REPORT OF THE
JOINT SUBCOMMITTEE STUDYING

The Needs of Head and Spinal Cord Injured Citizens and The Need for Research Pursuant to House Joint Resolution No. 135

TO THE GOVERNOR AND
THE GENERAL ASSEMBLY OF VIRGINIA

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EXECUTIVE SUMMARY

Report of the Joint Subcommittee Studying The Needs of Head and Spinal Cord Injured Citizens and the Need for Research Pursuant to House Joint Resolution No. 135

The study of the needs of head and spinal cord injured citizens and the need for research was authorized by the 1988 General Assembly via House Joint Resolution No. 135. This resolution represents a consolidation of HJR No. 135 (Marks) and HJR No. 149 (Mayer) to provide a broader examination of the issues and to assist the Commonwealth in developing a sound, efficacious health policy which better serves the needs of such citizens.

HEAD INJURY

Head injury is defined as a "physical injury to living brain tissue caused by an external force. Head injury is commonly caused by accidents, motor vehicle accidents, sports or a fall. However, cardiac arrest, stroke, and accidents such as drowning can result in anoxia (loss of oxygen to the brain) and traumatic head injury. There are two basic types of head injury: closed head injury (CHI) and open or penetrating head injury (OPI) (*National Head Injury Foundation, 1988*).

A. National

In the United States, head injury is a major health problem from which "more than 1.9 million people suffer and trauma and head injuries are the fourth leading cause of death" *(National Statistics Show Seriousness of Head Injuries, 1984).* According to data provided by the National Institute of Neurological and Communicative Disorders and Stroke, persons most at risk for head injuries include young people between the ages of fifteen and twenty-four, the elderly and infants. Young men are more than twice as likely as women to suffer a head injury. The elderly, infants and children are likely to be injured from falls and accidents. Abused children also may suffer from head injuries (*Head Injury: Hope Through Research, 1984*).

B. Virginia

In Virginia, nearly 14,000 Virginians suffer head injuries each year. Males account for 62% of head injuries and females for 38%; whites account for 70% of head injuries, Blacks 29%, and other nationalities 1%. By age group, head injuries are represented as follows:

- 15 - 29 years 33%
- 61 and older 20%
- 14 and younger 17%
- 30 - 45 years 17%
- 46 - 60 years 13%

C. Manifestations of Head Injury

The symptoms of head injury are partly determined by the area of the brain that is injured. The following symptoms are common:

- *Physical Impairments* - speech, vision, hearing and other sensory impairments, headaches, lack of coordination, spasticity of muscles, paralysis of one or both sides and seizure disorders.

- *Cognitive Impairments* - short-and long-term memory deficits, concentration, thinking, attention, perception, communication, reading and writing, planning, sequencing and judgment;

- *Psycho-Social-Behavioral-Emotional Impairments* - fatigue, mood swings, denial, self-centeredness, anxiety, depression, lowered self-esteem, sexual dysfunction, restlessness, lack of motivation, inability to cope, agitation, excessive laughing or crying and difficulty in relating to others *(NHIF, 1988).*

D. Needs of Head Injured Persons

Although advances in medical technology have enabled physicians to save and prolong the lives of many individuals who have sustained life threatening injuries, the rehabilitative technology has not evolved commensurately to enable clinicians to ameliorate permanent brain damage. The cognitive, neurological and other physical disorders which result from such injury require that many of these individuals receive long-term, expensive medical and rehabilitative care. The following represents the critical needs of head injured persons:

- *Prompt, Quality Emergency Medical Care*
- *Rehabilitation*
- *Education*
- *Vocational Services*
- *Housing*
- *Family Services*

E. Research

The increased success of rehabilitative techniques in improving the quality of life and survival rates for head injured patients is largely attributable to research on the brain. At the Medical College of Virginia, a NINCDS-funded study conducted to determine what happens to patients who survive a severe head injury concluded that aggressive surgical and medical therapy enables some patients who would have died to make a good recovery without increasing the proportion of severely disabled patients.

Other studies concerning patients with minor head injuries indicate that subtle consequences may be more frequent and more lasting than previously believed. Scientists hope to identify the structural and functional changes in the brain produced by a head injury to relate such changes in the condition of the patient after the injury and possible methods of treatment.

SPINAL CORD INJURY

The spinal cord, which conducts messages from the brain to the rest of the body, is part of the central nervous system. When damage, injury, or disconnection take places, the spinal cord will not be able to receive and process information and make that information useful. When spinal cord injury occurs, the information needed for some or all of the body's functions will not be appropriately received and transmitted by the brain.

A. National

In the United States, an estimated 10,000 people per year sustain new permanent, disabling injuries of the spinal cord. Experts have stated that approximately 200,000 spinal cord injured people are living in the United States. Nationwide, the most frequent cause of spinal cord injuries is the motor vehicle accident. Nationally, experts estimate that eighty percent of spinal cord injuries occur between the ages of sixteen and twenty-four.

B. Virginia

In Virginia, an estimated 215 people per year suffer new permanent spinal cord damage and varying degrees of loss of body function. Approximately 6,000 people living in Virginia are spinal cord injured with varying degrees of permanent injury ranging from loss of use of the legs and lower body functions to complete loss of body functions. Virginia mirrors national statistics with approximately forty-four percent of spinal cord injuries caused by motor vehicle accidents. In addition, the Commonwealth's statistics indicate the following breakdown for the causes of spinal cord injuries:

- falls - 19%
- gunshot wounds - 11%
- sports - 7%
- diving accidents - 4%
- violence other than gunshots - 2%
- bicycle accidents - 1%

Typically, the individual with spinal cord injury in Virginia is young with approximately sixty-six percent of such persons between the ages of eleven and forty. By age, race and sex, the Virginia statistics are as follows:

- Between ages 21 and 30 - 28%
- Males - 82%
- Females - 18%
- Caucasian - 72%
- Black - 26%
- Hispanic, Oriental or of other racial origin - 4%

Approximately half of all individuals with spinal cord injuries are single

Although the levels of education vary, approximately fifty-one percent of spinal cord injured persons have not finished high school and forty-two percent have finished high school or have completed some college. Of the total population of persons with spinal cord injuries in Virginia, approximately fifty-seven percent are paraplegic and forty-two percent are quadriplegic. Another one percent appear to be triplegic. Ninety-three percent of individuals with spinal cord injuries live in private residences, primarily with family. Three percent reside in nursing homes.

It appears that patients with spinal cord injuries residing in nursing homes are among the most severely injured and frequently have also sustained severe head injuries. An estimated twenty-five percent of individuals with spinal cord injuries are employed post injury. Approximately one-third of people with spinal cord injuries also have evidence of various degrees of head injury.

C. Needs of Spinal Cord Injured Persons

Individuals with spinal cord injuries are faced with adjusting to the fact that their injuries are permanent and that life as they have known it prior to their injuries no longer exists. They require:

- Assistance in adjusting to the need for help to care for personal needs, such as skin care and bowel and bladder management;
- Education regarding pressure sores and changes in sleeping habits to prevent such sores;
- Daily regimens of inspecting for red spots, remembering to change position and to shift the body weight;
- Assistive technology for mobility and transportation;
- Housing with appropriate building modifications to provide access;
- Proper nutrition to avoid weight gain, dehydration and to prevent the formation of kidney stones;
- On-going medical care

D. Research

Injuries to the central nervous system are the most devastating types of injuries from which man can suffer and yet survive. At present, medical science does not have a cure for severe spinal cord injury. Although there is some research in regeneration of nerve cells, such research is in its infancy. In addition, rehabilitative engineering, which is also in its earliest stages, can provide the individual with some measure of mobility and motility. Rehabilitative medicine has advanced considerably over the last twenty years and much assistance can be provided to the individual for the control of bladder and bowel and the care of his body.

PROPOSALS

In considering the possible alternatives to address the needs of citizens with traumatic brain injury and spinal cord injury, several interested groups offered proposals for the Joint Subcommittee's consideration. The following is a description of the proposals which were submitted by the Department of Rehabilitative Services, the Woodrow Wilson Rehabilitative Center, the Virginia Head Injury Foundation, the Fairfax County Office of Human Services, and Mr. C. Bruce Ross.

A. Department of Rehabilitative Services

The Department of Rehabilitative Services proposed a regional consortium for long-term case management. Eligibility to receive long-term case management services would be based upon functional disability and would include such medical conditions as traumatic brain injury, spinal cord injury, cerebral palsy, arthritis and other central nervous system diseases and disorders. The proposed fiscal impact was estimated to be $232,500.

B. Woodrow Wilson Rehabilitative Center

The Virginia Spinal Cord Injury System (VSCIS) of the Department of Rehabilitative Services at Woodrow Wilson Rehabilitative Center proposed (i) the establishment of a spinal cord injury services coordinator at the three medical schools in the Commonwealth; (ii) the establishment of a full-time clinic coordinator at the Woodrow Wilson Rehabilitation Center (WWRC); (iii) the expansion of the VSCIS to Level I Trauma Centers in Roanoke and Northern Virginia; (iv) authority to enable the WWRC to provide life long continuity of care for the spinal cord injured as proposed by the Enhanced Services Task Force; (v) the implementation of two types of community grants - materials and supplies grants, and contracted grants for home modifications and accessible housing which use volunteer labor to assist in these projects; and (vi) coordination of community services to reduce duplication of services, breakdown of services and frustration of clients. The budget for the proposed grants program was estimated to be $190,000.

C. Virginia Head Injury Foundation

Representatives of the Virginia Head Injury Foundation proposed a project to expand the current functions of the Virginia Head Injury Registry. The proposal included three components: registry management, case management and the development of a systematic client needs assessment and documentation process. The fiscal impact was estimated to be $225,500.

D. Fairfax County Office of Human Services

The Fairfax County Office of Human Services proposed that funding be provided for the creation of a system of community-based services for traumatic brain injured adults in the Northern Virginia area, in cooperation with Fairfax County, Fairfax Hospital System, Inc., the Northern Virginia Chapter of the Virginia Head Injury Foundation and Services and representatives of the Virginia Department of Rehabilitative Services. The proposal noted an estimated savings to the state of $6.14 for every dollar spent on services provided through the proposed system.

E. Mr. C. Bruce Ross

A proposal by Mr. C. Bruce Ross of Amherst requested the establishment of the Elli Ross Revitalization Center Program. The proposal would create a center that would be available to all Virginians through the utilization of professionals and volunteers to assist, stimulate, energize, encourage and support the special needs of people who have suffered serious, debilitating injuries and diseases. It was proposed that funding for the center be provided through local, state and federal funds, as well as from private, public and charitable foundations.

Although the services available to individuals with disabilities in Virginia appear to be numerous, the growth in the disabled population coupled with the youth of a majority of them has created gaps in such services as housing, education, vocational rehabilitation, respite care, and accessibility to services.

RECOMMENDATIONS

- Implementation of a Long-Term Rehabilitative Case Management System for functionally disabled persons, including those with head and spinal cord injuries.

- Dissemination of information concerning central nervous system disorders to the public.

- Development of a model protocol for pre-hospital treatment of central nervous system injuries by advanced life support emergency medical personnel and training for such personnel and operational medical directors.

- Development of a resource center for intermittent services for the chronically disabled and for individuals with central nervous system injuries in Virginia.

- Maximum utilization of federal and state funds for innovative housing strategies such as transitional living facilities and congregate living arrangements.

- Dissemination of information on respite programs available in the Commonwealth.

- Solicitation of funding for research in the treatment of head and spinal cord injury and other central nervous system disorders.

- Establishment of a regionalized telecommunications linkages for practicing physicians and health care providers in rural and other areas to enable physicians in such areas to confer with emergency medical physicians, neurosurgeons, other medical specialists, and allied health personnel concerning the care and treatment of individuals with central nervous system injuries.

- Televised programs on disabling conditions and related services to provide public education on such issues.

- Expansion of the function of the Head Injury Registry to include outreach, client consultation services, systematic assessment, and documentation of clients' needs.

- Assessment of the service needs of low-level functioning head injured persons, development of a plan to address coma care and long-term placement needs of this population, and determine the feasibility of implementing a training program on traumatic brain injury for health service providers in the Commonwealth.

- Instruction on central nervous system disorders which may result from motor vehicle accidents in the driver education programs in the public schools.

- Enhancement of public awareness programs and disseminate information on the importance of complying with existing seat belt, helmet, infant restraint and DWI laws.

