Traumatic Brain Injury

Facts and Figures

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TRAUMATIC BRAIN INJURY NATIONAL DATA CENTER

KESSLER MEDICAL REHABILITATION RESEARCH AND EDUCATION CORPORATION
A Not for Profit Medical Research Organization

Inside This Issue

NIDRR

TBI MODEL SYSTEMS FOCUS ON TECHNOLOGY

When the National Institute on Disability and Rehabilitation Research (NIDRR) announces competitions for Model System awards, it proposes specific research priorities for each new funding cycle. In 1997 and 1998 when the 17 current Traumatic Brain Injury Model System (TBIMS) programs were awarded, one of NIDRR's research priorities was to identify and evaluate interventions, including those using emerging technology, that can improve vocational outcomes and community integration.

The territory covered by emerging technology is expanding rapidly, and the applications of the priority are diverse. Ongoing TBIMS projects are seeking to improve computer access, enhance vocational performance and independent living capability, and improve mobility for persons disabled by moderate to severe TBI. At the Georgia Model Brain Injury System (GAMBIS), Emory University's Assistive Technology Assessment Laboratory, a joint effort with the Georgia Institute of Technology, provides a state-of-the art evaluation to improve access of persons with disabilities to computer technology and to enhance independent functioning. Computer access can be enhanced through the use of one-handed or on-screen keyboards, touch screens and pads, trackballs and joysticks, and even a no-hands mouse operated by the feet. For individuals with severe motor control problems, computers can still be accessed through head pointing devices, voice recognition systems, or systems that rely upon eye gaze for input. Through the computer, TBI survivors can learn to translate text to speech, operate environmental controls, and access a variety of programs designed to compensate for cognitive limitations.

At the Spaulding/ Harvard TBIMS, an interdisciplinary group of researchers is attempting to find a correlation between specific speech characteristics (as judged by a speech pathologist) and the effectiveness of Dragon Dictate, a commercial voice recognition software. The speech of subjects with dysarthria as a result of TBI is rated as to articulation, pitch, resonance, and various types of motor speech errors. Subjects are then asked to speak a standard series of words into the voice recognition program over a number of trials, with incremental correction of transcription errors to allow the software to "learn" the subject's speech. The ability of the software to adapt to speech characteristics will be evaluated across different patterns of dysarthria. The goal of this project is to develop clinically useful predictions for what types of dysarthric error patterns will be amenable to use of computer software for dictation or more general computer access. Preliminary results suggest that commercial voice recognition software will

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Center Spotlight

Spain Rehabilitation Center

University of Alabama at Birmingham

Birmingham, Alabama

Spain Rehabilitation Center, constructed in 1964 on the University of Alabama at Birmingham (UAB) campus, was one of the first freestanding rehabilitation hospitals in the Southeast. As an integral part of the UAB Hospitals, Clinics and Medical School, it provides comprehensive rehabilitation services for persons with physical and cognitive impairments. Spain Rehabilitation Center (SRC) has a history of commitment to patient care, education, and research. Over the past five years there have been over 4700 inpatient admissions to SRC, representing a wide range of medical disorders. Inpatient treatment is supplemented by outpatient services. In 1999 alone, 6,235 people received outpatient care at SRC. Specific programs of treatment have been developed at SRC for people experiencing stroke, spinal cord injury (SCI), and traumatic brain injury (TBI).

The faculty and staff at SRC are widely recognized for their research in the area of SCI (uab.edu/rehab). A Rehabilitation Research and Training Center in SCI, funded through the National Institute on Disability and Rehabilitation Research (NIDRR), has operated continuously at SRC since 1965. SRC has been a designated Model SCI Care System Center, also funded by NIDRR, since 1972. SRC has participated in contributing data to the National Spinal Cord Injury Care System (NSCICS) database since its inception in 1973. In 1983 UAB-SRC was awarded the funding for the NSCISC and continues to house and maintain the data for the 18 SCI Model Systems nationwide. These research efforts have led to over 700 peer reviewed journal publications and/or abstracts, book chapters and patient education materials related to SCI published by SRC research faculty and staff.

