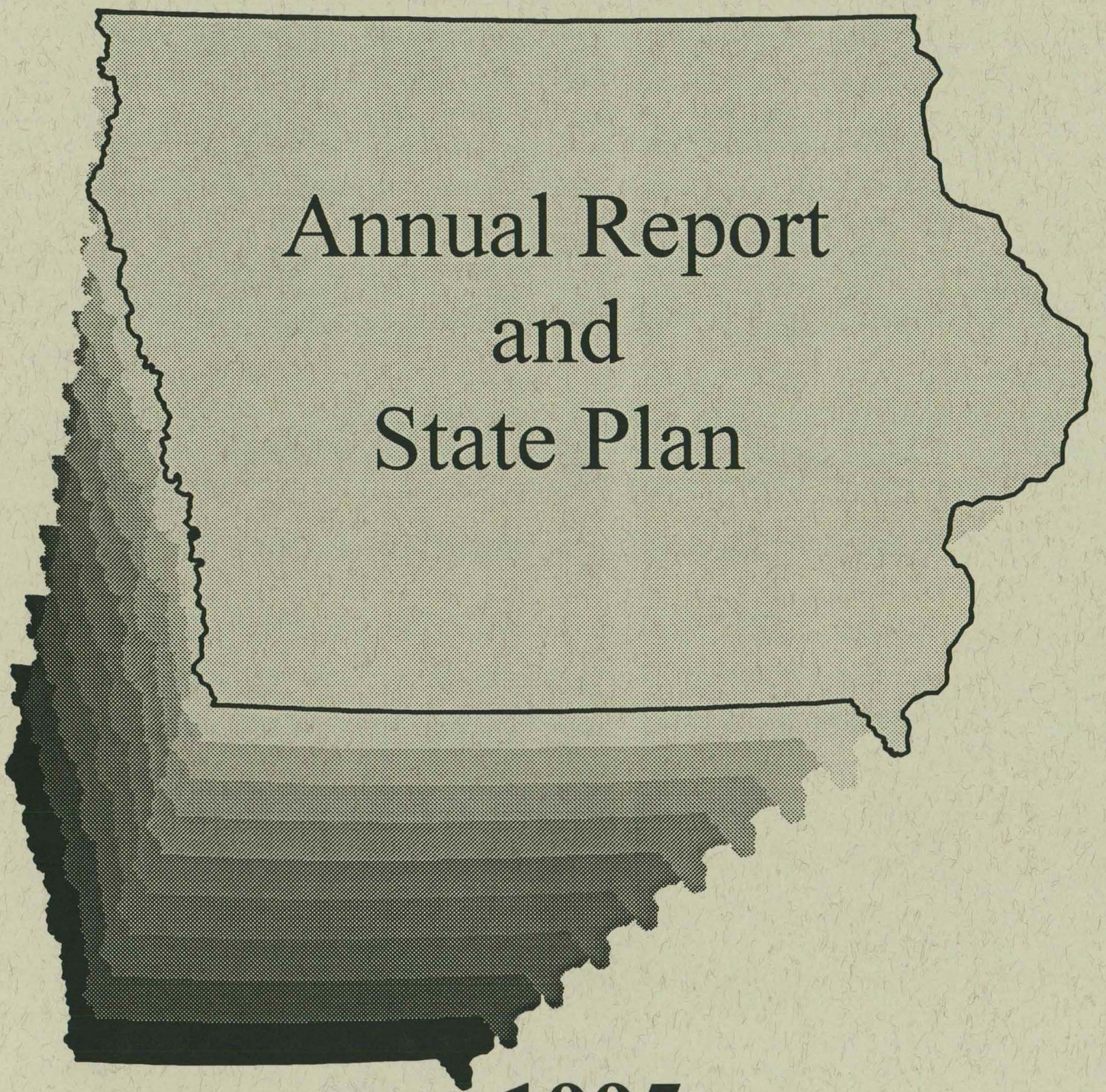
Iowa: Advisory Council On Head Injuries



Annual Report and State Plan

1995

IOWA

ADVISORY COUNCIL ON HEAD INJURIES

ANNUAL REPORT
and
STATE PLAN

MARCH 1996

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR

DEPARTMENT OF PUBLIC HEALTH
CHRISTOPHER G. ATCHISON, DIRECTOR

March 18, 1996

The Honorable Terry E. Branstad
Members of the General Assembly
State Capitol Building
Des Moines, IA 50319

Dear Governor Branstad and Members of the Assembly,

On behalf of the Iowa Advisory Council on Head Injuries it is my pleasure to forward to you the Annual Report as required by Iowa Code summarizing the activities of the Council for the past year.

As Chair of the Advisory Council, I must tell each of you that although an awareness of incidents of brain injury has increased, access to funding for services has not. Brain injury has been eliminated purposely through SF 69 1994-95 legislation, and SF 2030 1995-96 legislation which effected Managed Care. Also, it is well documented that brain injury is predominantly a disability that can be prevented. We have initiated collaborative efforts with many state agencies, (Department of Public Health, Department of Human Services, University of Iowa Injury Prevention Research Center, Governor's Traffic Safety Bureau, Department of Transportation, and other organizations throughout the state) promoting prevention methods through bicycle helmets and a universal motorcycle helmet law, For the most part these activities have been unsuccessful.

Frustration continues to permeate the community of persons with brain injuries, and their families as they seek help in putting their lives back together. A sense of urgency prevails as we see the many changes coming, realizing more the inequity that persons with brain injuries have in getting access to services.

The Council seeks your help in eliminating the barriers now in place that have resulted in competition between disability groups for funds that are now shrinking. May we together seek equality for all people with disabilities not by diagnosis but by functionality with emphasis on individual need. Our moral and fiscal responsibility demands no less of each of us.

Thank you for your continued support of persons with brain injury and the Council looks forward to working with you to create the resources and possibilities for all citizens of Iowa to attain the highest quality of life.

The Council has included, in this report, its accomplishments, and the plans of the prevention, and service task forces. I would appreciate it if you would take some time to review this report.

Respectfully Submitted,

Margaret J. Curry

Margaret J. Curry, Chairperson

LUCAS STATE OFFICE BUILDING / DES MOINES, IOWA 50319-0075 / 515-281-5787
FAX # (515) 281-4958 / TDD-DEAF SERVICES # (515) 242-6156

IOWA

Advisory Council on Brain Injuries

EXECUTIVE COMMITTEE

Margaret J. Curry
Chairperson
310 North Main
Danville, IA 52623
(319)392-4380

JoAnn C. Kramer
Past Chair
6315 Sage Rd.
Waterloo, IA 50703
(319) 273-8250

Marvin L. Tooman
Prevention Chair
715 SW Ankeny Rd.
Ankeny, IA 50021
(515)965-1339
FAX: (515)965-1186

Geoffrey M. Lauer
Service Chair
1700 1st Ave., Ste. 25E
Iowa City, IA 52240
(319)354-2121
FAX: (319)354-0724

Paul DeBoer, Staff
IA Dept. Public Health
Lucas State Office Bldg.
Des Moines, IA 50319-0075
(515)281-6283
FAX: (515)281-4535

MISSION STATEMENT FOR IOWA: ADVISORY COUNCIL ON BRAIN INJURIES

THE MISSION OF THE COUNCIL IS TO:

- ***STUDY THE NEEDS OF INDIVIDUALS WITH BRAIN INJURY AND THEIR FAMILIES***
- ***PROMOTE AND IMPLEMENT INJURY PREVENTION STRATEGIES***
- ***MAKE RECOMMENDATIONS REGARDING THE PLANNING, DEVELOPMENT, AND ADMINISTRATION OF A COMPREHENSIVE STATEWIDE SERVICE DELIVERY SYSTEM***

STATE OF THE STATE: Services for persons with a Brain Injury

CURRENT

The Advisory Council on Brain Injuries (ACBI) has worked within the structure of state government to address the need for an appropriate continuum of services for persons with brain injury. The services continue to be fragmented and inequitable in the state in terms of options, quality, and accessibility. We have consistently been advocating for a system of services that is individually driven, offering choices based on individual needs and providing opportunities for independence and productivity.

The awareness of the need for services is recognized, but adequate funding to support persons with brain injury continues to be a discretionary funding choice made by county boards of supervisors. Accessing services should not be this difficult; families and individuals continue to struggle for appropriate community based services and most go without in our current system.