- Continuation of in-service training for teachers and administrators, health and pupil personnel services in identifying the needs of head injured children and the provision of integrated educational, health, social and support services for such children.

- Continuation of the Study of the Needs of Head and Spinal Cord Injured Citizens until 1990.

Report of the
Joint Subcommittee Studying
The Needs of Head and Spinal Cord Injured Citizens
and the Need for Research
Pursuant to House Joint Resolution No. 135
To
The Governor and the General Assembly of Virginia
Richmond, Virginia
January, 1989

To: Honorable Gerald L. Baliles, Governor of Virginia,
and
The General Assembly of Virginia

I. AUTHORITY FOR THE STUDY

During the 1988 Session of the Virginia General Assembly, House Joint Resolution No. 135 (Marks) and House Joint Resolution No. 149 (Mayer) were introduced to request the creation of a joint subcommittee to study the needs of head and spinal injured citizens and head injured citizens, respectively. While considering these resolutions during the Session, the General Assembly determined that a broader perspective of the issues would better serve the needs of such citizens and assist the Commonwealth in developing a sound, efficacious health policy. Consequently, the essence of House Joint Resolution No. 149 was subsumed in House Joint Resolution No. 135, and HJR 135 was passed to create a joint subcommittee to study the needs of head and spinal cord injured citizens, and related research needs in the Commonwealth. The joint subcommittee has been requested to:

- Determine the number of head and spinal cord injured citizens in Virginia, and the number of head injured citizens who reside in long-term care facilities, mental health and correctional institutions and out-of-state health facilities;

- Ascertain the educational, health, emotional, social and rehabilitative needs of head and spinal cord injured citizens;

- Assess the cost of providing for such needs, the availability of retraining, vocational options, rehabilitative services and long-term care needs;

- Determine the availability of long-term care facilities and the projected costs thereof, and the need for research to assist these persons in re-entering the community;

- Study the long-term residential needs of head injured citizens and the most feasible, cost-effective means of providing residential options for such individuals; and

- Recommend ways in which long-term care, rehabilitative services and regeneration research for head and spinal cord injured persons may best be funded to assist such individuals in developing independent living skills.

The members of the joint subcommittee are Delegates E. Hatcher Crenshaw, Jr. of Richmond; Arthur R. Giesen, Jr. of Waynesboro; George H. Heilig, Jr. of Norfolk; and Alan E. Mayer of Lincolnia, and Senators Virgil H. Goode, Jr. of Rocky Mount and Kevin G. Miller of Harrisonburg, Richard L. Saslaw, of Springfield, and Altamont Dickerson, Jr., Director of the Department of Rehabilitative Services, ex officio. Delegates Alan E. Mayer and Arthur R. Giesen, Jr. served as Chairman and Vice Chairman, respectively.

II. ACTIVITIES OF THE JOINT SUBCOMMITTEE

During the course of its study, the Joint Subcommittee held meetings and a public hearing to solicit public comment on the various issues which it was requested to examine, and toured the Woodrow Wilson Rehabilitative Center in Fishersville, Virginia with the Senate Committee on Finance's Human Resources Subcommittee to ascertain the perspectives of state agency heads, the medical community, counselors, rehabilitative specialists, case managers, persons with head and spinal cord injuries, and their caregivers regarding the needs of head and spinal cord injured citizens.

Recurring themes which surfaced in the testimony submitted to the Joint Subcommittee were the need for appropriate and timely emergency medical treatment, public awareness of the myriad needs of persons with head and spinal cord injuries, e.g. transportation, adequate housing, medical follow-up, integration of community services, adequate health insurance coverage for medical care, case management, improved communication between caregivers and physicians regarding the etiology of head and spinal cord injuries and the needs of such patients upon discharge, increased funding for regenerative research, strengthened requirements for the reporting of such injuries, case management and rehabilitation services which are appropriate for the individual.

The Joint Subcommittee was also briefed on the work of the Secretary of Health and Human Resources Task Force on the Long- and Short-Range Plans for the Woodrow Wilson Rehabilitation Center, and was advised of the plans to address the management concerns and mission of the Center. It was noted that changes are necessary to reflect state and federal mandates to recognize and serve the needs and potentiality of severely mentally and physically disabled persons served by the Department of Rehabilitative Services. The objective of the Center will be to provide services based on the needs of clients to maximize their progress toward physical, mental, social, vocational and economic sufficiency. To facilitate the changes in the Center's management and mission, the General Assembly appropriated $1.9 million for fiscal year 1989.

The options being considered by the Secretary's Task Force include expansion of the Center's hospital and medical services, vocational services, programs for school-age children, and improvements to enhance the head injury program. Improvements in the accounting system and programs to bridge the services between medical and vocational programs are being coordinated to ensure an appropriate role for the Center within the Commonwealth's rehabilitative network. Other initiatives that will maximize the assets of the Center are being studied to enable the State to better serve disabled citizens.

III. FINDINGS OF THE JOINT SUBCOMMITTEE

The Joint Subcommittee also devoted considerable time and effort in becoming conversant with head and spinal cord injuries in order that its recommendations might be supported by knowledge of such injuries and tempered with understanding concerning the needs of such individuals, their families and caregivers, and the medical community. The following represents their findings.

A. HEAD INJURY: LIFE WITH COGNITIVE LIMITATIONS

In the United States, head injury is a major health problem as "more than 1.9 million people suffer from head injuries, and trauma and head injuries are the fourth leading cause of death" (*National Statistics Show Seriousness of Head Injuries, 1984*). "Each year more than 400,000 persons with new injuries are hospitalized and it is estimated that 100,000 victims of trauma and head injuries die from the injuries that they sustain, many of them before reaching a hospital. According to data provided by the National Institute of Neurological and Communicative Disorders and Stroke, persons most at risk for head injuries include young people between the ages of fifteen and twenty-four, the elderly and infants. Young men are more than twice as likely as women to suffer a head injury. The elderly, infants and children are likely to be injured from falls and accidents. Abused children also may suffer from head injuries" (*Head Injury: Hope Through Research, 1984*).

A statewide survey conducted by the Virginia Head Injury Foundation in 1983 indicated that nearly 14,000 Virginians suffer head injuries each year. Types of head injuries include concussions (31%), fractures of facial bones (22%), and intercranial injuries (13%), anoxia (12%), and asphyxia (6%). Males account for 62% of head injuries and females for 38%; whites account for 70% of head injuries, Blacks 29%, and other nationalities 1%. By age group, head injuries are represented as follows:

- 15 - 29 years 33%
- 61 and older 20%
- 14 and younger 17%
- 30 - 45 years 17%
- 46 - 60 years 13%

In 1984, the General Assembly established the Virginia Head Injury Registry. During the first year of its operation, more than 4,000 persons were reported who had sustained injuries, ranging from mild to severe, or death (*Report to Secretary Fisher on Head Injury in Virginia, 1985*).

Head injury is defined as "a physical injury to living brain tissue caused by an external force." Head injury is commonly caused by motor vehicle or other accidents, sports or a fall. However, "cardiac arrest, stroke, and accidents such as drowning can result in anoxia (loss of oxygen to the brain), and traumatic head injury" (*National Head Injury Foundation, 1988*). "There are two basic types of head injury: closed head injury (CHI) and open or penetrating head injury (OPI). A closed head injury occurs when the head collides with another surface, and damage is caused by a rapid acceleration and deceleration of the head during which the brain is whipped back and forth, bouncing off the inside of the skull. The stress of this rapid movement pulls apart nerve fibers and causes injury to the activated system of neuro-fibers which send messages to all parts of the body. This type of injury often results from motor vehicle accidents and blows to the head. It places extreme pressure on the brain stem, which connects the large areas of the brain to the spinal cord and controls consciousness, breathing, heart beat, pupil reactions, swallowing and eye and facial movements. All sensations going to and signals coming from the brain from other parts of the body must pass through the brain stem. The open or penetrating head injury occurs when an object penetrates the brain. This is a visible injury and may be the result of a gunshot wound, or motor vehicle or other accident. The penetrating head injury is usually located at a focal point in the brain, consequently, the victim may experience difficulties with speech, but demonstrate no problem with writing. (*NHIF, 1988; Head Injury: Hope Research, August, 1984*).

Manifestations of Head Injury

Injury to the human brain threatens the most profound and complex functions, diminishing a few or many physical and cognitive functions temporarily or permanently, and minimally or extensively. Trauma to the brain may affect the areas that control behavioral, cognitive and physical functions, or the balance among these functions may be disrupted. The prognosis for victims with severe head injury is usually very poor, and those with minor head injury may also experience significant and long-term debilitating effects (*Report to Secretary Fisher on Head Injury in Virginia, 1985*).

The symptoms of head injury are partly determined by the area of the brain that is injured. The following symptoms are common:

- *Physical Impairments* - speech, vision, hearing and other sensory impairments, headaches, lack of coordination, spasticity of muscles, paralysis of one or both sides and seizure disorders.

- *Cognitive Impairments* - short-and long-term memory deficits, concentration, thinking, attention, perception, communication, reading and writing, planning, sequencing and judgment;

- *Psycho-Social-Behavioral-Emotional Impairments* - fatigue, mood swings, denial, self-centeredness, anxiety, depression, lowered self-esteem, sexual dysfunction, restlessness, lack of motivation, inability to cope, agitation, excessive laughing or crying and difficulty in relating to others (*NHIF, 1988*).

Injuries that affect a single, specific part of the brain are called *focal lesions* and are of two types: contusions and hematomas. A contusion frequently the result of a severe head injury, is a bruised portion of the brain and can occur at the point of injury or at a distant point where the brain strikes the skull. The symptoms may include confusion, restlessness, delirium, unconsciousness, severe headache, paralysis, or seizures which may lead to epilepsy (*Head Injury: Hope Through Research, August, 1984*).

A *hematoma* occurs when a blood vessel is torn at the time of impact and blood leaks into the brain or the dura (covering membrane). It may accompany a contusion; may form within the brain tissue or between the brain and the skull; be very small or involve a large area; and may result in increased pressure on the brain, causing increased injury (*Head Injury: Hope Through Research, August, 1984*).

Conversely, *diffuse lesions* are spread out and involve several areas of the brain where cells are damaged temporarily or permanently. Diffuse lesions are of three types: mild concussion, full concussion and diffuse axonal injury. The mild concussion, the least harmful diffuse lesion, is reversible and probably leaves no ill effects, although the individual may experience temporary neurological problems without loss of consciousness. A full concussion leaves the individual unconsciousness for a period of time and may also affect memory. Although the ill effects may not be longlasting, some persons show permanent subtle changes in personality or more prolonged memory loss. In both types, the brain stem is disturbed.

