _____</p> <p>Re-teach _____</p> <p>Use peer tutor _____</p> <p>Use small group instruction _____</p> <p>Use simple sentences _____</p> <p>Use individualized instruction _____</p> <p>Pause frequently _____</p> <p>Discuss errors and how made _____</p> <p>Use cooperative learning _____</p> <p>Utilize instructional assistant _____</p> <p>Other: _____</p>	<p>Adapt Instructional Materials:</p> <p>Reduce length of assignments _____</p> <p>Use easier materials _____</p> <p>Underline or highlight words _____</p> <p>Change skill/task _____</p> <p>Use manipulative materials _____</p> <p>Use color-coded text _____</p> <p>Use books-on-tape _____</p> <p>Use graphic organizers (visual/spatial displays) _____</p> <p>Modify testing mode/setting _____</p> <p>Other: _____</p> <p>Enhance Home/School Relations:</p> <p>Parent conference every _____</p> <p>Daily/weekly reports home _____</p> <p>Parent contract _____</p> <p>Home visits on _____</p> <p>Other: _____</p> <p>Modify Student's Behavior:</p> <p>Re-teach expected behavior _____</p> <p>Increase student success rate _____</p> <p>Learn to recognize signs of stress _____</p> <p>Give nonverbal cues to discontinue behavior _____</p> <p>Reinforce positive behavior (4:1) _____</p> <p>Use mild, consistent consequences _____</p> <p>Set goals with student _____</p> <p>Use key students for reinforcement of target student _____</p> <p>Use group or individual counseling _____</p> <p>Teach student to attend to advance organizers at beginning of lesson _____</p> <p>Provide opportunities to role play _____</p> <p>Teach student the grading system _____</p> <p>Other: _____</p>	<p>Resources Needed:</p> <p>Fine motor training _____</p> <p>Gross motor training _____</p> <p>Speech and language specialist _____</p> <p>Other (including past) teachers _____</p> <p>Resource teachers _____</p> <p>Resource specialist _____</p> <p>School psychologist _____</p> <p>Student study team _____</p> <p>Counselor _____</p> <p>Principal/assistant principal _____</p> <p>Rehab facility _____</p> <p>Other: _____</p> <p>Provide Support</p> <p>Use Peer-partner (Buddy system) _____</p> <p>Explain disabilities to other students _____</p> <p>Teach peers how to be helpful _____</p> <p>Position appropriately _____</p> <p>Point out similarities to previous work _____</p> <p>Teach sequencing skills _____</p> <p>Teach study skills _____</p> <p>Teach visual imagery _____</p> <p>Write assignments in daily log _____</p> <p>Encourage requests for clarification, repetition, etc. _____</p> <p>Teach memory strategies _____</p> <p>Elicit responses when you know student knows the answer _____</p> <p>Allow extra time _____</p> <p>Develop objective grading system using daily participation as a percentage of weekly and final grades _____</p> <p>Schedule regular meetings for all staff to review progress and maintain consistency _____</p> <p>Other: _____</p>
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Modify the School Settings:

Post class rules _____

Give preferential seating _____

Change to another class _____

Change schedule (more difficult classes in the morning) _____

Post daily schedule _____

Reduce distractions _____

Modify length of school day _____

Provide time for frequent breaks _____

Provide place for quiet time _____

Maintain consistent schedule _____

Other: _____



ADMINISTRATIVE CONSIDERATIONS

ADMINISTRATIVE CONSIDERATIONS

GUIDELINES FOR EDUCATORS

Educator guidelines regarding traumatic brain injury are available to classroom, special education, and support staff personnel. The Utah State Office of Education has made the following resources available for educators:

- **Savage, R., *An Educator's Manual: What Educators Need to Know About Student(s) With Traumatic Brain Injury*. National Head Injury Foundation.**
- **Mira, M., Tyler, J., and Tucker, B., *Traumatic Head Injury in Children: A Guide For Schools*. Kansas State Department of Education.**
- ***A Fate Better Than Death*, Video Tape, 18 minutes, National Head Injury Foundation.**
- ***A Teacher's Guide. Managing Children with Brain Injury in the Classroom*. Neurology, Learning and Behavior Center, 230 South 500 East, Suite 100, Salt Lake City, UT 84102.**
- ***A Teacher's Guide. Managing Children with Brain Injury in the Classroom*. Neurology, Learning and Behavior Center, 230 South 500 East, Suite 100, Salt Lake City, UT 84102.**

INSERVICE TRAINING

Teachers and support personnel involved in the education of students with traumatic brain injury should participate in training programs to utilize the expertise of professionals in the community. The USOE has developed a two-day inservice training for staff working with students with traumatic brain injury. Please call the Utah State Office of Education for more information.

HEAD INJURY TEAM

It is suggested that each school or region assemble and provide opportunities for training a Head Injury Team (HIT). This team would serve as a resource whenever a student with traumatic brain injury is identified by the school district.

MULTI-DISCIPLINARY APPROACH

Many students with traumatic brain injury will require a multi-disciplinary approach involving medical, rehabilitative, parental, and educational involvement. Involving all parties will better ensure a seamless transition from hospital, to rehabilitation, to an appropriate educational program.

TRANSPORTATION

Many students with traumatic brain injury will require a transportation plan (blue form) to address their medical and/or behavioral requirements. If a transportation plan is necessary, the bus driver should be involved in meetings involving this part of the student's program.

SERVICE OPTIONS

The school administrator should be aware of the many possible service options for a student with traumatic brain injury. The goal for any student should be the regular classroom, but Section 504 accommodations and/or special education services might be necessary to meet unique needs manifested by a traumatic brain injury.

EDUCATIONAL PLANNING

Regardless of which service option is used, the educational plan for students with traumatic brain injury should include cognitive, social/behavioral, and sensorimotor goals and objectives.

PROGRAM REVIEW

All Section 504 and special education placements must be reviewed at least annually. It is recommended that all TBI placements be reviewed every 6-8 weeks, since rapid changes are characteristic of traumatic brain injury.

RESOURCES

RESOURCES

The following list is a compilation of possible programs in and out of the State of Utah that provide services for persons with traumatic brain injury. The inclusion of this list within the guidelines does not imply that the Utah State Office of Education endorses these programs. They are provided merely for your convenience and ready reference.

UTAH AGENCIES

Active Re-Entry Independent Living Center
451 South Carbon Avenue
P.O. Box 931
Price, UT 84501
(801) 637-4950

Allen Memorial Hospital
P.O. Box 998
Moab, UT 84532
(801) 259-7191

Alta View Hospital
9660 South 1300 East
Sandy, UT 84094
(801) 734-9471

American Fork Hospital
170 North 1100 East
American Fork, UT 84003
(801) 763-3300

Ashley Valley Medical Center
151 West 200 North
Vernal, UT 84078
(801) 789-3342

Avatar Utah Head Injury Transitional Residence
348 East 200 South
Kaysville, UT 84037
(801) 546-2574

Bear River Valley Hospital
440 West 500 North
Tremonton, UT 84337
(801) 257-7441

Beaver Valley Hospital
85 North 400 East
Beaver, UT 84713
(801) 438-2531

Benchmark Regional Hospital
592 West 1350 South
Woods Cross, UT 84087
(801) 298-2844

Brigham City Community Hospital
950 South 500 West
Brigham City, UT 84302
(801) 734-9471

Castleview Hospital
300 North Hospital Dr.
Price, UT 84501
(801) 637-4800

Central Valley Medical Center
549 North 400 East
Nephi, UT 84648
(801) 623-1242

Charter Canyon Hospital
1350 East 750 North
Orem, UT 84057
(801) 365-9555

Charter Summit Hospital
175 West 7200 South
Midvale, UT 84047
(801) 561-8181

Cottonwood Hospital Medical Center
5770 South 300 East
Murray, UT 84107
(801) 262-3461

Davis Hospital & Medical Center
1600 West Antelope Dr.
Layton, UT 84041
(801) 825-9561

Delta Community Medical Center
126 South White Sage Ave.
Delta, UT 84624
(801) 864-5591

Developmental Disabilities, Inc.
1018 Atherton Dr., Suite 101
Salt Lake City, UT 84107
(801) 266-3939

Division of Services for People with Disabilities
120 North 200 West #201
Salt Lake City, UT 84103
(801) 538-4200

Dixie Medical Center
544 South 400 East
St. George, UT 84770
(801) 634-4245

Doxey Hatch Surgical Center
1255 East 3900 South
Salt Lake City, UT 84124
(801) 262-3401

Duchesne County Hospital
250 West 300 North
Roosevelt, UT 84066
(801) 722-4691

Easter Seal Society of Utah
254 West 400 South, Suite 340
Salt Lake City, UT 84101
(801) 531-0522

Fillmore Community Medical Center
P.O. Box 746
Fillmore, UT 84631
(801) 743-5591

Garfield Memorial Hospital
200 North 400 East
P.O. Box 389
Panguitch, UT 84759
(801) 676-8811