We recognize the need to collaborate with all entities so that all persons with disabilities can access what is needed without pitting one disability group against another. It is the role of the ACBI to request state agencies to exert a unified effort to meet the specific needs of persons with a brain injury. Examples of this are the development and maintenance of a 28E Agreement with the Department of Human Services, and the University of Iowa Hospitals and Clinics. This agreement allows persons with a brain injury to leave the hospital setting when they are medically ready, and not yet approved for Medicaid. Another important objective achieved by the Council was the development of a Home and Community Based Services Waiver for individuals with Brain injury that is to be implemented in 1996.

FUTURE

However, the HCBS/BI waiver is only one small step in meeting the needs of persons with a brain injury. Of great concern to the Council are the large barriers of:

- Lack of a single point of entry for people needing services.
- Brain injury's systematic exclusion from existing funding sources for services.

These barriers must come down. With a sense of urgency the Council will strive toward that end. We will continue to collaborate and advocate for accessible, appropriate, adequate, and affordable services for people with brain injury.

Table of Contents

ANNUAL REPORT and STATE PLAN

APPENDICES

INTRODUCTION

The lack of funding options and a comprehensive service delivery system that appropriately addresses the unique needs of survivors of brain injury propelled Iowans to action. In response to these needs, the Iowa Legislature passed a bill establishing the **Advisory Council on Head Injuries** (henceforth referred to as the Advisory Council on Brain Injuries) in 1989. The Council was administratively assigned to the Division of Persons with Disabilities within the Department of Human Rights until the 1992 legislative session transferred it to the Bureau of Disabilities and Injury Prevention within the Department of Public Health.

The Council meets quarterly to make recommendations regarding funding, legislative initiatives, prevention, and access to appropriate programs that utilize professionals trained specifically in brain injury, rehabilitation, long term care, and community support services. Two task forces were formed to examine these issues, one focused on prevention and the other service provision. The subcommittees report to the complete Council. The task forces may meet more frequently, depending on the need.

This report will provide an update on the Council's progress toward meeting the established goals and objectives. The state plan includes action plans and objectives based on annual goals. This enables the Council to plan and evaluate progress based on immediate needs, while maintaining insight into the future challenges.

OVERVIEW

Traumatic brain injury (TBI) is referred to as the "Silent Epidemic" with approximately five hundred thousand injuries occurring annually nationwide. "Head injury" or "traumatic brain injury" is damage or sudden insult to the brain or its coverings, not of a degenerative or congenital nature. This damage, or insult, can produce an altered state of consciousness that may result in personality and intellectual changes, as well as changes in physical, behavioral, and emotional functioning. Since no two injuries are alike, a person may exhibit one or more of these conditions as a result of the injury. The consequences of brain injury and its disabling effects are socially, educationally, medically, and economically devastating to individuals, families, and our communities. Consider the following:

- Iowans have a 1 in 10 chance of suffering a significant brain injury during his or her lifetime;

- nationally, an estimated 500,000 people a year experience traumatic brain injuries;

- brain injury is the leading cause of death for Iowans under the age of 34;
- an estimated 5,600 Iowans sustain a traumatic brain injury annually, with 1,200 of those suffering moderate to severe disabilities;
- children and young adults are disproportionately affected with the majority of victims being male between the ages of 15-24;
- in Iowa, over half of severe traumatic brain injuries due to bicycle crashes occur between the ages of 5 and 14;
- In 1993 2,311 school-aged children in Iowa sustained traumatic brain injuries; 656 of these cases were serious enough to require hospitalizations;
- motor vehicle crashes are the leading cause of TBI nationwide;
- the cost for one person with a severe brain injury for acute care is estimated to be $578,750 and the annual lifetime care costs following the acute care phase between $32,250 -- $84,950 (American Re-Insurance Company)

Medical and technological advances have resulted in greater rates of survival for persons sustaining traumatic brain injury. **The result is an emerging population of young, disabled survivors**. The improved survival rate is placing an increasing burden on an extremely limited array of rehabilitation services; yet the main burden still falls onto families of these individuals.

As concerned citizens, we need to address the present issues, and identify further challenges to assure survivors of TBI and their families appropriate, accessible, affordable and available services.

DEFINITION

Medically there are two primary types of brain injury: traumatic and non-traumatic. A traumatic brain injury can be categorized as "open" or "closed brain injury." An "open brain injury" is caused when an object forcefully penetrates the skull and brain, thereby damaging the brain. A "closed brain injury" refers to the damage to the brain that is caused without penetration of the skull when the brain is shaken violently within the skull. Non-traumatic causes of brain injury involves chemical agents, loss of oxygen to the brain, and brain pathology.

Iowa Code 135.22

"brain injury" means clinically evident brain damage or spinal cord injury resulting from trauma or anoxia which temporarily or permanently impairs a person's physical or cognitive functions.

During acceleration/deceleration events, such as motor vehicle crashes, the brain can be tossed and rotated within the skull. Because the gelatin like brain is encased within the rough, bony, rigid skull, violent impact causes a ripple effect throughout the brain, causing it to twist and tear. Bleeding in and around the brain tissue and swelling lead to increased intracranial pressure. This increased pressure adds to the amount and severity of the brain damage. Localized damage may also occur where there is bruising or the brain tissue is torn.

The effects of brain injury vary greatly, depending on the nature and severity of the injury: Persons with a brain injury commonly experience deficits in one or all the following categories. **Many persons with brain injuries appear to recover physically, but may experience cognitive, physical and socio-behavioral impairments.**

Cognitive Impairments:

- Long & Short term memory deficits.
- Altered self awareness.
- Difficulty with
  - Communication
  - Perception & Spatial relations
  - Attention & Concentration,
  - Reading & Writing
  - Sequencing
  - Problem solving
  - Planning, & Decision making
  - Thinking & Reasoning.
- Impaired
  - Coordination
  - Judgment & Conceptual & Constructional skills.
- Decreased capacity for abstraction.

Physical Impairments:

- Changes in
  - Vision
  - Hearing
  - Speech
- Other sensory information.
- Impaired spatial orientation
- Headaches
- Altered Balance & Strength & Equilibrium.
- Decreased coordination
- Spasticity & Ataxia of Muscles.
- Difficulty with Range of Motion.
- Paralysis on one or both sides
- Possible seizure disorders.

Social/Behavioral Impairments:

- Altered self esteem.
- Decreased awareness of social rules.
- Difficulty with
  - Family relations/roles
  - Sexual relations
  - Impulsively
  - Confabulation
  - Impatience
  - Lethargy
  - Emotional lability
  - Grooming & appearance
  - Age-appropriate behavior
  - Lack of motivation
  - Depression & Denial

PREVENTION COMPONENT PLAN

OVERVIEW

Considering injury statistics, it is apparent that the incidence of brain injury can be greatly reduced through prevention activities. Injuries have traditionally been perceived as unavoidable "accidents," rather than a health problem. Most unintentional injuries, however, are not "accidents," that is, random acts of fate that result in injury and death. Rather, the majority of the injuries are controllable and preventable, and in light of the risks taken, predictable. Such "accidents" are the leading cause of death and disability in children and young adults and cause the loss of more working years than all forms of cancer and heart disease combined. It is the goal of the Council to change the mindset of Iowan's to better recognize the consequences of risky behavior.

Three general strategies are available to prevent injury:

1. **Education** --Persuade persons at increased risk to alter their behavior.
2. **Legislation** --Require individual behavior change by law or administrative rule.
3. **Engineering** --Provide automatic protection by product and environment design.

Preventing brain injury is, of necessity, a societal task. The Iowa Advisory Council on Brain Injuries has, as a part of its mission, sought to pursue those activities that reduce the effect of brain injury on the citizens of Iowa. During our relative short existence as an organization, we have sought to align ourselves as an organization committed to prevention. To that extent, a Prevention Task Force was established, and it has actively pursued those programs, activities, and legislative efforts that do or could reduce the numbers and/or effect of brain injury. During the fall of 1992 and the spring of 1993, the Prevention Task Force was actively advocating the establishment of a universal motorcycle helmet law. While a great deal of time and effort was expended, the initiative was unsuccessful. However, many associated with the undertaking saw opportunities for a renewed effort. An effort was initiated to support the universal use of bicycle helmets through local ordinances. There was the belief that demonstrating the benefit of helmet use at the local level would improve the likelihood that a statewide application could be instituted. Such an initiative was undertaken in Iowa City.

SPECIAL CONSIDERATIONS

The Prevention Task Force of the Iowa Advisory Council on Brain Injuries must be sensitive to the best possible advocacy for persons with brain injury and also to the wishes of the Governor of Iowa. The Council and the appointed Task Force members serve at the Governor's request. A special responsibility of the Prevention Task Force is to keep the Governor and the legislators informed about those prevention initiatives that can reduce the human and fiscal cost of brain injury.

