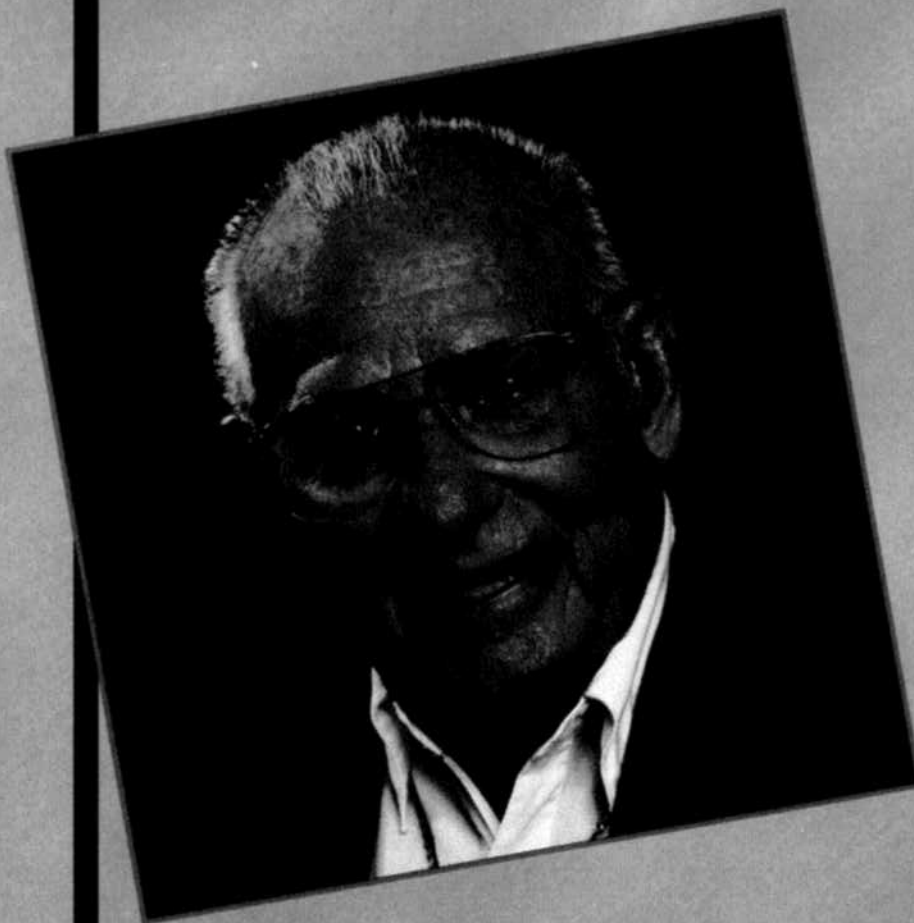


HAWAII MEDICAL JOURNAL

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Special Issue on Brain Injury



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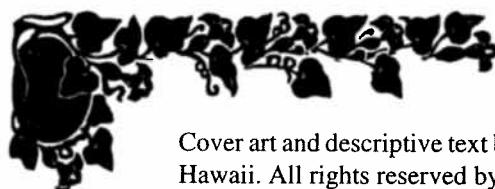
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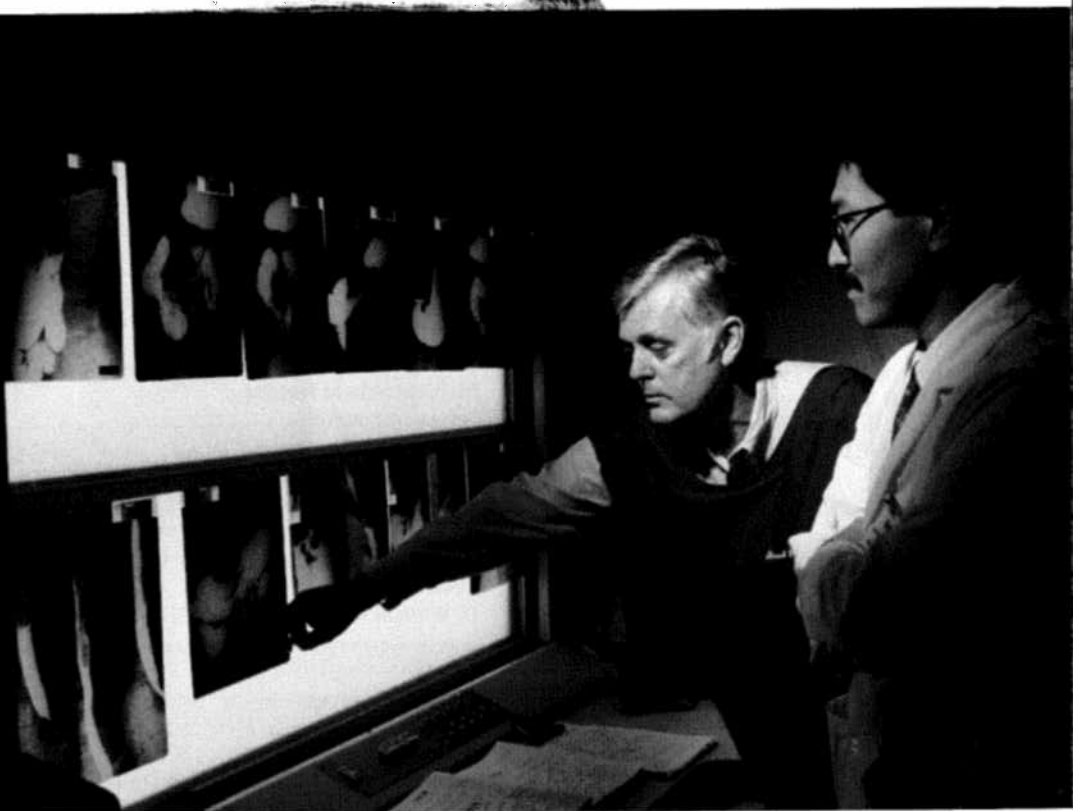


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Editorial

The "Silent Epidemic" Traumatic Brain Injury

Norman Goldstein MD

Gary Okamoto MD, MPH is the Medical Director of the Rehabilitation Hospital of the Pacific. He is also an Associate Clinical Professor of Medicine at the John A. Burns School of Medicine as well as Medical Director of the Department of Rehabilitation Services at the Queen's Medical Center.

In his very busy practice of physical medicine and rehabilitation (physiatry), his patient population includes those with physical and cognitive disabilities caused by stroke, spinal cord injury, amputation, cerebral palsy, paralytic polio and traumatic brain injury. When Dr Okamoto was asked to serve as Guest Editor for this Special Issue on Brain Injury, he received so many excellent manuscripts that we were planning to publish them in two issues. But, thanks to our many advertisers, we are able to offer this entire special issue under one cover.

Next month, look forward to another pain manuscript, "Cancer Pain Guidelines: Are They Being Used?" by Patricia Kalua, RN, member of the Pain Task Force convened by the Governor and directed by Dr Gary Okamoto.

**Norman Fetner
lost his leg, but didn't
lose his life.**



**He's fighting back with the
American Diabetes Association.**



Guest Editor

Gary Okamoto MD, MPH

Governor Ben Cayetano has proclaimed October 1998 as the *Prevent Traumatic Brain Injury and Family Violence-Induced Brain Injury Awareness Month*. To heighten the awareness of our physician readership, local experts have been invited to contribute a series of articles about traumatic brain injury (TBI) in Hawaii. In this special issue of the *HMJ*, these articles have been published, creating an awareness of effective social, behavioral, and cognitive strategies to help patients disabled by TBI.

One may legitimately ask "Why such attention to TBI, a clinical entity with only prevention as its cure and disability as its complication?" The answer may be found in thinking of TBI as fundamentally a "social disease." Consider the common predisposing factors such as family violence, alcoholism, drug abuse, motorcycling without helmet, unsafe ladders, and competitive sports. Each factor can be avoided or certainly modified.

At the other end of this social disease, understand that TBI can inflict permanent physical, cognitive, and behavioral disabilities that can be and are easily overlooked, ignored, or ineffectively managed by conventional medical models of service. These disabilities can consume an enormous amount of health and medical-related resources and account for the unspoken but hemorrhaging long-term costs of this high risk patient population in Hawaii. Thus, the attention over TBI as a social disease is driven largely by the real potential to prevent its occurrence and a socio-economic need to manage the irreversible effects of TBI with appropriate health services and outcomes.

Each contributor leaves us physicians with a challenge to do more and better for our patients disabled by traumatic brain injury. Faced with these challenges and prepared by new information found in this special issue of the *HMJ*, we are able to prescribe selective and specialized help for TBI-patients locally. Going one step further, we can join our patients and their families in making every month an awareness month for traumatic brain injury.

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Medical School Hotline

Student Profile: Class of 2002 at the John A. Burns School of Medicine

**Satoru Izutsu, PhD, Associate Dean
Chair, Admissions Committee**

The Class of 2002 will begin its first day in medical school on August 5, 1998. Twenty-five women and thirty-three men will make up the 32nd entering class and the 10th class to undertake their medical education in a format titled, "PBL-Problem Based Learning."

There were one thousand ninety-eight applicants for forty-eight slots. Of this number, 226 qualified academically to be interviewed. In addition, ten graduates from the Post-Baccalaureate Program, *Imi-Ho'ola*, joined the class for a total of 58 new students. The *Imi-Ho'ola* Program addresses diversity and those who are educationally, socially, and economically disadvantaged.

The average age of the entire class is 24.4. Fifty-three are Hawaii residents and 5 are non-residents (3 mainland states, 1 Guam and 1 from Japan.).

Of the 125 medical schools in the United States, the John A. Burns School of Medicine is the most ethnically diverse. In the new class, there are 18 Japanese, 9 Chinese, 8 Hawaiians, 8 Filipinos, 4 Caucasians, 3 other Asians, 1 Korean, 1 Vietnamese, 1 Hawaiian Afro-American, 1 Hispanic, and 1 Indian. Three students did not respond to the question of ethnicity.

Seventeen are graduates of Hawaii colleges (16 from University of Hawaii at Manoa and 1 from Hawaii Pacific University). Seventy-one percent or 41 are graduates of mainland colleges which include Universities of Washington, Cornell, Stanford, UCLA, Dartmouth, Pomona, Brandeis, Brown, Gonzaga, Hampshire, Marquette, MIT, San Diego State, Sarah Lawrence, Smith, Colorado at Boulder, Denver, Illinois, Maryland College Park, Oregon, Texas at Austin, University of California at Berkeley, University of California at Santa Barbara, University of California at San Diego, University of California at San Francisco, University of California at Irvine, and University of Southern California.

All of the students possess Baccalaureate Degrees: 6 have Masters Degrees and 1 holds a degree in Jurisprudence. Fifteen were Biology majors, 6 majored in Psychology, 2 each in Economics, Liberal Arts/Liberal Studies, 2 in Microbiology and one in each of the following: Anthropology/German, Biology/Asian Studies, Biology/ Psychology, Biology/Public Policy Analysis, Biology/Biomed Ethics, Biology/Biomed Science, Biology/Epidemiology, Biology/Management, Nursing, Biology/Psychology, Biomed Engineering, Chemical Engineering, Chemistry, Cybernetics, English, French, Health Sciences, History, Human Biology, International Studies, Journalism, Music-Drama, Neurosciences, Physical Therapy, Physics/Biology, Physiology, Political Science/Law/General Science, Psychobiology, Sports Medicine, and Zoology.

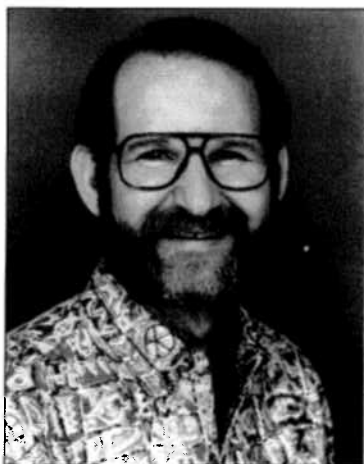
The ten-member 1998 Admissions Committee was composed of equal numbers of male and female members. They represented the clinical, basic, and social sciences and most of the major ethnic groups in Hawaii as well as a variety of age levels. The Committee convened from September through mid-May.

The Admissions Committee rated a total of 240 (including the *Imi Ho'ola* candidates for the 1999 Post-Baccalaureate Program) through a secret ballot. The candidates were ranked to determine the 58 candidates for admission and the alternates. The rating of each candidate is determined after examining the following documents: Hawaii residency status, academic scores (Grade Point Averages and scores from the Medical College Admission Test-MCAT), interviews, essays that address the questions, "Why medicine?" and "Why the John A. Burns School of Medicine?", letters of recommendations, a biographical sketch and transcripts from the American Medical College Admission Service (AMCAS). Credits are awarded for clinical/health-related experiences (i.e. employment, community services, volunteerism) and related research/graduate studies. All applicants are interviewed by the Chair of the Admissions Committee who is also the Associate Dean of the School of Medicine.

The entering class's MCAT scores are competitive with the national norms (the 1997 national norms are in parenthesis). JABSOM students scored: Verbal Reasoning—9.14 (7.8); Physical Science—9.97 (8.1); Writing Sample—Q/R (Q); Biological Sciences—10.21 (8.4). (Note: scores cited for JABSOM students are from the 1995, '96 and '97 test results since MCAT Scores are valid for three years for admission to JABSOM.)

Each student is assigned a faculty advisor who maintains contact with him/her throughout the years in medical education. Students are strongly advised to seek the counsel of their advisors.

The members of the class of 2002 are on their way to becoming physicians. They have been selected to ensure that they have the potential to complete training in medicine. In addition, those selected possess the capacity not only to become competent scientists but achieve mastery in the art of healing and comforting their fellow human beings.



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†Double-blind, comparative clinical studies have not been conducted to evaluate comparative efficacy.