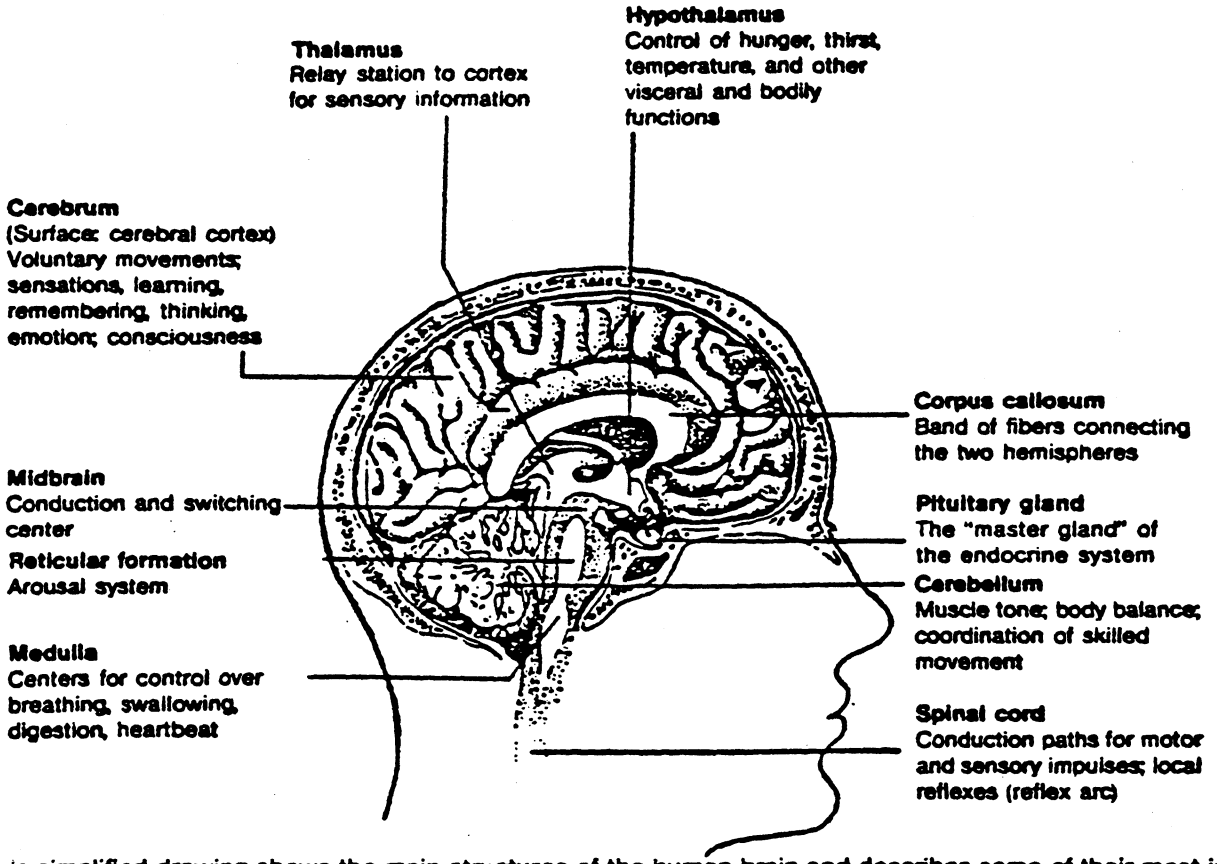


Table I: This simplified drawing shows the main structures of the human brain and describes some of their most important functions.

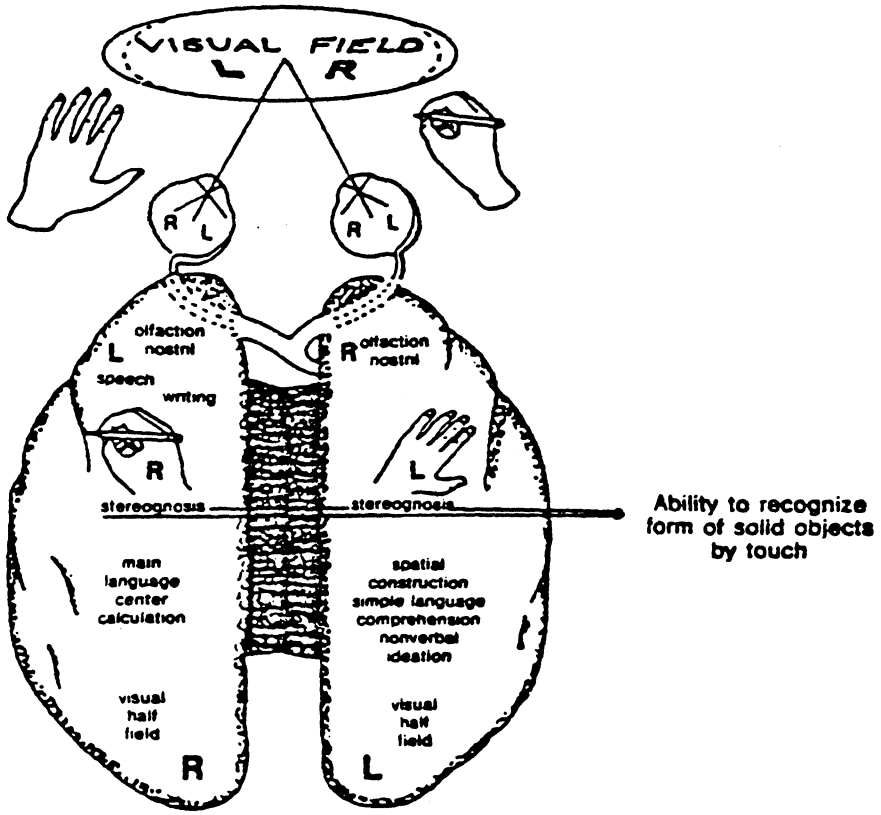


Table II: Schematic diagram of visual fields, optic tracts, and associated brain areas, showing left and right lateralization in man

Source: "Understanding the Etiology of Brain Injury," excerpted from Readings in Brain Injury, Andrew E. Barrer and Douglas H. Ruben, eds.

Diffuse axonal injury involves damage to the brain stem as well as torn brain axons which help transmit chemical messages to the body. This type of injury may range from mild to severe, and results in coma. Recovery of consciousness is followed by confusion and memory lapses. Some persons recover fully while others suffer intellectual, memory and personality losses. A severe diffuse axonal injury involves the tearing of many nerve fibers throughout the brain and brain stem. Persons with this type of head injury remain deeply unconscious for a long time and often have extensive loss of intellect, sensation, and movement; others die (*Head Injury: Hope Through Research, August, 1984*).

"The stages following head injury cannot be clearly distinguished from each other nor they can they be defined in generality of what occurs in each such injury. The stages can be brief or prolonged, obvious or undetectable or absent in some individuals. However, the stages can be described as acute, post acute, long term, and plateaued functioning. The *acute period* is marked by shock to the central nervous system and minimal, momentary or severe damage to the cognitive and other functions. The *post acute period* is that period which follows the acute stage in which the brain tissues that were not damaged and the cognitive and other functions which were temporarily disturbed are resuming their normal functions. Also during this period damage to brain tissues and to cognitive and other functions can be identified and medical interventions employed to assist in the restoration or the partial compensation of functional losses. The *long term period* is characterized by the apparent healing and recovery to the extent feasible of the damaged tissues of the central nervous system and of any permanent tissue injury. Cognitive and other functions also appear to have stabilized and compensated. Less obvious and longer term diminishments of cognitive and other functions can be better identified in the context of the individual's pre-injury intellectual and social functioning and personality characteristics. *Plateaued functioning* is the remainder of the individual's life during which the post acute and long term effects of the injury seem to have stabilized, compensatory responses have had maximum benefit, and remaining cognitive and other function deficits can be clearly identified. During this period, compensations and deficits can be dealt with in the context of the individual's social, vocational and educational plans" (*Report to Secretary Fisher on Head Injury, 1985*).

A further quotation from the same report lists thirteen characteristics afflicting most head injured persons:

- *Loss of Intellectual Capacity* - a drop in IQ and a great disparity between their verbal and performance ability
- *Hemiplegia* - loss of all or part of the use of one side of their bodies and the loss of awareness of one side of their bodies, thus affecting mobility
- *Seizure Disorders*
- *Dysphasia* - difficulty with either hearing, speech, or speaking
- *Anosognosia* - not knowing that you do not know
- *Behavioral-Emotional Impairments* - may include fatigue, mood swings, denial, self-centeredness, anxiety, depression, lowered self-esteem, restlessness, lack of motivation, inability to self-monitor, difficulty with emotional control, inability to cope, agitation, and difficulty with interpersonal relationships.

- *Short Attention Span* - easily distracted and poor concentration
- *Memory Impairments*
- *Decreased Learning Capacity*
- *Difficulty With Multiple Problem Solving Skills* - due to channel function deficits and general distractability, head injured persons cannot contain as many different ideas in his mind as a normal person can at one time
- *Ineffective Sequencing* - inability to plan daily activities or perform simple ordinary living skills
- *Auditory, Verbal and Visual Deficits*
- *Decreased Inhibition* (*Report to Secretary Fisher on Head Injury in Virginia, 1985*).

Needs of Head Injured Persons

Advances in medical technology have enabled the medical profession to save and prolong the lives of many individuals who have sustained life threatening injuries. However, the rehabilitative technology has not evolved commensurately to enable clinicians to ameliorate the permanent brain damage. The cognitive, neurological and other physical disorders which result from such injury require that many of these individuals receive expensive medical and extensive rehabilitative care to meet their educational, vocational retraining, health and social needs in order that they may re-enter their communities, relearn essential living skills and become independent. The following represents the critical needs of head injured persons:

- *Prompt, Quality Emergency Medical Care* - Appropriate "emergency treatment before the patient reaches the hospital is critical to the prevention of further damage to brain tissues. It is essential that emergency medical personnel be adequately trained to identify and provide the initial medical care that is vital to saving the life of such individuals. It is critical to the life of the victim that he be transported immediately to a health care facility - a shock trauma center - that has the expertise and staffing capability to provide accurate and immediate evaluation and treatment to increase the likelihood of his survival, and to reduce the potential of increased tissue damage and cognitive and functional impairments" (*Head Injury: Hope Through Research, 1984*).
- *Coma Treatment* - "Head injury may cause patients to lose consciousness for a prolonged period of time. Such persons who are unresponsive to stimulation and treatment require specialized care to survive, minimize muscle atrophy and infection" (*Head Injury: Hope Through Research, 1984*).
- *Rehabilitation* - "Approximately sixteen percent of all head injured persons require acute care and/or intensive care services in the hospital. Unresponsive patients will require specialized care, such as a coma program to prevent complications and to enhance the possibility of waking up. The majority of head injured persons will require services that promote sensory-motor return, visual, auditory and tactile perceptual skills, cognitive skills, community living skills, and vocational retraining, and education for family and caregivers" (*Report to Secretary Fisher on Head Injury in Virginia, 1985*).

- *Education* - "Approximately fifty percent of the head injured in Virginia who require services are school age. An unspoken requirement placed upon public education is to reintroduce the young person to academic and peer social life. However, many times such children are placed in classes and programs for the learning disabled and/or the emotionally disturbed due to the cognitive deficits and emotional-behavioral impairments which results from the injury. However, the head injured child differs in the nature of his learning difficulties than the typical learning disabled child. Head injured children require instructional personnel who have been sensitized to the peculiar nature of their disability and educational programs which accommodate their learning difficulties" (*Report to Secretary Fisher on Head Injury in Virginia, 1985*).

- *Vocational Services* - "Primary emphasis is on vocational services that are designed to lead to employment" NHIF, 1988). However, head injured persons need vocational services and employment opportunities that have been designed to accommodate or can respond sensitively and flexibly with their limited cognitive skills, distractability and emotional-behavioral impairments" (*Report to Secretary Fisher on Head Injury in Virginia, 1985*).

- *Housing* - "There exists a general lack of adequate available housing for the head injured. Many of these persons return to their homes, are transferred to nursing homes or to residential treatment facilities following discharge from the hospital. However, it is believed that these choices may not be appropriate in every instance. Problems may arise in families of head injured persons when they are returned if they have already established independence prior to their injury. The nursing home site may not provide the environment, and kind and level of care needed by such persons. The need for an orderly, supervised living arrangement is an important element to functional independence for the head injured" (*Report to Secretary Fisher on Head Injury In Virginia, 1985*).

- *Family Services* - The needs of families of head injured persons include education on the nature of the disability, training to provide home care, support and respite. Families require help in learning to cope with the fact that head injured relatives are "new people with unique needs and desires." The family needs assistance in adapting psychologically and environmentally to the residual deficits of head injury (*NHIF, 1988*).

Prevention

Perhaps the most significant means of reducing the rate of mortality attributable to head injury is education and prevention. Some preventatives which have been recommended include mandatory seat belt use, air bags, helmet use for motorcyclists, banning of ATVs, increasing the minimum driving age, banning or controlling of firearms, and standardizing definitions of sports injuries.

Research

The increased success of rehabilitative techniques in improving the quality of life and survival rates for head injured patients is largely attributable to research on the brain. However, the neuroscientist's task is made difficult by the extreme complexity of the brain. Scientists hope to be able to better predict the outcome of head injuries through information obtained in the NINCDS-sponsored Traumatic Coma Data Bank. Currently, at four U.S. medical centers, physicians enter data about the types of head injuries they treat into a national computer network . It is envisioned that these data will assist researchers in determining which factors influence the survival of head injured persons and what kind of life survivors can expect. At the Medical College of Virginia, a NINCDS-funded study conducted to determine what happens to patients who survive a severe head injury concluded that aggressive surgical and medical therapy enables some patients who would have died to make a good recovery without increasing the proportion of severely disabled patients. Other studies concerning patients with minor head injuries indicate that subtle consequences may be more frequent and more lasting than previously believed. Scientists hope to identify the structural and functional changes in the brain produced by a head injury to relate such changes to the condition of the patient after the injury and possible methods of treatment.