Gunnison Valley Hospital
64 East 100 North
Gunnison, UT 84634
(801) 528-7246

Highland Ridge Hospital
4578 Highland Dr.
Salt Lake City, UT 84117
(801) 272-9851

Holy Cross Jordan Valley Hospital
3580 West 9000 South
West Jordan, UT 84088
(801) 561-8888

Intermountain Rehabilitation Center at LDS
Hospital
8th Avenue & C Street
Salt Lake City, UT 84143
(801) 321-5450

Intermountain Rehabilitation Center at Utah
Valley Regional Medical Center
1034 North 500 West
Provo, UT 84604
(801) 379-7370

Intermountain Surgical Center
359 Eighth Avenue
Salt Lake City, UT 84103
(801) 321-3200

Kane County Hospital
171 West 300 North
Kanab, UT 84741
(801) 644-5811

Lakeview Hospital
630 East Medical Dr.
Bountiful, UT 84010
(801) 292-6231

Logan Regional Hospital
1400 North 500 East
Logan, UT 84321
(801) 752-2050

Milford Valley Memorial Hospital
P.O. Box 640
Milford, UT 84751
(801) 387-2411

Monument Valley Hospital
P.O. Box 4
Monument Valley, UT 84536
(801) 727-3241

Mountain View Hospital
 P.O. Box 640
 Milford, UT 84751
 (801) 387-2411

NeuroCare
 2159 South 700 East
 Salt Lake City, UT 84106
 (801) 467-1919

NeruoCare, Salt Lake City Residential
 8265 West 2700 South
 Magna, UT 84044
 (801) 250-8400

Neurology Learning & Behavior Center
 230 South 500 East, Suite 100
 Salt Lake City, UT 84102
 (801) 532-1484

Office of Social Services
 Utah Department of Human Services
 Regional Offices
 120 North 200 West, Room 324
 Salt Lake City, UT 84103
 (801) 538-4004

Olympus View Hospital
 1430 East 4500 South
 Salt Lake City, UT 84117
 (801) 272-8000

Orem Community Hospital
 331 North 400 West
 Orem, UT 84057
 (801) 227-3301

PCMC Rehabilitation Center
 100 North Medical Drive
 Salt Lake City, UT 84113
 (801) 588-3955

Pioneer Valley Hospital
 3460 South Pioneer Parkway
 West Valley City, UT 84107
 (801) 964-3100

Primary Children's Medical Center
 100 North Medical Dr.
 Salt Lake City, UT 84113
 (801) 588-3385

Quinney Rehabilitation Institute of Holy Cross
 Hospital
 1050 E. South Temple
 Salt Lake City, UT 84102
 (801) 350-4593

Rivendell Psychiatric Center
 5899 West Rivendell Dr.
 West Jordan, UT 84084
 (801) 561-3377

Salt Lake Surgical Center
 617 East 3900 South
 Salt Lake City, UT 84107
 (801) 261-3141

San Juan County Hospital
 P.O. Box 308
 Monticello, UT 84535
 (801) 587-2116

Sanpete Valley Hospital
 1100 South Medical Dr.
 Mt. Pleasant, UT 84647
 (801) 462-2441

Sevier Valley Hospital
 1100 North Main
 Richfield, UT 84701
 (801) 896-8271

Shriners Hospital
 Fairfax At Virginia
 Salt Lake City, UT 84103
 (801) 532-5307

South Davis Community Hospital
 401 South 400 East
 Bountiful, UT 84010
 (801) 295-2361

S'PLORE, Special Populations Learning
 Outdoor Recreation and Education
 699 E. South Temple, Suite 120
 Salt Lake City, UT 84102
 (801) 363-7130

St. Benedict's Hospital
 5475 South 500 East
 Ogden, UT 84405-6978
 (801) 479-2111

St. Mark's Hospital
1200 East 3900 South
Salt Lake City, UT 84124
(801) 268-7074

Stewart Rehabilitation Center
3939 Harrison Blvd.
Ogden, UT 84409
(801) 581-2267

Tooele Valley Hospital Regional
211 South 100 East
Tooele, UT 84074
(801) 882-1697

University Hospital Rehabilitation Center
50 North Medical Drive
Salt Lake City, UT 84132
(801) 581-2267

University of Utah
50 North Medical Drive
Salt Lake City, UT 84132
(801) 581-2267

Utah Easter Seal Society
331 South Rio Grande, Suite 206
Salt Lake City, UT 84101
(801) 531-0522

Utah Head Injury Family Resource Center
1800 S. West Temple, Suite 201
Salt Lake City, UT 84115
(801) 484-2240

Utah State Office of Education
Students At Risk Section
250 East 500 South
Salt Lake City, UT 84111
(801) 538-7695

Utah State Hospital
P.O. Box 270
Provo, UT 84604
(801) 344-4400

Utah Valley Regional Medical Center
1034 North 500 West
Provo, UT 84604
(801) 373-7850

Veteran's Hospital
500 Foothill Drive
Salt Lake City, UT 84148
(801) 584-1218

Western Rehabilitation Institute
8074 South 1300 East
Sandy, UT 84094
(801) 561-3400

Wasatch Canyon Hospital
5770 South 1500 West
Salt Lake City, UT 84123
(801) 262-6199

Western Institute of Neuropsychiatry
501 Chepita Way
Salt Lake City, UT 84108
(801) 583-2500

Western Rehabilitation Institute
8074 South 1300 East
Sandy, UT 84094
(801) 561-3400

Western Rehabilitation Institute
8074 South 1300 East
Sandy, UT 84094
(801) 583-2500

NATIONAL AGENCIES

Bear Creek Community Re-Entry
7201 West Hampton Avenue
Lakewood, CO 80227
(303) 989-6660

Greenery Rehabilitation Center
555 16th Avenue
Seattle, WA 98122
(800) 877-3422

Hidden Valley Rehabilitation
16585 Highland Valley Road
Ramona, CA 92065
(619) 789-4600

Intermountain Rehabilitation Center at
Pocatello Regional Medical Center
777 Hospital Way
Pocatello, ID 83201
(208) 234-0777 ext. 3600

National Head Injury Foundation
 1776 Massachusetts Avenue Northwest
 Suite 202
 Washington, DC 20036
 (202) 296-2643
 1-800-444-NHIF

NeuroCare's Neurobehavioral Rehabilitation Program
 Davis
 2115 Road 97
 Davis, CA 95616
 (916) 757-2006

Neurological Rehabilitation Center
 20600 Highway 18
 Apple Valley, CA 92307
 (619) 247-7555

New Medico Community Re-Entry Center at Apple Valley
 20600 Highway 18
 Apple Valley, CA 92307
 (800) CARE-TBI

New Medico Community Re-Entry Services of Washington
 6911 226th Place SW
 Mountlake Terrace, WA 98043
 (800) CARE-TBI

New Medico Head Injury Systems
 14 Central Avenue
 Lynn, MA 01901
 (800) CARE-TBI

Rehabilitation Research and Training Center on Severe Traumatic Brain Injury
 MCV Box 434
 Richmond, VA 23298-0434
 (804) 786-7290 (voice) 786-0956 (TDD)

Rocky Mountain Regional Brain Injury Center
 1900 Grant Street, Suite 830
 Denver, CO 80203
 (303) 894-7556

UTAH SUPPORT GROUPS

LDS Hospital
Head Injury Support Group
 8th Avenue C Street
 Salt Lake City, UT 84143
 (801) 321-1550

Options for Independence
Head Injury Support Group
 1095 North Main
 Logan, UT 84321
 (801) 753-5353

Parents of Children with Head Injury
 1650 East 1100 South
 Clearfield, UT 84067
 (801) 776-8560

Quinney Rehabilitation
Head Injury Support Group
 Holy Cross Hospital
 1050 East South Temple
 Salt Lake City, UT 84102

Stewart Rehabilitation
Head Injury Support Group
 McKay Dee Hospital
 3939 Harrison Blvd.
 Ogden UT 84409

Pediatric
 1650 East 1100 South
 Clearfield, UT 84067

Utah Valley Regional Medical Center
Support Group
 1034 North 500 West
 Provo, UT 84064
 (801) 561-3400

University of Utah
Department of Medicine and Rehabilitation
 50 North Medical Drive
 Salt Lake City, UT 84132
 (801) 581-2260

Western Rehabilitation Head Injury Support Group
 80744 South 1300 East
 Sandy, UT 84094
 (801) 561-3400

PREVENTION

Listed below are state and national organizations which disseminate materials related to spinal chord injury and traumatic brain injury.