REVIEW OF 1995 ACCOMPLISHMENTS: Prevention Task Force

The Iowa Advisory Council on Brain Injuries maintains an active relationship with the Brain Injury Association of Iowa. Through this relationship, the Council has actively supported the universal use of motorcycle and bicycle helmets. In particular, an initiative was established in Iowa City to inform and educate Iowan's about the benefits of bicycle helmet usage. The Council and the Association served as a catalyst in organizing community leaders to consider increased bicycle helmet usage. Additional linkages and liaisons have been established with the University of Iowa Injury Prevention Research Center.

Of special significance in the last year was the decision of the US Congress to repeal the Intermodal Surface Transportation Efficiency Act of 1991. Commonly referred to as the "ISTEA Act," this piece of legislation encouraged states to enact mandatory seat belt and motorcycle helmet laws. If states did not enact such laws, certain portions of the states' allotment of federal highway transportation dollars would be diverted to safety related programming. In Iowa, this amounted to nearly $4 million for the federal fiscal year 1996. The Governor's Traffic Safety Bureau was destined to be the recipient of the diverted funds. The repeal of this Act eliminated the requirement to transfer or divert these funds, effectively ended the potential for prevention related initiaves.

Believing that most Iowan's remain relatively uninformed about the benefits of motorcycle and bicycle helmets (Appendix A), the Council through the Department of Public Health sought to apply to the Governor's Traffic Safety Bureau for ISTEA funds to support a public education campaign using non-print media. The repeal of the ISTEA Act eliminated the dollars that the Council had intended on utilizing for this public education effort.

There are some advocates of prevention that believe the repeal of the ISTEA Act may, in the long run, be beneficial to the universal application of both motorcycle and bicycle helmets. A number of Iowa legislators suggested that the ISTEA Act only served to "blackmail" the state into enacting seat belt and motorcycle helmet legislation. The elimination of this alleged "blackmail" will necessitate that state legislators consider the use of helmets on their own merits. While any immediate legislation for helmets is unlikely, it will be imperative that prevention advocates continue to clearly state how the use of helmets could significantly reduce the incidence of death and disability on our streets and highways.

In addition to the repealing of the requirements for mandatory seat belts and motorcycle helmets, the US Congress also repealed the National Maximum Speed Limit. Many Iowa legislators are seeking to raise the speed limits in Iowa. The Chairperson of the Council's Prevention Task Force, in the fall of 1995, actively participated with the Iowa Department of Transportation Study Committee in examining the potential impact of increasing Iowa's speed limits. Information gained from this collaborative experience assisted the Council in formulating its position that Iowa's existing speed limits need to be maintained not changed.

A NEW APPROACH TO PREVENTION ADVOCACY

There are many organizations and institutions currently engaged in prevention activities designed to reduce the incidence of brain injury. It is critical in this time of dwindling resources that the prevention community coordinate strategies. Consequently the Council will actively seek collaborative relationships with these bodies. Such alliances will enhance the opportunity to make a significant impact on the prevention of brain injuries.

PREVENTION ACTION PLAN 1996

- **Involve the committee in a process to educate Iowa communities on the impact of brain injury.**

⇒ Educating primary and secondary students on the incidence of brain injury

⇒ Providing public service announcements related to the incidence and cost of brain injury

⇒ Educating children and young adults about the dangers associated with substance abuse relative to brain injury

⇒ Educating children and adults in how to control anger

- **Educate Iowans and Iowa legislators on the need for legislation to increase individual safety.**

⇒ Maintaining our existing street and highway speed limits

⇒ Advocating legislation for motorcycle helmets

⇒ Advocating legislation for bicycle helmets

⇒ Advocating legislation for improved safety of passenger vehicles

⇒ Advocating for tighter driving criteria for OWI

- **Encourage the coordination and collaboration of agencies, organizations, and individuals in advocating for the reduction of the effects of brain injury.**

⇒ Encouraging the tighter control of fire arms

⇒ Emphasizing the importance of swimming pool safety

⇒ Encouraging EMT's to administer prophylactic drugs in advance of secondary injury

While any of the above action plan components can be dealt with directly by the Council, the likelihood of having the Council favorably impact any one area is extremely limited. It becomes increasingly important for the Council and/or the Task Force to seek out new alliances in its effort to reduce the number of brain injuries in Iowa.

Efforts to further the prevention of brain injury will require coordination and collaboration with other advocacy organizations. Foremost among those will be the Brain Injury Association of Iowa (BIAI). The BIAI has, as part of its mission, the prevention of brain injuries. Any prevention efforts on the part of the Council or the Task Force should be closely coordinated with the BIAI. Further, other organizations with similar ideals include D.A.R.E. and M.A.D.D and the Governor's DD Council. The Governor's Traffic Safety Bureau is also a long-time supporter of

seat belts and motorcycle helmets. All of these organizations, and many others, have a similar if not the same objective in the reduction of preventable brain injury.

While each of the above-mentioned areas of prevention are important and need to be attended to, there is a special concern in 1996 relative to the likelihood of increasing Iowa's speed limits on our streets and highways. Any effort at increasing speed limits should be firmly responded to with information on what the cost will be to our state. To that extent, the following objective data should be widely distributed to our state's decision-makers:

A. Physical forces in a crash double with every 10 mile-per-hour increment above the speed of 50 miles per hour. (Advocates for Highway Safety, 750 1st Street, NE, Suite 901, Washington, DC 20000)

B. The cost for increasing the speed limit by 10 miles per hour on highways now subject to the national maximum speed limit would be an increase of 2,027 major injuries and 97 deaths annually and $355,200,000 annual increase in fiscal costs. This represents a 30 percent increase in fatalities, which, in turn, would translate into higher speed-related economic costs. (This point was presented by the Iowa Safety Management System Task Force on Speed Limits report January 1996.)

C. The increased cost of over 350 million dollars annually may be hard to believe. It may become more believable when it can be identified that the acute care cost of one severely brain injured individual is $578,750 and the annual ongoing costs can range from $32,250 to $84,950 per year for the individual's lifetime. (Based on 1993 dollar values)

Advocates seeking to reduce the effects of brain injury will need to work together in retaining our current speed limits and tempering our legislators' desire to **"put the pedal to the metal."**

SERVICE DELIVERY PLAN

OVERVIEW

The demographics of brain injury make it clear why this population has an ever more pressing need for a system of services. Advances in medical technology and emergency response systems since the late 1970's and early 1980's have led to a growing population of persons surviving a brain injury. Additionally, it typically has been the parents of this "first generation" of survivors who have cared for their sons and daughters, and acted as their service coordinators or case managers. Many of these parents, now entering their 60's and 70's, are growing increasingly concerned about the lack of community based support for their now adult children with brain injury. In Iowa, it is estimated that over the last 20 years more than 100,000 persons experienced a TBI, and of these over half struggle with a range of disabilities as a result of the brain injury.

People with disabilities, including people with brain injury, need a variety of services and supports, in many different combinations, so that they may live as independently and productively as possible. However, people with brain injury have cognitive limitations presented by the disability itself. These include problems with memory, attention, planning, and judgment. These limitations make it difficult for many Iowans with brain injury to be effective self-advocates. As a result, it is extremely difficult to access needed services because they are administered through a maze of state departments and local agencies, and no one state agency is responsible for seeing that Iowans with brain injury receive the help they need.

At present the state appears to have an adequate system of acute care. **The primary need is for an expanded system of sub-acute and community-based care.**

REVIEW OF 1995 ACCOMPLISHMENTS: Service Task Force

- Much of the effort of the Service Task Force in 1995 was directed at assisting the Division of Medical Services, Iowa Department of Human Services in the development of a limited statewide system of Home and Community Based Services for persons with brain injury through a Medicaid Waiver Program. Meetings were held monthly and members of the Iowa Advisory Council on Brain Injury provided support and guidance in the development of services to be offered under this waiver, as well as assistance in the definition of eligibility for services.

- The Service Task Force continued to research obstacles to the development of residential care facilities for persons with brain injury and began to prepare a brief report for the full Council to be delivered in April of 1996.

- The Council continued to assess the availability and cost of services for persons with brain injury through a survey developed in collaboration with the Iowa Department of Public Health and the University of Iowa Department of Preventive Medicine. Analysis of this survey was completed and a report to the full Council is expected in early 1996. Efforts to disseminate key data regarding service type and availability will continue in 1996.

- In collaboration with the Iowa Department of Public Health and the University of Iowa Department of Preventive Medicine, the Service Task Force submitted a proposal to the University of Iowa Prevention Research Center to continue to develop a system of surveillance for outcomes related to rehabilitation of persons with TBI.