B. SPINAL CORD INJURY: LIFE WITH PHYSICAL LIMITATIONS

In the United States, there are approximately 200,000 spinal cord injured people and an estimated 10,000 per year sustain new permanent, disabling injuries of the spinal cord. In Virginia, an estimated 215 people per year are added to the 6,000 residents who are spinal cord injured with varying degrees of permanent injury ranging from loss of use of the legs and lower body functions to complete loss of body functions.

Nationwide, the most frequent cause of spinal cord injuries is the motor vehicle accident. Virginia mirrors this statistic with approximately forty-four percent of such injuries caused by motor vehicle accidents. In addition, the Commonwealth's statistics indicate that falls account for approximately nineteen percent; gunshot wounds for approximately eleven percent; sports for approximately seven percent; diving accidents for approximately four percent; violence other than gunshots for approximately two percent, and bicycle accidents for approximately one percent. Approximately twelve percent of spinal cord injuries result from serious accidents which can and do occur in the most mundane places such as the backyard, factories, construction sites and during recreational activities such as sledding, water skiing, and skateboarding.

Nationally, experts estimate that eighty percent of spinal cord injuries occur between the ages of sixteen and twenty-four. Typically, the individual in Virginia is young with sixty-six percent between the ages of eleven and forty and twenty-eight percent ages twenty-one to thirty. Virginia's statistics by sex indicate eighty-two percent are male and eighteen percent are female, while those related to races show seventy-two percent are Caucasian, twenty-six percent Black, and the final four percent are Hispanic, Oriental or of other racial origin. Approximately half of all such victims are single.

Although the levels of education vary in Virginia, approximately fifty-one percent have not finished high school and forty-two percent have finished high school or have completed some college. Approximately fifty-seven percent are paraplegic, forty-two percent are quadriplegic, and another one percent appear to be triplegic. Individuals who live in private residences, primarily with family, constitute ninety-three percent of those injured. It appears that those residing in nursing homes (3%) are among the most severely injured and frequently have also sustained severe head injuries. Approximately one-third of people with spinal cord injuries also have evidence of various degrees of head injury. An estimated twenty-five percent of individuals with spinal cord injuries are employed post-injury.

Manifestations of Spinal Cord Injury

The spinal cord, which conducts messages from the brain to the rest of the body, is part of the central nervous system. The spinal cord consists of gelatinous bundles of nerve fibers and is housed in the vertebral canal which extends from the brain to the lower back. The vertebral column which encases the spinal cord contains thirty-three vertebrae. These bones are designated according to the region of the spine as cervical (seven in the neck area), thoracic (twelve in the upper back), lumbar (five in the middle back), sacral (five in the low back) and coccyx (four bones comprising the tail bone).

The spinal cord could be analogized to the cabling between the central processing unit of a personal computer and the keyboard as it feeds in the information and the monitor as it makes the information available. When the cabling is damaged or disconnected, the central processing unit will not be able to receive and process information and make that information useful. Messages may be sent; however, they will not be processed. When spinal cord injury occurs, the information needed for some or all of the body's functions will not be appropriately received and transmitted by the brain.

Depending on the level of the injury, control of specific muscles and the ability of certain body parts to feel and respond to sensation are lost either partially or completely. When experts speak of complete injuries of the spinal cord, they are speaking of those injuries which cause total loss of sensation and muscle control below the site of the injury. The term "incomplete" is used to describe those injuries which cause partial loss of sensation and/or muscle control below the site of the injury.

Each injury is unique. However, in general, the higher the site of the injury, the greater the loss of control of body functions and feeling. Injuries of the cervical vertebra, (neck), will result in loss of muscle power and sensation in both the lower and upper parts of the body and can result in complete paralysis. Injuries of the vertebra below the cervical vertebra will result in loss of muscle power and sensation in the lower extremities, and depending on the severity and location of the injury, may result in loss of control over bodily functions such as breathing, body temperature, blood pressure, urination, defecation and sexual functions, and complete or incomplete loss of use and/or feeling in the hands and legs. The person may be quadriplegic, i.e. having paralysis of all four limbs, or paraplegic, i.e. having paralysis in the lower part of the body including the legs. Although these terms are the most frequently used to describe the level of disability, some individuals are termed triplegic, i.e. having paralysis of three limbs.

CHART A

CERVICAL (NECK)

C4 Diaphragm
C5 Deltoid (lifts arms sideways) and Biceps (bends elbow)
C6 Wrist Extensors
C7 Triceps (straightens elbow)
C8 and T1 Hands and Fingers

THORACIC (CHEST)

T2 - T8 Chest muscles

T6 - T12 Abdominal muscles

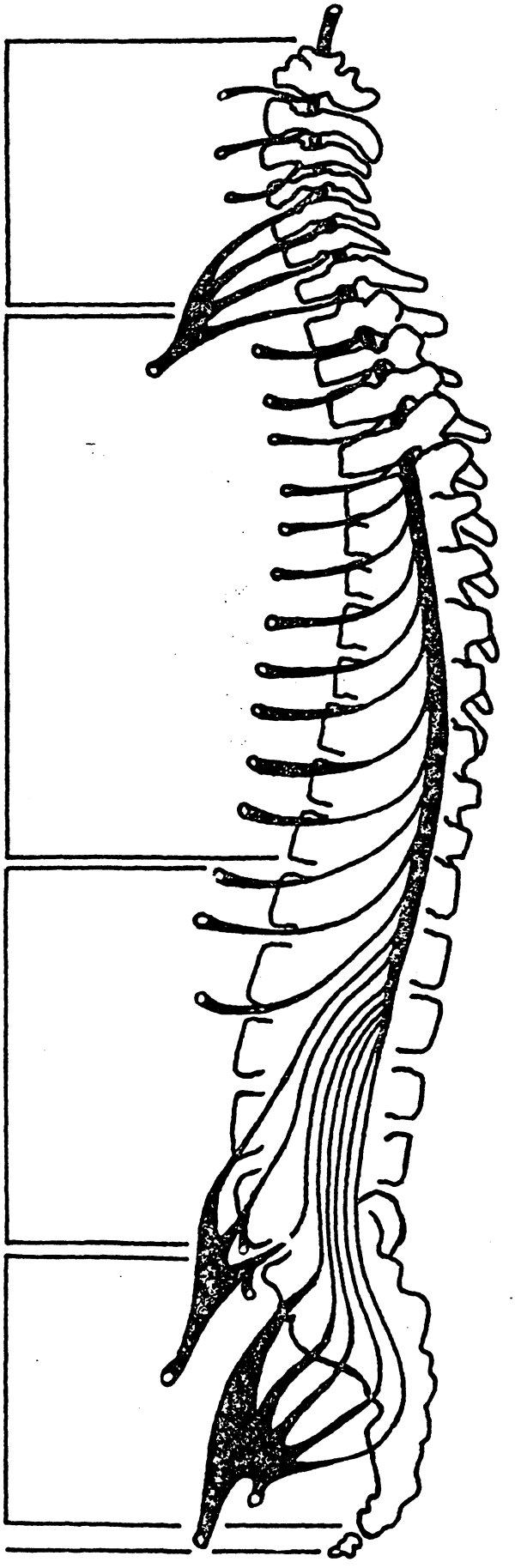
LUMBAR (BACK)

L1 - L5 Leg muscles and S1

SACRAL (LOW BACK)

S2 and Bowel and bladder below

COCCYX (TAIL BONE)



Source: Department of Rehabilitative Services, "Spinal Cord Injury: Patient and Family Care Treatment Manual."

Injuries to the central nervous system are the most devastating types of injuries from which man can suffer and yet survive. During the first year following injury, an individual with an incomplete injury may improve. However, at present, medical science does not have a cure for severe spinal cord injury. Although there is some research in regeneration of nerve cells, such research is in its infancy. Rehabilitative engineering, which is also in its earliest stages, can provide the individual with some measure of mobility and motility. Rehabilitative medicine has advanced considerably over the last twenty years and much assistance can be provided to the individual for the control of bladder and bowel and the care of his body.

Needs of Spinal Cord Injured Persons

Individuals with spinal cord injuries are faced with adjusting to the fact that their injuries are permanent and that life as they have known it no longer exists. Many find it difficult to believe that they will never walk again. Most people with spinal cord injuries have been healthy and strong prior to their accidents and go through a period of denial during which they cannot accept the fact that some injuries will not heal. At the point the individual can no longer deny his injuries, he becomes angry and depressed. The spinal cord injured person finds that he has become a part of a distinct group of people, overtly set apart by the wheel chair and separated from control of his body in numerous covert ways.

Eventually, the spinal cord injured person must come to terms with the new requirements for daily living regardless of his disappointment, grief or bitterness. The list of changes in the daily routine of life is long and arduous. For example, skin care may become a complex matter requiring careful and constant attention because of loss of sensation. The person must learn about the causes of "pressure sores," ulcerated spots on the skin caused by constant pressure from a supporting surface on the skin.

Daily regimens of inspecting for red spots, remembering to change position and to shift the body weight must be learned. Frequently, the spinal cord injured person must revise his sleeping habits to prevent pressure sores.

After spinal cord injury, the normal elimination functions of the bowel and bladder can no longer be taken for granted and special programs must be learned for bowel and bladder management. These programs are particularly important to avoid autonomic dysreflexia (hyperreflexia or exaggerated reflexes) in some spinal cord injured individuals and to prevent kidney infections for all such individuals. Kidney infections are a primary cause of death among individuals with spinal cord injuries. Autonomic dysreflexia is a serious, life-threatening condition caused by involuntary contraction of blood vessels in response to bladder or bowel irritation and infection, uterine contractions or pressure sores.

Individuals with spinal cord injuries must also engage in programs of exercise and stretching to maintain the range of motion of their joints and muscle tone. The maintenance of joint flexibility and muscle tone is important in order to avoid contractures, to manage spasticity and to control joint pain. Contractures are the abnormal shortening of muscle fibers which cause the muscle to be resistant to stretching and can, therefore, cause additional loss of functioning capacities such as being able to feed himself. Spasticity is the uncontrolled movement of muscles caused by increased tightening of the muscle and heightened reflexes. It can interfere with daily functioning and create pain or can sometimes be of benefit in assisting in transfers from one supporting structure to another, e.g. from the wheelchair to the bed.

Proper nutrition becomes very important to avoid weight gain, dehydration and the formation of kidney stones. Because illness in general causes more tissue breakdown, the individual with spinal cord injury may have to increase the protein in his diet. The number of calories must be limited because of limitations on activity. Fluid balance must be monitored to comply with the bowel and bladder programs, but still avoid dehydration. Frequently, foods that were favorites before the injury become difficult to tolerate and must be avoided.

In addition, the spinal cord injured person may have to learn ways to prevent and to monitor his physical condition for signs of blood clots (thrombosis), pulmonary infections (coughing may become difficult and secretions may accumulate in the lungs creating a substrate for pathogens), heterotopic ossification (bone formation in the connective tissue or cartilage, particularly in joints), edema (swelling in various parts of the body, particularly the feet and legs), osteoporosis (abnormal rarefaction of bone, i.e., thinning or less density and weight of bone), bone fractures and drops in blood pressure.

Although not being able to walk, run and participate in sports are devastating disabilities which cause great psychological and physical pain, some individuals with spinal cord injuries feel that the other effects are more troubling. In *Twice a Champion: The Toney Lineberry Story* the autobiographer states that "I'm not going to sit up here and try to kid you, it's tough not being able to walk. It's also tough not being able to feel anything from the chest down or move any of your ten fingers. The sad fact is it gets even uglier than that. Because it's also tough when you lose control of all bowel and bladder functions. It's gone. You have to learn how to deal with it and take care of it by artificial means."

Spinal cord injuries interrupt the normal life sequence of each injured individual and create physical, social and financial burdens of great magnitude. The costs of the acute care are very high, often as much as $100,000 or more, and hospitalization for medical complications is frequent for some individuals. Depending on the nature and extent of the disability, primary medical care may become costly. Home care for a quadriplegic who is ventilator dependent may cost over $10,000 per month. Loss of employment because of the injury may mean loss of health insurance coverage and eventually, medical indigent status.