STATE

Bureau of Health Promotion & Risk Reduction
Utah Department of Health
288 North 1460 West
Salt Lake City, UT 84116
1-800-894-7651
(801) 538-6120

University of Utah
100 North Medical Drive
Salt Lake City, UT 84132
(801) 588-3097
(801) 262-5400

Utah Head & Spinal Chord
Injury Prevention Program
Think First
(801) 583-525

Utah Head Injury Association
1800 South West Temple
Suite 208
Salt Lake City, UT 84115
(801) 484-2240
(801) 484-2287

Utah Safe Kids Coalition
Utah Department of Health
288 North 1460 North
Salt Lake City, UT 84116

Utah Safety Council
Bicycle Helmet Safety
5263 South 300 West
Salt Lake City, UT 84107
(801) 262-5400

LOCAL HEALTH DEPARTMENTS

Bear River District Health Department
655 East 1300 North
Logan, UT 84321
(801) 752-3730
FAX (801) 750-0396

Box Elder County
125 South 100 West
Tremonton, UT 84337
(801) 257-3318

Box Elder County Courthouse
10 South Main
Brigham City, UT 84302
(801) 734-2031

Rich County Courthouse
20 South Main
Randolph, UT 84064

Central Utah Public Health Department
70 West View Drive
Richfield, UT 84701
(801) 896-5451 or 896-5452
FAX (801) 896-4353

East Millard County
55 South 400 West
P.O. Box 745
Fillmore, UT 84631
(801) 743-5723

Juab County
146 North Main
Nephi, UT 84648
(801) 623-0696

North Sanpete County
20 South 100 West #30
Mt. Pleasant, UT 84647
(801) 462-2449

Piute County Courthouse
P.O. Box 40
Junction, UT 84740
(801) 577-2521

South Sanpete County
57 South Main
Manti, UT 84642
(801) 835-2231

Wayne County Courthouse
18 South Main
Loa, UT 84747
(801) 836-2671

West Millard County
252 West Main
P.O. Box 175
Delta, UT 84624

Davis County Health Department
Courthouse Annex
50 East State Street
P.O. Box 618
Farmington, UT 84025-0618
(801) 451-3340
FAX (801) 637-1933

Salt Lake City/County Health Department
610 South 200 East
Salt Lake City, UT 84111
(801) 534-4500
FAX (801) 637-1933

2001 South State Street
Salt Lake City, UT 84190-1000
FAX (801) 468-2737

Southeastern Utah District Health
Department
28 South 1st East
P.O. Box 800
Price, UT 84501
(801) 637-3671
FAX (801) 534-4502

Emery County
450 East 100 South
P.O. Box 644
Castle Dale, UT 84513
(801) 381-2252

Grand County
471 South Main, Suite 4
P.O. Box Drawer E
Moab, UT 84532
(801) 259-5602

San Juan County
558 South 200 East
P.O. Box E
Blanding, UT 84511

San Juan County Courthouse
P.O. Box 127
Monticello, UT 84535
(801) 587-2021

Southwest Utah Public Health Department
354 East 600 South, Suite 301
St. George, UT 84770
(801) 673-3528
FAX (801) 673-3791

88 E Fiddlers Canyon Road
Suite H
Cedar City, UT 84720
(801) 586-2437
FAX (801) 586-4851

Beaver County
Beaver City Hospital
385 East 100 North
P.O. Box G
Beaver, UT 84713
(801) 438-2482

Garfield County
565 North Main
P.O. Box 394
Panguitch, UT 84759
(801) 676-8800

Garfield County
155 West 100 North
P.O. Box 14
Escalante, UT 84726
(801) 826-4397

Iron County
88 East Fiddlers Canyon Road
Suite H
Cedar City, UT 84720
(801) 586-2437

Kane County
245 South 200 East
Kanab, UT 84741
(801) 644-2537

Southwest Utah Clinic
350 East 600 South
St. George, UT 84770
(801) 673-4179

Washington County
320 East Newel Avenue
Hildale, UT 84741
(801) 847-2323

Washington County
25 South Main
Hurricane, UT 84737
(801) 635-4485

Summit City/County Health Department

85 North 50 East
P.O. Box 128
Coalville, UT 84017
(801) 336-4451 ext. 222
FAX (801) 336-4450

Coalville
85 North 50 East
P.O. Box 128
Coalville, UT 84017
(801) 336-4451

Park City
1753 Sidewinder
P.O. Box 680166
Park City, UT 84068
(801) 649-9072

Kamas
110 North Main
P.O. Box 698
Kamas, UT 84036
(801) 783-4321

Tooele County Health Department

47 South Main Street
Tooele, UT 84074
(801) 882-9420
FAX (801) 882-8138

Uintah Basin Public Health Department

147 East Main Street
Vernal, UT 84078
(801) 781-0770, ext. 475
FAX (801) 781-0799

Daggett County Courthouse
Box 156
Manila, UT 84046
(801) 784-3494

Duchesne County
34 South 200 East
Roosevelt, UT 84066
(801) 722-5085

Duchesne County
734 North Center
Box 210
Duchesne, UT 84021
(801) 738-2202

**City/County Health Department of Utah
County**

589 South State Street
Provo, UT 84606
(801) 370-8700
FAX (801) 370-8709

150 East Center Street, Suite 1100
Provo, UT 84601
(801) 374-7091

Wasatch City/County Health Department

805 West 100 South
P.O. Box 246
Heber City, UT 84032
(801) 654-2700
FAX (801) 654-2705

BOOKS AND ARTICLES

"Advancing the Health Care Professional's Knowledge of Neurologic Injuries and Conditions"
Headlines (March/April 1992). Available from Headlines, 14 Central Avenue, Lynn MA 01901-0025.

Bigler, Erin, ed. *Traumatic Brain Injury: Mechanisms of Damage, Assessment, Intervention, and Outcome*. Austin, TX: Pro-Ed, 1990. Available from Pro-Ed, 8700 Shoal Creek Blvd., Austin TX 78758.

Bogali, Vivian. *Head Injury in Children and Adolescence*. Brandon VT: CPPC Publishers, 1992

JMA Bulletin. v. 2, n. 1 (March 1992). Available from JMA Foundation, 1730 M Street, NW, Suite 903, Washington DC 20036.

Journal of Head Injury. v. 3, n. 1 (1992). Available from John Heinz Institute of Rehabilitation Medicine, 150 Mundy Street, Wilkes-Barre PA 18701.

NeuroDevelopments. v. 1, n. 3 (Winter 1992). Available from NeuroRecovery Inc., Pediatric Brain Injury Resource Center, 230 South 500 East, #100, Salt Lake City, UT 84102-2105.

Available from the National Head Injury Foundation, 1776 Massachusetts Avenue, NW Suite 100, Washington DC 20036, (202) 296-2643:

Catalogue of Educational Materials. 3rd ed. 1991.

Savage, R. *An Educator's Manual: What Educators Need to Know about Students with Traumatic Brain Injury*. 1988.

"Serving People with Traumatic Brain Injury: Promoting Prevention" *National Head Injury Foundation Newsletter* v. 11, n. 3 (Summer 1992).

Available from the New York State Head Injury Association, 855 Central Avenue, Albany NY 12206:

Pieper, Betty. *In Home Family Supports: What Families of Youngsters with Traumatic Brain Injury Really Need*. 1991.

_____. *Injury and Response: What Parents and Professional Providers are Telling Us about Treating Children with Traumatic Brain Injury*.

_____. *Serving People with Traumatic Brain Injury and their Families: A Look at the Past: A Vision for the Future*. 1991.

_____. *Sisters and Brothers: Brothers and Sisters in the Family Affected by Traumatic Brain Injury*. 1991.

_____. *Traumatic Brain Injury: Talking about Future Problems Today*. 1991.

_____ and George Singer. *Model Professional Partnerships for Interventions in Children with Traumatic Brain Injury*. 1991.

Singer, George et al. *You Can't Imagine Unless You've Been There Yourself: A Report on the Concerns of Children with Traumatic Brain Injury*. Oregon Research Institute, 1991.

ORGANIZATIONS

National Head Injury Foundation, 1776 Massachusetts Avenue, NW Suite 100, Washington DC 20036, (202) 296-2643.

Utah Head Injury Association, 1800 South West Temple, Suite 201, Salt Lake City UT 84102, (801) 484-2240.

TRAINING

The Utah Office of Education has developed a two-day inservice training for staff working with students with traumatic head injury. Please contact the USOE for further information (801) 538-7695.

VIDEOS

Information on these videos is available from Cheryl Hostetter at the Utah State Office of Education, 250 East 500 South Salt Lake City, Utah 84111, (801) 538-7695.

All the Kings Horses and All the Kings Men

Challenge of Brain Injury: A Team Perspective on Treating the Whole Person

Community Integration of Persons with Traumatic Brain Injury

Damage to Frontal Lobes / Role of the Neuropsychologist in Diagnosing and Treating Brain Injury: I Find Brain Injury When... / I Do Not Find Brain Injury When...