- The Service Task Force continued to coordinate presentations to the Council from a number of providers in order to increase awareness of service options and obstacles.

- Members of the Service Task Force spoke in a number of public and professional settings regarding the status and needs for service delivery with a specific focus on the development of home and community based services for persons with brain injury.

- Members of the Service Task Force participated across the state in Human Service Systems Change legislation meetings.

- Members of the Council collaborated with the Brain Injury Association of Iowa to inform and educate legislators regarding issues related to brain injury services.

SERVICE TASK FORCE GOALS FOR 1996

- **Maintain and develop a network of collaboration for the purpose of collecting, analyzing, and disseminating information related to the provision of services to persons with TBI.**

⇒ Report to the full Council on the status of residential care facilities (RCF) for persons with brain injury.

⇒ Distribute to potential providers a position paper on RCF/BI in Iowa.

⇒ Report to the full Council regarding the results of the survey on distribution and type of services for persons with TBI.

⇒ Distribute to Iowa Compass, BIA-Iowa, and other referral agencies information from the survey on distribution and type of services for persons with TBI.

⇒ Continue to research and provide input to appropriate sources regarding service standards development.

⇒ Increase the frequency of communication regarding services for persons with TBI to both the Governor and state legislature.

- **Support the development and implementation of a range of services for persons with TBI.**

⇒ Continue to collaborate with the Department of Human Services in the development and implementation of the Home and Community Based Services Waiver for persons with brain injury.

⇒ Investigate models for funding and extending community based services to persons not eligible for the limited services of the Medicaid Waiver.

COUNCIL ACCOMPLISHMENTS

1995 ACCOMPLISHMENTS

The Council:

- Collaborated to conducted an educational forum for legislators called "Muffins & Memos." At this forum packets were presented to legislators with factual information concerning the need for a universal motorcycle and bicycle helmet law. This forum was held in collaboration with the Brain Injury Association of Iowa, Iowa SAFE KIDS Coalition, Blank Children's Hospital, Iowa Nurses Association, American College of Emergency Physicians, Iowa Medical Society, Association of Critical Care Nurses, Iowa State Parent Teacher Association, American Academy of Pediatrics, Injury Prevention Center, University of Iowa, Governor's Traffic Safety Bureau, Department of Public Health, Department of Transportation, Triple AAA Insurance, RIDE RIGHT/ RAGBRAI, and Bike World.
- Representatives of the Council and the before mentioned associations testified at a public hearing facilitated by a legislator in support of helmet legislation.

  The collaborative efforts of the Council and the other associations mentioned earlier regarding the universal helmet law were unsuccessful in the legislature. A strong, focused lobbying effort on the part of individuals opposed to the legislation was able to stop it from becoming law. The opposition was well organized, attended all public hearings, and was able to convince legislators that this law was unnecessary, and an invasion of their personal rights by the government.

- Continued collaboration with Department of Human Services to insure the implementation of HCBS/BI wavier.
- Developed a relationship with the Injury Prevention Research Center of the University of Iowa.

PRECEDING ACCOMPLISHMENTS

The Council:

- Council members participated in the Iowa Helmet Coalition to increase public awareness on the number of deaths and severely injured Iowans in our state. There is sufficient evidence to establish the fact that motorcycle helmets do reduce fatalities and injuries that are attributable to motorcycle crashes.

- A Home and Community-Based Medicaid Waiver for persons with a brain injury was legislated in 1994. The waiver will allow individuals who are currently in a medical institution for at least thirty days to return to their community with needed services.
- Received funds from the Iowa Department of Public Health to collaborate with the University of Iowa Injury Prevention Center on a feasibility study to determine scope and cost of services

for persons with head injury. It will also increase the understanding of the rehabilitation process and provide a means for a state-wide surveillance.

- Submitted a proposal to the Governor and a legislator on the need for the Department of Human Services to develop and submit a Home and Community-Based Service Waiver for Iowans with a brain injury.

- Conducted a preliminary survey with the Department of Public Health to determine the average cost per day in institutionalized settings for persons with brain injury.

- Participated with the Restructuring Task Force in their final recommendations to the Governor and the General Assembly on restructuring the delivery of services for MR/MI/DD/BI.

- Collaborated with the Public Policy Research Group, Iowa City, to review the Medicaid files for persons identified as brain injured and receiving Medicaid reimbursements for services.

- Disseminated an educational report authored by Council Member John Bayless, Ph.D., to provide factual information to legislators and the public about the efficacy of helmet usage by Iowa motorcyclists.

- Supported and provided input to the Iowa Central Registry for Brain and Spinal Cord Injury which enhanced their efforts in the need for prevention and to identify the emerging population of persons with traumatic brain injury. The registry also allowed the Council to provide state and local policy makers with accurate data to make informed decisions about legislative initiatives. The Council funded the registry through a state appropriation for two years and supported efforts for the registry to become self-sufficient through a successful federal grant application.

- Continued to build positive alliances within state agencies, advisory committees, community coalitions and other organizations interested in addressing the needs of the disabled community. Furthermore, staff regularly attended the meetings of the Iowa Commission of Persons with Disabilities, Iowa Department of Education - Head Injury Advisory Committee, the Iowa Department of Public Health - Disability Prevention Advisory Committee, Prevention of Disability Policy Council, Iowa SAFE KIDS Coalition, Restructuring Task Force, and Systems Change Project.

- Collaborated with the University of Iowa Hospitals and Clinics and the Division of Disability Determination, a subdivision of the Division of Vocational Rehabilitation within the Iowa Department of Education to develop a system which allows the "flagging" of specific head injury cases, thereby expediting the qualification process for disability determination. The Council continues to monitor this project.
- Successfully developed a 28E agreement between the Iowa Department of Human Services and the University of Iowa Hospitals and Clinics regarding the coordination of a revolving

fund. Under this agreement, University of Iowa Hospitals and Clinics established a revolving fund for payment of needed post-acute care until Medicaid eligibility is determined. Repayment would then be made to the revolving fund, and Medicaid would be billed for the care and services.

The revolving fund used current funding to save money for the state by:

- Reducing the length of acute hospital stay for persons with head injuries

- Preventing the state from paying higher medical expense rates for persons who, at a later date, are not approved for Medicaid under current policy

This fund has been operational since February 1992. The Council is collecting data on number of people being served and the amount of dollars saved through this agreement. This system could save as much as $250,000 as documented by an actual study.

- Turned to the excellent services offered through Iowa Compass, a statewide information and referral resource to utilize their data base to develop and continually update a traumatic brain injury service directory for survivors and their families. The Council believes this system is a valuable asset to the state of Iowa and will provide assistance as needed.

- Contributed to the Department of Human Services criteria for facilities providing services to survivors of brain and spinal cord injuries. The Council and other dedicated professionals have formed a committee to make recommendations based on national standards to address the skill level of the professionals, measurable outcomes based on goals, and cost effectiveness for positive and appropriate care of survivors of TBI and their families. Recommendations were finalized and forwarded to DHS and the Iowa Foundation for Medical Care in 1993.

- Initiated communication between the Iowa Department of Human Services, Minnesota's Department of Human Services and area providers to discuss the development of Minnesota's Brain Injury Waiver model and community-based programs

CENTRAL REGISTRY FOR BRAIN AND SPINAL CORD INJURIES

BACKGROUND:

In 1987, the Iowa General Assembly passed, and the Governor signed into law, legislation creating the Iowa Central Registry for Brain and Spinal Cord Injuries. The initial purpose of the Registry was to document the number of injuries. As the need for injury prevention became evident the Registry was used to identify at-risk populations and opportunities for intervention.

OVERVIEW:

Data on the occurrence and severity of brain injuries needs to be collected for the following reasons. First, to effectively target those at increased risk of sustaining brain injuries. Second, to design prevention strategies that reduce the occurrence and severity of brain injuries. Third, to determine costs associated with the occurrence of specific types of brain injuries. Fourth, to evaluate interventions aimed at reducing the occurrence and severity of TBI.

CURRENT REGISTRY MANDATE:

The Iowa Department of Public Health, (IDPH) in cooperation with the Centers for Disease Control-Prevention, and endorsed by the Advisory Council, requested the 1994 legislature to narrow the focus by collecting data on hospitalized patients, traumatic brain injuries, and anoxia (lack of oxygen), thereby excluding non-traumatic events (e.g., vascular lesions, infections). Information about those conditions deleted from the registry's mandate are readily available through hospital discharge data, death certificates, and other databases at IDPH. These changes allow the Registry to collect in-depth, valid, and reliable data on hospitalized patients, since this group represents the most severely injured with the largest potential for costly future disabilities. Non-traumatic brain injuries will still be available through the Bureau of Injury and Disability Prevention by combining data from the above mentioned reporting sources.