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The antimicrobial action may be attributable to inhibition of microbial cellular protein synthesis. A normalization of keratinization leading to an anticomedomal effect of azelaic acid may also contribute to its clinical activity. Electron microscopic and immunohistochemical evaluation of skin biopsies from human subjects treated with AZELEX[®] demonstrated a reduction in the thickness of the stratum corneum, a reduction in number and size of keratohyalin granules, and a reduction in the amount and distribution of filaggrin (a protein component of keratohyalin) in epidermal layers. This is suggestive of the ability to decrease microcomedo formation. **Pharmacokinetics:** Following a single application of AZELEX[®] to human skin *in vitro*, azelaic acid penetrates into the stratum corneum (approximately 3 to 5% of the applied dose) and other viable skin layers (up to 10% of the dose is found in the epidermis and dermis). Negligible cutaneous metabolism occurs after topical application. Approximately 4% of the topically applied azelaic acid is systemically absorbed. Azelaic acid is mainly excreted unchanged in the urine but undergoes some β -oxidation to shorter chain dicarboxylic acids. The observed half-lives in healthy subjects are approximately 45 minutes after oral dosing and 12 hours after topical dosing, indicating percutaneous absorption rate-limited kinetics. Azelaic acid is a dietary constituent (whole grain cereals and animal products), and can be formed endogenously from longer-chain dicarboxylic acids, metabolism of oleic acid, and ω -oxidation of monocarboxylic acids. Endogenous plasma concentration (20 to 80 ng/mL) and daily urinary excretion (4 to 28 mg) of azelaic acid are highly dependent on dietary intake. After topical treatment with AZELEX[®] in humans, plasma concentration and urinary excretion of azelaic acid are not significantly different from baseline levels. **INDICATIONS AND USAGE:** AZELEX[®] is indicated for the topical treatment of mild-to-moderate inflammatory acne vulgaris. **CONTRAINDICATIONS:** AZELEX[®] is contraindicated in individuals who have shown hypersensitivity to any of its components. **WARNINGS:** AZELEX[®] is for dermatologic use only and not for ophthalmic use. There have been isolated reports of hypopigmentation after use of azelaic acid. Since azelaic acid has not been well studied in patients with dark complexions, these patients should be monitored for early signs of hypopigmentation. **PRECAUTIONS: General:** If sensitivity or severe irritation develop with the use of AZELEX[®], treatment should be discontinued and appropriate therapy instituted. **Information for patients:** Patients should be told: 1. To use AZELEX[®] for the full prescribed treatment period. 2. To avoid the use of occlusive dressings or wrappings. 3. To keep AZELEX[®] away from the mouth, eyes and other mucous membranes. If it does come in contact with the eyes, they should wash their eyes with large amounts of water and consult a physician if eye irritation persists. 4. If they have dark complexions, to report abnormal changes in skin color to their physician. 5. Due in part to the low pH of azelaic acid, temporary skin irritation (pruritus, burning, or stinging) may occur when AZELEX[®] is applied to broken or inflamed skin, usually at the start of treatment. However, this irritation commonly subsides if treatment is continued. If it continues, AZELEX[®] should be applied only once-a-day, or the treatment should be stopped until these effects have subsided. If troublesome irritation persists, use should be discontinued, and patients should consult their physician. (See ADVERSE REACTIONS.) **Carcinogenesis, mutagenesis, impairment of fertility:** Azelaic acid is a human dietary component of a simple molecular structure that does not suggest carcinogenic potential, and it does not belong to a class of drugs for which there is a concern about carcinogenicity. Therefore, animal studies to evaluate carcinogenic potential with AZELEX[®] Cream were not deemed necessary. In a battery of tests (Ames assay, HGPRT test in Chinese hamster ovary cells, human lymphocyte test, dominant lethal assay in mice), azelaic acid was found to be nonmutagenic. Animal studies have shown no adverse effects on fertility. **Pregnancy: Teratogenic Effects: Pregnancy Category B.** Embryotoxic effects were observed in Segment I and Segment II oral studies with rats receiving 2500 mg/kg/day of azelaic acid. Similar effects were observed in Segment II studies in rabbits given 150 to 500 mg/kg/day and in monkeys given 500 mg/kg/day. The doses at which these effects were noted were all within toxic dose ranges for the dams. No teratogenic effects were observed. There are, however, no adequate and well-controlled studies in pregnant women. Because animal reproduction studies are not always predictive of human response, this drug should be used during pregnancy only if clearly needed. **Nursing Mothers:** Equilibrium dialysis was used to assess human milk partitioning *in vitro*. At an azelaic acid concentration of 25 $\mu\text{g/mL}$, the milk/plasma distribution coefficient was 0.7 and the milk/buffer distribution was 1.0, indicating that passage of drug into maternal milk may occur. Since less than 4% of a topically applied dose is systemically absorbed, the uptake of azelaic acid into maternal milk is not expected to cause a significant change from baseline azelaic acid levels in the milk. However, caution should be exercised when AZELEX[®] is administered to a nursing mother. **Pediatric Use:** Safety and effectiveness in pediatric patients under 12 years of age have not been established. **ADVERSE REACTIONS:** During U.S. clinical trials with AZELEX[®], adverse reactions were generally mild and transient in nature. The most common adverse reactions occurring in approximately 1-5% of patients were pruritus, burning, stinging and tingling. Other adverse reactions such as erythema, dryness, rash, peeling, irritation, dermatitis, and contact dermatitis were reported in less than 1% of subjects. There is the potential for experiencing allergic reactions with use of AZELEX[®]. In patients using azelaic acid formulations, the following additional adverse experiences have been reported rarely: worsening of asthma, vitiligo depigmentation, small depigmented spots, hypertrichosis, reddening (signs of keratosis pilaris), and exacerbation of recurrent herpes labialis. **DOSAGE AND ADMINISTRATION:** After the skin is thoroughly washed and patted dry, a thin film of AZELEX[®] should be gently but thoroughly massaged into the affected areas twice daily, in the morning and evening. The hands should be washed following application. The duration of use of AZELEX[®] can vary from person to person and depends on the severity of the acne. Improvement of the condition occurs in the majority of patients with inflammatory lesions within four weeks. **HOW SUPPLIED:** AZELEX[®] is supplied in collapsible tubes in a 30 gm size: 30 g - NDC 0023-8694-30. **Note:** Protect from freezing. Store between 15°-30°C (59°-86°F). **Caution:** Federal (U.S.A.) law prohibits dispensing without a prescription. Distributed under license; U.S. Patent No. 4,386,104.

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Announcements

Research Competition on Filipino Health: Call for Abstracts

The Philippine Medical Association of Hawaii and Pharmacare are offering cash prizes for original research on the health issues of Filipinos in Hawaii. First place is \$400 and second place \$200.

The research must be previously unpublished, and must be presented in the form of a poster at the annual meeting of the association at the Turtle Bay Hilton on May 29, 1999. Authors may come from any professional field (physicians, medical students, nurses, epidemiologists, pharmacists, therapists, etcetera), in training or in practice, and may be of any ethnicity. The abstract submission deadline is January 31, 1999.

For complete instructions and an abstract form, please contact Dr Theresa Danao-Camara, 522-3863, voice mail 522-4488 ext. 3863, fax 522-3523.

Pacific Conference on Brain Injury October 1 - 3, 1998

Traumatic Brain Injury is the focus of the *Pacific Conference on Brain Injury* scheduled for October 1 - 3, 1998 at the Sheraton Waikiki Hotel. The conference will feature nationally respected speakers including 1985 airline hostage survivor Jackie Pflug. The conference will convene experts on brain injury treatment, management and prevention—encompassing the physical, psychological, educational, vocational, and social aspects of brain injury services from point of injury through community reintegration.

Day one of the conference will focus on family violence and brain injury prevention. The subsequent two days will address the continuum of care—specifically, medical and clinical interventions; prevention and policy; and community reintegration issues.

For more information, contact the Rehabilitation Hospital of the Pacific at 566-3451 (Mel Devera).

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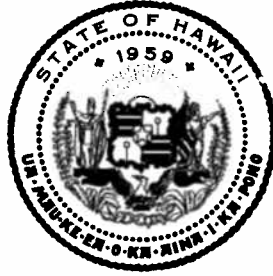
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Proclamation

WHEREAS, two of the major public health epidemics in Hawaii and the nation are family violence and Traumatic Brain Injury (TBI); and

WHEREAS, for those who survive, brain injury is a life-altering experience -- with serious physical impairments and a variety of cognitive, behavioral and emotional complications that include violent and aggressive behavior; and

WHEREAS, TBI is the most expensive of all disabilities, with an estimated cost of \$4-6 million for health care and social services over the lifetime of a severe injury survivor; and

WHEREAS, family violence victims seek health care eight times more frequently than non-violent families; and

WHEREAS, the head area is a primary target in violent attacks on women and children, resulting in cumulative TBI disabilities and fatalities for which there is no cure; and

WHEREAS, with prevention as a highly desired goal, it is essential to heighten public awareness of the consequences of brain injuries that can be induced by violent family relationships; and

WHEREAS, in order to reduce the number of brain impairments caused by violence -- and to meet Hawaii's health objectives for the Year 2000 -- we must break the intergenerational cycle of child abuse and domestic violence;

NOW, THEREFORE, I, BENJAMIN J. CAYETANO, Governor of the State of Hawaii, do hereby proclaim October, 1998, to be

BRAIN INJURY AWARENESS MONTH

in Hawaii, and urge our citizens to join with those in our community who are working to eliminate incidents of abuse that can lead to Traumatic Brain Injury.

DONE at the State Capitol, in the Executive Chambers, Honolulu, State of Hawaii, this twenty-fourth day of June, 1998.

Benjamin J. Cayetano

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Deep Pockets or Blueprint for Change: Traumatic Brain Injury (TBI) Proactive Strategy

D. William Wood, MPH, PhD*; Sandra Pohl, MSW, MPH**;
Sharon Lawler MD***; Gary Okamoto MD****

The Pacific Conference scheduled for October 1-3, 1998, is a critical event in the development of an integrated community-based plan for a comprehensive continuum of services to address the "silent epidemic," Traumatic Brain Injury (TBI). This paper provides insights of the complex nature and the special problems faced by the TBI survivors; their families, natural supports and caregivers, as well as the health, social and educational care providers in Hawaii. Process for the development of the community plan is presented.

Unless we are willing and able to remove all risks from our day to day lives, Traumatic Brain Injury (TBI) will continue to occur. Nationally, every 17 seconds a person sustains a TBI. It has become the number one killer and cause of disability in the United States.¹ Approximately 2 million Americans experience moderate to severe TBI every year. About half of these cases result in short-term disability, fifty-two thousand people die, and seventy thousand to ninety thousand endure lifelong multiple loss of functions. An additional two thousand will exist in a persistent vegetative state.²

The number of individuals with brain impairments is increasing significantly. As recently as the early 1980's nine out of ten died, but

in the 1990's nine out of ten survive due to new medical technology, aggressive patient management, and quick effective emergency response at the point of injury and in the trauma center. Long known as the "silent epidemic," everyone is at-risk—any age, any time, any place. The major causes of TBI are motor vehicle accidents (50%), sports accidents (10%), falls (21%) and firearms (12%) and other reasons (7%). Alcohol is an associated if not a causal factor of TBI: 50% of persons were intoxicated at the time of injury.³

The Cost of Brain Injury

Brain injury is a life-long disability, with no cure. It also does not just go away. It is considered the most expensive disability with the life-time estimated cost for one severe injury at \$4 to \$7 million. This is about 5 times more than the life-time costs of treating one severe spinal cord injury. In addition, annually there is an estimated 10,000 spinal cord injuries compared to the 2 million TBI.³

Families and survivors of TBI quickly use up their limited health insurance coverage and soon after exhaust their personal resources. Impoverished by their large outstanding bills from the health care facilities, they often default in payments leaving health care providers unpaid. Disabled and impoverished, survivors apply for Medicaid or Medicare benefits to pay for their health care needs. If ineligible for public assistance however, they may go without medical attention until their secondary disabilities develop into more extensive preventable medical-social complications.

The Brain Injury Association of Kentucky identifies another factor to the crisis which will be faced by every state and the nation in the near future. The caregivers are older and are more frail and dying, their abilities to continue providing home care has diminished. The crux of the problem is the demand for more resources to meet the long term care needs of the aging brain impaired population as well as their aging caregivers.³

The health care system has experienced major unforeseen consequences impacting the existing costly infectious disease trauma-based system. This means that relying on the existing system alone is not feasible because the survivors and their families are already financially weakened. They will be unable to sustain the provision of needed resources in the long term. The same is likely true for other disability groups.

Federal Law Encourages Community Involvement

The Traumatic Brain Injury Act, P.L. 104-166, 104th Congress (1996) established a national program to promote basic and applied

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research with respect to prevention and to minimize the extent and the severity of impairments caused by TBI. The program also offered grants to states for establishing demonstration projects in the form of matching of two dollars for every dollar appropriated by the state. The TBI projects will foster person and family centered care which requires: involvement of survivors and their families in all phases of the TBI continuum of care; clear and continuous communication between family members and the care teams; attention to the psychosocial needs of survivors and family members; and cultural competence of the providers.⁴

What is TBI?

The federal statute (PL 104-166), defines TBI as an acquired injury to the brain, a broad category that includes other neurological disorders. However, it does not include brain dysfunction caused by congenital or degenerative disorders, nor birth trauma, but may include brain injuries caused by anoxia due to near drowning. TBI is different from other brain injuries as the damage happens during what may well have been normal development; it happens suddenly, bringing significant changes immediately; damage is usually diffuse, widespread, and not confined to one area of the brain.⁴

TBI can be caused by an external mechanical force or motion to the head region. An open brain injury caused by a foreign object penetrating the skull and lodging in the brain (an example is a gunshot wound.) A closed Brain Injury occurs when the head accelerates and then rapidly decelerates by violent smashing, shaking, stretching, and twisting of brain tissue; the nerve endings connecting the skull to the brain are often torn or may become completely separated.⁵ Examples of closed head injuries are whip-lash or shaken baby syndrome.

Simple Bump on the Head or is it TBI?

Due to the lack of emergency, most mild and moderate TBI injuries are not noticed or diagnosed, and often it is assumed everything will be okay — life as usual when the pain goes away. Survivors may appear to be fine with no obvious physical symptoms, but the cognitive, social, emotional, behavioral losses of function and the changes in personality are very real.³ The brain injuries that require medical attention are often discharged from the emergency room with few instructions and minimal follow-up. This only indicates that the patient has no gross symptoms or reactions and is medically stabilized at the time of the examination. Survivors and their support system sense something is not quite right but do not relate the changes with the brain injury. They seek acute health care and report their symptoms without mentioning the injury. Uninformed or unaware of brain injury, the health care providers and professionals unintentionally may make diagnosis and referrals to inappropriate treatment. This only adds to the cost of care as well as cause additional confusion and stress to the family and support systems.