In addition to an ongoing commitment to provide services to those with SCI, UAB-SRC also focuses on those with TBI (uab.edu/rehab). Funding from the Centers for Disease Control (CDC) in 1987 led to development of the UAB/CDC Head Injury Database, intended to expeditiously collect acute and follow-up information about people experiencing TBI. This database served as a model for the development of the database used by the TBI Model Systems and was used in a data collection effort spanning 5 years with funding from the CDC. The latter study involved 241 people with severe TBI and has so far generated 15 publications and 18 presentations.

In 1998, UAB-SRC joined 16 other centers nationwide as a TBI Model System Center. In addition to contributing information to the National Database, 8 research projects are being conducted, three of them in collaboration with the Model System Center in Mississippi. These projects focus on expediting the diagnosis of deep vein thrombosis after TBI, new therapy techniques to improve movement in a partially paralyzed limb, evaluating driving safety, and evaluating the capacity of people with TBI to make decisions about financial and health issues. The impact of violence-related injury is also being explored, as well as the effects of diffuse versus localized brain injury. Finally, one project focuses on instructing family members how to provide cognitive stimulation in the home environment as a means of expanding the treatment available to people with TBI. Dissemination

projects, including the ***TBI Inform*** newsletter and the UAB TBI Care System web site [www.uab.edu/tbi], ensure the availability of research results. Dr. Tom Novack, who has been at UAB for 15 years, is the Principal Investigator of the TBI Model System and is joined by Dr. Jay Meythaler, with 14 years of experience in physiatry and 9 years at SRC, as the Co-Principal Investigator.

Over the years there has been a strong bond forged between SRC and the Alabama Department of Rehabilitation Services (ADRS; rehab.state.al.us), which provides vocational rehabilitation in the State. Two of the projects of the UAB Model System (screening for driving evaluation and home-based cognitive stimulation) involve a close collaboration between SRC and ADRS. The Interactive Community Based Model was developed by ADRS to provide services to people with TBI returning home following TBI. This program, managed by the six TBI Care Coordinators positioned throughout the State, helps family members to organize stimulation activities and identify community assets with a goal of expediting the injured person's involvement in vocational rehabilitation. The program has been very successful in shortening the time between injury and referral to vocational rehabilitation services. SRC researchers have played an important role in helping develop and maintain this program.

Alabama is also fortunate to have the Alabama Head Injury Foundation (AHIF; ahif.org), the most effective state organization of its kind. The AHIF has successfully lobbied for state legislation in the use of seat belts and bicycle helmets. The AHIF was instrumental in the passage of the Impaired Drivers Trust Fund, which sets aside money from every drunk driving fine in the State to assist people with TBI and SCI. These funds assist the ADRS and AHIF with programs including recreation for people with TBI, housing modifications, respite care to benefit families of injured persons, and assistance with obtaining therapy services. AHIF now extends to using Housing and Urban Development funds to construct accessible apartments for those with TBI. Dr. Novack, in his 15 years on the Board of the AHIF, has provided a guiding hand in development of these programs.

Article submitted by Dr. Thomas Novack; University of Alabama Traumatic Brain Injury Care System.

GEORGIA AND OREGON TBIMS INVESTIGATORS ADDRESS SCANDINAVIAN CONFERENCE

Dr. Anthony Stringer of the Georgia Model Brain Injury System and Dr. Randall Chesnut and Dr. Nancy Carney of the Oregon Traumatic Brain Injury Model System were featured as keynote speakers at the *Visions for Brain Injury Rehabilitation in the 21st Century* conference organized by the Vejlefjord Centre for Development and Rehabilitation in Stouby, Denmark. The 3-day international conference, held on the grounds of the 100 year old Vejlefjord Center, attracted rehabilitation professionals,