Because the majority of people with spinal cord injuries are young at the time of the injury and have normal life expectancies after the injury, life goals may be altered with finality. Employment may not be possible for the rest of the individual's life because of his physical limitations and/or his lack of education. If the employment engaged in prior to the injury demanded physical strength or dexterity, the individual will not be able to return to his job. Vocational rehabilitation may provide such individuals with new occupations. Expensive equipment such as electric wheelchairs and especially equipped vans may be required to access employment. Other costly equipment may be necessary for the daily needs of the injured person such as special cushions, hospital or water beds, air mattresses, commodes, shower benches, braces, crutches, and medical equipment.

Some individuals with spinal cord injuries must have help with some daily living activities and others require help with all of life's functions. This may mean that family members will have to be trained to care for the injured person or that an attendant must be hired to assist or care for him. In many cases, a family member must quit working outside the home in order to care for the injured person. This may mean the loss of two incomes to the family.

Modifications of the home are necessary such as the installation of ramps, platforms, railings and nonskid floor surfaces and the widening of doorways. Other retrofits may also be required such as special bathrooms. The effects on the interpersonal relationships of the injured person are tremendous. The injured person may lose motivation for change, for continuing education or for maintaining social relationships. He may feel useless or become depressed. He may resent his dependence on others - either physically or financially or both. He may be constantly worried about money and how any efforts to be employed will affect eligibility for public assistance programs, e.g. Supplemental Security Income (SSI) or Medicaid. Many of the young people who are not married at the time of their injury lose their significant others and find it difficult to adjust to a life in which dating and social events are less accessible and a simple outing to the movies may become difficult because of lack of transportation.

Persons with spinal cord injuries who have suffered an industrial or employment-related accident frequently become eligible for worker's compensation and/or after a two-year waiting period, for Social Security Disability Income (SSDI) payments. Some of the injured qualify for Supplemental Security Insurance payments. However, since almost half of injuries are the result of automobile accidents, the majority of the individuals with spinal cord injuries are not covered by workers' compensation and some may not be eligible for SSDI or SSI. Although most automobile accidents result in settlements or coverage of care up to a certain maximum, these funds are quickly depleted through the high costs of acute care, especially if the individual is the victim of multiple trauma, e.g. spinal cord and head injuries.

Reimbursement for acute care and rehabilitative services for the individual with spinal cord injury appears to be incurred by all third party payers, i.e. Blue Cross/Blue Shield, the commercial insurers, Medicare and Medicaid. However, since many of the individuals are young, they are often uninsured prior to the injuries and become eligible for Medicaid soon after their injuries. Nevertheless, even for those people who were employed prior to their injuries, health insurance benefits frequently disappear because of loss of employment and income and they may also become medically indigent and eligible for Medicaid.

Research

In developing one of the four federally funded model Spinal Cord Injury Systems in 1972, Virginia pioneered the delivery of coordinated care and treatment and follow-up services. The Spinal Cord Injury Registry was established in statute in 1978 to "facilitate the provision of appropriate rehabilitation services by the Department of Rehabilitative Services . . . and other State agencies to such persons" (§ 51.01-11, Code of Virginia).

Acute care services are available to the individual with spinal cord injury at the five Level I trauma centers - Norfolk General Hospital, Medical College of Virginia Hospital, University of Virginia Hospital, Fairfax Hospital and Roanoke Memorial Hospital. Some acute care services are also available in the five Level II trauma centers - Arlington Hospital, Alexandria Hospital, Community Hospital of Roanoke Valley, Riverside Hospital in Newport News and Hampton General Hospital.

In addition, Woodrow Wilson Rehabilitation Center in Fishersville provides vocational and occupational rehabilitation as part of the services delivered by the Department of Rehabilitative Services. Research related to spinal cord injury is being conducted at the University of Virginia Medical Center. Primary and follow-up medical care can be obtained in most areas of the Commonwealth. Family support groups have been organized and training and counseling for family members are available. Seminars are presented which focus on providing the injured individual with technical information, the opportunity to view equipment, discussions of vocational opportunities and problems, understanding of psychological, social and sexual issues, and updates on recreation and independent living. Education programs on care and treatment are also available for health care workers such as emergency medical services personnel. Further, the Community Cadre Network, a group of individuals with spinal cord injuries, has been organized to assist those who are newly injured and their families. A newsletter, "The Project News," is published by the Department of Rehabilitative Services and it also contracts with nine independent living centers located in Arlington, Charlottesville, Fishersville, Hampton, Norfolk, Pennington Gap, Richmond and Winchester. Another center is being developed in Abingdon for services in peer counseling, information and referral, advocacy skills, and independent living skills. Some centers offer additional amenities such as social activities and libraries. There are twenty-seven rehabilitative units operated by the private sector as a result of the dramatically increased interest in this service on the part of the hospital industry in recent years.

C. PROPOSALS

During the course of the Joint Subcommittee's study, several proposals were made to it concerning how to best provide for the needs of persons with head and spinal cord injuries. The following is a description of those proposals.

A. Department of Rehabilitative Services

The Department of Rehabilitative Services proposed a regional consortium for long term case management to provide coordinated educational, rehabilitative, psychosocial, medical, vocational, familial and long-term care services. Eligibility to receive such services would be based upon functional disability and would include such medical conditions as traumatic brain injury, spinal cord injury, cerebral palsy, arthritis and other central nervous system diseases and disorders. The proposed fiscal impact was estimated to be $232,500.

B. Woodrow Wilson Rehabilitation Center

The Virginia Spinal Cord Injury System (VSCIS) of the Department of Rehabilitative Services at Woodrow Wilson Rehabilitation Center proposed (i) the establishment of a spinal cord injury Services Coordinator at the three medical schools in

the Commonwealth; (ii) the establishment of a full-time clinic coordinator at the Woodrow Wilson Rehabilitation Center (WWRC); (iii) the expansion of the VSCIS to Level I Trauma Centers in Roanoke and Northern Virginia; (iv) authority to enable the WWRC to provide life-long continuity of care for the spinal cord injured as proposed by the Enhanced Services Task Force; (v) the implementation of two types of community grants, materials and supplies grants, contracted grants for home modifications and accessible housing while fostering volunteer labor to assist in these projects; and (vi) coordination of community services to reduce duplication and breakdown of services and frustration of clients. The budget for the proposed grants program was estimated to be $190,000.

C. Virginia Head Injury Foundation

Representatives of the Virginia Head Injury Foundation proposed a project to expand the current functions of the Virginia Head Injury Registry. The proposal included three components: registry management, case management and the development of a systematic client needs assessment and documentation process. The fiscal impact was estimated to be $225,500.

D. Fairfax County Office of Human Services

The Fairfax County Office of Human Services proposed that funding be provided for the creation of a system of community-based services for traumatic brain injured adults in the Northern Virginia area, in cooperation with Fairfax County, Fairfax Hospital System, Inc., the Northern Virginia Chapter of the Virginia Head Injury Foundation and Services and representatives of the Virginia Department of Rehabilitative Services. The proposal noted an estimated savings to the state of $6.14 for every dollar spent on services provided through the proposed system.

E. Mr. C. Bruce Ross

A proposal by Mr. C. Bruce Ross of Amherst requested the establishment of the Elli Ross Revitalization Center Program. The proposal would create a center that would be available to all Virginians through the utilization of professionals and volunteers to assist, stimulate, energize, encourage and support the special needs of people who have suffered serious, debilitating injuries and diseases. It was proposed that funding for the center be provided through local, state and federal funds, as well as from private, public and charitable foundations.

RECOMMENDATIONS

After a careful and thorough analysis of the issues relating to head and spinal cord injuries and an assessment of the unmet needs of individuals who suffer these devastating injuries, the Joint Subcommittee recommends that:

1. A. The Department of Rehabilitative Services be designated in statute as the lead agency for rehabilitative services to individuals with central nervous system disabilities.

B. A Long-Term Rehabilitative Case Management System for functionally disabled persons, including those with head and spinal cord injuries, be established within the Department to facilitate coordinated medical, psychosocial, familial, vocational, and long term care services, avoid Medicaid expenditures by reducing rehospitalization and medical treatment, increase the potential for independent living by disabled individuals, and promote the family's economic independence by allowing caregivers to reenter the workforce or maintain their employment.

2. The Woodrow Wilson Rehabilitation Center serve as a resource center with a full-time clinic coordinator for intermittent services for the chronically injured and for individuals with central nervous system disabilities in Virginia.

Discussion:

Although the services available to Virginia residents with disabilities appear to be numerous, the growth in the disabled population coupled with the young age of a majority of them has created gaps in such services as housing, vocational rehabilitation, education, respite care and health and medical services. Although vocational rehabilitation is available through the Department of Rehabilitative Services, there is no coordinated effort or a case management system at the state level designed to respond to the needs of individuals with functional disabilities. Many disabled individuals are not eligible for vocational rehabilitation; however, all of the disabled could benefit from long-term, coordinated medical and psychosocial rehabilitation. The Long-Term Case Management System could facilitate coordinated medical, psychosocial, familial, vocational, and health care services to promote healthy, independent lifestyles. In addition, the System could (i) minimize Medicaid expenditures by reducing rehospitalization and medical treatment; (ii) increase the number of individuals who can provide self-care or access independent living conditions, thereby enabling family caregivers to reenter or maintain their place in the workforce; and (iii) motivate individuals with disabilities to become employed.

3. A. The Secretary of Health and Human Resources enlist the cooperation of the Department of Motor Vehicles, the Alcoholic Beverage Control Commission and the media in the dissemination of information concerning central nervous system disorders to the public.

B. The Secretary of Health and Human Resources explore the potential for offering televised public education programs on disabling conditions and related services funded through public-private cooperative ventures.

4. The Secretary of Health and Human Resources be requested to provide information on respite programs available in the Commonwealth to health care facilities, professional health, medical and counselor associations, and community and civic groups.

Discussion

Although there are services available to individuals with disabilities, testimony submitted to the Joint Subcommittee indicates that these people know little about the availability of the services. Because many of the caregivers are devoted family members who find themselves physically and mentally stressed by their supportive roles, the coordination and provision of respite care are essential in order to avoid an increase in institutionalization of disabled adults.

5. The Secretary of Health and Human Resources be required to initiate collaboration between the Division of Emergency Medical Services of the State Health Department, the Virginia Chapter of Emergency Medical Physicians, and the Virginia Chapter of the College of Neurosurgery for the joint development of a model protocol for pre-hospital treatment of central nervous system injuries by advanced life support emergency medical personnel and for training such personnel and operational medical directors.

In the development of the model protocol, it is not the intent of this Joint Subcommittee to mandate additional training for emergency medical services personnel at this time unless adequate resources are provided for the training.

Discussion

The Joint Subcommittee has determined that there is no statewide uniform manner in which pre-hospital emergency medical treatment is provided. In most cases, the critically injured are treated by advanced life support emergency medical personnel. However, such personnel, in all areas of the State, may not be familiar with or be trained to provide the type of critical care such injuries require. It is not the intent of the Joint Subcommittee to recommend additional training for emergency medical personnel without sufficient financial support for such training. Nevertheless, recognizing the need to ensure prompt, appropriate and accessible medical care to persons whose lives depend upon it, the autonomy of the State's localities, and the responsibilities of the various medical specialties involved in rendering such care, it does recommend that the Secretary of Health and Human Resources initiate the collaboration that is necessary between the Division of Emergency Medical Services, the Virginia Chapter of Emergency Medical Physicians, and the Virginia Chapter of the College of Neurosurgery for the joint development of a model protocol for pre-hospital treatment of central nervous system injuries by advanced life support emergency medical personnel and training for such personnel and operational medical directors.

6. A. The Secretary of Health and Human Services, in cooperation with the Medical College of Virginia and the University of Virginia Medical Center, be requested to conduct a study of the service needs of low-level functioning head injured persons and to develop a plan to address the coma care and long-term placement needs of this population.

B. The Secretary of Health and Human Services determine the feasibility of implementing a training program on traumatic brain injury for health service providers in the Commonwealth.

Discussion

As previously mentioned in this report, coma and other low-level functioning head injured persons require costly specialized care. Because such persons lose consciousness for a prolonged period of time and are unresponsive to stimulation, it is essential that such persons have access to the expertise of specialists and immediate evaluation and treatment to increase the likelihood of survival and the reduction of tissue damage and cognitive impairments. The Joint Subcommittee determined that there is no mechanism to provide for the continuous care of these persons, many of whom are eventually placed in nursing homes, in Virginia. Due to the expense for such care, it recommends that the Secretary of Health and Human Services, in cooperation with the Medical College of Virginia and the University of Virginia Medical Center, study the service needs of low-level functioning head injured persons and develop a plan to address the coma care and long-term placement needs of this population.