Brain Impairments are Unique with Every Person

Unlike other disabilities, there is no diagnostic criteria to rule out brain impairments. Each brain injury survivor requires an individual assessment and evaluation because of the very subtle multiple deficits in one or more areas in different degrees and the extent of the injury. The symptoms include: hypersensitivity to stimulation,

metabolic and neurological disorders, sexual dysfunction, sleep disturbance, fatigue, lethargy, cognitive problems of short and long term memory deficits, speech/language impairments, learning disabilities, difficulty with perceptions, concentrating, reading and writing, impaired executive functions i.e. plan, make judgments and think quickly as well as understand complex issues. There are also the psychosocial-behavioral-emotional consequences such as irritability, aggression, violent reactions, restlessness and anxiety, lack of spontaneity, childishness, apathy and depression, mood swings, denial, self-centeredness, lack of ambition, indecision, lowered self-esteem, sexual disinhibition, difficulty with emotional control, unable to develop personal relationships, excessive emotions (i.e. laughing, swearing, or crying), etc.⁵ These symptoms are similar to other primary diagnosis (mental illness, behavior disorders, chronic fatigue syndrome, etc.) Often these diagnosis are used without any reference to the organic dysfunction due to tissue damage.

Pediatric TBI is Different from Adult TBI

The National Pediatric Trauma Registry identified brain injury as the most frequent diagnosis reported and the leading cause of death and disability in children and adolescents: one million children are taken into emergency rooms each year with brain injuries.

For children, the neurological consequences of an injury to their undeveloped brain most often have negative results on future education, vocation and the quality of life as they mature, develop and live their normal life spans. Brain impaired students have unique considerations for community reintegration. The brain impaired have tendencies to "absorb" the behaviors exhibited by those around them and they very often cannot generalize what they have learned in one situation to another, etc.³ In addition, for children and young adults some dysfunctions develop when physical maturity requires functions from the injured parts of the brain.

The majority of students return to school with different educational and emotional needs from their pre-injury development. Although students with TBI may seem to function much like children born with other handicapping conditions, but the unexpected disability resulting from trauma is very different. TBI Children can often remember how they were and what they could do before the injury. This can result in significant emotional, psychosocial and relationship problems not usually present in children born with disabilities. Further the trauma impacts family, friends and professionals who remember the pre-injured child. Everyone grieves the loss of functions and potential often without hope of recovery. Confused and frustrated, the caregivers and natural support system have difficulty in shifting and adjusting to the changes as a result of the injury and the increase demands on care giving.⁷

Educational Implications

Unidentified and not evaluated, students with TBI are too often inappropriately classified as having learning disabilities, emotional disturbances, or mental retardation, mental illness, etc. As a result, the appropriate medical, educational and related services to address the brain injury may not be prescribed.⁸

TBI is a separate disability within special education. The schools are held responsible to provide children and youth with access to and funding for neuropsychological, speech and language, educational, and other evaluations necessary to provide the information needed

for the development of an appropriate individualized educational program (IEP). According to Debosey, careful planning for school reentry (include linkages between the trauma center/rehabilitation hospital and the special education team at the school) is extremely important in meeting the needs of the student's successful community reintegration and regaining functions to be on track with their developmental and educational tasks as well as catch up with their peers.⁹

Need for Medical Self-Sufficiency

Hawaii is unique in that, unlike other states it is located in the middle of the Pacific Ocean, 2,300 miles away from the continental United States and is comprised of island counties. The distance between the islands and from the mainland U.S. isolates residents from easily accessing and exchanging services and resources of any neighboring communities.

The augmenting of the state's 1.3 million residents by over six (6) million tourists annually also creates unique service delivery problems. The year round mild climate increases the risk of preventable TBI from outdoor and recreational activities of both residents and tourists. Because little opportunity exists to learn of the unique personal behaviors, baseline brain activity and because tourists engage in higher risk activities on vacation than in their normal lifestyles, the complexity of their trauma cases is intensified. Finally, the cultural differences within the multi-ethnic communities and their associated lifestyles, the social services and health care models from elsewhere do not seem appropriate for Hawaii. Thus, the development of sustainable solutions relying on the islands' self

sufficiency is essential.

Like most other States, the TBI community's (survivors, families and caregivers) needs are only now being addressed through the Federal initiatives and the availability of matching grant funds.

Gross Underestimation of TBI

The Healthy People Hawaii 2000 Objectives, the National Health Promotion and Disease Prevention Objectives reported the incidence of moderate and severe brain injuries is similar to other states.¹⁰ A 1997 Hawaii Health Information Corporation report identified approximately 1,200 TBI discharges from Hawaii's hospitals annually of which 2/3 were residents and 1/3 tourists. These patients are distributed across twenty of the State's 22 health care facilities with acute care capacity. Fourteen percent are children ages 0-14 years; 43% are ages 15-44. Over the period 1993 through the first quarter of 1996, the average cost per discharge was \$22,048. The total hospital cost for the emergency room or initial acute hospital admission for the TBI discharges are estimated at \$26.6 million per year.¹¹ The numbers do not account for the admissions with other primary diagnosis, the mild to moderate brain injuries that did not require medical attention and those already living in the community with TBI related disabilities. The required funds and resources needed to treat Hawaii's TBI survivors under the present system cannot be seen to meet the known and unknown need.

TBI Advocacy

During the 1997 Legislative session, the Hawaii Medical Association (HMA), the Brain Injury Association of Hawaii formerly

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known as the Pacific Brain Injury Association (PBIA), the University of Hawaii School of Public Health (UHSPH), the Hawaii Nurses' Association (HNA) and the many TBI advocates were able to provide convincing data to the Legislatures. The growing political-will to develop local solutions is indicated by the unanimous votes in both houses of the State Legislature and the Governor signing Act 333 relating to TBI on July 2, 1997. In addition, the 1998 Hawaii legislature appropriated state funds to match federal or other private foundation funds.

Community Challenge—Opportunities for Collaboration

The purpose of the community planning process is to identify needs, resources and local solutions through citizen participation. The success of the planning process will reflect genuineness of the communication, cooperation, coordination and collaboration between the public and the private sectors.

Reality of Private-Public Partnerships

These are difficult financial times in which to create a continuum of services given the State's fiscal constraints, the outcry for downsizing government and reduction of the state's income projections. The cost of acute care and long term care, managed care cost containment policies also exacerbate the problems and increase the public burden (cost). With the shortage of resources and the growing need, can Hawaii continue providing services without a plan? The choices are to 1) continue as is, 2) break the bank with band aid

approaches, or 3) develop a proactive strategy for an integrated comprehensive continuum of care for all individuals with brain impairments and support services for their families and caregivers statewide.

HMA Committee for Neuropsychology

Committee for Neuropsychology — Hawaii Medical Association Community Research Bureau was formed in 1996 to address the gaps in services. The members of this public-private coalition include: Hawaii Medical Association, Brain Injury Association of Hawaii formerly the Pacific Brain Injury Association, Department of Health Neuropsychology Services at the State Hospital, The Department of Education Special Education Services, University of Hawaii School of Public Health and the Department of Psychology, and families/caregivers. The committee is establishing the Hawaii Neuropsychological Community Research Bureau, as an education, research and development infrastructure for cost-effective neuropsychology programs. In addition, they have also collaborated with other agencies to sponsor educational forums for the general public, the TBI community, health care and education professionals.

The Committee on Neuropsychology has the freedom and flexibility to expand or contract as the need grows or shrinks. The vision is to develop diverse local solutions that are built on real private-public partnerships to do "whatever it takes" to meet the needs of its partners to provide family and survivor centered care.

What's the Problem

There is a need to have a more accurate count of the individuals with brain impairments who need special services to implement the size of programs and type of services. The comprehensive assessment survey developed by Federal Health Resources and Services Administration, Maternal Child Health Division (HRSA/MCH) will be modified to account for the unique ethnic demographic distribution. The assessment will be distributed to the following groups as defined by HRSA/MCH: 1) TBI survivors, 2) family members, 3) service providers, 4) private and public agency administrators. This assessment process will supplement other data collection efforts.

"Barefoot Epidemiology"

The Community Epidemiology Work Group (CEWG)¹³ process will provide rough estimates of incidence and prevalence rates. But more importantly, the CEWG will create opportunities for the stakeholders to discuss the problem, and participate in a process of consensus building. The CEWG is an effort that has been well defined in the field of substance abuse.¹³ Known as "barefoot epidemiology," it relies on the knowledge and information from those "who ought to know" as a primary source of information.

The primary purpose of the CEWG is to build a foundation for the interaction of providers and researchers in a non-threatening environment with the intent of identifying what we know and what we need to know. Health care professionals and their agencies share information that was previously viewed as proprietary. This coalition is vital in reinforcing the need for "standardized" methods of case determination, a minimum data set for individuals with TBI, and an overall improvement of data collection. No attempt is made to develop precise prevalence rates since the data provided simply



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do not lend themselves to that precision. Instead, prevalence ranges and estimates of what might be are made. This process brings the stake holders together to build the infrastructure for the TBI surveillance system in the state.

Second, the information collected provides an invaluable tool for professionals in the community to plan cost effective services for the needs of individuals with TBI as well as provide all organizations within the community a resource for referring TBI cases to providers of care.

Third, Hawaii has a mix of ethnic communities who may have differing prevalence rates of TBI as well as differences in socioeconomic status, age, and gender. To provide Hawaii's residents with more effective health promotion and disease prevention programs, it is important to understand the magnitude of the problem within the ethnic community and to determine what factors shape health behaviors.

The CEWG data will be paralleled with an analysis of the consolidated inpatient data as well as available outpatient data. Finally, data from the state emergency medical system will be factored in to complete the basic data for the assessment of services to identify the profile of unmet needs and useful information related to prevalence rate determination. It will also provide information to: 1) develop a monograph on TBI in Hawaii; 2) encourage researchers to identify research projects for future grant applications and 3) implement cost effective demonstration projects with strong evaluation components to self correct the programs.

Understanding is Critical to Informed Choices

The role of all education in the development of the comprehensive TBI program cannot be emphasized enough. In fact, this may be the one area where substantial change can be instigated in a short period of time. Educational improvements may be more human related technology and less reliance on expensive high technology medical care.

Teaching survivors and caregivers leadership, advocacy and coping skills will encourage cooperation and smoother dynamics. The survivors and their caregivers are able to ask the right questions, participate as a member of the trans-disciplinary care team providing the needed care and involved in making informed choices. This skills development and information dissemination strategy is a simple cost-effective means of improving the system.

TBI education may also alter the environment in which more expensive and extensive inter-related program components will later evolve such that the medical community, allied health professionals and the community at large may understand and be willing to facilitate and advocate for positive change.

Start Somewhere Sometime

The start of the planning process begins on October 1-3, 1998 with the Pacific Conference on Brain Injury focusing on prevention of Family Violence Induced Brain Injuries and the Continuum of Care. The first progress report, tentatively scheduled for October 1999, will make recommendations for no cost public policy changes and other proposals to increase access for services without sacrificing the quality of health care.

Impact of Community Proactive Strategy

In the end, a community and its government are judged by how they address the civic responsibility for the health and well-being of all citizens. The community involvement gives citizens the power to direct the public sector in how best to utilize resources for a more responsive government. The private sector has the flexibility to develop new small businesses and new jobs to fill the needs as identified during the process.

The implementation of an action plan may save considerable sums of money. The current practice of discharging the brain injured by health insurance authorization criteria of sicker and quicker, only to have them return because of complications. With effective rehabilitation, survivors may regain functions quicker and is ready for earlier discharge to lower costs community based services to transitioning back to independent living.

This practice of discharging severe to moderate brain impaired survivors from the acute care system (acute rehabilitation costs of \$20,000 to \$30,000 per month), and transferring to less expensive community based services, (residential rehabilitation costs of \$7,000 to \$15,000 per month) will save money in the long term. In addition the survivors live in the least restrictive environment moving through the community based continuum of care to achieve their highest potential and an increased quality of life.

"Hawaii the Health Care Center of the Pacific."

Nationally, the TBI industry is the fastest growing and most profitable niche medical sub-specialty. This is one way of diversifying our economic base by providing specialized appropriate and effective brain impaired services provided by the private sector. The State of Hawaii has the infrastructure and professional leadership to become the pioneers in brain injury treatment, education, training and research development. "Hawaii the health care center of the Pacific" is possible. The support to develop community-based partnerships that build "Centers of Excellence," requires support from all sectors of the community. The added benefit is the money will stay in the community multiplying by a factor of 2.1 and in turn generate more state income.

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Pity and Compassion Are Not Enough

Frederick C. Holschuh MD

In the September, 1996 issue of the *Hawaii Medical Journal*, I ended a commentary article on violence with a quote I attributed to a young girl from Los Angeles. The physician who mentioned this was from Los Angeles. He is Dr Reed Tuckson, now with the AMA, and the quote was actually from a 12-year-old girl from a youth theatre group in Washington, D.C. She said, "pity and compassion in a world of pain, means nothing unless it leads to change." This bit of wisdom sums up what should be the driving force behind our efforts to combat the epidemic of violence in America. Aside from the crucial and immediate need to care for the injured victim and keep him or her safe, nothing is more important than mobilizing a massive campaign of prevention, education, public awareness and intervention in troubled families long before violent events occur. The heightened level of awareness must be targeted as well to physicians, nurses, office and ER staff, police, and prosecutors, paramedics and judges. Dr Shay Bintliff has been very outspoken and appropriately so, in teaching physicians the correct ways to ask the questions. Not: "who beat you up?" but "are you safe at home?" All of us who've worked in ERs for a long time have gone through attitudinal changes from feeling that the victim must "ask for it" or she would leave, to recognizing the terrifying effects of living with daily fear. Mr Casey Gwinn, the San Diego prosecutor, said at a conference in Hilo two years ago that victims should never be asked if they want to press charges. You don't ask a bank after a robbery if they want to press charges. The act of violence should not be looked at, as in years past, as a "family matter" but rather as a matter between a jurisdiction and the perpetrator of a violent crime.

The Big Island leads the State in the rate of cases of abuse of dependent adults and children and the rate of TROs (temporary restraining orders) against perpetrators of violence. I have worked in the ERs on the Big Island since 1972, mostly in Hilo. There is no doubt in my mind that although it is not an "excuse" for domestic violence, the abuse of alcohol and other drugs contribute greatly to the commission of acts of violence. One must also look at the effects of poverty, and lack of jobs and self-esteem. I also feel that TV and movie violence has a definite effect, particularly in young people, on the ease with which a violent act is committed. We must also consider the relationship between a child or adult who commits violence and the environment in which they live and grow. In some cases, this begins in the womb with the damaging effects of alcohol and other drugs on the fetus, with actual brain trauma from beatings, with being victimized and with the devastating role model witnessed on a daily basis by many children growing up in a home racked by violence and abuse.