Participants enjoy informal atmosphere at Vejlefjord Center Conference. (From left: Dr. Grethe Damgaard, Vejlefjord; Dr. Chesnut, OR Model System; Asbjørn Krupp, Vejlefjord; Christine MacDonnell, CARF; Dr. Stringer, GA Model System; Dr. Barry WIller, Univ. of Buffalo; Dr. Carney, OR Model System; Dr. Alan Finlayson, Ontario, Canada; Dr. Harvey Jacobs, Cumberland Hospital / GA Model System.

advocacy groups, and governmental representatives from Denmark, Norway, and Sweden. While enjoying a relaxed and informal atmosphere, conference participants heard the latest research findings on brain injury rehabilitation and discussed policy implications for the still developing systems of evaluation and care for persons with brain injury in the Scandinavian countries.

Dr. Chesnut opened the conference with a overview of evidence-based approaches to rehabilitation, challenging

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Technology Spotlight

TECHNOLOGY, continued.

indeed be able to "learn" at least some dysarthric speech patterns over a series of structured trials.

TBI typically involves cognitive and behavioral as well as physical impairments. Several TBIMS programs are studying ways to use emerging technologies to compensate for cognitive deficits in community activities, as well as ways of adapting existing technologies to meet the cognitive needs of persons with TBI. Researchers at the Spaulding/ Harvard TBIMS and the TBIMS at Charlotte Institute of Rehabilitation are conducting separate studies comparing the use of electronic personal organizers and more traditional memory notebooks, as compensatory strategies for deficits in prospective memory. At Spaulding, a cross-over design with 2-week phases will evaluate whether subjects remember more time-linked assignments when they use a traditional paper notebook system versus the datebook function of a Psion personal organizer, which contains a timed alarm. Training in the use of the device is deliberately limited to the one function needed to collect the comparative data. Subjects are drawn from persons with mild to moderate TBI with clinical deficits in prospective memory.

A similar study underway at Charlotte focuses on the utility of electronic personal organizers for persons with TBI, and on the ability of those individuals to learn the necessary skills to operate the devices. Charlotte researchers have found that the organization, length, and vocabulary of the training manuals included with commercial devices must be adapted to meet the needs of users with TBI and that special training and learning methods are required. Trainers first determined the essential functions needed by users of a portable electronic device, and then taught those functions in a hierarchical manner. Instruction involved modeling, visual handouts, and hands-on applications, with frequent repetition and review. The class learned new functions only after everyone had mastered more basic skills. Moreover, basic functions needed for multiple applications (e.g., "searching" through both a to-do list and a memo function) were reviewed when teaching each new task. A new manual with simple, concise step-by-step instructions was developed with each section following the same format for consistency. Clients were given this manual one section at a time as it was introduced in class. Pilot work at Charlotte has determined that a minimum of three 2-hour classes is needed, with two instructors for a maximum of 6 students. The classroom setting has worked well, allowing clients to share their experiences with the device and to engage in group problem-solving.

A project of the TBIMS at MossRehab/ Moss Rehabilitation Research Institute is attempting to develop methods of "matching" the problem areas and other characteristics of clients with moderate to severe TBI to the compensatory strategies afforded by commercially available portable electronic devices. With a focus on vocational function, MossRehab is developing a "lending library" of personal organizers, including voice organizers, for use in its Community Re-entry Program (CRP). This collection has been supplemented by short-term loans of devices by the Pennsylvania Initiative on Assistive Technology, also a NIDRR-funded project. Pilot trials have been conducted with clients engaged in hospital work trials, using the Parrot Voice Organizer and other voice-recording devices, as well as a Palm Pilot. Project participants are attempting to develop structured methods of identifying client strengths, weaknesses, and training needs that impact on the clinical use of portable electronic devices.

Another area of emerging technology that stands to make a significant impact on TBI rehabilitation is telemedicine, drawing on the vast resources of the Internet as well as improved telecommunications technology.