Appropriate emergency treatment before a head injury patient reaches the hospital is critical to the prevention of further damage to brain tissues. Consequently, it is important that all service providers involved with head injured people be adequately trained to identify and provide the initial medical care that is vital to saving the lives of such individuals. The Joint Subcommittee, therefore, recommends that the Secretary of Health and Human Services determine the feasibility of implementing a training program on traumatic brain injury for all health service providers.

7. The Departments of Housing and Community Development, MHMRSAS, Social Services and Rehabilitative Services be requested to cooperate in developing maximum utilization of available federal and state funds for innovative housing strategies such as transitional living facilities and congregate living arrangements.

Discussion

Often, because many of the caregivers are aging parents, housing and personal care for young disabled individuals has the potential of becoming an increasing problem in future years. This potential creates a profound need for innovative housing strategies such as provision of transitional living facilities, utilization of available housing subsidies, and development of congregate living arrangements.

8. The Medical College of Virginia and the University of Virginia Medical Center be encouraged to pursue funding for research in the treatment of head and spinal cord injury and other central nervous system disorders.

9. A. The Medical College of Virginia and the University of Virginia Medical Center be encouraged to establish regionalized telecommunciations linkages for practicing physicians and health care providers in rural and other areas to enable physicians in such areas to confer with emergency medical physicians, neurosurgeons, other medical specialists, and allied health personnel concerning the care and treatment of individuals with central nervous system injuries.

B. The position of central nervous system injury services coordinator be established at each of the State's medical schools to provide care for disabled persons in remote areas of the State and to strengthen out-patient services for area residents.

Discussion

It is believed that the key to the prevention of long-term disability from traumatic brain injury and spinal cord injury is research. Although there is increased activity in research in these areas and the teaching hospitals in the State are participating in such research activities, the Joint Subcommittee believes that more could be accomplished if greater financial support were available. The Joint Subcommittee encourages the Medical College of Virginia and the University of Virginia Medical Center to pursue funding for research in the treatment of central nervous system disorders and injuries.

The Joint Subcommittee has determined that there is no continuity in the level of emergency medical and critical care and that there is a lack of available neurosurgeons and specialists throughout the State. Because immediate and appropriate medical care is critical to the survival and the minimization of long-term disability of persons who sustain traumatic brain injury and/or spinal cord injury, the Joint Subcommittee supports the use of existing technology to provide vital linkages between physicians in rural areas with those in the State's teaching hospitals and Level I trauma care centers in order that all citizens who sustain such life-threatening injuries may have access to the very best medical care available in Virginia.

10. The current functions of the Head Injury Registry be expanded to include increased registry operation, outreach, client consultation services, systematic assessment, and documentation of clients' needs.

Discussion

The Department of Rehabilitative Services is required by § 51.5-11 of the Code of Virginia to "establish and maintain a central registry of persons who sustain . . . brain injury if permanent disability is likely to result, in order to facilitate the provision of appropriate rehabilitation services by the Department and other state agencies to such persons." Although the registry is an effective mechanism by which to monitor the frequency of traumatic brain injury in the Commonwealth, the Joint Subcommittee believes that expanding the functions of the registry to include increased registry operation, outreach, client consultation services, systematic assessment, and documentation of clients' needs would facilitate effacacious health and social policy development, health planning, need analysis, and program effectiveness.

11. The Board of Education be requested to include in its driver education programs instruction on head and spinal cord injury which may result from motor vehicle accidents.

Discussion

Injuries to the central nervous system are the most devastating types of injuries from which a person can suffer and yet survive. These injuries interrupt the normal life sequence and create physical, social and financial burdens of great magnitude for the individual and the State. The most frequent cause of head and spinal cord injuries nationally and in Virginia is the motor vehicle accident.

Typically, the individual who sustains such injuries in Virginia is young with approximately sixty-percent being between the ages of eleven and forty. Because such a large number of these injuries involve young people and motor vehicle accidents, it is essential that good driving habits and respect for motor vehicle laws are developed when a person is learning to drive. Teaching students in driver education programs in the public schools about these injuries might help convince them of the importance of developing good driving habits, refraining from driving under the influence of alcohol and drugs, and resisting peer pressure to take risks. The Joint Subcommittee therefore recommends that the Board of Education include instruction on central nervous system disorders which may result from motor vehicle accidents in the driver education programs of the public schools.

12. The Secretary of Transportation and Public Safety, the Secretary of Health and Human Resources and the Office of the Attorney General be requested to collaboratively enhance public awareness programs and more widely disseminate information on the importance of complying with existing seat belt, helmet, infant restraint and DWI laws as one means to reduce central nervous system injuries in the Commonwealth.

Discussion

In Virginia, an estimated 215 people each year suffer permanent spinal cord injury and varying degrees of loss of bodily function, and approximately 14,000 people have varying degrees of head injury. Approximately fifty percent of the head injured citizens in the State who require services are of school age. Although the Commonwealth has certain laws which govern the operation of motor vehicles, place restraints and penalties for driving under the influence of alcohol and drugs, and even require the use of seat belts and other safety equipment for passengers while the motor vehicle is in operation, thousands of Virginians continue to suffer needlessly from head and spinal cord injuries which could have been prevented had they complied with existing laws. Central nervous system injuries and disorders take their toll not only on the victim and his family, but also on the Commonwealth through the escalating costs of medical and long-term care for the disabled. The Joint Subcommittee recommends that the Secretary of Transportation and Public Safety, the Secretary of Health and Human Resources, the Secretary of Education and the Office of the Attorney General collaboratively enhance public awareness of the importance of complying with state safety laws as a means of reducing central nervous system injuries in the Commonwealth.

13. The Virginia Head Injury Foundation be encouraged to continue its in-service training for teachers and administrators, health and pupil personnel services in identifying the needs of head injured children and in providing integrated educational, health, social and support services for such children.

Discussion

As previously stated, nearly fifty percent of head injured citizens in Virginia who require services are school age. The prognosis for victims of severe head injuries is usually very poor, and even minor head injuries may produce significant and long-term debilitating effects. Head injured children require educational programs which accommodate their learning difficulties and instructional personnel who have been sensitized to the particular nature of their disabilities.

In recent years, the Virginia Head Injury Foundation has provided in-service training for teachers, administrators and pupil services personnel on the identification of the needs of head injured children and the provision of integrated educational, health, social and support services for such children. Through its in-service training programs and services, the Foundation has improved the quality of life for some such children and their families. The Joint Subcommittee commends the Virginia Head Injury Foundation for its work and encourages it to continue to serve the head injured children of the Commonwealth by assisting in the preparation of their instructors.

14. The Joint Subcommittee Studying the Needs of Head and Spinal Cord Injured Citizens be continued until 1990.

Discussion

The Joint Subcommittee worked arduously over the past year to identify the needs of head and spinal cord injured citizens and the need for research. During this time, the Joint Subcommittee reviewed various proposals to establish a mechanism to meet the needs of such individuals, but did not have sufficient time to thoroughly assess the implications of each proposals or to develop effacacious approaches to implement the proposals. The Joint Subcommittee recommends that the 1989 General Assembly continue the study until 1990 to enable it to complete its work.

ISSUES FOR FURTHER STUDY

During the course of its study, the Joint Subcommittee determined that persons suffering from all types of central nervous system disorders need adequate housing, transportation, on-going health and medical care, rehabilitation, and case management. Moreover, research on these disorders needs greater funding as many of these persons also suffer from both injuries or other equally debilitating disorders. The Subcommittee found that there is no statewide mechanism to deliver essential services to these victims in an effective and cost-efficient manner. The critical needs of the head and spinal cord injured population require examination and resolution. In addition, because many of these persons are uninsured or have exhausted their benefits, they do not receive needed medical care and support services. Further, it is believed that other such persons, such as those suffering from traumatic head injury, have been misdiagnosed and inappropriately placed in mental health and other health care facilities.

To address these issues, the Joint Subcommittee has determined to include in its deliberations during the second year of its study an examination of the following:

- The extent to which persons with head injuries are misdiagnosed and inappropriately placed in state mental health institutions;
- The relationship between head injury and crime;
- The needs of head and spinal cord injured children, particularly those between the ages of fifteen and twenty-one;
- The need for a community coordinator at the State's medical schools;
- The need for regional demonstration projects for long-term care of low-level functioning head injury survivors and for behavioral treatment programs;
- The adequacy of coverage and benefits of health insurance for central nervous system disorders;
- The need for establishing revenue generating initiatives to fund services and research for persons with central nervous system disorders;
- The need to request that the Medical Society of Virginia encourage practicing physicians to increase their patient education efforts for individuals with central nervous system disorders, particularly those with head and spinal cord injuries, and to provide more information to the families of such individuals concerning the nature of the disability and care of the patient upon discharge; and
- The review of the provisions and status of implementation of the federal law, *"Technology-Related Assistance for Individuals with Disabilities Act of 1988"* to ensure that Virginians of all ages may avail themselves of the assistive technology devices that would enable them to "participate independently in the tasks of daily living."

CONCLUSION

The Joint Subcommittee believes that of a mechanism which provides access to the integrated educational, health, respite, transportation, housing, vocational rehabilitation, social and support services for victims of central nervous system injuries and disorders, and their families, would facilitate the re-entry of such persons in the community, promote family unity, minimize the waste of human life and reduce the burden of the escalating costs of health care and duplication of services. The Joint Subcommittee believes that the proposed case management system is the mechanism by which to meet the needs of all persons who are functionally disabled, without regard to how their disability was sustained. The case management system will provide a point of entry for and the continuity of services, lessen the number of persons with whom the disabled person and his family will have to work, and reduce the costs to the Commonwealth by ensuring appropriate referrals, and rehabilitative and long-term placement.

The Joint Subcommittee believes that considerable work remains to determine the most appropriate and cost-effective means of addressing the issues which it has continued for further study.

The Joint Subcommittee extends its appreciation to the Secretary of Health and Human Resources, the Senate Finance Committee's Human Resources Subcommittee, the Department of Rehabilitative Services, the Woodrow Wilson Rehabilitation Center, the Medical College of Virginia, the University of Virginia Medical Center, the Virginia Head Injury Foundation, and all other state agencies and interested citizens that assisted it in its study.

Respectfully submitted,

Alan E. Mayer
Arthur R. Geisen, Jr.
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Virgil H. Goode, Jr.
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Altamont Dickerson, Jr., Ed.D.

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APPENDICES

A. House Joint Resolution No. 135 (1988)

B. Proposed Legislation

C. Head Injury Registry Statistics

D. New Spinal Cord Injuries in Virginia

APPENDIX A

GENERAL ASSEMBLY OF VIRGINIA -- 1988 SESSION

HOUSE JOINT RESOLUTION NO. 135

Establishing a joint subcommittee to study the needs of head and spinal injured citizens and needs for research.

Agreed to by the House of Delegates, February 16, 1988
Agreed to by the Senate, March 2, 1988

WHEREAS, an estimated 439 of every 100,000 Virginia citizens have been head injured and about a quarter of them remain disabled by the injury; and

WHEREAS, the number of Virginia citizens who survive traumatic brain injury but remain chronically disabled and in need of care is growing; and

WHEREAS, the direct and indirect costs of care, treatment and rehabilitation of head injured persons are nationally estimated to be over $10.5 billion each year, with much of the indirect costs resulting from a lack of needed services; and

WHEREAS, many head injured citizens already reside inappropriately in mental health institutions or have become incarcerated due to their head injury deficits; and

WHEREAS, the majority of these head injured citizens are young adults who will be in need of residential and associated case management, social, recreational and day support services for the remaining thirty or more years of their lives; and

WHEREAS, concerns have been raised about the availability in the Commonwealth of community-based residential programs and long-term care facilities for head injured Virginia citizens; and

WHEREAS, there is no long-term action plan to provide for the residental needs, both nursing care and community based, of Virginia's head injured citizens; and

WHEREAS, approximately 6,000 individuals with spinal cord injury are living in Virginia, and there are 215 new injuries each year; and

WHEREAS, eighty percent of spinal cord injuries occur between the ages of sixteen and twenty-five and the impact of such injury can be overwhelming, resulting in paralysis, the need for psychological adjustments, loss of sensation, dysfunctional sex and family life, and other related health problems; and

WHEREAS, spinal cord injuries are among the most expensive to treat as initial medical costs of $100,000 are frequent, specially equipped vans may cost $20,000, repair of a "pressure sore" may cost $20,000, and yearly medical costs without major complications amount to thousands of dollars; and

WHEREAS, the majority of head and spinal injuries are sustained from motor vehicle accidents, falls and sports injuries; and

WHEREAS, rehabilitation for head and spinal injuries do not end with discharge, but must continue throughout the life of the individual; and

WHEREAS, rehabilitation is one of the most costly components of the care and treatment of such persons, and additional support is needed to fund regeneration research, vocational re-training, cognitive and physical rehabilitation, long-term medical care, residential options, and assistance to help such persons develop independent living skills; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That a joint subcommittee is established to study the needs of head and spinal injured citizens and the need for research to assist such persons in re-entering the community. The joint subcommittee shall be composed of seven members as follows: two members each of the House Committees on Health, Welfare and Institutions and on Appropriations, to be appointed by the Speaker of the House, and one member each of the Senate Committees on Education and Health, on Rehabilitation and Social Services and on Finance to be appointed by the Senate Committee on Privileges and Elections. The Director of the Department of Rehabilitative Services shall serve ex officio.