I spoke recently at a Rotary club meeting in Kona and was thinking of cases of family violence I've personally cared for in the Hilo ER, as well as, murdered partners that Diane and I know personally. My memory is crowded with reflections of the terror in the swollen eyes of a woman whose face is broken, bloody and pulpy, the woman with the shattered forearm, one covered head to toe with bruises and lacerations and a young woman with multiple torturous, superficial knife lacerations all over her body, including a 6-inch laceration across the throat. That one was carefully inflicted while her hair was held—it came close to killing her but was meant to terrify her.

Another troublesome episode involved a 12-year-old boy who was grabbed when he attempted to stab someone in the chest. He is the product of a chemically damaged pregnancy. An 18-month-old boy I saw recently, best emphasizes the message of awareness of violence and brain injuries. This boy, now in foster care, came to the ER with an ear infection. He is severely brain injured, can't talk, sit upright or feed himself. I remembered caring for him when he was brought in at age 2 or 3 months having been starved and beaten by those he trusted.

This pitiful little boy, with a BROKEN BRAIN, best sums up the problem. Not only must we consider the terrible human suffering, but also the monumental costs of caring for someone this disabled. It is my opinion, we are just seeing the tip of the iceberg in terms of the amounts of family and stranger violence that will result from poverty, alcohol and other drug abuse and exposure of the unborn to the devastating effects of alcohol and other drugs.

A few positive comments. I am hearing in meeting with advocates and from word of mouth, that more networks of "safe houses" for victims are being formed. There is more awareness in the community. In Hilo, we are very proud of our advocate call system in the ER. I have long believed in mandatory reporting to police of incidents of violence, but well understand the fears of victims when the police are called against their will. We have policy now at Hilo Medical Center that provides for calling victim advocates and offering their counsel to victims in the ER. I feel that is working very well in providing the foundation of safety and support for victims.

So in this month of awareness of the costs of traumatic brain injuries, let us heed the advice of that 12-year-old girl from D.C. Let us couple our pity and compassion with the will to approach the epidemic of family violence like we would any major epidemic: emphasizing public awareness, education, prevention and sound treatment. As Dr Jeff Goldsmith once said, physicians in America clean up wrecks of life styles at the bottom of a cliff. It's time to build the safety net at the top of the cliff.

Achieving Better Outcomes for Hawaii's Children

Sandra Potter Marquardt, MPA*

Act 333, adopted by the State Legislature in 1997, notes that traumatic brain injury is the leading cause of death and disability in children and young adults. While Act 333 requires the Department of Health to develop a comprehensive plan to address the needs of persons affected by disorders resulting from such injuries, it is clear other more preventative measures must be taken to deal with this problem.

These are trying times for Hawaii's families. The lingering economic slump and predominance of low-paying service sector jobs, unemployment figures on the rise, and the high cost of living continue to test our resiliency. Providing the kind of care and attention children need to thrive is particularly challenging under such stressful circumstances. Indeed, recent reports of infant deaths and traumatic brain injuries resulting from child abuse have many concerned that a growing number of families may not be coping well at all, and that despite a shrinking state budget, somehow we must do more to help children at risk.

Act 333, adopted by the State Legislature in 1997, notes that traumatic brain injury is the leading cause of death and disability in children and young adults. While Act 333 requires the Department of Health to develop a comprehensive plan to address the needs of persons affected by disorders resulting from such injuries, it is clear that this issue calls for additional preventative measures to deal with this problem.

The need to be proactive about child safety becomes even more urgent in light of recent discoveries about the significance of early brain development. In the last several years, research findings have underscored the fact that more learning and growth take place in the first two years than at any other time of life. Recent studies, such as the one released by the Rand Corporation, reinforce what we have intuitively realized all along - that the kinds of experiences that infants and toddlers are exposed to have a lasting impact. Quality care and nurturing will pave the way for a lifetime of successful learning. Conversely, prolonged exposure to severe stress can actually change the physiological development of a child's brain leading to learning handicaps and other developmental delays.

In Hawaii we pride ourselves on how the state's public policy reflects our love of children. We do not want to sacrifice the gains

we have made on their behalf, despite the gloomy financial news. With this in mind, a coalition of community leaders, state legislators, and public and private agency representatives have been grappling with ways to make the most of existing resources. In the face of shrinking human service budgets, we must develop innovative approaches which will help shift cost from expensive intervention and treatment services to more economical prevention programs that have a positive impact on child outcomes.

During this past legislative session, lawmakers and the Cayetano Administration acted on several measures that will bring people together to take collective action on important child outcomes. In particular, House Concurrent Resolution 38 establishes a state policy and a recommended course of action for improving the well being of children, youth and families.

The document draws from a number of statewide initiatives to define a continuum of good outcomes for children from the time of birth through young adulthood. For example, "Every child will thrive physically - be healthy from birth with ongoing access to good health care, have a safe home, school, and community environment" is generally accepted to be a fundamental requirement for all children to thrive. It acknowledges that "the majority of children and youth are mentally and physically healthy because they grow up in loving sustaining families where the care of children is viewed as a fundamental responsibility, however, all families need supportive communities and some families need more support than others to assure good outcomes for their children."

Providing appropriate support to enable communities and families achieve these outcomes will take a more focused approach than in the past, and the resolution prescribes a means to do so. It calls for communities and public and private services providers to think strategically about ways they can combine resources and energies to address common goals. It also calls for the development of a mechanism to measure progress on achieving the desired results for families over time and for government as well as private, non-profit agencies to cooperate on gathering and sharing data that will make this possible. Thus, the resolution helps set the stage for the creation of "performance partnerships" for the state.

The Office of the Governor is very committed to the concept of performance partnerships, an idea that is being promoted by the federal government, through the National Performance Review Board and Vice President Al Gore's Office. The National Performance Review Board is currently developing mutually beneficial agreements with a number of leading states in order to pursue key outcomes that are important to those states and federal government.

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Vocational Rehabilitation of People with Traumatic Brain Injury

Tony Hunstiger MEd, CRC* and Gunnar Thompson PhD**

The role of the vocational rehabilitation counselor in the rehabilitation process for individuals with TBI is explained. The specialized evaluation, team-orientation, and services involved are described. Eight areas involved in vocational evaluation are noted: social support, vocational / educational, independent living, medical, behavioral / psychosocial, financial, legal, and other areas.

Recent advancements in emergency trauma care and physical rehabilitation offer hope of survival to people who sustain brain injuries. As encouraging as that may be, vocational interests of those with traumatic brain injury (TBI) can not be overlooked. Rehabilitation services are not usually readily available or affordable for most people. It is this unavailability of adequate life-long care programs for persons with chronic impairments that seems to be the major problem facing survivors of TBI.¹ Vocational readjustment can play a major role in optimal medical recovery, psychological adjustment, and long-term quality of life.

A vocational consultant may be added to the treatment team at any point where immediate vocational decisions must be made regarding the patient's employment status or where long-range vocational goals might provide a suitable foundation for psychological adjustment. A vocational evaluation is begun as soon as the individual with TBI is mentally and physically prepared to begin the tasks of

physical and cognitive rehabilitation. This evaluation considers the pre-injury occupation along with a current assessment of skills, interests, and limitations.

When the patient is ready, a return to work program is initiated to begin the process of gradually resuming work-related activities. Through the coordinated efforts of physical therapist and vocational counselor, long-term vocational goals can often serve as a framework or incentive for patient effort. The timing, method, and goals for work-related activities are generally summarized in a document called the "vocational rehabilitation plan".

Because of the complex consequences associated with TBI, vocational assessment and planning require a team effort involving client, family, physician, neuropsychologist, vocational rehabilitation counselor, physical therapist, occupational therapist, and other appropriate parties. The rehabilitation plan serves the purpose of establishing a framework for coordinating team efforts. Patient status is monitored in all crucial phases, and the plan is modified to suit changing contingencies and unforeseen opportunities. Family involvement is recommended in all phases of the rehabilitation process, along with the support, and coordination of all team members. Since research indicates the need for (a) unique evaluation techniques, (b) team-oriented rehabilitation planning, (c) team-oriented therapies, and (d) support services formulated specifically for TBI survivors, it is necessary for case managers (i.e., vocational rehabilitation counselors) working with this population to develop specialized knowledge, skills, and resources.²

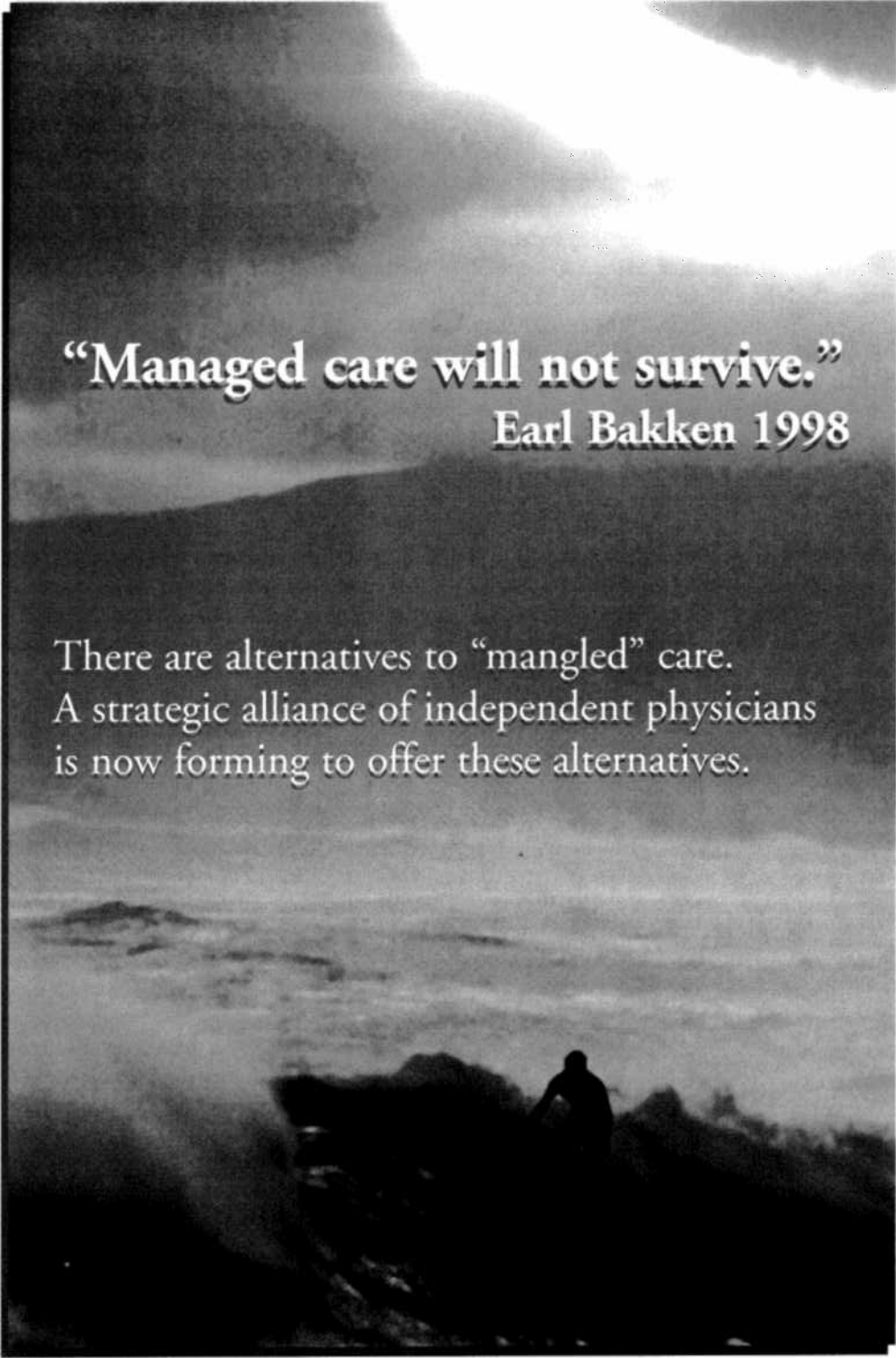
A team of specialists with a representative from each relevant discipline should be gathered. A team leader is then identified from among the specialists gathered. Treatment goals are prioritized according to the client's needs. A schedule for evaluating treatment is established on the basis of objective outcomes, which are expected at prescribed intervals based on the patient's usual level of functioning. Failure to attain expected outcomes provides a basis for re-evaluating client abilities and re-adjusting the long-term program. The provision of care across all levels of treatment is monitored for continuity. An outcome orientation is promoted; and, ideally, long-term management and support systems are put in place.

Some aspects of vocational rehabilitation, such as vocational evaluation, neuropsychological, and psychological assessment are specific to the vocational rehabilitation component of TBI rehabilitation. Other aspects of TBI rehabilitation, such as cognitive remediation, psychotherapy and social skills training overlap with the vocational rehabilitation process. These aspects of rehabilitation include the assessment of key barriers to employability and community reentry after brain injury, which are the effects of psychological

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**served as the graduate advisor during the literature review and as a consultant for this article. A former Project Coordinator at Harborview Medical Center in Seattle, and an Assistant Professor at the University of Hawaii (1993-97), he is currently the Director of the Multicultural Discovery Project in Seattle.

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and cognitive changes. These changes are often more profound than physical changes.³ Vocational rehabilitation provides training not only in job skills, but also in appropriate workplace behaviors. It provides an effective means of restoring a sense of identity to a person with a brain injury. In this regard, vocational rehabilitation should be viewed as a major part of the overall rehabilitation process.

An assessment of the client's needs is an elementary component of any initial vocational rehabilitation, case management or life-care planning interview. These needs generally fall into the following inter-related categories: (1) a social support system, (2) vocational and/or educational assistance, (3) independent living, (4) medical, (5) behavioral management / psychosocial, (6) financial, (7) legal, and (8) other areas of concern. In this process of life care planning, nothing should be left to chance; and, everything important in the TBI survivor's life should be considered openly and in depth with active participation by all involved.⁴ This list of aspects of life is used to analyze an individual client's needs so that they can be prioritized and included in their vocational rehabilitation plan. The use of this framework simplifies the vast array of complex and overlapping aspects of TBI rehabilitation making them more manageable.