How Brain Injury Occurs / The Biomechanics of Brain Injury

Learning Services Bear Creek - Post Acute Rehabilitation Services for Individuals with Acquired Brain Injury

Misconceptions of Head Injury

Neurosurgeon Looks at Mild to Moderate Brain Injury / Pediatric Head Injury: Major and Subtle Differences Post Acute Rehabilitation Services for Individuals with Acquired Brain Injury

GLOSSARY

GLOSSARY

ABSTRACT	Refers to concepts that may be difficult to understand (concepts that are theoretical or detached) dealing with things that cannot actually be seen. Some students with cognitive deficits can only understand concepts that are "concrete", or related to something tangible in the environment.
ACALCULIA	Loss of ability to do simple arithmetic.
ACTIVITIES OF DAILY LIVING (ADL)	Include dressing, feeding, hygiene, bathing, and homemaking. In a rehabilitation setting, the occupational therapist re-trains the brain injured person in self-care activities by the use of adaptive equipment or special techniques.
ACUITY	Sharpness or quality of sensation.
ADAPTIVE EQUIPMENT	Devices that allow a person to perform tasks that he/she previously could not carry out because of disability. Examples include button hooks, reaches, and stocking assists.
ADL	Activities of daily living. Routine activities carried out for personal hygiene and health (including bathing, dressing, feeding) and for operating a household.
AFFECT	The emotional state of an individual at any given time.
AFFECTIVE BEHAVIOR	The verbal and nonverbal patterns of behavior (facial expression, gestures, actions) associated with emotions such as happiness, anger, distress, surprise, and pleasure. In a brain injured person emotional responses are often irrelevant and may not be appropriate to the situation.
AGITATION	Excessive motor activity, which usually is nonproductive and repetitious and is often accompanied by shouting or loud complaining. Examples of agitated behavior include an inability to sit still, pacing, and pulling at clothes or other persons. Agitation is often associated with progress in recovery following brain injury.
AGNOSIA	Loss of ability to recognize things through a particular sensory system. For example, visual agnosia refers to the inability to put together visual information so that it makes sense. The parts of an object may be seen but the student is unable to put it together as a "whole."
AGRAPHIA	Inability to express thoughts in writing.
ALERTNESS	Refers to consciousness or wakefulness.
ALEXIA	Inability to read.

AMBULATION	Walking.
AMNESIA	<p>Lack of memory for periods of time. There are several varieties:</p> <p>Anterograde Amnesia: Short-term, inability to remember events beginning at the onset of the injury; essentially severely decreases ability to learn.</p> <p>Post-Traumatic Amnesia (PTA): The period of anterograde amnesia following a head injury, the student is unable to store new information.</p> <p>Retrograde Amnesia: Long-term loss of memory for events proceeding the injury.</p>
ANGULAR GYRUS	A convolution in the parietal lobe of the brain, important in language functions and intersensory processing.
ANOMIA	Loss of the ability to recall the names of objects. Students who have this disability often can speak fluently but have to use other words to describe objects. For example, a student may say, "It's one of those things that you hold and you move it like this" (describing a hair brush).
ANOXIA	Lack of oxygen that can cause damage to the brain. This can result when blood flow is reduced (such as when electrocution has occurred).
ANTERIOR	Of or pertaining to the front.
ANTIBIOTICS	A category of medications used to control the infections to which injured persons are prone.
ANTI-CONVULSIVE MEDICATIONS	Medications that prevent or relieve convulsions. Such medications include Dilantin, Tegretol, and Phenobarbital. A student may be placed on such medications as a precaution against seizures, or the medication may be administered to halt a lengthy seizure.
ANXIETY	A state of physical and psychological tension characterized by motor tension (inability to relax, jitteriness, trembling), physical symptoms (sweating, pounding heart, dry mouth, upset stomach, light-headedness, dizziness, increased pulse and respiration rates), apprehensions, worry, fear, feeling of being "on the edge," difficulty in falling asleep, interrupted sleep, and difficulty in concentrating.
APATHY	A lack of interest or concern.

APHASIA	Loss of the ability to express oneself and/or to understand language. There are many different kinds of aphasia. Receptive aphasia refers to the inability to understand what someone else is saying. This is often associated with damage to the temporal area of the brain. Expressive aphasia refers to an inability to express oneself. Some students may know what they want to say but may not be able to form the words but many of the words may not "make sense." Expressive aphasia is often associated with the left frontal area of the brain.
APHONIA	Produces no sound, (movements of the mouth may be present but no sound is produced).
APRAXIA	Problems in planning, organizing, and carrying out sequential movements on command. Prevents deliberate and spontaneous execution of motion or of speech.
ARTICULATION	Movements of the tongue, lips, teeth, and palate into specific patterns for purposes of speech. Also, a jointable joint.
ASPIRATION	When fluid or food enters the lungs through the wind pipe, it can cause lung infection or pneumonia.
ASTEREOGNOSIA	Inability to recognize things by touch.
ATAXIA	Loss of ability to coordinate smooth movements or steady gait. Limits control of trunk, extremities, and ability to regain balance during movement. To compensate, the patient walks with feet spread apart.
ATROPHY	A wasting away or decrease in size of a cell, tissue, organ, or part of the body caused by lack of nourishment or loss of nerve supply.
ATTENTION	The ability to focus on one subject or bit of information; being able to filter out the relevant from the irrelevant information in one's environment.
ATTENTION AROUSAL	The ability to respond consistently to sensory stimulation by eye opening, localizing, and tracking with head or eye movement. To assess a comatose patient's level of arousal, one might determine if the patient brushes away a pitching hand; or, if the head turns to a voice or noise.
ATTENTION DISTRACTIBILITY	Refers to the patient's inability to sustain attention because of competing internal or external stimuli. Typically, the head injury survivor has decreased ability to inhibit inappropriate responses.
AUDIOLOGIST	One who evaluates hearing defects and who aids in the rehabilitation of those who have such defects.

**AUGMENTATIVE
COMMUNICATION
DEVICES AND
SYSTEMS**

An alternative communication device for nonverbal persons or a supplemental communication device to augment whatever verbal skills a person possesses. Examples are an alphabet board on which the individual spells out messages and a computer that can type out sentences entered by the patient, who merely focuses on the letters.

**AUTOMATIC
BEHAVIOR**

Actions that require little or no thought, effort, or planning. These actions are usually learned in childhood and are used frequently throughout life. Examples include reciting the alphabet or days of the week, tying shoelaces, and responding to social conventions (such as "How are you?"); words without much thinking on the part of the speaker. Spontaneous swearing by individuals who did not do so before their injury is an example.

AWARENESS

Conscious of stimulation arising from within or from outside the person.

AXON

A thin neuronal process that transmits action potentials away from the cell body to other neurons.

BAGGED

Use of a respirator bag to assist breathing.

**BASAL
GANGLIA**

The islands of gray matter within each cerebral hemisphere involved in modulating and modifying motor movement.

BILATERAL

Occurring on or applying to both sides of the body.

BIOFEEDBACK

An external feedback system that allows a person to re-learn how to move or relax muscles.

**BLADDER
PROGRAM**

Since a physical disability often impairs bladder function, an indwelling ((Foley) catheter is often put in place soon after the injury to allow for bladder drainage. This indwelling catheter may be removed, and a bladder program may be established to assist the person in regaining bladder control. This program may include fluid intake restrictions, a toileting schedule, periods (intermittent) catheterization, and medications.

BODY SCHEME

Refers to the knowledge of how one's body is put together and the relationships of each body part to each other. For example, a person with a body scheme disorder may not know that his/her hand is at the end of his/her arm and, therefore, may have trouble moving his/her hand in order to perform a functional task such as putting on his/her shirt.

BRAIN SCAN

An imaging technique in which a radioactive dye is injected into the blood stream and then pictures of the brain are taken to detect tumors.

BRAIN STEM	The lower portion of the brain connecting it to the spinal column. The brain stem coordinates the body's vital functions (breathing, blood pressure and pulse). It also houses the reticular formation, which controls consciousness, drowsiness, and attention.
CARRYOVER	Refers to the ability to retain newly learned skills or information and to apply them from situation to situation. In a rehabilitation setting this applies to voluntarily using strategies and techniques previously performed in therapy. These strategies and techniques have been taught to assist a brain injured person in compensating for areas of impairment.
CASE MANAGEMENT	Facilitating the access of a patient to appropriate rehabilitation and support programs, and coordination of the delivery of services. This role may involve liaison with various professionals and agencies.
CAT SCAN	A radiographic scan of the brain by projecting x-rays through the body and making a photograph on sensitive film. By scanning the brain in layers, tumors and ventricle problems can be detected.
CATHETER	A hollow tube placed into a part of the body for the removal of fluids or to allow fluids to be introduced into the body.
CEREBELLUM	The portion of the brain that is located below the cortex. The cerebellum is concerned with coordinating movements.
CEREBRAL ANEURYSM	Outpouching of the cerebral artery. Can rupture and be fatal. Treated with surgery.
CEREBRAL ANGIOGRAPHY	An injection of dye into an artery so the vascular system of the brain can be studied through an x-ray. Can detect aneurysms, tumors, or circulation problems.
CEREBRAL CORTEX	(See Cortex)
CEREBRAL EMBOLISM	Traveling clot to the brain.
CEREBRAL HEMORRHAGE	Rupture of a blood vessel due to hypertension or an aneurysm.
CEREBRAL THROMBOSIS	Most common--it is a clot in the artery in the brain--arteriosclerosis.
CEREBRO VASCULAR ACCIDENT (CVA)	Stroke.