At the GAMBIS, Shepherd's TeleRehabilitation Program has been investigating the application of telecommunications technology for solving the real-world problems faced by people with

disabilities during the transition to home and community. In one of the first applications, videocon-ferencing support and services have been provided to families caring for a person with a reduced state of consciousness as a result of TBI. Weekly follow-up after discharge is conducted via a telephone-based video-conferencing system. The purpose of follow-up communications is to provide emotional support for the family, to monitor for significant changes in the patient's status that might suggest the need for re-evaluation, and to reinforce training received by the family during inpatient rehabilitation. The TeleRehabilitation Program, in conjunction with the Georgia Institute of Technology and its corporate partners, Earthlink, Siemens, and Cyber-Care, is also developing a next generation Internet testbed. It will be used to deliver multimedia, interactive, instructional material to clients, families and caregivers in their homes. This project will also explore assistance with scheduling and prompting of daily activities, as well as other computer-based compensatory applications.

A project at the University of Washington Medical Center seeks to develop a web-based method to support medical and other staff in problem-solving and case management for pa-tients with brain injury. In another study, a researcher provides telephone follow-up for persons with TBI who are discharged from acute rehabilitation units after injury. The system allows for confidential posting to other members of the team to assist the care manager in identifying resources and approaches to problems. The goal is to demonstrate the use of such a system to practitioners in rural communities without available TBI expertise. Using a Web-based system enhances access for case discussion that is not time- or place-linked.

A state-of-the-art Virtual Reality project is underway at the Northern New Jersey Model System. The Virtual Rehabilitation Center (VRC) is an internet-based site that delivers rehabilitation and social support to survivors of traumatic brain injuries (TBI) and to their families. The VRC allows users to access resources in a convenient manner…from their own homes. The key aim of this Demonstration Project has been to design and implement a system that provides rehabilitative, educational and communication services to brain injury survivors and their families. A second, but equally important objective has been to evaluate the efficacy of the VRC in order to determine whether learning occurs in the VRC. The VRC includes the following modules: Information Processing: This module will provide a method for testing visual acuity and for displaying reaction times to a stimulus. Functional Modules: Using a Microwave Oven, Banking and Using a Vending Machine: Audio-Video streaming, digitized images and text will be used to assist client in activities of daily living. Telecommunications: This module provides educational, rehabilitation and patient support services using interactive voice communications, pictures, text and graphics capabilities. Forum: This module will allow users to communicate using text based messages. Help: This module provides answers to frequently asked questions.

Focus groups consisting of patients and facilitators will provide programmatic feedback regarding the "friendliness" of the system. In addition, questionnaires and evaluation scales will measure criterion-based learning in the VRC environment and determine whether learning on the VRC generalizes to the community.

Article submitted by Dr. Tessa Hart; Model Brain Injury System of Care in the Philadelphia Region. Contributions from GA, MA, NC, NJ, PA & WA Model Systems

Research Abstracts

FUNCTIONAL OUTCOMES FOLLOWING TRAUMATIC BRAIN INJURY: A LONGITUDINAL PERSPECTIVE

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The Functional Independence Measure ™ (FIM) and Disability Rating Scale (DRS) are frequently used measures for studies following long-term traumatic brain injury (TBI) outcomes. These studies report a convenience sample obtained at various time points. This study addresses group changes by identifying a chart from 1160 subjects in the TBIM Model System database for whom all data were available for each time interval. Changes in outcome were measured were measured by FIM and DRS at rehabilitation discharge and annually. There was a significant difference between FIM total, FIM motor, FIM cognitive subscales (p = .0001, n = 537) and DRS (p = .001, n = 534) at rehabilitation discharge and year 1 (Y1). However, there were no significant differences between Y1 through year 5 (Y5) with FIM (n = 71) and DRS (n = 73). Given the small sample size for complete data through the 5 years, comparisons were conducted for Y1 and year 2 (Y2), and Y1 and Y5 using only subjects with complete data at those time points. Again, there were no significant differences between FIM at discharge with Y1 and Y2 (n = 292), discharge with Y1 and Y5 (n = 135), or DRS at discharge with Y1 and Y2 (n = 138) or discharge with Y1 and Y5 (n = 78). Further analysis was performed excluding those more independent at