The joint subcommittee shall study the long-term residential needs of head injured citizens and recommend the most cost effective long-term action plan to provide for the development of residential options in the Commonwealth for Virginia's head injured citizens. It shall also determine the educational, health, emotional, social and rehabilitative needs of head and spinal injured persons, the cost of providing for such needs, the availability of re-training, vocational options and rehabilitative services for such persons, their long-term care needs and availability of such facilities and the projected cost thereof, and the need for research to assist these persons in re-entering the community. The joint subcommittee shall determine the number of head injured Virginians who reside in long-term care facilities, mental health and correctional institutions and out-of-state facilities, and recommend ways in which long-term care, rehabilitative services and research for head and spinal injured persons may best be funded.

APPENDIX B

1989 SESSION

VIRGINIA ACTS OF ASSEMBLY - CHAPTER 176

An Act to amend and reenact §§ 51.5-11 and 51.5-14 of the Code of Virginia and to amend the Code of Virginia by adding sections numbered 51.5-9.1, 51.5-9.2 and 51.5-9.3, relating to the Department of Rehabilitative Services and the Long-Term Rehabilitative Case Management System.

[H 1486]

Approved MAR 7 1989

Be it enacted by the General Assembly of Virginia:

1. That §§ 51.5-11 and 51.5-14 of the Code of Virginia are amended and reenacted and that the Code of Virginia is amended by adding sections numbered 51.5-9.1, 51.5-9.2 and 51.5-9.3 as follows:

§ 51.5-9.1. Department designated as state agency for purpose of coordinating rehabilitative services.—The Department is designated as the state agency for coordinating rehabilitative services to persons with functional and central nervous system disabilities. The Department shall provide for the comprehensive assessment of the need for rehabilitative and support services of such persons, identify gaps in services, promote interagency coordination, develop models for case management and advise the Secretary of Health and Human Resources, the Governor and the General Assembly on programmatic and fiscal policies and the delivery of services to such persons.

For the purposes of this section, "functional and central nervous system disabilities" shall include, but not be limited to, traumatic brain injury, spinal cord injury, cerebral palsy, arthritis, muscular dystrophy, multiple sclerosis, and systemic lupus erythematosus (Lupus).

§ 51.5-9.2. Long-Term Rehabilitative Case Management System.—The Department shall develop and pilot a model for the initiation of a Long-Term Rehabilitative Case Management System. Such system shall provide for the coordination of medical, psychosocial, vocational, rehabilitative, long-term care, and family and community support services for persons with functional and central nervous system disabilities.

The Department shall facilitate the provision of such services by the Department and any other state, local, public or private nonprofit agency, organization or facility to such persons.

§ 51.5-9.3. Eligibility for long-term rehabilitative case management.—A person shall be eligible to receive long-term rehabilitative case management services pursuant to § 51.5-9.2 if he is determined by the Department to be disabled indefinitely, requires a combination and sequence of special interdisciplinary or generic care, treatment, or other services which are lifelong or for an extended duration and are individually planned and coordinated, or his disability results in substantive functional limitations in three or more of the following areas of major life activity: (i) self-care; (ii) receptive and expressive language; (iii) learning; (iv) mobility; (v) self-direction; (vi) capacity for independent living; and (vii) economic sufficiency.

§ 51.5-11. Central registry; information contained therein to be confidential.—A. The Department shall establish and maintain a central registry of persons who sustain spinal cord injury other than through disease, whether or not permanent disability results, and brain injury if permanent disability is likely to result, in order to facilitate the provision of appropriate rehabilitation services by the Department and other state agencies to such persons. *The Department, in cooperation with organizations representing persons with disabilities maintained by the central registry, shall establish and pilot a mechanism which utilizes the data maintained by the central registry pursuant to this section to provide client identification, follow-up and outreach; maintain accurate and up-to-date records concerning the client's functional level and need for services; and facilitate better analysis and utilization of such data for effective program, policy and fiscal planning purposes.*

B. Every hospital and attending physician shall report to the Department by the most expeditious means within thirty days after identification of any person sustaining brain injury and within seven days after identification of any person sustaining spinal cord injury. The report shall contain the name, age and residence of the person, date and cause of the injury, and such additional information as the Department may deem necessary.

C. Information contained in the registry concerning individuals shall not be subject to the Virginia Freedom of Information Act (§ 2.1-340 et seq.) and shall be confidential for purposes other than those directly connected with the administration of programs under the

Department's jurisdiction or as required by other agencies of the Commonwealth. Information needed for research purposes may be made available to an organization or individual engaged in research only for purposes directly connected with the administration of programs relating to persons with disabilities, including research for the development of new knowledge or techniques which would be useful in the administration of the program; however, the organization or individual must furnish satisfactory assurance that the information will be used solely for the purpose for which it is provided, that it will not be released to persons not connected with the study under consideration, and that the final product of the research will not reveal any information that may serve to identify any person about whom information has been obtained through the Department without the written consent of the person, or his legally authorized parent or guardian, and the Department.

§ 51.5-14. Powers and duties of Commissioner.–The Commissioner shall have the following powers and duties:

1. To employ such personnel, qualified by knowledge, skills, and abilities, as may be required to carry out the purposes of this title relating to the Department;

2. To make and enter into all contracts and agreements necessary or incidental to the performance of the Department's duties and the execution of its powers under this title, including, but not limited to, contracts with the United States, other states, agencies and governmental subdivisions of this Commonwealth;

3. To accept grants from the United States government and agencies and instrumentalities thereof and any other source and, to these ends, to comply with such conditions and execute such agreements as may be necessary, convenient or desirable;

4. To do all acts necessary or convenient to carry out the purposes of this title;

5. To develop and analyze information on the needs of persons with disabilities;

6. To develop plans, policies and programs for the delivery of services to persons with disabilities for consideration by the Governor and the General Assembly ; ~~such~~ . *Such* policies, plans and programs for services to those who cannot benefit from vocational rehabilitation shall be prepared over time, and as funds become available for such efforts;

7. To operate and maintain the Woodrow Wilson Rehabilitation Center and to organize, supervise and provide other necessary services and facilities (i) to prepare persons with disabilities for useful and productive lives, including suitable employment and (ii) to enable persons with disabilities, to the degree possible, to become self-sufficient and have a sense of well-being;

8. To develop criteria for the evaluation of plans and programs relative to the provision of rehabilitative and other services;

9. To investigate the availability of funds from any source for planning, developing and providing services to persons with disabilities, particularly those not capable of being gainfully employed;

10. To coordinate the Department's plans, policies, programs and services , *and such programs and services required under § 51.5-9.2,* with those of the other state agencies providing services to persons with disabilities so as to achieve maximum utilization of available resources to meet the needs of such persons;

11. To compile and provide information on the availability of federal, state, regional and local funds and services for persons with disabilities;

12. To accept, execute and administer any trust in which the Department may have an interest, under the terms of the instruments creating the trust, subject to the approval of the Governor; and

13. To perform such other duties as may be required by the Governor and the Secretary of *Health and* Human Resources.

1989 SESSION

LD6908511

HOUSE JOINT RESOLUTION NO. 392

Offered January 24, 1989

Requesting the Medical College of Virginia and the University of Virginia Medical Center to work collaboratively to establish a regionalized telecommunications system to facilitate medical consultations on central nervous system disabilities between physicians in rural and metropolitan urban areas.

Patrons--Mayer, Marks, Giesen and Crenshaw; Senators: Goode, Saslaw and Miller, K. G.

Referred to the Committee on Health, Welfare and Institutions

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WHEREAS, thousands of Virginians suffer head and spinal cord injuries each year, primarily due to motor vehicle and sports accidents and falls; and

WHEREAS, the immediate delivery of emergency and tertiary medical care is critical to the survival and recovery of such persons with a minimum of long-term chronic disability; and

WHEREAS, in many rural areas of Virginia, such specialized medical care and neurosurgeons are not available, but essential medical information could be transmitted to health care providers in outlying areas by medical specialists at hospitals with tertiary level of care through the technology of telecommunications; and

WHEREAS, the establishment of such a system would facilitate the exchange of medical information that may save the lives of thousands of people, and the system could potentially be used for other worthy purposes; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Medical College of Virginia and the University of Virginia Medical Center are requested to work collaboratively to establish a regionalized telecommunications system to facilitate medical consultations on central nervous system disabilities between physicians in rural and metropolitan urban areas.

The institutions shall report their findings and recommendations regarding the establishment of such system by December 1, 1989, to the Joint Subcommittee Studying the Needs of Head and Spinal Cord Injured Citizens and the Need for Research.

Official Use By Clerks	
Agreed to By The House of Delegates	**Agreed to By The Senate**
without amendment ☐	without amendment ☐
with amendment ☐	with amendment ☐
substitute ☐	substitute ☐
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Date: _____	Date: _____
Clerk of the House of Delegates	Clerk of the Senate

1989 SESSION

LD6906511

HOUSE JOINT RESOLUTION NO. 393

Offered January 24, 1989

Requesting the Secretary of Health and Human Resources to study the need for and feasibility of implementing a training program on traumatic brain injury for emergency medical personnel, educators, and mental health counselors.

Patrons--Mayer, Marks, Giesen and Crenshaw; Senators: Goode, Saslaw and Miller, K. G.

Referred to the Committee on Health, Welfare and Institutions

---

WHEREAS, appropriate emergency treatment before a head injury patient reaches the hospital is critical to the prevention of further damage to brain tissues; and

WHEREAS, it is essential that emergency medical personnel are adequately trained to identify and provide the initial medical care that is vital to saving the lives of such individuals; and

WHEREAS, approximately fifty percent of the head-injured in Virginia who require services are school age and these children need to be reintroduced to academic and peer social life; and

WHEREAS, many times such children are placed in classes and programs for the learning disabled and/or the emotionally disturbed due to cognitive deficiencies and emotional-behavioral impairments which result from the injury, yet the head injured child differs in the nature of his learning difficulties from the typical learning disabled child; and

WHEREAS, children with traumatic brain injuries require instructional personnel who have been sensitized to the peculiar nature of their disability and educational programs which accommodate their learning difficulties; and

WHEREAS, families of brain-injured persons need help in learning to cope with the fact that their head-injured relatives are different people now with unique needs and desires; and

WHEREAS, it is important that all service providers involved with head-injured people, including emergency medical personnel who have the initial contact with such people, educators who reintroduce brain-injured children to academics, and mental health counselors who help families cope, have the appropriate training to deal with each of these situations; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Secretary of Health and Human Resources is hereby requested to study the need for and feasibility of implementing a training program on traumatic brain injury for emergency medical personnel, educators, and mental health counselors.

The Secretary shall report her findings and recommendations by December 1, 1989, to the Joint Subcommittee Studying the Needs of Head and Spinal Cord Injured Citizens and the Need for Research.

Official Use By Clerks	
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Clerk of the House of Delegates	Clerk of the Senate

1989 SESSION

LD6909511

HOUSE JOINT RESOLUTION NO. 394

Offered January 24, 1989

Requesting the Board of Education to include instruction on central nervous system disorders which may result from motor vehicle accidents in the driver education programs in the public schools.