CEREBROSPINAL FLUID	The fluid within the subarachnoid space, the central canal of the spinal cord, and the four ventricles of the brain. This fluid cushions the brain and the cord from shock.
CIRCUMLOCUTION	Use of other words to describe a specific word or idea which cannot be remembered.
CLOSED HEAD INJURY	Refers to a head injury in which the skull is not fractured or split.
COGNITION	Knowing, awareness, perceiving objects, thinking, remembering ideas. The learned set of rules on which all thinking is based.
COGNITIVE FLEXIBILITY	The ability to shift one's cognitive or perceptual set.
COGNITIVE REHABILITATION	Therapy programs which aid head injury survivors in the management of specific problems in thinking and perception. Skills are practiced and strategies are taught to help improve function and/or compensate for remaining deficits.
COGNITIVE RETRAINING/REHABILITATION	Therapeutic intervention aimed at facilitating the recovery of mental skills disrupted as a result of brain injury.
COMA	Unconsciousness lasting for more than a brief period of time. A state of unconsciousness during which the person cannot be aroused and/or does not respond.
COMA ASSESSMENT	Scales which assess levels of consciousness: 1. Glasgow Coma Scale 2. Rancho Los Amigos Cognitive Coma Scale
COMMUNICATIVE DISORDER	An impairment in the ability to 1) receive and/or process a symbol system, 2) represent concepts or symbol systems, and/or 3) transmit and use symbol systems. The impairment is observed in disorders of hearing, language, and/or speech processes.
COMPREHENSION	The ability to process language of varying complexity, relating that information to past experiences and acting upon it appropriately; comprehension is determined by the patient's behavior.
CONCENTRATION	Sustaining attention to a task over a period of time; remaining attentive.
CONCRETE THINKING	Difficulty in forming abstract concepts, in speculating about what might be, and in grouping similar things into categories.

CONCUSSION	The common result of a blow to the head usually causing unconsciousness, either temporary or prolonged. Physiologic and/or anatomic disruption or connections between some nerve cells in the brain may occur.
CONFABULATION	Verbalization about people, places, and events with no basis of reality may be detailed and delivered with apparent confidence by the student. This disturbance is related to the person's inability to interpret and integrate events and accompanies confusion and memory disturbances. Often these stories reflect the person's effort to make sense of the environment. Confabulation differs from lying in that the individual actually believes what he/she is reporting and is not attempting to deceive.
CONFUSION/ DISORIENTATION	The individual may talk fluently in words and phrases, which do not make sense, and what he/she says does not relate to the stimuli presented.
CONGENITAL DISABILITY	A disability that has existed since birth but is not necessarily hereditary. The term "birth defect" is inappropriate.
CONTRACTURE	Loss of flexibility (range of motion) in a joint due to changes in a joint, tendon, or ligament.
CONTRALATERAL	Pertaining to the side of the body opposite the reference point.
CONTRE-COUP	When the brain is hit with sufficient force, causing it to "bounce" against the opposite side of the skull, thereby causing injury to both the site of impact, and the part of the brain opposite the impact. (For example, if the impact is to the left frontal area, contre-coup damage may occur to the right occipital area.)
CONTUSION	A vascular injury resulting in bruising, edema, and the hemorrhage of capillaries.
CORPUS CALLOSUM	The band of fibers which connects the two hemispheres of the brain and allows for rapid and effective interhemisphere communication.
CORTEX	The largest portion of the brain consisting of two cerebral hemispheres which are connected by a band of tissue (the corpus callosum). This is the area where most "thinking" and cognitive functioning takes place. It is sometimes referred to as the "cerebrum."
COUP DAMAGE	Damage to the brain at the point of impact.
CT-SCAN	A series of x-rays taken at different levels of the brain. A scan is often done soon after the injury to determine whether surgery is needed. Repeat scans are done later to see how the brain is recovering.

DENDRITES	The tree like fibers of a neuron that reach out toward other nerve cells.
DEPRESSION	A significant persistent change in mood characterized by the patient's description of his/her mood as sad, blue, hopeless, low, "down in the dumps", or irritable. Depression often is accompanied by a loss of interest or pleasure in most or all of the patient's usual activities or pastimes. A depressed individual may complain of loss of energy, feelings of inadequacy or worthlessness, and difficulty in concentrating and often expressed thoughts of suicide or death. These symptoms are often accompanied by social withdrawal, decreased effectiveness in activities, tearfulness, pessimism, and sleep disorders. Even though most individuals have a sense of what it means to feel depressed, the actual diagnosis of depression is complicated. Medical complications, medications, or environmental factors often result in symptoms that imitate those of depression.
DIFFUSE	Brain damage that covers many areas of the brain rather than one specific location. Diffuse damage is common in closed head injuries due to the brain moving about and tissue being torn, stretched, or bruised.
DILANTIN	Used to control or prevent seizures and convulsive disorders.
DIPLOPIA	Seeing two images of a single object (double vision).
DISCRIMINATION	The ability to discern fine differences among stimuli whether visual, auditory, tactile, or other types.
DISINHIBITION	Refers to an impairment in the ability to control one's own behavior resulting in occasional or frequent displays of socially inappropriate behavior, decreased impulse control, and difficulty in the control of emotions.
DISORGANIZED SYNTAX	Use of words in incorrect order (cat out don't forget the to put).
DISORIENTATION	Not knowing where you are, who you are, or the time. Often professionals use the term "oriented in all three spheres" or "oriented times three", which refers to person, place, and time.
DORSAL	Toward the back.
DRESSINGS	Protective coverings for wounds.
DYSARTHRIA	Difficulty forming or articulating words. This may be caused by damage to the motor areas of the cortex or damage to the brain stem. Dysarthria may include speech that is slurred, talking extremely fast or slow, or improper pitch.

DYSCALCULIA	Difficulty with pronunciation due to weakness or poor coordination of muscles of the lips, tongue, and jaw. Speech may sound slurred, slowed, distorted, weak, and nasal. Speech content is unaffected.
DYSGRAPHIA	Impaired ability to write not due to motor impairment also referred to as "agraphia," which is technically a total inability to write.
DYSLEXIA	Impaired ability to read.
DYSPHAGIA	A swallowing disorder characterized by difficulty in oral preparation for the swallow, or in moving material from the mouth to the stomach. This definition also includes problems in positioning food in the mouth.
EDEMA	Collection of fluid in the brain tissue causing swelling.
ELECTRO-ENCEPHALOGRAPHY (EEG)	A test that measures the electrical activity of the brain.
ELECTRO-ENCEPHALOGRAM (EMG)	An insertion of electrodes into muscles and surface of skin to study their electrical activity and see if the nerves react to the needles. It is painful to the patient. Helps diagnose Myasthenia Gravis, a disease of great muscle weakness in which there is a lack of acetylcholine--a transmitter.
EMBOLISM	The sudden blocking of an artery or a vein by a blood clot, bubble of air, deposit of oil or fat, or small mass of cells deposited by the blood flow.
EMOTIONAL LABILITY	Exhibiting rapid and drastic changes in emotions quickly becoming angry, sad, silly or happy, and being extreme in showing these emotions.
ENCEPHALO-GRAPHY	Non-invasive use of ultrasound waves to record echoes from brain tissue. Used to detect hematoma, tumor, or ventricle problems.
EPILEPSY	A group of neurological disorders characterized by recurrent episodes of convulsive seizures, abnormal behavior, loss of consciousness, sensory disturbances, or all of the above.
EQUIPMENT (ASSISTIVE DEVICES)	Devices needed to increase independence. Examples include braces, wheelchairs, bathroom equipment, and walking aids. Such equipment is individually designed to meet a particular patient's needs.
EUPHORIA	An exaggerated feeling of well-being; mild elation.

EVOKED CEREBRAL RESPONSE TEST	A test to measure the brain's response time to a visual, auditory, or tactile (somatosensory) stimulus. Also called evoked potential.
EX (EXERCISE)	This usually denotes a mat program used for physical therapy. Time also may be spent doing advanced transfer training, family teaching, and equipment evaluation.
EXECUTIVE FUNCTIONS	Planning, prioritizing, sequencing, self-monitoring, self-correcting, inhibiting, controlling, or altering behavior.
FIGURE GROUND	Differentiation between the foreground and the background of a scene; this refers to all sensory systems including vision, hearing, and touch.
FLACCIDITY	Lack of muscle tone resulting in inability to perform movement.
FLAT AFFECT	Little variation in emotional expression.
FOLEY CATHETER	An indwelling catheter used to provide drainage of urine when bladder function is impaired.
FRONTAL LOBE	The area of the brain located at the front on both the left and right sides. This area plays a role in controlling emotions, motivation, social skills, expressive language (in an area on the left side referred to as "Broaca's" area), and inhibition on impulses. The motor strip controlling movement and motor integration runs along the posterior (back) of the frontal lobe.
FRUSTRATION TOLERANCE	The ability to deal with frustrating events in daily life, the point at which a student can no longer control his/her anger in a situation and responds by yelling, throwing things, or becoming aggressive.
FUNCTIONAL	Refers to the ability to accomplish a task using any means available; e.g., adaptive equipment and compensation techniques.
GI TUBE	A tube inserted through a surgical opening into the stomach. It is used to introduce liquids, food, or medication into the stomach when the patient is unable to take these substances by mouth.
GLASGOW COMA SCALE	A scale of severity of injury developed by B. Jennett, MD, and G. Teasdale, MD. This scale relates the level of consciousness with three factors: motor responses, eye opening, and verbal response.