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PREDICTION OF EMPLOYMENT OUTCOME AFTER TBI FROM EARLY NEUROPSYCHOLOGICAL STATUS

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Early neuropsychological assessment after traumatic brain injury (TBI) serves many purposes. Such assessments document the patient's current neuropsychological status and may be used to guide treatment and to make decisions about need for supervision, return to driving, and return to work. Early neuropsychological assessment may also be used to predict long-term employment outcome. However, existing studies do not clearly show that neuropsychological assessment makes an additional contribution to such predictions beyond that made by indices of severity of injury, demographic factors, and measures of pre-injury functioning. The present study investigated the ability of early neuropsychological assessment to predict employment outcome after TBI. Subjects were 416 persons with TBI from the TBI Model System National Database. Initial neuropsychological assessment was obtained at resolution of post-traumatic amnesia (PTA) and employment outcome was assessed at one year post-injury. Predictors investigated were neuropsychological status, age, education, initial Glasgow Coma Scale score, duration of PTA, and pre-injury employment status. Results indicated that neuropsychological assessment makes a unique contribution to predicting employment outcome even when adjusted for all the other predictors. After adjustment for other predictors, persons scoring at the 75th percentile of overall neuropsychological status (less

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FACTORS ASSOCIATED WITH BALANCE DEFICITS ON ADMISSION TO REHABILITATION AFTER TRAUMATIC BRAIN INJURY: A PROSPECTIVE MULTI-CENTER ANALYSIS

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Many studies have shown that maintaining balance is necessary for ambulation, transfers, and most activities of daily living. The study sought to evaluate how demographics, measures of injury severity, an acute care complications, relate to sitting and standing balance in patients with traumatic brain injury (TBI). Data were collected prospectively from 908 patients at 7 medical centers participating in the Traumatic Brain Injury Model Systems program. Sitting and standing balance were assessed by a physiatrist within 72 hours of admission to inpatient rehabilitation. Balance was rated on a 4-point scale as normal, mildly impaired, grossly impaired, or not testable. Relationships between balance and demographics, injury severity, and acute care complications were examined using chi-square analyses. Age less than 50 years had a significant association with normal sitting and standing balance ($p < .01$). Measures of severity of TBI, including admission Glasgow coma scale, length of post-traumatic amnesia, length of coma and acute care length of stay were all independently and significantly related to impairments of sitting and standing balance ($p < .01$). Initial abnormalities in pupillary response had a significant relationship with impairment of sitting balance ($p = .009$) but not with standing balance. Incidence of respiratory complications, soft tissue infections, and urinary tract infections were all related to impaired sitting balance ($p < .01$). Presence of intracranial hemorrhages did not have a significant relationship with either sitting or standing balance. Intracranial compression did have a significant relationship with standing ($p = .004$) but not sitting balance. A discriminant function analysis, including neuroradiologic findings, injury severity, and medical complica

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COORDINATED AND ADEQUATELY FUNDED STATE STREAMS FOR REHABILITATION OF NEWLY INJURED PERSONS WITH TBI

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Traumatic brain injury (TBI) rates are highest among families with the lowest income levels. Yet there is a paucity of appropriate funding streams available to low-income, recently-injured TBI patients, which is reported to cause delays in provision of early post-acute rehabilitation, or to cause patients to be discharged without receiving rehabilitation. There are also reports of patients remaining in hospitals with minimal care or being returned home, both because of a lack of a discharge site. The purposes of this exploratory study were to: (1) identify model aspects of existing publicly supported and administered programs for post-acute individuals with TBI; (2) present results of a survey measuring to what extent state Medicaid programs fund post-acute rehabilitation services for recently-injured patients with TBI; (3) present results of interviews with trauma center social workers affiliated with the National Institute on Disability and Rehabilitation Research (NIDRR) TBI Model Systems projects to determine if and how delays in receiving Medicaid coverage occur; and (4) make recommendations for improved systems of care for post-acute individuals with TBI. Survey results revealed that no states currently provide funding streams explicitly for individuals with TBIs during the post-acute phase. Instead, in most states, individuals with TBIs were covered under larger funding programs providing services for individuals with disabilities. Unfortunately, under the auspices of such policies, eligibility criteria were often found to be purposefully broad and duration of care made indefinite to allow inclusion of a broad range of disabilities and disability levels. However, such breadth was found to cause several difficulties for individuals with TBIs, including: (a) duration of care tended to be shorter than typically needed by patients with TBI; (b) eligibility criteria tended to be not be specific