Iowa Code 135.22 defines a brain injury only as it relates for data the Registry's is responsible for collecting. It defines a "brain injury" as clinically evident brain damage or spinal cord injury resulting from trauma or anoxia which temporally or permanently impairs a person's physical or cognitive functions.

Data to be collected include, but is not limited, to patient demographics, circumstances surrounding the injury, measures of the severity of injury, the use of protective devices, payment source for medical care. Currently 15 hospitals are collecting data electronically, capturing more that 50 percent of all hospitalized persons with brain injuries. The remaining Iowa hospitals have the option of submitting data electronically or by completing the reporting form manually. Hospitals started reporting data using the new definition in January 1995.

During the past year, Registry data have been used for prevention programs such as bicycle safety, and child passenger restraint programs. The IDPH plans to continuing to expand the possibilities of the Registry for the intervention and prevention projects such as utilizing grants in collaboration with other related agencies interested in preventing falls in the elderly.

INCIDENCE

BACKGROUND:

Based on national estimates, Iowans can expect 5,000-6,000 traumatic brain injuries serious enough to require medical treatment. Of the number of Iowans who sustain brain injuries each year, it is estimated that:

- 250-300 will die.
- 2,000-2,500 will be hospitalized for traumatic brain injury.

Lifetime rehabilitation costs for survivors that are severely brain injured are estimated at $4 million per person.

OVERVIEW:

Iowa Code requires that injuries to the brain and spinal cord that result "directly or indirectly from trauma, infection, anoxia, or vascular lesions not primarily related to degenerative or aging process" are to be reported to the Department of Public Health Central Registry.

IOWA SYSTEM TRAUMA REGISTRY

The Iowa System Trauma Registry data are generated by the State Systems Trauma Register (STR), located within the Iowa Department of Public Health, Bureau of Emergency Medical Services. Ten Hospitals currently submit trauma data to the STR. The hospitals are; Allen Memorial Hospital, Waterloo; North Iowa Mercy Health Center, Mason City; University of Iowa Hospitals & Clinics, Iowa City; St. Luke's Methodist Hospitals, Cedar Rapids; Iowa Methodist Medical Center, Des Moines; Mercy Medical Center, Des Moines; Marion Health Center, Sioux City; Mercy Health Center, Dubuque; and The Finley Hospital, Dubuque. Each of these hospitals has a dedicated computer for their respective Hospital Trauma Register (HTR), and download quarterly to the state the required data via diskette.

Each hospital follows specific criteria to identify patients for inclusion in the hospital trauma registry. The following criteria, have been recommended to the IDPH to define which trauma patients are entered into the hospital trauma registry.

- *Injury diagnosis (ICD-9-CM N-Code 800.00 through 959.00), excluding isolated hip fractures unrelated to traumatic event, and one or more of the following:*

1. *injured patients who die.*
2. *injured patients who are admitted to the hospital for a stay greater than 24 hours.*
3. *injured patients who are admitted to intensive care units or an operating room.*
4. *injured patients who are transferred into or out of the hospital.*
5. *injured patients who are readmitted within 72 hours after discharge from the initial injury.*

The STR data includes many elements focused on care delivery, and allows for the comparison of different types of trauma, but the data are limited to selected hospitals in specific areas around the state, and more severe injuries. Also this data includes patients that are transferred into the hospitals, and therefore may have some duplication. The STR is designed for trauma case evaluation, not for surveillance, and its design reflects this purpose.

Voting Members

Margaret J. Curry, Danville, is the chairperson of the Iowa Advisory on Brain Injuries and founder of the Iowa Head Injury Association, Southeast Area Support Group. She has been an active board member of the Brain Injury Association of Iowa for several years. She has a daughter who has sustained a traumatic brain injury. She is a member of the Service Provision Task Force.

Jo Ann C. Kramer, MA, Waterloo, is past chairperson of the Iowa Advisory Council on Brain Injuries. She is the founder of the Brain Injury Association of Iowa and is a Special Education Consultant with Area Education Agency 7. She has a daughter who has sustained a traumatic brain injury. She is a member of the Prevention Task Force.

Marvin L. Tooman, Ed.D., Ankeny, is the chairperson of the Prevention Task Force. He is the chief executive officer of On With Life, Inc. He is the Director of Advocacy for the Brain Injury Association of Iowa.

Geoffrey M. Lauer, MA, Iowa City, is the chairperson of the Service Provision Task Force. He serves as program director of Life Skills, Inc., a home and community-based service delivery agency for families, and individuals with a disability. He is vice-president of the Brain Injury Association of Iowa.

Joni Henderson, Independence, is the rehabilitation program coordinator at Mercy Medical Center of Cedar Rapids. She has extensive experience as a rehabilitation nurse. She is a member of the Service Provision Task Force.

Deborah J. Hughes, JD, Cedar Rapids, is an attorney in private practice with Irvine & Robbins in Cedar Rapids. Her practice is focused on the representation of injured persons, including those with head injuries. She is past president of the Professional Women's Network and serves on the board of governors of the Iowa Trial Lawyers Association. She is a member of the Prevention Task Force.

K. Josephine Gruhn, Spirit Lake, is on the Prevention Task Force. She is a former member of the Iowa House of Representatives. She is a member of the Prevention Task Force.

James C. Hardy, Ph.D., Iowa City, is professor and director of professional services in the Division of Developmental Disabilities at the University of Iowa. He is on the Service Provision Task Force.

Delbert L. Jensen, St. Ansgar, is the former superintendent of schools in St. Ansgar and is a board member of the Brain Injury Association of Iowa, the North Central Iowa Group. He sustained a traumatic brain injury in 1986. He serves on the Prevention Task Force.

Karen A. Johnson, Davenport, is president of the Brain Injury Association of Iowa and a long-standing member. She is active in her local brain injury support group. She has two family members who have sustained traumatic brain injuries. She serves on the Service Provision Task Force.

John May, MD, Des Moines, is the medical director of Blue Cross/Blue Shield of Iowa. He is a member of the Service Provision Task Force.

Jeffrey S. Thomas, Spencer, is a school psychologist for Lakeland Area Agency and team leader of the brain injury resource team. He is a member of the Prevention Task Force.

Laurie Dyer, Des Moines is an advocate for children with a brain injury. She is a member of Advocate for Special Kids. She has a son who sustained a head injury in 1983 and diagnosed in 1990. She is on the board of directors of the Brain Injury Association of Iowa, Central Iowa Support Group, a member of the Brain Injury Association of Iowa, the National Brain Injury Association, and the System Change Project. Laurie serves on the Service Provision Task Force.

Robert Schultz, Burlington, is an inventory specialist with GE for the last 32 years. He is a member of the southeast Iowa brain injury support group. His wife had a tumor removed in 1984 which left her with some mild deficiencies in day-to-day living skills. Bob serves on the Prevention Task Force.

Esthyr Ropa, CRC, Sioux City, is a vocational rehabilitation counselor. She sustained a traumatic head injury in 1985. She is a member of the Service Provision Task Force.

Kris Tharp, West Des Moines. Her son was injured in a bicycle/car collision and sustained a head injury that resulted in his death. She has an interest in preventing future fatalities and in investing in quality services for other families whose loved ones survive. She is a member of the Service Provision Task Force.

Ex - Officio Members

Christopher Atchison, Des Moines, is the director of the Iowa Department of Public Health.

Almo Hawkins, Des Moines, is the director of the Iowa Department of Human Rights.

Terri Vaughan, Des Moines, is commissioner of the Insurance Division of the Iowa Department of Commerce.

Chuck Palmer, Des Moines, is the director of the Iowa Department of Human Services.

R. Craig Slayton, Des Moines, is the director of the Iowa Department for the Blind.

Donna Eggleston, Des Moines, is with the Division of Educational Services for Children, Families, and Communities of the Department of Education.

Margaret Knudson, Des Moines, is administrator of the Vocational Rehabilitation Division, with the Iowa Department of Education.

Ex - Officio Representatives

Janet Shoeman, Des Moines, is a developmental disabilities specialist with the Iowa Department of Human Services. She is on the Service Provision Task Force.

Ruth Burrows, Des Moines, is on the Service Provision Task Force. She is bureau chief of Rehabilitation Resources, Vocational Rehabilitation Division, with the Iowa Department of Education. She is a board member of the Iowa Head Injury Association.