A social support system, or the lack of one, establishes the alternatives available to a TBI survivor upon discharge from acute care. This category may be the most important in terms of promoting optimal rehabilitation for a person with an injury: "people do better and heal faster when they feel that somebody cares about them."⁵ Lack of social contact, increased dependence on the family, and a

reduction in close friends, leisure activities and visitors is a frequent concern of post-injury clients.⁶

Without assistance from family, friends, community and/or a competent guide, such as a vocational rehabilitation counselor, the survivor may not receive needed chronic care. Lacking the skills necessary to care for themselves, persons having TBI may become a social burden by becoming homeless, institutionalized, or jailed. Access to the other seven categories on the life-care-planning list above might be impossible without fundamental social support.

As the incidence of brain injury among young people is known to be very high, return to school is often a serious concern after injury. Awareness regarding TBI by educators and school counselors and awareness of students and their parents of services available to them needs to be increased. For most young adults, return to work or school is usually a desirable and potentially attainable goal.

Vocational evaluation as part of the transition from school to work comes under the auspices of the State-Federal vocational rehabilitation program. State counselors use a variety of assessment techniques including simulated job tasks such as standardized job samples, trial work stations or "situational assessments" in addition to neuropsychological evaluations as the basis for an adult rehabilitation plan. Persons who are injured on the job qualify for assistance from counselors who are certified with the workers' compensation program. Finally, some individuals covered by automobile insurance receive vocational counseling assistance under the terms of vocational rehabilitation coverage. However, financial constraints often limit the availability of skilled counseling or other services for persons with chronic disability.

Vocational evaluation involves an assessment of an individual's assets and limitations along with a prediction of the individual's behavior and success on the job. Vocational evaluation encompasses the full repertoire of work behaviors with a focus on the manner in which deficits interfere with vocational functioning. A determination of maximum capabilities and mechanisms to optimize performance is necessary. On-the-job evaluation is preferable to standardized group testing and commercially available work samples for this population.⁷

The vocational counseling component usually involves helping a person with a brain injury develop a realistic vocational outlook. Frequently, people with brain injuries, overestimate their vocational potential, with the consequence that their vocational goals are unrealistic. Further, they typically underestimate the amount of work or the extent of the capabilities needed to achieve their goals because they lack self-awareness and do not accept the consequences of the injury. Vocational rehabilitation counselors work closely with professionals attending to the psychological adjustment. They can recommend work-related activities to help the person with the brain injury become aware of the reality of their relationship to the work environment.

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Treatment with antibacterial agents alters the normal flora of the colon and may permit overgrowth of clostridia. Studies indicate that a toxin produced by *Clostridium difficile* is one primary cause of "antibiotic-associated colitis."

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General: For topical use only; not for ophthalmic use. Concomitant topical acne therapy should be used with caution because a possible cumulative irritancy effect may occur, especially with the use of peeling, desquamating or abrasive agents. If severe irritation develops, discontinue use and institute appropriate therapy.

The use of antibiotic agents may be associated with the overgrowth of nonsusceptible organisms including fungi. If this occurs, discontinue use and take appropriate measures.

Avoid contact with eyes and all mucous membranes.

Information for Patients: Patients using BENZAMYCIN® Topical Gel should receive the following information and instructions:

1. This medication is to be used as directed by the physician. It is for external use only. Avoid contact with the eyes, nose, mouth, and all mucous membranes.

2. This medication should not be used for any disorder other than that for which it was prescribed.

3. Patients should not use any other topical acne preparation unless otherwise directed by physician.

4. Patients should report to their physician any signs of local adverse reactions.

5. BENZAMYCIN® Topical Gel may bleach hair or colored fabric.

6. Keep product refrigerated and discard after 3 months.

CARCINOGENESIS, MUTAGENESIS AND IMPAIRMENT OF FERTILITY

Data from a study using mice known to be highly susceptible to cancer suggests that benzoyl peroxide acts as a tumor promoter. The clinical significance of this is unknown.

No animal studies have been performed to evaluate the carcinogenic and mutagenic potential or effects on fertility of topical erythromycin. However, long-term (2-year) oral studies in rats with erythromycin ethylsuccinate and erythromycin base did not provide evidence of tumorigenicity. There was no apparent effect on male or female fertility in rats fed erythromycin (base) at levels up to 0.25% of diet.

Pregnancy: Teratogenic Effects: Pregnancy Category C: Animal reproduction studies have not been conducted with BENZAMYCIN® Topical Gel or benzoyl peroxide.

There was no evidence of teratogenicity or any other adverse effect on reproduction in female rats fed erythromycin base (up to 0.25% diet) prior to and during mating, during gestation and through weaning of two successive litters.

There are no well-controlled trials in pregnant women with BENZAMYCIN® Topical Gel. It also is not known whether BENZAMYCIN® Topical Gel can cause fetal harm when administered to a pregnant woman or can affect reproductive capacity. BENZAMYCIN® Topical Gel should be given to a pregnant woman only if clearly needed.

Nursing Women: It is not known whether BENZAMYCIN® Topical Gel is excreted in human milk after topical application.

However, erythromycin is excreted in human milk following oral and parenteral erythromycin administration. Therefore, caution should be exercised when erythromycin is administered to a nursing woman.

Pediatric Use: Safety and effectiveness of this product in pediatric patients below the age of 12 have not been established.

ADVERSE REACTIONS

In controlled clinical trials, the total incidence of adverse reactions associated with the use of BENZAMYCIN® Topical Gel was approximately 3%. These were dryness and urticarial reaction.

The following additional local adverse reactions have been reported occasionally: irritation of the skin including peeling, itching, burning sensation, erythema, inflammation of the face, eyes and nose, and irritation of the eyes. Skin discoloration, oiliness and tenderness of the skin have also been reported.

DOSAGE AND ADMINISTRATION

BENZAMYCIN® Topical Gel should be applied twice daily, morning and evening, or as directed by a physician, to affected areas after the skin is thoroughly washed, rinsed with warm water and gently patted dry.

How Supplied and Compounding Directions:

Size (Net Weight)	NDC 0066-	Benzoyl Peroxide Gel	Active Erythromycin Powder (In Plastic Vial)	Ethyl Alcohol (70%) To Be Added
11.65 grams (as dispensed)	0510-05	10 grams	0.4 grams	1.5 mL
SAMPLE				
23.3 grams (as dispensed)	0510-23	20 grams	0.8 grams	3 mL
46.6 grams (as dispensed)	0510-46	40 grams	1.6 grams	6 mL

Prior to dispensing, tap vial until powder flows freely. Add indicated amount of ethyl alcohol (70%) to vial (to the mark) and immediately shake to completely dissolve erythromycin. Add this solution to gel and stir until homogeneous in appearance (1 to 1½ minutes). BENZAMYCIN® Topical Gel should then be stored under refrigeration. Do not freeze. Place a 3-month expiration date on the label.

NOTE: Prior to reconstitution, store at room temperature between 15° and 30°C (59° - 86°F).

After reconstitution, store under refrigeration between 2° and 8°C (36° - 46°F).

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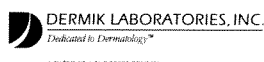
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Vocational training focuses on job performance tasks and behaviors. This includes skill proficiency, rate, quality and endurance. It includes equally the development of appropriate on-the-job behavior. A flexible training program using behavioral techniques with presentation of tasks in small, sequential steps along with a gradual shift to self-monitoring is recommended.⁸

Job development and job placement approaches vary according to job readiness and severity of injury. A client may start with volunteer work, move to supported employment with a job coach and finally hold a job independently. "Supported employment" is so named because special trainers called "job coaches" assist individuals with handicaps as they learn complex tasks on the job site; or, co-workers are trained to assist the person to keep on track or to assume those job tasks that are beyond the TBI worker's competency. Return to work options are as broad as the labor market, but are defined by the person's work and educational history, physical and mental abilities, aptitudes, interests, and needs.

Research has consistently shown a decrease in employment rates after brain injury in relation to pre-injury employment rates; furthermore, unemployment is often a long-term problem due to relatively minor behavior-cognitive deficits.⁹ With special and intensive forms of intervention, however, employment outcomes can range from 50% to 80% for clients with even a severe TBI. Although job placement is possible, sustained job retention is a lingering concern.¹⁰ Follow-up after job placement is, thus, important with this population. Monitoring of activities and assistance with situations may be necessary for some time after placement to insure work skills and behaviors are appropriate. Typically, six months to one year is suggested.

Before return to work is possible, basic supports may be needed. The support services for independent living most needed by persons with moderate to severe TBI are: (a) personal assistance services, (b) homemaker/chore support, (c) home health services, (d) respite services, (e) housing, (f) case management or resource coordination, (g) transportation, and (h) advocacy. The three obvious barriers that impede the delivery and utilization of these needed supports are funding, attitudes, and housing. If lack of funding is a problem, a case manager can help direct the person with TBI and their family to sources other than individual insurance like Social Security and Medicaid. Where an attitudinal barrier is a problem; the widely held opinion that persons with disabilities cannot or should not live independently often means a more restrictive lifestyle in a "safer environment" than is needed or desired by the individual. When there is no affordable housing, it is often less expensive to place individuals in nursing homes instead of in more appropriate community based independent living arrangements.¹¹

Most medical insurance policies cover only hospital-based rehabilitation, and not chronic care. The hospital team must, therefore, deliver the most comprehensive, high-quality treatment before the person is discharged from the hospital. In order to obtain this goal, Howard calls for an inter-disciplinary approach rather than a multi-disciplinary approach. A few significant differences between the inter-disciplinary model and the multi-disciplinary model are: a behavioral-learning treatment model, not a medical treatment model; an emphasis on mental, not physical treatment; chronic care, not an acute care model; group control with a democratic team leader, not centralized control with an autocratic team leader; a common goal among the disciplines, not separate goals; a focus on the whole

patient, not on rehabilitating parts of the patient; and group problem solving in staff meetings instead of individual reporting.¹²

Any discussion of the support system, the vocational/educational rehabilitation, the activities of daily living of the person with TBI, or the medical aspects of the person with TBI must deal with managing the behavior of the person with TBI. The rebuilding of social skills is often necessary to allow the human contact vital to all other concerns. The behavioral and cognitive aspects of TBI are not physically obvious, yet they are often most severely effected by TBI and are tied to every element of social and familial support and cohesion for the recovering individual.

It is critical that accurate assessment of an individual's strengths and limitations followed by appropriate interventions to improve behavior take place from the beginning of treatment. A person with TBI often suffers memory and personality impairments. These impairments threaten social relationships and can lead to social isolation, frustration and substance abuse. Given an opportunity to become involved and learn in a challenging environment, these socially challenged individuals often achieve a new sense of identity and self-esteem.¹³ As the high incidence of vocational and academic failures can be attributed partially to substance abuse, in order to more effectively overcome obstacles to educational and vocational outcomes, professionals can become more knowledgeable about and can educate their clients about substance abuse risk factors, assessments, and interventions while stressing the need for continuing education, family involvement, and increased monitoring with increased independence.¹⁴

Private insurance rarely pays for anything other than acute care, and the co-payments on that care are beyond the financial reach of most individuals. The health-care crisis of the 1990's has forced a move toward managed care in medical treatment. This poses a new danger to rehabilitation, especially in treatment of brain injury. Insurance companies are increasingly intervening in treatment planning, while control of patient care is moving out of the hands of clinicians and facility managers into the hands of the payers for services.¹⁵

An important first step in financial planning for a person with TBI is determining eligibility for government benefits. The next step involves looking beyond government benefits, which generally pay only basic room and board expenses, and calculating the remaining financial needs of the person with TBI. A financial strategy can be devised once these basic costs are determined. Experts in financial, investment and estate planning as well as insurance specialists should be consulted for help in determining long-term costs.¹⁶

Whether acquiring knowledge of legislation impacting people with TBI or selecting a competent plaintiff's attorney when a personal injury suit is involved, a person with TBI and their caregivers may require expert legal advice. If the event that caused the TBI may become the subject of civil litigation, it is important to select the right lawyer as soon as possible. Money obtained through litigation is used for compensation for lost income, pain and suffering, and to pay for treatment and rehabilitation programs.

The "other" category in the life-care list is designed to include planning for any individual aspect that may not fit conveniently anywhere else in the life-care-planning list. These may include religious, leisure or other activities that are of particular interest to the individual. Special diets, equipment, and clothing, treatments that work, and personal preferences should be considered here.

The only cure for TBI is prevention. Use of seat belts and air bags in cars, use of helmets by riders on motorcycles and bicycles, along with efforts to eliminate drunken and unsafe driving can reduce the incidence of TBI. Gun control, awareness and reporting of child abuse, stricter regulations governing contact sports, and the prevention of secondary injury through prompt identification and diagnosis of TBI are also ways to reduce the incidence of TBI. Considering the extent of the intellectual and personal loss caused by TBI as well as the enormous financial burden placed upon families and society as a whole, the little effort directed at prevention is woefully inadequate.¹⁷

In spite of the best efforts at prevention some individuals will become injured; and they will need effective rehabilitation services. Only a comprehensive program of professional services can mitigate the mental, physical, emotional, spiritual, and financial costs paid for by survivors of TBI, their families, and the larger community. With an understanding of the unique processes of vocational evaluation, team oriented planning and therapy, and special support services specifically directed at re-training people with TBI to re-enter the community and the workforce, professionals, and the public alike, can assist survivors of TBI to achieve meaningful and rewarding lives.

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The Neuropsychology Department at Hawaii State Hospital

Daryl E.M. Fujii PhD*

The Neuropsychology Department at the Hawaii State Hospital has been an oasis for Hawaii's brain injured population. It is one of the oldest neuropsychology services in the United States and one of only a handful of state funded programs. The department has been in existence since 1973 and has just celebrated its 25th anniversary. This article will briefly describe the past, present, and future of the Neuropsychology Department.

The department originated when psychologists Jim Craine and Howard Gudeman used monies from a federal grant for improving hospital services to evaluate brain damage in schizophrenic inpatients. Although the project was successful, the two psychologists were dismayed that there was no treatment for the patients diagnosed with brain damage. Thus with the assistance of a creative staff, they developed their own cognitive rehabilitation program. Today the Neuropsychology Department provides services to the entire state including neighbor islands. The department consists of two separate programs providing services in neuropsychological assessment and cognitive rehabilitation.