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Database Update

Data From the Traumatic Brain Injury Model Systems of Care 1989-2000

The Traumatic Brain Injury Model Systems (TBIMS) Project is a prospective, longitudinal multi-center study examining the course of recovery and outcomes following traumatic brain injury (TBI). The seventeen Model System centers, funded by the National Institute on Disability and Rehabilitation Research, provide coordinated emergency care, acute neurotrauma management, comprehensive inpatient rehabilitation and long-term interdisciplinary follow-up services.

Information contained in the database is collected during initial hospitalization and annually thereafter on the anniversary of injury. The database contains 423 variables describing the initial hospitalization period, and 412 variables relevant to the follow-up period. The Database Syllabus contains detailed information about the database and is available for purchase from the TBIMS National Data Center.

Presently, the database contains **2184** cases discharged from the TBIMS between March, 1989 and September, 2000; with annual follow-up information extending, thus far, to eleven years post injury. The table below summarizes several key characteristics of the TBIMS population, which have been updated from previous issues of ***TBI Facts and Figures:***

Number of Cases	2184
Mean Age in Years	36
% Male	75
% White	57
% African American	31
% Unmarried at Injury	71
% w/o High School Graduation at Injury	36
Mean Lowest Glasgow Coma Scale	7
% Vehicle-related Injury	53

INCIDENCE and PREVALENCE*

It is estimated that 1.3 million Americans experience TBI each year. Approximately 5.3 million Americans are currently living with this condition.

EMPLOYMENT

At time of injury, approximately of 60 % of persons with TBI are competitively employed. One year after injury, only 25 % are competitively employed.

*Figures from CDC's National Center for Injury Prevention and Control data; 1999. All other data obtained from the TBIMS National Database; 2000.

Residence

At time of injury, 97 % percent reside in private residences. One year after injury, 84 % live in private residences.

Loss Of Consciousness (LOC)

88 % of persons with TBI in the database experienced a loss of consciouness at time of injury. Of those with LOC, duration of unconsciousness lasted 3.8 days.

Inpatient Length Of Stay

In 1999, TBI patients in the Model Systems database averaged 19 days in acute care and 27 days in an inpatient rehabilitation facility, as compared to 22 and 39 days respectively in 1994.

Disability Rating Scale (DRS)

Average DRS score upon admission to rehabilitation facility was 13.64 (Severe Disability). Average score at rehab discharge was 5.74 (Moderate Disability). At one and two year post injury testing, average DRS scores were 3.02 and 2.92, respectively (Partial Disability).

Alcohol Use

Persons with TBI tested positive for alcohol at time of injury in 49 % of cases. Of these, blood alcohol levels of 100 mg/ml were detected in 62 % of cases.

Post Traumatic Amnesia (PTA)

Approximately 97 % of patients experience PTA. Of these, PTA lasts 30 days or longer in 34 % of cases. Post Traumatic Amnesia lasts between 8 and 29 days in 34 % of cases as well. PTA between 1 and 7 days in duration is seen in 8 % of cases.

Costs Of Care

Average acute care costs for treating TBI patients injured in 1999 were $96,606. Mean costs for inpatient rehabilitation care for these individuals was $43,435.

Functional Independence Measure (FIM)

Mean Total FIM score for patients upon admission to rehabilitation facility is 58. Mean score upon rehab discharge is 98. Total FIM scores at one and two years post injury are 114.50 and 115.60. The maximum possible score is 126.