**GLASGOW
OUTCOME SCALE**

A system for classifying the outcome of head injury survivors. The categories range from "good recovery" in which the patient appears to regain the pre-injury level of social and career activity; "moderate disability" in which the patient does not regain the former level of activity but is completely independent with respect to the activities of daily living; "severe disability" is defined as the state wherein the conscious communicating patient is still dependent on the help of others. The original scale has eight outcome categories. This scale relates to functional independence and not residual deficits.

GLIAL CELLS

Supportive cells of the central nervous system.

**GOAL DIRECTED,
PURPOSEFUL
BEHAVIOR**

Actions directed toward the accomplishment of specific objectives or the fulfillment of intention or desire. Such behavior appears to be organized, controlled, and efficient.

HALDOL

Used to calm agitated, combative, anxious, or tense patients, usually during the relatively early stages of post-acute treatment.

HALO

A metal ring used with patients who have spinal cord injuries to preserve proper alignment of the neck and spinal cord. This helps keep the patient still and the body aligned during healing.

HEAD-INJURED

A person who has a definite history of a blow to the head, a laceration of the scalp or forehead, and/or altered consciousness, no matter how brief. This excludes facial injuries, fractures of the lower jaw, and foreign bodies in the eye, nose, or ear, unless they are associated with one of the "head injury" features.

**HEAD INJURY,
CLOSED**

Occurs when the head collides with another object (for example, the windshield of a car) and brain tissue is damaged, not by the presence of a foreign object within the brain, but by violent smashing, stretching, and twisting of brain tissue. Closed head injuries cause diffused tissue damage that results in disabilities which are generalized and highly variable.

**HEAD INJURY,
PENETRATING**

Occurs when an object (for example a bullet or an ice pick) fractures the skull, enters the brain and rips the soft brain tissue in its path. Penetrating injuries tend to damage relatively localized areas of the brain which result in fairly discrete predictable disabilities.

**HEAD INJURY,
TRAUMATIC**

Damage to living tissue caused by an external, mechanical force. It is usually characterized by a period of altered consciousness (amnesia or coma) that can be very brief (minutes) or exceedingly long (months/indefinitely). Also called TBI.

HEMATOMA	The collection of blood in tissues or a space following a rupture of a blood vessel. Epidural- Outside the brain and its fibrous coverings, but under the skull. Subdural- Between the brain and its fibrous coverings. Intracerebral- In the brain tissue.
HEMIANOPSIA	Visual field cut. Blindness for one half of the field of vision. This is not the right or left eye, but the right or left half of vision in each eye.
HEMIPARESIS	Weakness of one side of the body. Motor weakness of one side of body. Limits movement of arm, face, or leg.
HEMIPLEGIA	Paralysis of one side of the body as a result of injury to neurons carrying signals to muscles from the motor areas of the brain. Motor paralysis of one side of body. Inhibits movement of arm, face, or leg.
HEMISPHERIC ASYMMETRY	Differences in the types of functions for which the two sides of the brain are responsible. (For example, the left side is usually associated with spinal abilities.)
HEMORRHAGE	Bleeding that occurs following trauma. Bleeding may occur within the brain when blood vessels in the skull or the brain are damaged.
HOYER LIFT	Equipment used to transfer a person safely to and from the bed to a wheelchair and vice versa.
HYDROCEPHALUS	Excess accumulation of cerebrospinal fluid causing increased intracranial pressure.
HYDROTHERAPY	Treatment using water as a means of promoting relaxation and healing, increasing flexibility, and decreasing pain. Such treatments may involve the use of a variety of water tanks, including Hubbard tanks, walking tanks, whirlpools, and lowboys.
HYPERTONICITY	The quality or state of having excessive muscle tone, increased resistance of muscle to passive stretching.
HYPOTHALAMUS	A portion of the diencephalon of the brain which activates, controls, and integrates functions such as body temperature, sleep, and appetite.
HYPOTONICITY	Low muscle tone of trunk or extremities. Prevents initiation of balanced muscle contraction for stability.
HYPOXIA	A decrease in the oxygen supply to tissues.

IMPULSIVITY	A behavioral trait, common following head injury, in which the individual acts or speaks without first considering the consequences. Also called impulse control. May include reckless acts without consideration of the consequences because social judgment and planning abilities are impaired.
INDEPENDENT LIVING	Community-based to maximize a person's ability to be empowered and self-directed; allows an individual to live in his home with maximum personal control over how services are delivered, combined with the opportunity to work as much as possible.
INFARCTION	An area of necrosis (dead or dying tissue) resulting from an obstruction of the blood vessels normally supplying that area.
INFLEXIBILITY	The inability to adjust to everyday changes in routines, usually related to injury to the frontal lobes. Some students with head injuries may have little difficulty following a structured routine but may exhibit sudden frustration and confusion when their routine is changed.
INITIATIVE	Refers to the individual's ability to begin a series of behaviors directed toward a goal.
INSIGHT REGARDING IMPAIRMENT	The extent to which an individual accurately judges one's own strengths and weaknesses.
INTERMEDIATE CARE FACILITY	The facility providing personal care to individuals who demonstrate an intermediate degree of physical or social dependency. Minimal medical nursing care is provided. The emphasis is on a structured supportive care system with minimal physical assistance in meeting daily living needs.
INTRACEREBRAL	Refers to the inside of the brain itself.
INTRACRANIAL	Refers to the cavity inside the skull that contains the brain.
INTRACRANIAL PRESSURE (ICP)	The exertion of force within the brain by intracellular fluids capable of causing distortion or displacement of cerebral structures or a reduction of cerebral blood flow.
IRREVELANT SPEECH	Statements that make sense but don't have anything to do with the conversation.
ISCHEMIA	A severe reduction in the supply of blood to body tissues.
ISOLATION	Precautions taken to protect injured persons and others, usually from the spread of infection.
JARGON	Words that are not real words and have no meaning or words that are close to the word the student means to say.

JUDGMENT	The process of forming an opinion, based on an evaluation of the situation at hand. "Good" judgment refers to choosing the optimal available course. Judgment involves cognitive skills, personal values and preferences, and insight into an individual's abilities and disabilities. For example, a student with judgment deficits may be able to make decisions, but the decisions may be unsafe or unsuccessful.
KINESTHESIA	The sensory awareness of body parts as they move.
LABILITY	State of having notable shifts in emotional state (e.g., uncontroiled laughing or crying).
LANGUAGE	Usually refers to the ability to enter new information into long-term memory; any means of expression or communicating thoughts and feelings; can include hand gestures and facial expression as well as speech, writing, and the ability to use numbers. Language also refers to the structure (grammar) and meaning (semantics) of thoughts and feelings and their expression. A brain injury or stroke may disrupt thought processes and result in confusion or disturbed language expression.
LESION	Any visible, local abnormality of the tissues of the body; any damage to the nervous system.
LIMBIC SYSTEM	A set of structures (usually considered part of the temporal lobe) that plays an important role in memory, attention, emotions, and behavior.
LOCKED-IN SYNDROME	A condition resulting from interruption of motor pathways in the ventral pons, usually by infarction. This disconnection of the motor cells in the spinal cord from controlling signals issued by the brain leaves the patient completely paralyzed and mute, but able to receive and understand sensory stimuli; communication may be possible by code using blinking, or movements of the jaws or eyes, all of which are spared.
LOG BOOK	A diary-like listing of the individual's daily activities which can be used to help remember what happened during the course of a day, names of persons with whom contact occurs, and the order in which events occurred.
MAGNETIC RESONANCE IMAGING (MRI)	A diagnostic technique that uses nonionizing forms of energy to produce sectional images of the brain.
MANUAL DEXTERITY	The ability to coordinate one's hands to accomplish basic specific tasks; e.g., typing and dialing a phone.

MEMORY

The process of perceiving information, organizing and storing it, and retrieving it at a later time as needed. Memory is a complex function that involves many parts of the brain working together. There are different "types" of memory, for example, immediate (repeating a phone number), recent (recalling what occurred the previous day), and remote (recalling the name of a childhood friend).

Delayed Recall: Recall of material after a delay, often with intervening material being introduced to prevent active rehearsal.

Episodic Memory: Memory for continuing events in a person's life more easily impaired than Semantic memory, perhaps because rehearsal or repetition tends to be minimal.

Immediate Recall: Immediate repetition of information given by the examiner.