The assessment program is responsible for providing comprehensive neuropsychological evaluations and training graduate students in assessment techniques and case conceptualization. Currently, due to limited resources, the assessment program services primarily HSH inpatients, community health center patients, courts and correction referrals, and clients admitted into the neurotraining program.

Assessments have historically been based on the traditional Halstead-Reitan Neuropsychological Battery (HRNB).¹ The HRNB is a fixed battery of tests that comprehensively examines a variety of brain functions such as attention, language, perceptual organization, memory, and problem solving. The battery has been found to be useful in identifying brain dysfunction and assisting in localizing brain lesions.

Dr. Craine has trained many of the local neuropsychologists in practice today through weekly case conceptualization seminars. His seminars have been an ongoing tradition for over 20 years. A former student of note is Charles Golden, a prominent neuropsychologist who later went on to develop the Luria-Nebraska Neuropsychological Battery.²

Recently, there has been a shift in orientation with a strong influence of the Boston Process Approach.³ In comparison to the HRNB, the Process Approach is hypothesis driven and emphasizes the process of performances on testing versus quantitative test scores. In testing hypotheses a flexible battery is utilized to address different questions the clinician may have for a particular case. Despite changes in the evaluation process, the goal of providing Hawaii with quality assessments still remains.

The jewel of the Neuropsychology Department is the neurotraining program. Neurotraining is a comprehensive cognitive rehabilitation program that was developed in Hawaii by Drs. Craine and Gudeman, and neurotraining staff. The principles of neurotraining are based on Alexander Luria's⁴ theory that the brain is plastic and can recover from injury by forming new connections. Through use of repetitive problem solving activities administered in one on one sessions several times a week, therapists have been successful in improving cognitive functions of many brain injured individuals in Hawaii. The principles and techniques of neurotraining are summarized in a book that was authored by the department.⁵

Similar to the assessment laboratory, the neurotraining program is also undergoing changes. Historically, clients of the program have been serviced in one to one sessions with a neurotraining therapist or technician. However, due to limited resources and the great demand in the community, alternative methods of service delivery are now being pursued. One new method of treatment is through groups. Treatment groups are currently being held for socialization of community clients and for enhancing attentional skills of inpatient schizophrenics. In addition to groups, staff are also focusing on training other professionals in neurotraining to expand the resources in the community. Such programs are occurring on the Big Island and in the Department of Education on Oahu.

Currently, it is an exciting time for the Neuropsychology Department. Collaborations are being established with the University of Hawaii Department of Psychology to do research and with other agencies such as the Pacific Brain Injury Association to provide better services to the community. The department has also participated in organizing local conferences on traumatic brain injury to increase community awareness and education. Programs for previ-

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Hawaii Neuropsychology Program Gets Results: The Nuts and Bolts of Neurotraining

James Craine PhD*

Anecdotal reports from Hawaii's Neuropsychology Services reveal severe brain impaired clients have significant improvement in functions suggesting considerable recovery is possible, and contradicting the "irreversibility" of brain injury. Hawaii's Neurotraining program uses assessment techniques to map brain functions targeting deficits, evaluation to determine specific strategies to regain impaired functions, and stimulation exercises to retrain the brain with the basic cognitive skills necessary to learn.

Introduction

Here in Hawaii, the State Department of Health's Neuropsychology Service devised a program designed for the purpose of treatment and rehabilitation of patients with brain lesions. This program required a basic set of assumptions and directions to be used in neurotraining, the name given to the program.

This is a structured program aimed at the remediation of cognitive deficits resulting from brain insults. In order to implement the program, it was necessary to detail a series of "working principles" derived primarily from clinical practice, observation, and considerable trial-and-error effort.

Due to the widespread belief in the permanence and irreversible nature of brain damage, a great deal of pessimism has existed generally concerning the potential of environmentally based strategies for inducing recovery following injury to the central nervous system. As a result, much of the rehabilitation efforts with these patients have been limited primarily to efforts to help the individual compensate for the effects of the injury and to adjust to the limitations imposed by his deficits. Neurotraining is especially interested in detailing the deficits as revealed by tests, but not to help the

individual compensate for them or adjust to them but rather so that the assessment can zero in on the deficits as a target for the retraining program.

Neuropsychology Assessment: Diagnosis

Even if the Neurotrainer knows that specific sensory or motor or other neuropsychological deficits are due to a specific lesion in the brain, the primary question asked by the client is what can be done about his persistent disabilities.

Specification of Deficits

It is time to reverse the current conclusions involving the irreversible debilitating consequences of brain damage. For Neurotraining it is necessary to target the deficits, as this is the area where the individual is hurting the most and is especially in need of help. This is the area where he or she is at the most disadvantage when compared with others who are not impaired.

Specification of Strengths

It is also important to take special note of each of the strengths that are revealed from the extensive testing process. The Neurotrainer can use the strengths to praise and encourage the client and also may be able to bridge the strengths to the deficits if this proves to be feasible.

Developing a Neurotraining Program: What Is Neurotraining?

Neurotraining is the systematic application of psychological and neurological principles for the purpose of enabling individuals to overcome the deficits that result from central nervous system dysfunction.

Aim at Deficits

First, Neurotraining is training aimed at specific deficits. This means the intent is to work directly with the most impaired areas for each patient. In other words, training in the areas where the person hurts the most and was at the greatest handicap. With each deficit spelled out in clear behavioral terms, it is easier to design effective training programs for the person being trained.

It is worth pointing out that to make a comprehensive list of the various deficits is not the same as attempting to specify the location in the brain of the lesions for a patient who is diagnosed with brain dysfunction. For training purposes, the primary concern is with the gap in individual performance, the behavioral deficits, rather than

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copyrighted test for localizing brain injuries.

with the location of the specific lesions of the brain. This satisfies the need to be able to say, for example, that an individual has great difficulty with new learning in the auditory-verbal area or that visual-spatial memory is notably weak. These are the behavioral deficits and as such are the focus of the neurotraining program.

Although there is a definite relationship between the physical status of the brain and the performance of the individual, neurotraining intends to deal with the actual performance of the individual and to make use of the brain model only as it has further meaning in terms of the current performance of the individual patient. If careful attention is paid in the determination of the specific deficits for each patient and if the training activities are carefully structured on the basis of these deficits, then it is clearly possible to promote considerable recovery within the brain damaged population.

Making Use of Activities as Brain Exercises

The idea of using exercises for the brain is to make use of the ability of the brain to improve with stimulation. The name of this "game" is stimulation, and Stimulation, and **Stimulation**. The human brain has been called the adaptive organ because it is through the brain that everyone is able to adapt to changes in the environment. The adaptation comes about by means of the learning process which is controlled by the brain. In order to bring about these changes, there is a need for heightened stimulation. The neurotraining program becomes the means to provide the precise kinds of stimulation needed.

It is common knowledge that individuals tend to lose functions and abilities through lack of use or because of restriction of stimulation. If there is injury to the brain, from whatever cause, ability to adapt and to learn can be slowed or completely halted. However, it is possible to gain or regain functions and abilities with the aid of properly administered stimulation. Because it becomes a learning process, it is possible to structure training activities in such a way as to promote recovery of function.

The function of neurotraining is to stimulate in the direction toward which the learning or the relearning needs to occur. Because the brain is the adaptive organ the individual will be capable of making changes in behavior in response to changes in the environment. It is essential, however, that the stimulation be carefully planned and as specific and precise as possible.

It is apparent that the environment acts to stimulate individuals constantly and continually. This is not generally a program of planned stimulation, however, and may indeed be quite haphazard. Neurotraining is able to intervene in such a manner as to control the environmental presentations to provide a special kind of training called "programmed stimulation". This is where neurotraining enters into the picture. The central nervous system, even with a brain in a pathological condition, is not a closed system but is continuously reacting to external influences and continues to be affected by external events. If the individual is able to perceive stimulation, it would follow that he is also susceptible to changes in his behavior as a consequence of the changes in his environment. It is on this basis that it is possible to structure neurotraining activities in order to promote recovery of function.

Need for Numbers

In order to provide the intense amount of stimulation that is

needed to achieve improvement in brain functions, an extensive resource of exercises of all types is available. The one essential that all of these exercises have in common is that they are able to make use of numbers to indicate progress in each exercise. From the very beginning, a requirement was made to quantify all of the activities in order to keep track of the progress and thus be able to draw graphs of the results. It is in this manner that Neurotrainers are able to know when each of the pre-chosen criteria have been reached.

Quantification can be a score in terms of number of seconds to complete a task or the number of blocks piled on a stack or the number of items remembered or whatever else the criteria might happen to be. The essential point is that numbers are applied to the tasks so that a score can be kept of the activities. The clients sometimes complain that it does them no good to reach a criteria point because as soon as they succeed, a new criteria is set and thus the task is made more difficult for them. They are correct. The increase in the level of expectations is the method used to encourage clients to improve and make progress.

Frequently, clients will not realize the extent of the progress they have made over time. However, when the Neurotrainer can show them the graphs and point to the score achieved six months earlier, then they can appreciate their progress. The use of numbers for this purpose is invaluable.

First Things First

"We must learn to crawl before we walk and must learn to walk before we can run." This simply states that there is a developmental order involved in new learning. Relearning follows the same order of progression. The idea is simply that the completion of development of one stage is essential and is a prerequisite to the development of the next stage. It would be foolish to disregard this natural order of human learning and development in the neurotraining program.

In the training situation, it is necessary to recognize the importance of the hierarchical aspect of learning, both in describing and specifying a client's deficit and in structuring the goals of the training activities. As a matter of course, developmentally earlier tasks are trained first and these in turn are used to structure later more complex kinds of activities. In this way the stages of neurotraining attempt to recapitulate the stages of normal development that are followed in the growth of an individual or in the normal learning of a skilled behavior.

Observation of children at play reveals that they are continually doing something in their games that will prepare them for the next kind of activity that they are going to be doing next week or next month or next year. In the final analysis, all of these activities prepare them for life as an adult and it appears to be a natural order of progression. So once again Neurotrainers must keep this in mind when working with clients who have brain damage so as to provide them with the proper order of activities in order to lay a solid foundation.

It is even possible that a mature patient who has had abilities severely impaired may well have to start some of his training at a level that a four-year-old child would find appropriate. The client may make objections as to the level at which he may have to start a particular exercise as he thinks it is ridiculous for a grown person to be practicing a task that a young child can do. However, it may be essential that practice be completed at this level before it is possible

to progress to more difficult levels. One consolation is that the adult will probably be able to progress much faster than the child at the same task.

The importance of proper levels of training cannot be minimized. If the mastery of a prior level is not complete before the next level is presented to the client, he may well have some difficulty with this next level and with all succeeding levels simply because there is something missing in his repertoire. It is also possible that neglect of the proper developmental sequence of learning may be why there have been so many failures in the past in attempting to retrain brain damaged patients. If there is a failure to initially work with a patient at a level well within his grasp and then a failure to carry him progressively through more complex stages of development in the proper sequence, it may become difficult or impossible for the brain damaged patient to reestablish a functional system.

Learning to Learn

In a sense, neurotraining is seen as a process through which a patient with brain damage learns how to learn. It is almost as if he has forgotten how to learn and does not know how to start. Thus the training process is one designed to teach him how to learn.

The emphasis and procedures of neurotraining focus upon the learning process itself rather than upon any specific content area. There are times when brain damaged patients appear to lack the capacity to benefit from specific training programs such as high school, college or trade school simply because they are unable to absorb the training as it is presented to them.

Neurotraining carefully starts each client at a level where he can succeed in whatever the task might be and then only gradually presents an increase in the difficulty of the task so that he begins to realize, over time, that he is capable of learning. This kind of training is laying the groundwork so that the individual will be able to proceed, if he desires, with more specific training, perhaps at school or in a vocation. Neurotraining prepares the client to learn from these educational or vocational efforts by providing him with the basic cognitive skills necessary to learn.

The Nuts and Bolts of Neurotraining Program

Provide Constant Personal Attention

Neurotraining works best on a one-to-one level. The complexities involved in the retraining of brain functions require that a program is developed to meet the specific needs of the client. Maximum benefit from such a highly individualized program can best be achieved through the personal attention given to clients in a one-to-one setting.

The personal attention given creates an environment where the client is free to express his/her feelings, both negative and positive, to the trainer. This interaction can provide valuable insight to the client and will produce direct feedback for the trainer on the effectiveness of the training. As a result, the Neurotrainer can respond immediately to an individual's needs, both as a client and as a person.

Neurotraining is thus seen as a dynamic, ongoing, changing, and developing process rather than a monotonous, dull, and cut-and-dried series of practice sessions.

Although the requirements of one-to-one training may seem to be an extravagant use of manpower, the uniqueness of this process

makes it a necessity. Fortunately, some additional special advantages accrue because clients will tend to respond more positively to such an environment in which they do not have to compete with anyone else for attention or for results. In addition, the personal attention helps to generate enthusiasm and helps in developing and maintaining motivation.

Provide constant and Systematic Feedback

Neurotraining requires the active involvement of both client and trainer. It is essential that the client be continuously informed of the progress being made, the purpose of the exercises, and the achievement of sub-goals along the way. An effective way to involve clients in the process is to tell them the scores they make in each of their exercises and to frequently show them their graphs so that they can understand and identify with them. Most clients become quite interested in this process and frequently want to record their current scores on the graphs. This active involvement should be welcomed and encouraged in order to stimulate motivation. It is apparent that progress is usually quite slow and laborious in this kind of training and the Neurotrainer continuously needs to fight against client discouragement and depression. Appropriate regular feedback about the client's method of performance, and the unique aspects of each activity needs to be communicated, because this is one of the primary keys to successful learning. Clients often fail to recognize the positive improvements being made, but with proper use of feedback can be kept informed regularly.

Provide maximal stimulation

Whether the objective is to improve motor functions, memory, sensory perception, communication, or other high level central nervous system functioning, the aim must be achieved through means of stimulation. The best gain from time spent results from a maximum amount of stimulation that is properly presented and coordinated.

The brain responds to any and all types of stimulation; thus any stimulation in general will be of benefit to the brain as a whole but for Neurotraining purposes the stimulation should be precise. This is especially important in order to focus upon some highly specific brain functions. In neurotraining, the stimulation (1) should be prolonged and intensive through repetitive practice and (2) should consist of multi-modal stimulation and integration whenever possible.