Community Integration Questionnaire (CIQ)

At one year post injury, individuals with TBI have an average CIQ self-assessment score of 15.55. Average CIQ patient assessment scores reported by significant others is 13.86. Normal control subjects scored 20.5 (Willer et al, J Head Trauma Rehabil. 1993. 8(2) p. 75-87). The maximum possible score is 29.

COHORT OUTCOME MEASURES

MEASURE	Rehab Admit	Rehab Discharge	Year 1	Year 2	Year 5	Year 10
FIM	55.83	97.05	114.50	115.60	115.95	116.69
DRS	12.70	5.95	3.02	2.92	2.74	2.66
CIQ (self)	n/a	n/a	15.55	15.71	15.97	17.67
CIQ (other)	n/a	n/a	13.86	13.71	13.80	18.58

Scandinavian Conference, continued.

the audience to pay attention to what has been demonstrated to work in helping persons with brain injury return to productive functional roles and stressing the need for methodologically-sound research to identify rehabilitation "best practices." These points were amplified in workshops led by Drs. Chesnut and Carney that focused on evidence-based rehabilitation of children with brain injuries and the needs of family care-givers. In his lecture, Dr. Stringer highlighted areas of research that promise to revolutionize the care of persons with brain injury in coming decades including gene therapy, brain tissue implants, and computerized aids that replace or augment impaired cognitive skills. Dr. Stringer also conducted workshops on neuropsychological diagnosis and treatment.

Vejlefjord has been a pioneer in developing new treatment concepts and methods for brain injury rehabilitation and intends to increase its involvement in brain injury outcome research. Wishing to further extend its linkage with the TBI Model Systems, Vejlefjord will explore sending staff to the U.S. in 2001 for extended visits and discussion with Model System investigators in Georgia, Oregon, and elsewhere.

Article contributed by Dr. Anthony Stringer; Georgia Model Brain Injury System

Hammond, continued.

rehabilitation discharge (ie, FIM motor = 78, FIM cognitive = 30, DRS = 3), to detect potential change at lower functional levels. No significant differences were found between Y1 and Y2, or Y1 and Y5 at all measures. This study indicates that FIM and DRS are significant markers for improvement between rehabilitation discharge and Y1, but not after Y1, even among the more dependent at rehabilitation discharge.

Sherer, continued.

impaired) were 1.53 times as likely to be employed at follow-up as persons scoring at the 25th percentile. Without adjustment, persons scoring at the 75th percentile were 2.3 times as likely to be employed at follow-up as persons scoring at the 25th percentile. Duration of PTA and pre-injury employment status also made independent contributions to predicting outcome.

RESEARCH HELP WANTED !!

Wondering how the cost and efficacy of serial casting compares to ultrasound and standing for the treatment of equinovarus contracture following brain injury? The Charlotte Institute of Rehabilitation is conducting a randomized, controlled trial to answer this question, and is looking for collaborating centers.

If your rehab institute wishes to participate in this study, please contact Dr. Flora Hammond at fhammond@carolinas.org.

Greenwald, continued.

tions, accurately predicted normal but not impaired sitting balance performance ratings. This study demonstrated that rehabilitation admission balance ratings have a significant relationship with age, multiple measures of severity, and acute care medical complications after TBI. Prospective studies are indicated to evaluate the role balance at rehabilitation admission plays in the functional prognosis of patients with TBI. This information furthers the understanding on long-term outcomes following TBI. Research studies aimed at detecting meaningful long-term deficits following TBI may need to use other assessment tools.

Reynolds, continued.

enough to include all types and severities of TBIs; (c) policies were often made for individuals with acquired brain injuries. As such, the disabilities that patients must exhibit to be eligible for such policies, such as hemiparesis, were often more applicable to acquired brain injuries, such as stroke, than to TBI. (d) Additionally, programs that were explicitly designed for individuals with TBIs often did not adequately address needs. Results of interviews showed that patients with TBI frequently experience delays in obtaining necessary Medicaid coverage, with delays varying from 1 to 6 months. Five social workers indicated that such delays deleteriously affected outcomes.