Learning: Acquisition of new information determined by the extent to which an individual benefits from repetition, rehearsal, or practice.

Long-Term Memory: More permanent storage of the memory trace events that have occurred prior to an injury. For example, previous employment, family members, and residential history represent long-term memory events. This type of past information is typically partially or wholly preserved in many brain injured individuals.

Nonverbal Memory: Memory for figures, spatial relationships; assumed to be based in the deep structures of the right temporal lobe.

Registration: A very brief sensory; memory function by which information enters the memory system; it is then entered into short-term memory or decays and is lost; very resistant to impairment.

Short-Term Memory: Working memory with a limited capacity; the ability to remember momentary events. Its contents are in conscious awareness; lasts 30 seconds to several minutes. Short-term memory loss may range from occasional forgetting of names to a total loss of memory for events after only a few minutes. Short-term memory problems are the most common memory impairments exhibited by brain injured persons.

Verbal Memory: Memory for verbal information assumed to reflect functioning of the deep structures of the temporal lobe.

Auditory memory is the ability to recall a series of numbers, lists of words, sentences, or paragraphs presented orally.

**MEMORY, AUDIO /
VISUAL**

MONITOR	Any machine that gives a reading of vital body processes such as cardiac (heart) monitors or intracranial pressure monitors.
MOTOR CONTROLS	The ability to selectively contract or relax a muscle or group of muscles at will.
MOTOR CORTEX	The portion of the cortex that appears associated with motor functions.
MOTOR STRIP	The area of the cortex that extends between the frontal lobes and the anterior parietal lobe, where it overlaps the sensory areas.
MUSCLE TONE	The amount of tension (continuous contraction) in a muscle at rest. The quality or quantity of muscle tone affects the efficiency of voluntary muscle contraction. For example, when a person has low muscle tone, his/her endurance will be less and he/she will react less to a given stimulus. Therapy for abnormal muscle tone is designed to normalize tone by either decreasing spasticity (high muscle tone) to facilitate movement or, in the case of low muscle tone, improving tone to allow more ease of movement.
MYELOGRAPHY	A medical test involving injection of dye into the spinal subarachnoid space so an x-ray of the spinal cord can be taken.
MYSOLINE	An antiseizure medication often used if other similar-acting drugs fail to work.
NASO- GASTRIC TUBE (N-G TUBE)	A clear plastic tube inserted through a nostril into the stomach; used for feeding and draining stomach contents.
NATIONAL HEAD INJURY FOUNDATION (NHIF)	An organization of families and professionals concerned with the needs of individuals with traumatic brain injury. The organization provides information and support and has chapters in many states.
NEUROLOGICAL IMPAIRMENT	Impairment of the neurological (nervous) system.
NEURON	The basic nerve cell of the nervous system containing a nucleus within a cell body. Sensory neurons transmit nerve impulses to the spinal cord and the brain. Motor neurons transmit impulses from the brain to the muscles. All neurons have at least one axon and one or more dendrites.
NEURO-PATHOLOGY	The pathology of the nervous system.

NEURO-PSYCHOLOGICAL EVALUATION	An assessment using psychological tests, interviews, and behavioral observation to determine a person's cognitive, emotional, and behavioral state, with emphasis on deficiencies of intellect, personality, and behavior as outcomes of brain injury. Such assessment attempts to determine brain-behavior relationships, location of injuries, and brain systems involved.
NEURO-PSYCHOLOGIST	A psychologist concerned with evaluating (by tests) brain/behavior relationships, planning training programs to help the patient's brain return to normal functioning, and recommending alternative cognitive strategies to minimize the effects of head injury.
NEURO-PSYCHOLOGY	The branch of psychology that looks at the damage site of the brain-injured individual and identifies the impact on cognitive and behavioral function.
NEURO-TRANSMITTERS	Any one of numerous chemicals that modify or result in the transmission of nerve impulses between synapses.
NONVERBAL	No verbal communication.
NYSTAGMUS	Involuntary horizontal, vertical, or rotary movement of the eyeballs.
OCCIPITAL LOBE	The upper middle lobe of each side of the brain involved in perceiving and understanding sensations and closely linked to speech fluency and writing.
OCCUPATIONAL THERAPIST	Evaluates the patient's upper extremity functioning, fine motor skills, eye-hand coordination, perceptual skills, and cognitive functioning in relation to those everyday skills needed for independent living.
OPEN HEAD INJURY	Refers to a head injury in which there is an open wound where the skin is damaged or penetrated.
ORGANIC PERSONALITY SYNDROME	A change in personality marked by impaired judgment and a loss of control over emotions, impulses, and behavior. "Organic" personality changes result from a specific physical cause (e.g., brain injury). A person with organic personality syndrome may exhibit sudden temper outbursts, sudden crying spells, apathy, indifference, loss of initiative, suspiciousness, and anxiety, as well as other behavioral or emotional difficulties.
ORIENTATION	Reality-base information about the world; e.g., who one is, where one is, to whom one is talking, and what day it is.
ORTHOSIS	Splint or brace designed to improve function or provide stability.

OYSARTHRIA	Lack of control over automatic oral actions such as chewing, swallowing, and speech. May effect phonation, feeding, or respiration.
PARALYSIS	Neurologic muscular weakness or dysfunction to the extent of immobility.
PARAPHASIA	Substitution of sounds syllables or words; i.e., common slips of the tongue.
PARAPLEGIA	Paralysis of the legs (from the waist down).
PARIETAL LOBE	The upper middle lobe of each side of the brain involved in perceiving and understanding sensations and closely linked to speech fluency and writing. Left side- Damage to this area may disrupt a patient's ability to understand spoken and/or written language. Right side- Damage to this area can cause visuo-spatial deficits (patient may have difficulty finding their way around new places).
PERCEPTION	Integration of sensory impressions into psychologically meaningful data.
PERSEVERATION	Becoming "stuck" on one word or task and not being able to switch back and forth or go on to the next word/task. (For example, a student may be asked to draw a circle on a piece of paper. He/she may then be asked to draw a square, but instead continues drawing circles.)
PHENOBARBITAL	Used to control or prevent seizures and convulsive disorders.
PHYSIATRIST	A physician who specializes in physical medicine and rehabilitation.
PHYSICAL THERAPIST	Evaluates components of movement, including muscle strength, muscle tone, posture, coordination, endurance, and general mobility.
PLATEAU	A temporary or permanent leveling off in the recovery process.
POSEY	A safety harness used to prevent falls.
POSITIONING	Placing a person in a position such that muscle and joint flexibility is preserved and skin breakdown is prevented. Positioning is especially important for persons with the potential for contractures or limited mobility. A variety of positions are needed for each individual. A person's position must be changed at prescribed intervals to obtain maximal benefit.
POST-CONCUSSIONAL POSTERIOR	Of or pertaining to the back of a structure.

POST-TRAUMA AMNESIA (PTA)	A loss of memory occurring immediately after injury that may continue for weeks or months. During this time, many students are unable to organize or retrieve information. The length of PTA is regarded as an indicator of eventual recovery.
PRECOCIOUS PUBERTY	Exceptionally early occurrence of puberty.
PREMORBID	Prior to the onset of illness or injury.
PRESERVATION	Repetition of a behavior or train of thought beyond its usefulness.
PRIMARY SOMATOSENSORY	The area of cortex that relates to the skin senses of touch, pressure, pain, etc., as well as the body senses of joint position, muscle tension or visceral state.
PROBLEM SOLVING	The ability to evaluate all of the factors involved when faced with a problem, and to generate and evaluate possible solutions. Students with deficits in this area may "freeze" when faced with a problem; that is, they may not be able to think of possible solutions and instead respond by doing nothing.
PROGNOSIS	The prospect as to recovery from a disease or injury as indicated by the nature and symptoms of the case.
PROXIMAL INSTABILITY	Impaired strength or muscle tone of the trunk, shoulder girdle, or hip girdle. It can cause poor posture; abnormal movement of the limbs, inability to sit up, and inability to hold one's head up. It is caused by damage to the motor strip of the brain.
PROSTHESIS	An artificial substitute for a missing body part, such as an arm or leg, eye or tooth, used for functional or cosmetic reasons.
PSYCHOSOCIAL SKILLS	Refers to the individual's adjustment to the injury and resulting disability, and one's ability to relate to others. Includes feelings about self, sexuality, and resulting behaviors.
PTOSIS	Drooping of a body part, such as the upper eyelid, from paralysis, or drooping of visceral organs from weakness of the abdominal muscles.
QUADRIPARESIS	A weakness that involves all four limbs; also called quadriplegia.
RANGE OF MOTION	Exercises specifically directed to movement of joints that may atrophy from disuse. <i>Active Range of Motion:</i> The amount of motion at a given joint achieved by a person using his/her own muscle strength to move the joint.

Passive Range of Motion: The amount of motion at a given joint when the joint is moved by another person or by another functioning limb of a brain injured person.

REHABILITATION

Comprehensive program to reduce/overcome deficits following injury or illness, and to assist the individual to attain the optimal level of mental and physical ability.