It is not sufficient in this kind of training merely to make the stimulation available and expect to see achievement of goals. The client needs repeated stimulation on a regular basis in order to reconstruct and/or bolster the impaired function. The behavior, and thereby the function, must be continually produced until it is so readily available that it overcomes compensatory behavior and thus is used in everyday life.

Essentially, unselected stimulations occur naturally as life in general offers constant stimulation. This natural stimulation often plays an important role in so-called "spontaneous recovery" of brain functions after impairment. This recovery is often far from complete, however, and in order to be effective the stimulation should be repetitive for as long a period of time as necessary.

Stimulation should be as specific as needed for a given function and should be as intense as the client can accept without undue

discomfort. This kind of stimulation is possible in neurotraining through a precise mapping of deficits, a careful selection of exercises, and hours of expertly monitored repetitive practice.

Enter Training at the Proper Level

Unless attempts are made to commence training at the proper level for each client, in accordance with current abilities, it is possible to lose the benefits gained from a well-conceived training plan. If training is begun at a level that is too easy, the client will not benefit from the experience and little or no progress will be made. Conversely, if it is started at a level that is too difficult, failure will be evident along with discouragement and possible loss of motivation. Again, no learning will result from the experience except that the client may decide that this is an activity to be avoided or that he cannot make progress in this area. This is why it is necessary to put special stress upon orienting training efforts so that the client can experience success but has to put out an effort to do so and is thus forced to work and "reach" in order to succeed.

There is a special technique called "a baseline" that can be used to commence training at the proper level. It is necessary to establish a baseline for each client and for each exercise used. This is achieved by first making a brief survey of the client's range of ability in each activity by sampling ability, first at a very easy level and then by progressing in a series of steps to a point of excessive difficulty.

When this is completed, which takes just a short amount of time, a clear picture of the client's range of ability for this particular exercise is mapped. Once there is an established baseline for an exercise, it is then easy to select a level at which to enter training for that activity which will insure success the major part of the time but will still have a high enough level of difficulty to cause some errors. Training can be commenced at this point with confidence because the client will have to work to achieve the established criterion for success.

Increase Difficulty in Small Increments

Once training has begun, it is then necessary to insure that each selected task increases in difficulty in small steps and at regular intervals. This requirement seems to be necessary in order to force each individual to "Stretch" and to continue to improve while at the same time being careful not to impose too large a step, as this might cause failure.

Each training technique or activity must be capable of being calibrated in increasing degrees of difficulty. In addition, each step of increased difficulty will carry with it a criterion of success which will signal when to move to the next higher step. It is preferable that each step be relatively small so that the progression in difficulty from one to the next will not be too large. This particular point may often require close scrutiny because there will be times when the step upward seems to be small and orderly but a client will respond to it as if it were a very large and insurmountable barrier.

When a reaction of failure to be able to take the next step occurs, it may be necessary to backtrack and either make the step smaller or, if that is not practical, to break the activity down into two or three separate exercises. When proficiency has been gained in these separate parts, it should be possible to put the original activity back together again and find that the previous barrier is no longer seen to

be insurmountable. When properly done, learning occurs and orderly improvement and progress will result.

Insure Successful Endeavors

It is of utmost importance that clients have success in their training experiences. Because training is in areas of specific deficits, this requirement may at times pose some rather challenging problems but it should always be observed. Although there is the popular saying, "We learn by our mistakes," this is not the kind of learning used in neurotraining; instead, emphasis should be on the positive rather than the negative.

Failure, in certain instances, may bring about the development of avoidance reactions. Because the training is in deficit areas, clients may already be inclined to try to avoid the activity. Life experiences frequently provide these failures and clients may often build elaborate ways of avoiding further failure in the area.

It is doubly important that successful experiences are provided when training in these deficit areas. As clients are lead through their exercises and they find to their surprise that they can succeed in these kinds of activities, it is very rewarding to them. Unless the efforts in the neurotraining exercises result in some measure of success, there will be little or no learning taking place and the learning that is achieved will certainly not be in the desired direction.

Insist Upon Overlearning

It can be quite discouraging to discover that a seemingly well-learned skill can be quickly forgotten after a short period of disuse. When this occurs, it is quite probable that the learning process was terminated prematurely. The best way to guard against this happening is to insist that the skill be overlearned to the point that it becomes almost automatic. When this point is reached, disuse will not readily erase the skill as it will have become a permanent part of the individual's repertoire. It is for this reason that overlearning in neurotraining is an essential key to the process.

In the neurotraining program clients are working with deficits that will have to be restored and relearned. In effect, they are using substitute or weaker tools to achieve these goals. The learning is tenuous and needs to be very well consolidated, firmly established, and overlearned in order to become a permanent skill.

The periodic use of exercises in order to refresh the previous learning is also recommended. This will help to guard against the weakening or possible loss which may occur even in overlearned skills if these are not reinforced by regular use. In this way the newly restored skills can be utilized and maintained at peak efficiency.

Conclusion

There is no question but that extensive gains can be made by those patients suffering from impairment of cognitive functioning, providing environmentally based strategies designed to encourage recovery are properly administered. Significant recovery from cortical dysfunction requires considerable time, involving months or even years and many helping hands. However, clients no longer have to accept arguments specifying the "irreversibility" of the cortical lesions. In addition, the experience with neurotraining suggests that considerably more recovery is attainable than has ever before been thought possible.

Phantom Loss of Function in Traumatic Brain Injury

Walter S. O. Fo, Ph.D.* and Rosalie K. Tatsuguchi, Ph.D.**

Despite appearing normal, survivors of TBI typically experience residual effects that significantly impact their daily functioning. Informed that they have a mild, transient brain injury which is expected to resolve rapidly, they encounter marked psychological difficulties when their cognitive dysfunction persists. Left undiagnosed and untreated, patients with TBI are at risk of developing serious psychiatric disorders. Early identification and referral to specialists in neuropsychology can head off this adverse clinical course through appropriate assessment and intervention.

Introduction

Traumatic Brain Injury (TBI) is one of the most common of medical conditions afflicting countless millions of people worldwide. Despite its prevalence, it is a disorder that is not widely understood—particularly when clinically manifested in mildly-to-moderately severe presentations of the syndrome. Survivors of TBI often appear uninjured with no obvious physical impairment, yet are unable to resume their normal daily activities due to the residual effects of their brain injury. For this reason, TBI has come to be known as the “silent epidemic”—surreptitiously striking and snatching away productive individuals from the mainstream of society and from personally fulfilling lives.¹

An Under-Recognized Condition

Many instances of TBI initially may go undetected by health care professionals, despite the presence of medically documented cerebral concussion or other evidence of physical assault to the brain. Even when recognized and diagnosed in a timely manner, the severity of the disorder and its corresponding functional impact upon the individual are frequently underestimated.

When this occurs, the clinical course for patients with TBI becomes unnecessarily difficult and complicated. These patients may be sent home with the pronouncement that they have sustained

a mild brain injury which is expected to have minimal effects on day-to-day functioning and to resolve quickly. Further assessment usually is deemed unwarranted, and treatment prescriptions if any are generally palliative in nature. For patients diagnosed with “mild TBI,” the reality of their life upon returning home is often a far cry from the innocuous-sounding description of their injury and its accompanying favorable prognosis. To their confusion and dismay, survivors of TBI typically encounter significant functional difficulties in performing what had been the simplest of tasks previously.

Illustrative Case

Ms. S, a 25-year-old single sales clerk, was discharged from the hospital emergency room following a motor vehicle accident in which she sustained a mild concussion. Except for complaints of headache, the patient appeared to exhibit minimal physical sequelae arising from the trauma to her brain. She was discharged home with instructions to follow-up with her primary care provider. Upon seeing her personal physician a week later, Ms. S reported that while her headache had resolved for the most part, she had been feeling listless and fatigued. She complained that virtually everything she did now seemed to be “such a chore.” Even the easiest of household work tasks represented a formidable undertaking for her that taxed her mind and sapped her strength. Additionally, Ms. S related how “absent-minded” she had become. For example, she would neglect to use laundry detergent when she did the wash. Repeatedly, she would misplace her keys, or forget what she had gone into a room to retrieve. Ms. S’s doctor duly noted her reported difficulties and assured her that while these symptoms were not unexpected, given the head injury that she had sustained, they were likely to be temporary. He encouraged her to be patient and to take things slow and easy for awhile. In the meantime, he would monitor how she was coming along, so she was to return in 2 weeks.

Ms. S’s basic clinical presentation did not change substantially when she returned for follow-up, nor did her symptoms remit over the ensuing months. Her husband confirmed that his wife continued to have the same kinds of difficulties in her day-to-day activities as she had reported earlier. Adding to her mounting frustration was the patient’s acute awareness that obviously something was terribly wrong with her. She still was not able to perform like she used to. While she had resumed her daily work activities, she found that every task required a substantial effort to accomplish, took longer than usual, and was prone to error.

The patient’s arduous efforts to reclaim her prior level of functioning began to exact an emotional and physical toll on her, and she felt demoralized by her life circumstances. She found her condition all

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the more difficult to accept because this "was not supposed to happen," as after all, had she not just sustained a mild concussive syndrome? She struggled to reconcile her daily observations of her own behavior with being told that she had a mild brain injury with transient difficulties that were expected to resolve completely.

By a year post-concussion, Ms. S was a thoroughly exasperated and bewildered young woman. Her symptoms had continued essentially unabated. If anything, they were worse now, as she tended to focus excessively on the difficulties which she was experiencing. She became preoccupied with her deficiencies, which she perceived as rendering her "a shell of the person I used to be." She found herself questioning her own judgment in a wide range of matters, and encountered notable difficulty making decisions. It was perplexing to observe these changes in herself, which served to erode further her sense of self and undermine her confidence. She ruminated obsessively about how drastically her life had changed—and for no real reason or at least one that her doctors could point to!

Compounding the problem, Ms. S began hearing from her family, who were growing increasingly weary and impatient with her, that she was making it difficult for them! They pointed out how irritable she was much of the time, snapping at them for no good reason. She was incessantly demanding and appeared incapable of being appeased. They complained how she was often moody, broke into tears easily, and sometimes flew into rages with minimal provocation on their part.

To Ms. S's consternation, her family also admonished her for "not handling her problems." With her doctors reporting no medical

disorder to account for her symptoms and with no obvious physical impairment evident, the patient's family assumed that the problem must be with the patient. They chided her to "change her attitude, stop being that way, and get over it already!"

Not surprisingly, by this time Ms. S was nearly distraught with frustration and anger; clearly, she was exhibiting a significant emotional overlay to her medical condition. In fact, she was at risk of developing a major affective disorder. As far as the patient was concerned, she had already long concluded that she was "going crazy."

Functional Impairment from TBI—Real or Imagined?

Ms. S's case demonstrates what could be called the "phantom loss of function" which often characterizes traumatic brain injury. Like a "phantom," TBI appears not to be there but is actually present. As in the aforementioned case, TBI often presents with accompanying functional impairment which does not seem commensurate with the perceived nature and extent of the brain injury sustained.

This phenomenon occurs because the effects of mild to moderate TBI are often difficult to see on casual observation. Survivors of TBI frequently "look good" on mental status exams, inasmuch as the kinds of difficulties experienced, such as memory problems, are not readily discernible in even carefully performed MSE's. Indeed, standard psychological testing as well may not detect the subtle but significant cognitive deficits associated with TBI. For example, the widely used Wechsler Scales of Intelligence usually do not reliably

detect the more subtle aspects of organic brain dysfunction. Moreover, it is not uncommon for patients with serious brain dysfunction to score in the average range on subtests of the Wechsler. Such test findings only serve to obscure, rather than elucidate, the TBI survivor's mental status.

When patients with apparently mild/moderate TBI submit disability claims (e.g., Worker Compensation or Social Security Disability), they may fail to even establish the presence of their disorder, much less demonstrate a severity sufficient to warrant disability status. Many claimants with significant cognitive impairment arising from TBI are routinely denied disability benefits because of a lack of objective findings—despite extensive medical records recounting their complaints over time and an abundance of third-person reports from family and friends corroborating the TBI patient's reported loss of function.

For example, in the Social Security Disability program, it is not uncommon for a claimant's medical records to indicate a less than severe traumatic brain injury, yet the claimant and significant others report a degree of functional limitation which casts serious doubt as to the claimant's ability to perform substantial gainful activity on a sustained basis. This occurs because treatment sources or consultative exams in the medical record report MSE and psycho-

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logical tests results which do not substantiate the claimant's allegations with objective findings. In the absence of sufficient confirming evidence from medical sources, a TBI survivor's claim for disability generally is not likely to be allowed. So once again, the societal message to TBI survivors is "You do not have a significant medical condition" in spite of their everyday experience to the contrary.

If the above-described scenario is to be averted, it is essential that TBI be recognized by health care providers at the onset or as early as possible. Just because there are no hard signs of TBI in a particular setting (e.g., in the emergency room or doctor's office), it does not necessarily mean that the condition is not present. Yet it is customary for health care practitioners to assume that if there are no objective indications of a medical disorder, then it must not be present.

Assessment Issues

The following measures may be fruitfully undertaken to ensure the proper identification and assessment of the patient with TBI: (1) Early detection of even seemingly mild cognitive deficits can set the stage for judicious monitoring of the residual functional effects of the TBI over its clinical course. (2) Then when physical sequelae of the brain injury do not remit as expected, further assessment can be undertaken without delay. At that point, preliminary neuropsychological testing can be done to pinpoint more precisely the nature and extent of the cognitive deficits present. Baseline measurements of the individual's current cognitive functioning can be established, to compare with later findings in order to measure changes over time. (3) More extensive neuropsychological assessment may be performed as warranted, in order to produce a systematic brain-mapping of the TBI patient's localized areas of cognitive dysfunction. At the same time, the TBI survivor's cognitive strengths may also be assessed and incorporated into the design of a suitable cognitive rehabilitation plan.

At this juncture in the neuropsychological work-up, it is not unusual for a pattern of cognitive deficits to emerge into focus, which considered singly may not appear remarkable, but collectively yield a compelling explanation as to why the patient with ostensibly mild TBI in fact encounters such pronounced difficulty in daily functioning. By elucidating what is going on in the TBI patient's brain, the results of neuropsychological assessment can be highly instructive to the attending physician, who has now been provided with a framework for making sense of the patient's functional complaints. However, the ultimate value of neuropsychological assessment as a diagnostic as well as treatment tool is perhaps most evident in its positive impact on the TBI survivor, who invariably is in a position to benefit immediately from its findings.