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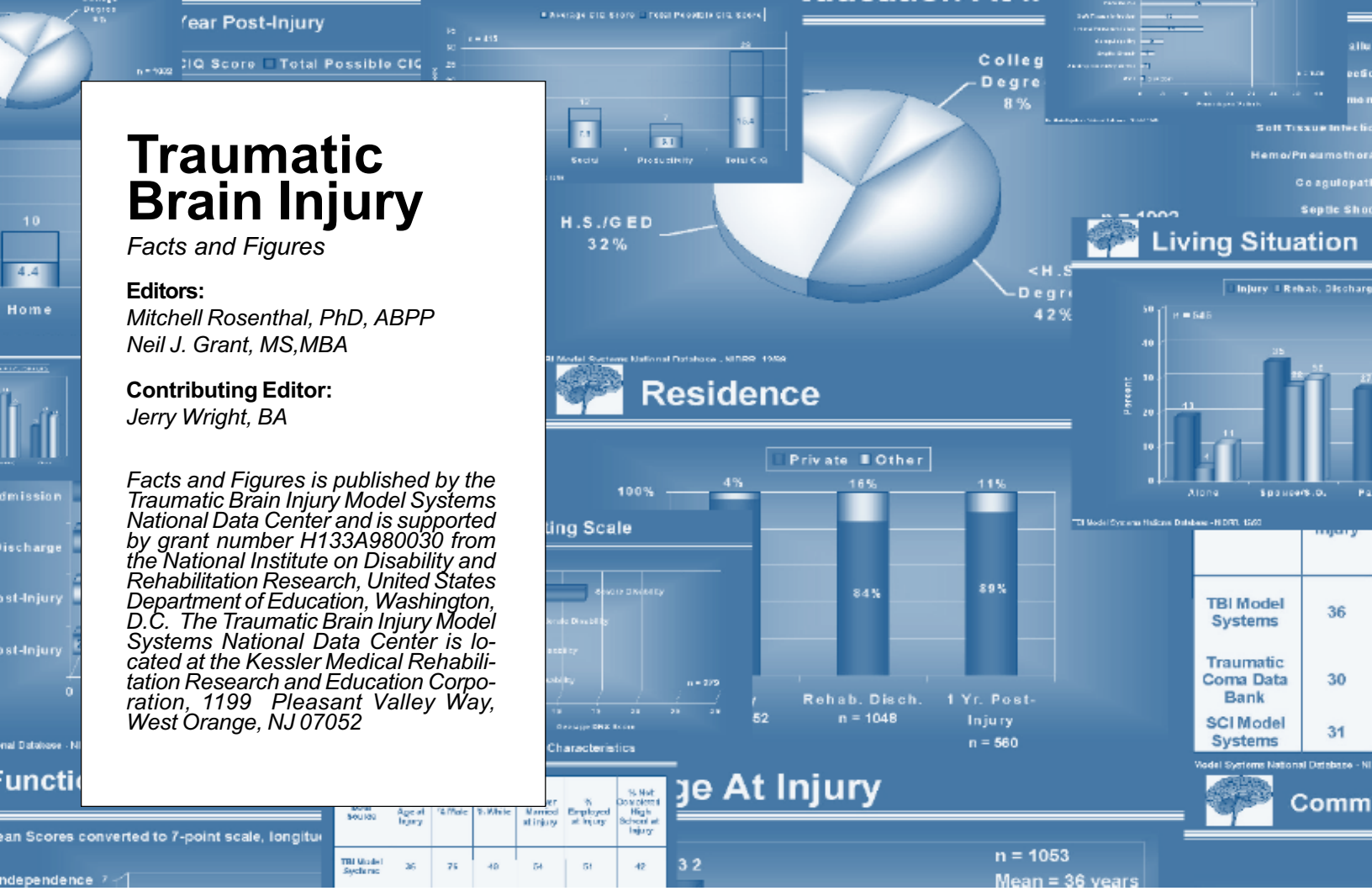

Traumatic Brain Injury

Facts and Figures

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