RIGIDITY

Resistance to movement in any range. Prevents active movements and good positioning.

SCOTOMA

Area of blindness of varying size anywhere within the visual fields.

**SECONDARY
INSULTS**

Secondary or delayed brain injury; includes all events other than the mechanical injury sustained at the time of impact.

**SEIZURE, SEIZURE
DISORDER**

A disturbance in the electrical-chemical activity of the brain due to nerve cell damage or electrolyte imbalance. After a brain injury, scar tissue in the brain may lead to reduced seizure tolerance (also known as a seizure disorder or post-traumatic epilepsy). Seizures are usually common during the first two years after injury and usually decrease in frequency as time goes on. Alcohol consumption by a seizure-prone person can increase his/her risk of having a seizure.

**SELECTIVE
ATTENTION**

Ability to focus on the most important aspects of a situation without becoming distracted.

SELF-ESTEEM

Self-respect; confidence in oneself.

**SELF-
MONITORING**

Awareness of one's behavior and accuracy or appropriateness of one's performance; usually automatic and continuing.

SENSATION

Feeling stimuli which activate sensory organs of the body, such as touch, temperature, pressure, and pain. Also seeing, hearing, smelling, and tasting.

**SENSORY
INTEGRATION**

Interaction of two or more sensory processes in a manner which enhances the adaptiveness of the brain.

SEQUELAE

The pathological sequences that follow a traumatic injury.

SEQUENCE SKILLS

The ability to order elements correctly may be motor (sequencing body movements smoothly), or linguistic (sequencing words appropriately into sentences), or may involve keeping track of the correct order of stimuli.

SHEARING

The type of brain lesion often seen as a result of an abrupt deceleration in movement which causes a continuation of brain movement within the skull; tears in nerve fibers.

SOCIAL ASSESSMENT

A social assessment includes general background data, description of family or other support group resources (including emotional, financial, environment resources, and their availability to the patient), the patient's position and role in the family (child, parent, spouse) and educational and employment history.

SPASMS

Involuntary muscle contractions resulting from excessive muscle tone caused by an interruption of controlling impulses in the brain and spinal cord.

SPASTICITY

An involuntary increase in muscle tone (tension) that occurs following injury to the brain or spinal cord, causing the muscles to resist being moved. Characteristics may include increase in deep tendon reflexes, resistance to passive stretch clasp knife phenomenon, and clonus.

SPEECH

Oral expression of language.

SPONTANEOUS MOVEMENT

A reaction resulting from a natural impulse without obvious planning or premeditation.

SPONTANEOUS RECOVERY

The recovery that takes place spontaneously as the brain heals. This type of recovery occurs with or without rehabilitation, and it is often difficult to know how much improvement is spontaneous and how much is due to rehabilitative interventions. It occurs early in the recovery process.

SUCTION MACHINE

Used to remove secretions from oral or nasal passages.

SUPPORTED EMPLOYMENT

Competitive work in integrated work setting for individuals with severe handicaps for whom competitive employment has not traditionally occurred, or for whom competitive employment has been interrupted or intermittent as a result of severe disability.

TACTILE DEFENSIVENESS

Being overly sensitive to touch; withdrawing, crying, yelling, or striking out when touched.

TANGENTIAL EXPRESSIONS

Speech rambles on and on while moving further and further from the original point.

TEAM CONFERENCE (STAFFING)

A periodic meeting of a patient's rehabilitation team. At the team conference, the patient's progress, rehabilitation goals, and estimated length of stay are discussed and documented. Families are periodically contacted by either the patient's program manager or his/her psychologist to discuss details of the topics discussed at these conferences.

TEMPORAL LOBE

The lower middle part of each side of the brain involved in receiving information from the auditory system and involved in memory.

THIRD PARTY FUNDING	Reimbursement for services rendered to a person in which an entity other than the recipient of the services is responsible for payments, (i.e., an insurance company).
TILT TABLE	A table that has the capacity to raise and lower a person from the horizontal to the vertical position and vice-versa. It is used to stretch heel cords or to increase standing tolerance in those who have not been in an upright position for an extended period of time.
TRANSITIONAL LIVING	Training for living in a setting of greater independence -- typical length of stay is 4-18 months.
TRAUMA	Injury or wound to the body.
TRAUMATIC BRAIN INJURY (TBI)	A brain injury from any blow to the head (with or without skull fracture), penetrating head wounds, compound fractures.
TRUNK	The region of the body from the shoulder to the pelvis.
TRUNK CONTROL	The ability of a person to maintain proper alignment of the head, neck, and pelvis; to bring the trunk back into alignment after displacement, and to move the trunk at will (for example, to twist).
TUBE FEEDING	Nutritional feedings administered through a gastrostomy tube (a permanent or semi-permanent tube placed in the stomach) or a nasogastric tube (a permanent or semi-permanent tube placed in the pharynx or esophagus) when swallowing is impaired.
UNILATERAL	Pertaining only to one side.
UNILATERAL NEGLECT	Not responding to things on one side. This usually occurs on the side opposite from the location of the injury (right side brain injury, neglect left side). Some students only exhibit this when both sides of the body are being touched at once. In extreme cases, the student may not bathe, dress, or acknowledge one side of her/his body.
VENTRICLES	Four cavities in the brain that are filled with cerebrospinal fluid serving as a cushion when the brain is impacted. These cavities may enlarge when brain tissue is damaged.
VERBAL APRAXIA	Impaired control of proper sequencing of muscles used in speech (tongue, lips, jaw muscles, vocal cord).
VESTIBULAR	Pertaining to the vestibular system in the middle ear and the brain which senses movements of the head. Disorder can lead to dizziness, poor regulation of postural muscle tone, and inability to detect quick movements of the head.

VISUAL FIELD DEFICIT

Not visually perceiving information in a specific area of the visual field. Often this involves either the left or the right half of the visual field, but may involve a quarter of the visual field, etc.

VISUAL MOTOR SKILLS

Ability to synchronize vision with the movements of the body or body parts; e.g., copying form a printed page.

VOCATIONAL COUNSELING

The process of assisting the disabled person to understand his/her vocational assets and liabilities and of providing occupational information to help in choosing choose an occupation suitable for his/her interests and abilities.

VOIDING

Urinating.

WHITE MATTER

Area of the nervous system rich in axons (an axon is the part of a neuron that sends information) the conducting portion of the brain and spinal cord.

LIST OF COMMON ACRONYMS FOR SECTION 504, IDEA, AND AMERICANS WITH DISABILITIES

ADA	Americans with Disabilities Act
ADD	Attention Deficit Disorder
ADHD	Attention Deficit Hyperactive Disorder
ADL	Activities of Daily Living
AG	Annual Goal
ALS	Advanced Life Support
AP	Accommodation Plan
BLS	Basic Life Support
CD	Cognitive Delay
CFR	Code of Federal Regulations

CHAPTER 1--DISABLED -- A part of Chapter 1 of Title 1 of ESEA, provides financial assistance to SEAs and eligible agencies to deliver supplemental services to students. (Formerly known as Public Law 89.313.)

CHI	Closed Head Injury
CNS	Central Nervous System
D	Deaf
DD	Developmental Disabilities
DON	Determination of Need
DRG	Diagnostically Related Groups
ED	Emotionally Disturbed

EMT	Emergency Medical Treatment
ESY	Extended School Year
FAPE	Free Appropriate Public Education required by the Individuals with Disabilities Education Act (IDEA)
FERPA	Family Educational Rights and Privacy Act
HI	Hearing Impaired
ICD	International Code of Diseases
ICF	Intermediate Care Facility
ICFMR	Intermediate Care Facility for Mental Retardation
IDEA	Individuals with Disabilities Education Act
IEP	Individual Educational Plan
IFSP	Individualized Family Service Plan
LD	Learning Disability
LEA	Local Education Agency (school district)
LRE	Least Restrictive Environment
LTCF	Long-Term Care Facility
OCR	Office of Civil Rights
OHI	Other Health Impaired
OT/PT	Occupational Therapy/Physical Therapy
PLOP	Present Level of Performance
PTA	Post-Traumatic Amnesia
PVS	Persistent Vegetative State
SEA	State Education Agency
SED	Severe Emotional Disturbance

SECTION 504 -- A part of the Rehabilitation Act of 1973 making it illegal for any organization receiving federal funds to discriminate against a person solely on the basis of disability.

STO	Short-Term Objective
TBI	Traumatic Brain Injury
VI	Visually Impaired
WISC-R	Weschler Intelligence Scale for Children - Revised

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REFERENCES

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**Cheryl Hostetter
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Dear Cheryl:

Please send _____ copies at \$2.50 per copy of the Educators Guidelines for Serving Students with Traumatic Brain Injuries. Payment is enclosed.

NAME _____

SCHOOL _____

ADDRESS _____

ZIP CODE

PHONE _____

Scott W. Bean
State Superintendent of Public Instruction

Utah State Office of Education
250 East Fifth South
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