Patrons–Mayer, Marks, Giesen and Crenshaw; Senators: Saslaw and Miller, K. G.

Referred to the Committee on Rules

WHEREAS, injuries to the central nervous system are the most devastating types of injuries from which a person can suffer and yet survive; and

WHEREAS, these injuries interrupt the normal life-sequence of each injured individual and create physical, social and financial burdens of great magnitude; and

WHEREAS, the most frequent cause of head and spinal cord injuries in the state and nation is the motor vehicle accident; and

WHEREAS, typically, the individual with head and spinal cord injury in Virginia is young with approximately sixty-six percent being between the ages of eleven and forty; and

WHEREAS, because such a large number of central nervous system injuries result from motor vehicle accidents and involve young people, it is critical that good driving habits and respect for motor vehicle laws which are designed to protect individuals are developed when a person is learning to drive; and

WHEREAS, teaching students in driver education programs about central nervous system disorders which may result from motor vehicle accidents, including head and spinal cord injuries, might help convince them of the importance of developing such good driving habits and respect for the law; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Board of Education is hereby requested to include instruction on central nervous system disorders which may result from motor vehicle accidents in the driver education programs in the public schools.

The Board shall report on its work to include such instruction in the driver education programs by December 1, 1989, to the Joint Subcommittee Studying the Needs of Head and Spinal Cord Injured Citizens and the Need for Research.

Official Use By Clerks	
Agreed to By The House of Delegates	**Agreed to By The Senate**
without amendment ☐	without amendment ☐
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Date: _____	Date: _____
Clerk of the House of Delegates	Clerk of the Senate

1989 SESSION

LD6910511

HOUSE JOINT RESOLUTION NO. 396

Offered January 24, 1989

Requesting the Secretary of Transportation and Public Safety, the Secretary of Health and Human Services and the Attorney General to work collaboratively to enhance public awareness of the importance of complying with state safety laws as a means of reducing central nervous system injuries in the Commonwealth.

Patrons--Mayer, Marks, Giesen and Crenshaw; Senators: Goode, Saslaw and Miller, K. G.

Referred to the Committee on Rules

WHEREAS, in Virginia an estimated 215 people each year suffer permanent spinal cord damage and varying degrees of loss of body function and approximately 14,000 people have varying degrees of head injuries; and

WHEREAS, the most frequent cause of head and spinal cord injuries in the state and nation is the motor vehicle accident; and

WHEREAS, injuries to the central nervous system are the most devastating types of injuries from which a person can suffer and yet survive; and

WHEREAS, central nervous system injuries interrupt the normal life sequence of each injured individual, create physical, social and financial burdens of great magnitude, and alter life goals for some completely; and

WHEREAS, at the present medical science does not have a cure for severe head and spinal cord injuries; however, some progress is being made in providing individuals with some measure of mobility and control over some bodily functions; and

WHEREAS, a number of these injuries could be avoided if people complied with the seat belt, helmet, infant restraint and DUI laws of the Commonwealth; and

WHEREAS, the public needs to be made aware of the possible devastating injuries that might result from the failure to comply with these laws designed to protect them; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Secretary of Transportation and Public Safety, the Secretary of Health and Human Services and the Attorney General are hereby requested to work collaboratively to enhance public awareness of the importance of complying with existing seat belt, helmet, infant restraint and DUI laws as one means to reduce the number of central nervous system injuries in the Commonwealth.

The Secretary of Transportation and Public Safety, the Secretary of Health and Human Services and the Attorney General shall report on their work by December 1, 1989, to the Joint Subcommittee Studying Head and Spinal Cord Injured Citizens and the Need for Research.

Official Use By Clerks	
Agreed to By The House of Delegates	**Agreed to By The Senate**
without amendment ☐	without amendment ☐
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Clerk of the House of Delegates	Clerk of the Senate

GENERAL ASSEMBLY OF VIRGINIA -- 1989 SESSION

HOUSE JOINT RESOLUTION NO. 287

Continuing the Joint Subcommittee Studying the Needs of Head and Spinal Cord Injured Citizens and Needs for Research and requesting that the joint subcommittee review the needs of all physically handicapped persons.

Agreed to by the House of Delegates, February 24, 1989
Agreed to by the Senate, February 23, 1989

WHEREAS, head injury is a major health problem, affecting more than 1.9 million people nationally, and nearly 14,000 Virginians suffer head injuries each year; and

WHEREAS, injury to the brain threatens the most profound and complex body functions, greatly diminishing physical and cognitive functions temporarily or permanently; and

WHEREAS, an estimated 10,000 people sustain new permanent, disabling spinal cord injuries each year, and approximately 6,000 Virginians have spinal cord injuries with varying degrees of permanent injury; and

WHEREAS, spinal cord injury may result in either the partial or complete loss of control of specific muscles and sensation of certain body parts; and

WHEREAS, many of these persons also suffer from both head and spinal cord injury or other equally debilitating disorders, and share common needs with other persons with central nervous system disorders for adequate housing, transportation, on-going health and medical care, rehabilitation, case management, and regenerative research; and

WHEREAS, because many of these persons are uninsured or have exhausted their benefits, they do not receive needed medical care and support services; and

WHEREAS, there is no state mechanism to deliver essential services to them in an effective and cost-efficient manner; and

WHEREAS, the joint subcommittee identified other critical needs of this population which require examination and resolution; and

WHEREAS, the joint subcommittee reviewed various proposals to establish a mechanism to meet the needs of such persons, but it requires additional time to assess the efficacy of the proposals and to determine whether other approaches may be more appropriate; and

WHEREAS, the physically handicapped in general have been the victims of various forms of discrimination, especially with regard to housing and programs of care; and

WHEREAS, the needs of such physically handicapped persons for housing, education, training and job placement require attention; now, therefore, be it

RESOLVED by the House of Delegates, the Senate concurring, That the Joint Subcommittee Studying the Needs of Head and Spinal Cord Injured Citizens and the Needs for Research is continued. The current membership of the joint subcommittee shall continue to serve.

The joint subcommittee shall include in its deliberations an examination of the following: (i) the extent to which persons with head injuries are misdiagnosed and inappropriately placed in state mental health institutions; (ii) the relationship between head injury and crime; (iii) the needs of head and spinal cord injured children, particularly those between the ages of fifteen and twenty-one; (iv) the need for a community coordinator at the state's medical schools; (v) the need for regional demonstration projects for long-term care of low-level functioning head injury survivors, and demonstration behavioral treatment programs; (vi) the adequacy of coverage and benefits of health insurance for central nervous system disorders; (vii) the need for establishing revenue-generating initiatives to fund services and research for persons with central nervous system disorders; and (viii) the needs of the physically handicapped in general, the effectiveness of existing programs in meeting those needs, and the need for and cost of additional programs for all physically handicapped persons.

All agencies of the Commonwealth shall provide assistance upon request as the joint subcommittee may deem appropriate.

The joint subcommittee shall complete its work in time to submit its findings and recommendations to the Governor and the 1990 General Assembly, as provided in the procedures of the Division of Legislative Automated Systems for processing legislative documents.

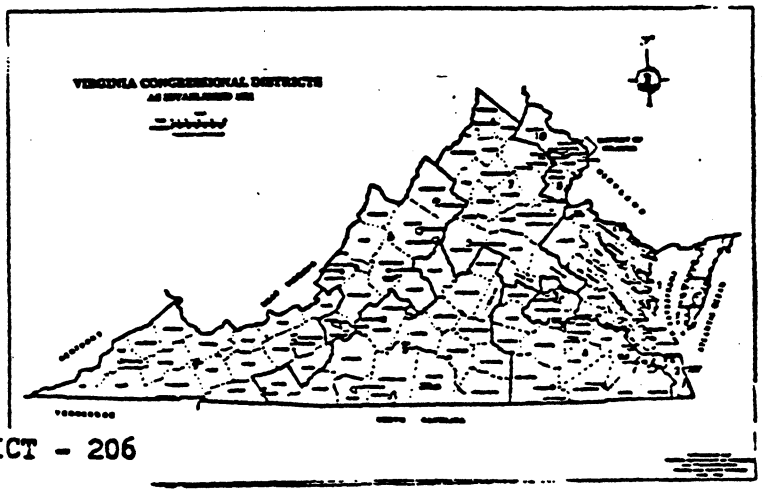
The indirect costs of this study are estimated to be $15,440; the direct costs of this study shall not exceed $8,560.

APPENDIX C

HEAD INJURY REGISTRY STATISTICS

JANUARY-NOVEMBER 1987

4550 head injuries were reported to Virginia's Head Injury Registry between January and November of 1987. Even with low compliance by some hospitals and noncompliance by others, there is sufficient data to demonstrate that this epidemic is distributed statewide. The statistics are arranged by congressional district, then listed by individual counties and cities.



FIRST DISTRICT - 206

Accomack - 4	King William - 3	Richmond Co. - 7
Caroline - 11	Lancaster - 7	Westmoreland - 12
Charles City - 2	Mathews - 4	York - 11
Gloucester - 14	Middlesex - 2	
James City - 1	New Kent - 6	
King & Queen - 4	Northampton -9	Hampton - 28
King George - 5	Northumberland - 4	Newport News - 72

SECOND DISTRICT - 500

Norfolk - 115	Virginia Beach - 385

THIRD DISTRICT - 182

Chesterfield - 36	Henrico - 7	Richmond - 139

FOURTH DISTRICT - 308

Amelia - 5	Powhatan - 2	
Brunswick - 29	Southampton - 37	
Greensville - 17	Prince George - 54	Chesapeake - 69
Isle of Wight - 15	Surry - 7	Dinwiddie - 4
Nottoway - 5	Sussex - 7	Suffolk -57

FIFTH DISTRICT - 343

		Henry - 4
Appomattox - 11	Charlotte - 9	Lunenburg -18
Bedford - 67	Cumberland - 4	Mecklenburg - 47
Buckingham - 1	Fluvanna - 21	Patrick - 2
Campbell - 27	Franklin - 45	Pittsylvania - 39
Carroll - 25	Halifax - 14	Prince Edward - 9

SIXTH DISTRICT - 786

		Rockbridge - 45
Alleghany - 33	Bath - 6	Rockingham - 45
Amherst - 47	Botetourt - 7	Salem - 14
Augusta - 326	Roanoke - 118	Staunton - 145

SEVENTH DISTRICT - 713

Albemarle - 152	Green - 12	Prince William - 173
Clarke - 5	Hanover - 17	Rappahannock - 5
Culpeper - 43	Louisa - 12	Shenandoah - 29
Fauquier - 37	Madison - 12	Spotsylvania -39
Frederick - 84	Orange - 39	Stafford - 21
Goochland - 2	Page - 14	Warren - 17

EIGHTH DISTRICT - 342

Fairfax - 226	Prince William - 111	other - 5

NINTH DISTRICT - 562

		Scott - 5
Bland - 5	Giles - 21	Smyth - 13
Buchanan - 44	Grayson - 34	Tazewell - 29
Craig - 1	Lee - 11	Washington - 18
Dickerson - 6	Montgomery - 274	Wise - 14
Floyd - 10	Pulaski - 19	Wythe - 58

TENTH DISTRICT - 214

Fairfax - 201	Loudoun - 13

OTHER - 394

TOTAL - 4550

SOURCE: Virginia Head Injury Foundation

APPENDIX D

New Spinal Cord Injuries in Virginia
July 1, 1985 to July 1, 1987

Planning District	# new SCI's	# older SCI's
20 South Eastern Virginia (Virginia Beach area)	47	168
15 Richmond Regional	44	174
8 Northern Virginia	19	110
21 Peninsula (Williamsburg, Newport News, Hampton area)	15	63
5 Fifth Planning District (Roanoke area)	13	67
19 Crater (Petersburg area)	13	37
6 Central Shenandoah (Staunton area)	11	75
10 Thomas Jefferson (Charlottesville area)	11	56
12 West Piedmont (Danville, Martinsville area)	11	66

The other planning districts all had less than 10 newer injuries over the two year period, and have a total of 350 older injuries. Cummulatively, there are a total of 2400 new and older people with SCI. (Hickman, 1987).

There are an estimated 6000 people with SCI currently living in Virginia which have survived since World War II, this includes those treated in the Veteran's Administration hospitals over the past forty years.

SOURCE: Sharon H. Taylor and Walter C. Wilson, "Needs of the Spinal Cord Injured in Virginia," March 3, 1988.