Roger Chapman, Des Moines, is bureau chief for the Disability and Injury Prevention Program, Division of Substance Abuse and Health Promotion, with the Iowa Department of Public Health.

Bonnie Linquist, Des Moines, is a vocational rehabilitation supervisor and is the facility specialist for the Iowa Department for the Blind.

Sue Pearson, Iowa City, is a brain injury consultant for Division of Special Education with the Iowa Department of Education.

Angela Koch Gaer, Des Moines, is an attorney for the Bureau of Policy Rates and Forms, with the Division of Insurance with the Iowa Department of Commerce.

Scott Falb, Des Moines, is a driver's service representative for the Iowa Department of Transportation.

John TenPas, Des Moines, is a consultant for persons with disabilities with the Department of Human Rights.

Staff

Paul DeBoer, MS, Des Moines, is the disability consultant within the Bureau of Disability and Injury Prevention, Department of Public Health.

APPENDIX A:

CHARTS:

Motorcycle Helmets

Length of Hospital Stay

Severity of Injury

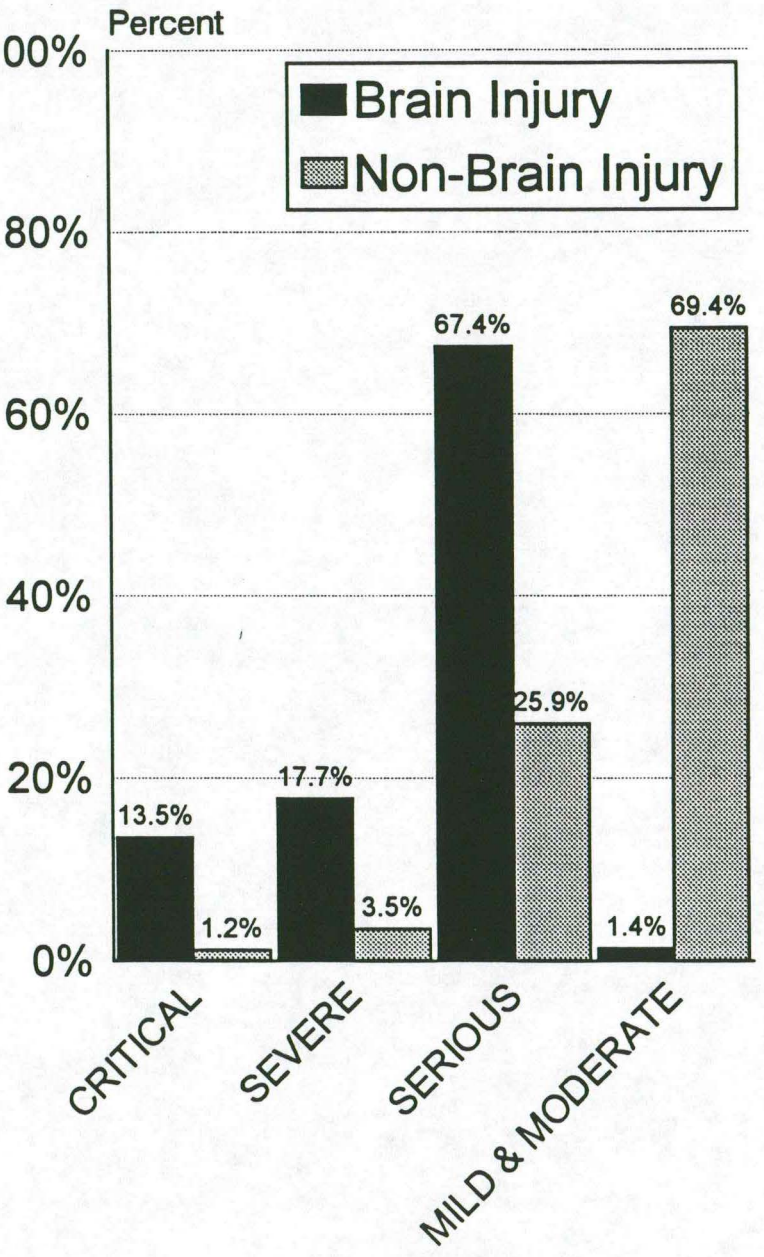
Cause of Injury

Injuries by Age

SEVERITY OF INJURY

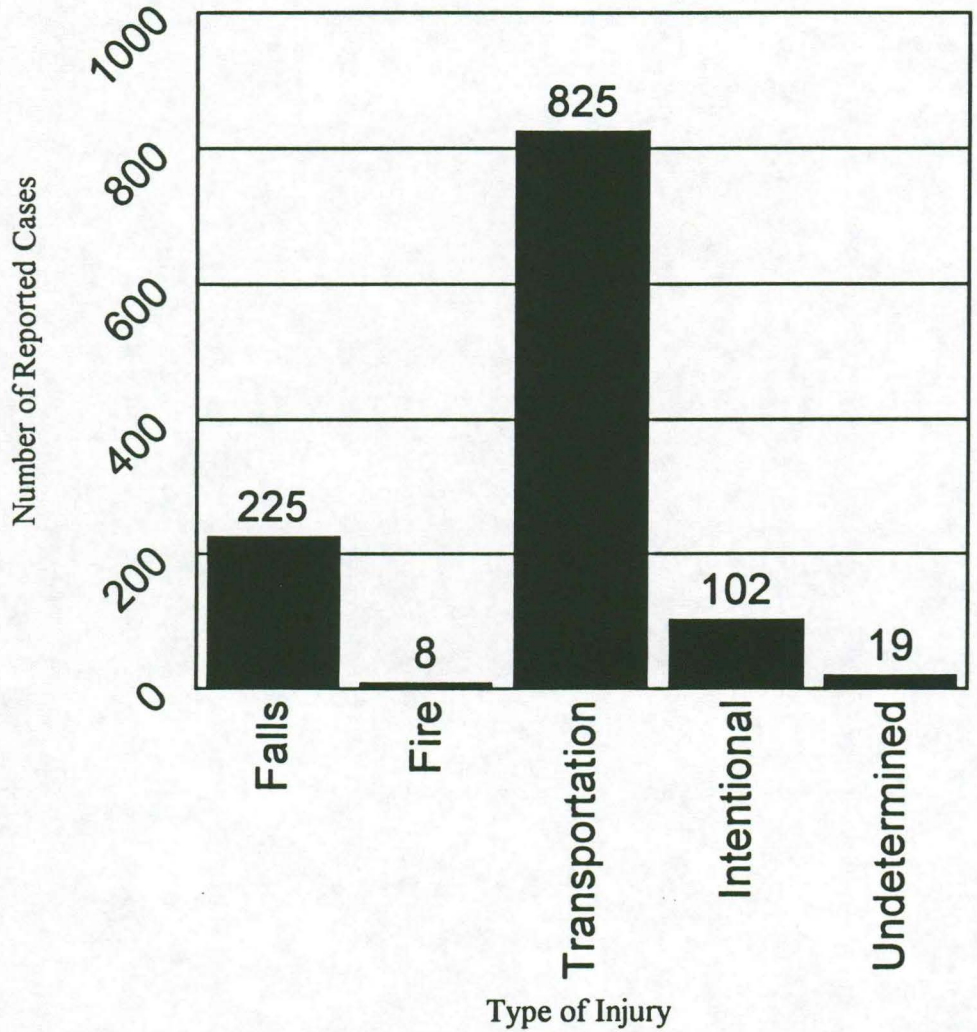
Comparison of Brain Injury to all other Reported Trauma

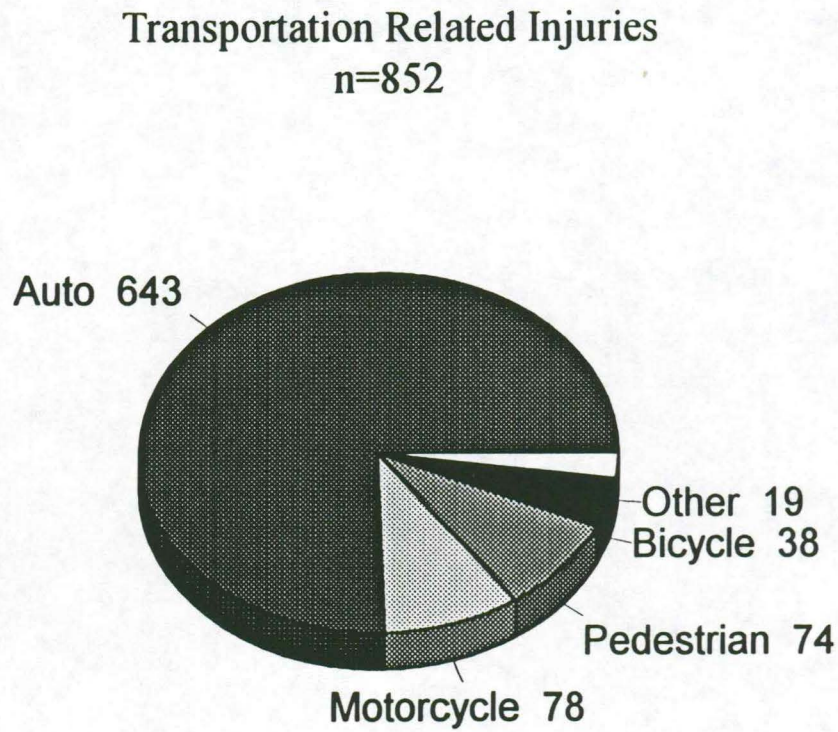
- Abbreviated Injury Scale (AIS) is a measure of severity of injury and probability of survival.
- Brain injury is not limited to only the AIS scores on head and neck, but to those with a primary diagnosis of brain injury. Non-brain injury includes some AIS scores of head and neck that are not diagnosed primarily with brain injury.
- Chart represents Maximum AIS according to primary diagnosis and only represents scores between 1 and 5.
- Persons with a primary diagnosis of brain injury on average have more severe injuries.



Percentages in each severity level from 3613 non-brain injuries, and 1330 brain injuries reported to the System Trauma Register, 1994

BRAIN INJURIES BY CAUSE OF INJURY

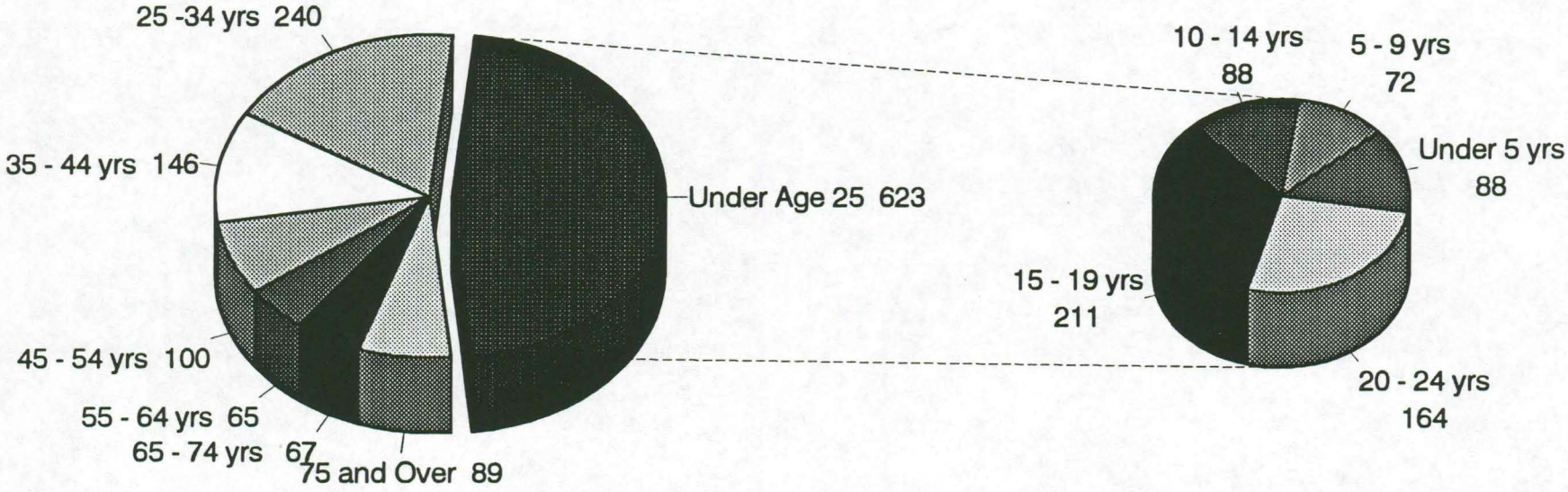




Intentional includes injuries due to firearms, pierce/cuts, and other unspecified means.
Out of 1330 injuries reported to System Trauma Registry, 1994.

TRAUMATIC BRAIN INJURIES BY AGE

Number of Cases by Age at Time of Injury



The majority of injuries were sustained by persons less than 25 years of age.
The age group of 25 - 34 was the second largest age group followed by those15 - 19 years of age.

Out of 1330 injuries reported to System Trauma Register, 1994

APPENDIX B:

Resources:

Iowa's Educational Network for Brain Injury

Pediatric Brain Injury Services

Brain Injury Association of Iowa

Support Groups

Iowa Compass

IOWA'S EDUCATIONAL NETWORK FOR BRAIN INJURY

In the spring of 1988, the Iowa's Bureau of Special Education formed a task force to identify issues and make recommendations regarding educational programs and services for students who had experienced brain injuries. One recommendation was to create Head Injury Resource Teams in each Area Educational Agency (AEA) for the purpose of working with local school personnel, and to provide assistance and support to the families of these children.

The Head Injury Resource Teams are multi-disciplinary and may include representatives from nursing, psychology, education, social work, speech/language pathology, occupational therapy, and physical therapy. Each team member has a specific contact person to facilitate communication with other agencies.

The teams have participated in numerous workshops and conferences in order to increase their skills and expertise as consultants. In turn, team members have provided in-service presentations to schools, emergency medical personnel, parent groups, and other agencies in order to increase knowledge and awareness of brain injury.

The Iowa Model for School Re-Entry is a document that was created by the Head Injury Teams. It is designed to assist students in making a smoother transition back to the classroom following a brain injury. The re-entry model helps to insure that the student's medical, educational, social, and emotional needs are identified and met. The model also emphasizes the importance of communication between medical and school agencies, and the family.

Prevention of brain injuries is a goal shared by all the resource teams. The most common causes listed for brain injury in this age group were from motor vehicle crashes, falls, assaults, and bicycle crashes. The Head Injury Resource Teams work with other community agencies and organizations in designing prevention activities which include farm safety for children, bicycle safety, use of seat belts/car seats, and playground safety.

For further information contact Sue Pearson, State Consultant for Head Injuries, at the University of Iowa (319)356-1172.

PEDIATRIC BRAIN INJURY SERVICE

A comprehensive interdisciplinary evaluation and therapeutic service for children following a brain injury is being offered by the Division of Developmental Disabilities at the University of Iowa Hospital School.

Populations served by the Pediatric Brain Injury Team include:

- The individual who is leaving a critical care setting and is in need of short term intensive therapy services;
- The individual who has completed post-acute rehabilitation and is attempting reintegration into school, work, and community

Emphasis is placed on:

- Evaluation and management of cognitive, emotional, and behavioral deficits.
- Neuropsychological assessment.
- Evaluation and management of motor deficits.
- Assistance with performing activities of daily living.
- Fabrication of postural support systems.
- Evaluation and management of feeding difficulties.
- Provision of educational evaluations with recommendations for educational programming.

The Pediatric Brain Injury Team includes a pediatrician, specialized nursing staff, neuropsychologist, educational consultant, occupational therapist, physical therapist, speech-language pathologist, social worker, nutritionist, and therapeutic recreation specialist. The family and patient are also important team members. Depending on the specific needs of the individual, professionals in the fields of child psychiatry, dentistry, rehabilitation engineering, and audiology are also available for consultation.

Both inpatient and outpatient evaluations focus on the following goals for the individual who has a brain injury:

Identification of specific problem areas.

Provision of ongoing follow-up services to meet the changing needs of the individual and his or her family.

Identification of additional services for the individual through either local services or the University of Iowa Hospitals and Clinics.

Assistance to local school personnel to facilitate reintegration of the individual into a specific school program.

For further information call:

Inpatient: (319) 356-7404 (Voice)
(319) 353-6805 (TTY)

Outpatient: (319) 356-0721 (Voice)
(319) 353-6805 (TTY)

Brain Injury Association of Iowa

The Brain Injury Association of Iowa (BIAI) was organized to speak out on behalf of all survivors of brain injury and their families. Founded in 1980, the BIAI is the second charter chapter of the National Brain Injury Foundation. People with brain injury, their families, friends, and professionals organized to improve the quality of life for survivors, to prevent the incidence of brain injury, and to advocate for services vital to persons with brain injury and their families.

Dedicated members work together to increase the public's awareness of brain injury and its consequences, develop support systems, encourage appropriate rehabilitation for survivors, and disseminate information regarding brain injury.

The organization's advocacy efforts have resulted in legislation being enacted to establish the Advisory Council on Brain Injuries, a Brain Injury Registry, and recognition of brain injury as a separate disability through the Category Bill.

BIAI sponsors educational programs for families and professionals. "BRAIN STORMING," the BIAI newsletter, reports new developments in the field and apprises members of available services and upcoming events. On the local level, there are 15 area support groups which are invaluable for exchanging experiences, advice, and assistance to one another.

BIAI is actively involved in prevention of brain injury. In January of 1987, the Traumatic Injury Prevention Strategies (TIPS) program began in Iowa. Since the inception of TIPS, over 65,000 Iowa students have heard this important message. TIPS is a school-based assembly program geared toward students, and focuses on prevention of brain injuries through the use of seat belts, helmets, driving safely, driving chemically free, and use of common sense. The program is a fast paced, upbeat, attention-holding, presentation which uses factual peer-to-peer approach.

BIAI believes that everyone facing life after a brain injury deserves the opportunity to achieve maximum functioning. Therefore, the association advocates statewide public and private funding to pay for services.

SUPPORT GROUPS

The occurrence of a brain injury is a very traumatic situation not just for the person who sustained the injury, but to everyone who is close to that person. After a brain injury occurs these many people are in need of support. This group of people includes parents, spouses, siblings, children, and friends of the individual with a brain injury, as well as the individuals themselves. The need for support, just like the changes due to the injury do not go away, and so the need for support is an ongoing need. ***How can we offer meaningful support to all of them?*** This is the challenge that is faced by the support groups.

Brain injury support groups are one of the key elements of a successful network of support. Support groups should accommodate the unique needs of the individuals requiring support. This can occur in a group setting for either specialized groups such as school-aged children, spouses, or may be all encompassing. It can be defined as linking one person to another or one family with another. The success of the support network is measured only by the participants.

Support groups help survivors and family members realize they are not alone, provide updated information, community resources, and coping strategies for the lifelong changes associated with a traumatic brain injury.

Support groups may prevent secondary disabilities related to brain injuries (divorce, chemical dependency, mental health problems, isolation, etc.) by providing the emotional and informational support lacking in our current systems. Since Iowa is primarily a rural state, the support groups may be the only source of solace for the survivors and/or their families.

There are 15 area support groups scattered throughout Iowa. For more information on joining or beginning a support group in your area, call the Brain Injury Association of Iowa at (319) 291-3552 or Paul DeBoer, Disability Consultant at (515) 281-6283.

IOWA COMPASS

Iowa Compass is an information and resource referral source for Iowans with disabilities and their families. Iowa Compass provides services to all Iowans with disabilities, family members, service providers, and other community members.

Iowa Compass provides Iowans with no-cost, specific, confidential, and up-to-date information regarding services and supportive programs through an accessible toll-free number. Iowans can also access information through the mail or on audio cassette. Compass collaborates and recognizes the existence of other information and referral systems throughout the state and nation.

The services Iowa Compass provides includes:

Advocacy/Legal add
Assistive Technology
Community Services to Meet Basic Needs
Health Care and Specialized Therapies
Individual and Family Support
Public Awareness Activities
Mental Health Services
Transportation
Service Provider Addresses, phone numbers, and contact persons
Services of Persons with Specific Disabilities
Education
Employment
Leisure Activities
Early Intervention
Financial Support Services
Prevention
Residential Services
Age Group Served
Licensing/Accreditation
Area Served

To learn more about IOWA COMPASS, contact

IOWA COMPASS
M104 Oakdale Hall
Oakdale, Iowa 52319

Phone 1-800-779-2001
Toll free voice and TTY
or (319) 355-4324

APPENDIX C:

Mild Brain Injury

Mild Brain Injury

Mild brain injury is commonly the result of a blow to the head or an abrupt change in direction of movement of the head. It may result in loss of consciousness followed by headaches, blurred vision, irritability to light and noise, and dizziness.

Mild brain injury is a common problem and accounts for most of the brain trauma in the United States and the rest of the industrialized world. The majority of mild brain injuries in the United States are due to motor vehicle accidents (42%); assaults (14%); falls from bicycles (6%); sports and recreational activities (6%); and all other injuries (8%).

As in all brain injury, the force of the event may damage a local area or it may be spread throughout the brain. The brain is the consistency of gelatin or a custard. When the brain is struck with sufficient force, it rotates back and forth inside the skull, striking the hard, sharp ridges of the bone. Rotational forces may cause diffuse tearing in the brain. Often, no abnormality shows up on imaging studies or with a neurological examination. The injured individual also may not notice behavior changes until a task challenges the area of the brain which has been damaged.

Whether the injury to the brain is focal or diffuse, the speed of information processing is slowed; the ability to handle multiple tasks is reduced; the ability to learn new information is more difficult; emotional control is disrupted; and the person is no longer as able to integrate new ideas or communicate them as efficiently. In addition, the person may experience changes in vision, smell, and taste, headaches, nausea, irritability to light and noise, and fatigue with an increased need for rest.

Children experience the same symptoms from mild brain injury as adults. Children, however, differ from adults by being more prone to swelling of the brain even with no loss of consciousness. Symptoms in children with mild brain injury are amnesia, irritability, headaches, fatigue, as well as those explained before. They too experience difficulties when performing higher level though processes, physical coordination, and controlling emotions. On occasion they will experience seizures.

The majority of injuries in motor vehicle accidents occur in males between 15 and 24 years of age. Data shows that men who are injured are most often single and from lower socioeconomic groups. Many have had problems with alcohol or drug abuse. (Third Injury Prevention Conference p.504) Injury from assaults follows a similar pattern. Falls occur most often to individuals who are under 5 or over 65 years of age. In sports and recreation activities injuries for females peak in the 5-9 age group, and for males in the 10-14 age group. (Levin p12-13)

Mild brain injuries in sports present a different problem. Incidence and outcome of sports-related trauma has not been adequately investigated. Sports such as boxing and football involve routine blows to the head. A syndrome which is characterized by mild confusion and

tremors of the upper extremities and head can result from numerous knockouts. However, amateur boxers are not likely to have brain injuries. (Levin, p258-262) This may be the result of wearing protective headgear.

Mild injuries in football players have only recently been considered a problem. Many football players have had one or more concussions during their career. Some team physicians advise athletes to discontinue participation once they have received three cerebral concussions. (Levin, p.263-264)

Other sports in which mild head injury can occur include: equestrian activities such as rodeo events, horse racing, and polo, as well as winter sports such as skiing. Brain injuries in sports such as ice hockey are likely to be more serious. (Levin, p.258-265)

A study done in San Diego County, California in 1981 provided the following medical breakdown for mild brain injury: 80% were commonly diagnosed as a concussion accompanied occasionally by a fracture. The remaining diagnosis were intracranial, contusion or hemorrhage. (Levin, p 14) A mild brain injury does not usually present with coma, as defined by the Glasgow Coma Scale, a checklist that evaluates motor and verbal responses, and whether the patient opens his eyes. Often acute injury to other parts of the body overshadows concerns about the presence of a mild brain injury. (Levin, p15)

A mild brain injury may result in depression and loss of confidence. Even the use of specialized neuropsychological tests may be unable to document cognitive losses after a few weeks have elapsed.

Life circumstance and the type of mild brain injury affects how the individual will adjust to any changes in ability to function. Some individuals will turn certain tasks over to someone else. Other abilities that were lost may not be required in daily functioning. Most important for the patient is support from family and friends. Accepting what is lost enables the person to rebuild a positive sense of self and use the remaining skills and abilities.

In summary, mild brain injury is a significant problem that has not been adequately addressed. Mild trauma has the potential to affect behavior in subtle ways. The possibility of a mild brain injury should routinely be considered when a differential diagnosis is being provided by health care professionals. Some major trauma centers in Iowa are beginning comprehensive follow-up and research projects with mild brain injury. The staff involved in the projects have been properly trained to insure appropriate treatment and documentation.

BIBLIOGRAPHY

Cooper, Paul R. MD (ed.) Head Injury, 2nd ed. Williams & Wilkins, Baltimore, 1987.

Kay, Thomas Ph.D. Mild Head Injury: An Introduction for Professionals, National Head Injury Foundation, Inc. Southboro, MA, 1986.

Levin, Harvey S. et al. (eds.) Mild Head Injury, Oxford University Press, New York, 1989.

Wright, Cynthia J. RNC, MSN Mild Head Injury: Care of the Child at Home, Children's National Medical Center, Washington, DC, 1990.

"Setting the National Agenda for Injury Control in the 1990's" US Department of Health and Human Services, Washington, DC, 1991.