Treatment Considerations

Neuropsychological assessment results typically introduce a measure of light into what had been experienced by the TBI survivor as a veritable darkness. For perhaps the first time since their injury, survivors of TBI are provided with information that accounts for the functional difficulties with which they have lived in past months. The TBI patients' bewildering complex of functional limitations—which heretofore had been experienced as a phantom—now are understood for exactly what they are: logical effects of known causes associated with the specific pattern of cognitive deficits originating from brain injury. These are no longer phantom losses of

function, but instead known and expected sequelae of trauma to the brain.

Finally, TBI survivors' everyday life experience in the aftermath of their brain injury is validated. In fact, they have been found to have a legitimate disorder—one that has a name, with residual deficits that can be directly attributed to it. As survivors of TBI come to understand how the brain functions, they acquire a working understanding and appreciation of the specific bases for their cognitive difficulties. Survivors of TBI retrospectively report that attaining this understanding typically represents a turning point for them, like "having a burden lifted off their shoulders." While they still face the same daily functional limitations as before, they reportedly feel better equipped to deal with them. For survivors of TBI, knowledge is power—empowering them to understand and accept their impairment, and ultimately enabling them to cope more effectively.

In addition, the neuropsychological test results afford an opportunity for the family of the TBI survivor to be apprised of the patient's medical condition, including an explanation of the underlying basis for the patient's observed functional difficulties. Proactively providing such information sets the stage for the physician to involve the patient's family more integrally in the treatment plan. Cultivated as allies, caregivers can make a distinct difference in eliciting and supporting the patient's active participation in treatment. Enlisting the family's cooperation in this intentional manner can contribute substantially to improved treatment compliance and outcome—all the while making life a whole lot easier for the physician. At the same time, the attending physician's consultative input to the TBI patient's family members can keep them involved in constructive activities in support of the patient and prevent caregiver burnout.

At this point, the TBI patient's improved prognosis is due not only to a more complete understanding and acceptance of his/her medical condition by both patient and caregivers. It is also attributable to another concrete benefit of neuropsychological assessment findings—pointing up specific strategies for remediating the cognitive deficits identified. Neuropsychological testing first pinpoints the specific profile of cognitive deficits present, then suggests possible points of intervention for overcoming the individual's identified functional losses.

Misconceptions about Brain Injury

Contrary to popular belief, brain damage is not a condition that either gets better or never does. If one believed this duality of outcome for cases of organic brain dysfunction, one would be reluctant to diagnose those who fell in the cannot-do-anything-for-them-anyway category. In neuropsychological intervention with organic brain dysfunction, an all-or-nothing mentality is decidedly not apropos. Hawaii neuropsychologist James Craine, Ph.D. has made a life's work of developing strategies and techniques for measuring and retraining damaged functions of the brain. His research findings show that neurotraining based on localizing specific cognitive functions can be effective with even severe traumatic brain injuries.²

Another common misconception prevalent in the TBI field is that the etiology of a particular organic brain condition determines the nature of the treatment available for it. The reality is that organic dysfunction can be viably treated with intervention techniques linked to the nature and type of the specific cognitive deficit,

irrespective of etiology. For example, the basic cognitive retraining methodologies developed by Dr. Craine, as described earlier, are likely to work with less severe non-traumatic brain injuries and learning disabilities—in addition to severe traumatic brain injuries.³ These kinds of organic brain dysfunction could not be more different from one another in etiology, yet they may be treated with similar methods of cognitive retraining, based on the localization of brain functions.

Availability of New Treatments for TBI

Thus while still an evolving science and art, neuropsychological training already has much to offer TBI survivors with cognitive dysfunction ranging in severity from mild to marked. However, the availability of effective treatment methodologies for retraining a broad range of organically based cognitive deficits may not be widely known, due to their being relatively new. It may be that if health care professionals were generally more aware of the interventions available for TBI, they might be more predisposed to diagnosing brain damage and informing the patient of it, as well as passing along treatment recommendations.

Timely and well-designed neuropsychological intervention enables TBI survivors to recover certain cognitive functions, by learning to learn all over again. They also are equipped with cognitive retraining strategies for strengthening and re-acquiring previously diminished function, as well as for putting into place alternative cognitive strategies to compensate for lost function. The reader is referred to the article on neurotraining by James Craine, Ph.D. elsewhere in this journal edition, which reviews his pioneering research in neuropsychological intervention techniques based on specific, localized cognitive functions derived from careful mapping of the brain.⁴

The Role of the Physician in TBI Management

The process of diagnosing and treating cognitive dysfunction arising from TBI is greatly facilitated by the attending physician who recognizes when to make a timely and appropriate referral for neuropsychological assessment and treatment. The role of the physician in recognizing significant cognitive sequelae of TBI is particularly critical in TBI of mild to moderate severity, in order to avoid some of the pitfalls described earlier. When uncertain, the attending physician may well wish to consider consultation from a neuropsychologist trained and experienced in the assessment and treatment of organically based cognitive dysfunction.

Whether the attending physician manages the patient with TBI alone, or in concert with specialists, it bears noting the obvious: his/her role is a highly influential one in shaping the attitude and expectations of the patient with TBI. This power is naturally doubled: it can be wielded sensitively and judiciously to impact the TBI patient positively (e.g., to invite the patient to join with the provider in pursuit of his/her own healing or recovery), or otherwise. Obtaining consultation from neuropsychologists, who routinely have expertise in matters of interpersonal influence, can contribute to the development of the kind of working relationship between doctor and patient which optimizes patient outcome. Consultation may also prove fruitful in certain TBI cases in which psychosocial factors may be of such critical importance as to override medical considerations under the purview of the physician.

As an ancillary treatment provider called in to participate in the care of a TBI survivor, the neuropsychologist can contribute significantly to meeting the overall health care needs of the patient. Beyond their expertise in evaluating the presence/severity of cognitive deficits and prescribing treatment for alleviating their effects, the neuropsychology specialist can also play a crucial role in attending to the emotional and psychological needs of TBI survivors in adjusting to their medical condition. Since human organisms are notorious for seeking to make sense of what has happened to them (i.e., by asking such questions as “Why me?” and “What effect will this have on my life?”), any professional guidance provided at such times can have more than salutary impact on the patient with TBI. The specialist in neuropsychology is particularly well-suited to assist the TBI survivor with issues such as these.

Emotional Sequelae of TBI

Patients with TBI who are not afforded the opportunity to talk about their medical condition and its expected impact on their life, or to process their feelings about what has happened to them, are likely to be distracted from full participation in their own health care. As a result, medical compliance issues may needlessly arise and adversely impact the TBI patient's clinical course. The “difficult” or “uncooperative” patient may merely be one who does not understand what is happening to them and is “acting out” their anxieties or other powerful emotions. For the physician who may not discern that the patient is manifesting signs of TBI, it is likely that the patient with mild TBI will be perceived as inexplicably difficult and demanding.

Most prominent among the disruptive emotions which may interfere significantly with the medical treatment of the TBI patient is grief. The patient with TBI is highly likely to be encountering some form of grief over the real and/or perceived sense of loss experienced as a consequence of the functional limitations stemming from the brain injury. The grieving process may be overt, or it may go “underground” where it may not be at all apparent that the patient is in fact grieving. In addition, patients with TBI may suffer from a substantial sense of loss of their “old selves” (i.e., the way they used to be), but they may be in denial and not fully aware of it. Even when acutely cognizant of their sense of loss, survivors of TBI may not understand it or think it is not valid (i.e., justified). When patients sense that what they are feeling or experiencing is somehow wrong or invalid, these feelings tend to be suppressed and hidden, only to make their presence known ultimately by stymieing their medical recovery.

Accordingly, TBI survivors who are actively grieving their loss of function need to be acknowledged in what they are experiencing and their feelings validated, if they are to progress expeditiously through the grieving process. Otherwise, in the absence of a resolution to the patient's grief, bereavement may be unnecessarily prolonged, and along with it, the patient's eventual physical (and emotional) recovery.

While physicians understand that psychological factors may play a key role in affecting a patient's medical condition, they often cannot respond to the emotional needs of the patient within the limitations of a brief office visit. Were they able to do so, or to arrange appropriate referral to psychiatric or psychological specialists, medical compliance and prognosis would be significantly

enhanced. This is particularly true of patients with TBI, who can be especially outrageous in the demands which they make of their health care providers. (E.g., patients with TBI often seem not to comprehend or accept the treatment rationales provided by their doctors for particular medical regimens to which they rigidly and persistently object, or vacillate in their decision-making, resulting in problematic patient management.)

Finally, opportune involvement of a neuropsychologist can prevent the development of psychiatric conditions which can be expected to needlessly hinder the clinical progress of the TBI patient. For example, survivors of TBI who are at risk for manifesting comorbid anxiety or depressive disorders can be properly identified and provided with early psychological intervention. In a similar manner, TBI patients with complaints of cervical pain or headache may receive appropriate psychological attention so as to reduce the chances of their symptoms escalating to a full-blown chronic pain syndrome. Patients afforded timely and appropriate psychological intervention may also be more likely to avoid further physical injury or aggravation of their medical condition.

Conclusion

Traumatic brain injury does not have to be the "silent epidemic" that it has been. Survivors of TBI no longer need to experience their residual loss of cognitive function as a phantom in their lives—invaliding their impairment as well as stealing their dignity and self-respect. An already difficult process of grieving their functional losses and accommodating their medical condition does not need to be exacerbated by denying that a bonafide disorder exists. Survivors of TBI should not have to "go crazy" trying to prove that something is wrong with them. They should not be made to feel that they are "making a big deal out of nothing"—manufacturing or exaggerating

their functional problems when no basis for them exists. Patients with TBI should not be stigmatized with the insinuation that they are faking their difficulties or otherwise malingering.

Clearly, when patients with TBI are responded to in this way by health care professionals, progress in treatment is likely to be hindered. TBI patients—like patients with any medical disorder—are prone to become even more preoccupied and invested in their impairments, when their clinical symptomatology is challenged. The predictable outcome is that everyone loses: patients with TBI are likely to persist in their symptoms, for treatment is not likely to be forthcoming for those not even perceived as having a valid medical disorder. The attending physician is likely to be left with a difficult and uncooperative patient on his/her hands. The patient's family is stuck with a family member who is likely to become increasingly hard to live with. And society loses a once productive citizen, whose impairment might very well have been successfully remediated, to the extent of being returned to substantial gainful employment.

In conclusion, a favorable prognosis is more probable if the patient with TBI is recognized early on, ideally beginning with the attending physician, in consultation as necessary with a specialist in neuropsychology. Timely and appropriate neuropsychological assessment can confirm the TBI diagnosis, yield reliable identification of cognitive deficits, and give rise to suitable neurotraining strategies targeting the specific damaged brain functions of the TBI patient. The subsequent clinical course for the patient with TBI is thereby more likely to lead to a positive therapeutic outcome.

Acknowledgment

We thank David J. Lam, PhD for his helpful editorial suggestions and critical review of the manuscript.

Achieving Better Outcomes for Hawaii's Children

Continued From Page 617

In exchange for making a commitment to work on outcomes and measuring progress over time, NPR will negotiate with appropriate federal agencies to permit more flexible use of funds at the state level through less restrictive regulations. This helps states make the most of federal dollars by allowing spending outside of narrowly defined categories. State agencies, working hand in hand with communities, are encouraged to disperse federal funds so that they can address specific local needs, priorities and support tailor-made solutions to community problems.

The National Performance Review Board is impressed with the broad-based efforts in Hawaii to define important outcomes, particularly with respect to children. The Office of the Governor has been in discussions with Vice President Gore's Office about formalizing an initial partnership agreement with NPR that will focus attention on early childhood outcomes. The Good Begin-

nings Alliance, a private, non-profit organization with statutory responsibility for coordinating improvements to the early childhood system, will play a major role in advancing the terms of this agreement. By working with public and private agencies as well as local Good Beginnings Councils, the Alliance and its partners will help organize a community-based response to ensuring that young children are safe and living in nurturing environments.

Thus, by achieving more clarity on the important goals we wish to achieve, mobilizing communities and providing greater incentives for collaboration towards achieving these goals, we see opportunities for making a difference in the lives of at-risk children. This three pronged approach gives us hope that maybe we indeed can do more with less.



The House of Representatives State of Hawaii

hereby presents this certificate to

BRAIN INJURY AWARENESS MONTH October 1998

WHEREAS, October 1998, has been designated as BRAIN INJURY AWARENESS MONTH to focus attention on the survivors of traumatic brain injury and the support services that they and their families and caregivers need; and

WHEREAS, BRAIN INJURY AWARENESS MONTH will focus on early identification, appropriate, effective, and intense treatment programs that are cost effective, and training family and volunteers to provide quality care in the community; and

WHEREAS, improvements to the treatment of traumatic brain injury reduces the intensity, magnitude, and length of suffering of survivors, thereby raising the overall level of quality of life; now, therefore,

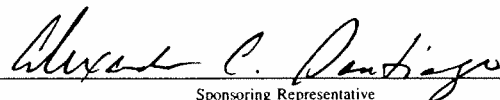
The House of Representatives of the Nineteenth Legislature of the State of Hawaii hereby commends and applauds the Consortium for its commitment to raising public awareness of traumatic brain injury through the designation of October 1998, as BRAIN INJURY AWARENESS MONTH.



The 19th Legislature


Speaker of the House


Chief Clerk


Sponsoring Representative



Life in These Parts

A \$1.17 million grant was awarded to the John Burns School of Medicine and *Ke Ola O Hawaii*, a community based multiprofessional training program. The grant came from the Health Resources & Services Administration of the U.S. Dept. of Health & Human Services and will go for operation of the Statewide Area Health Education Centers (per Senator Inouye)

Straub medic **Lawrence Levin** makes music on the mandolin and guitar with the Irish Hearts Band at O'Toole's downtown.

(Eddie Sherman Mid Week Jul 15)

Three years ago, a mandatory retirement age of 65 forced world renown stroke researcher and neurosurgeon **Bo K Siesjo** at Sweden's University of Lund to come to Queen's Neuroscientific Institute with his research team of seven and \$600,000 in National Institute of Health funds. Medical director of QMC Neuroscience Institute **Marek Mirski** describes Siesjo as "a stroke researcher at the very top of the game...practically a Nobel laureate...He's a giant." Rather than the "10 to 15 drugs in clinical trial for strokes" which will have marginal effect on stroke management, Bo's lab is working on a new generation of nontoxic drugs which would block calcium influx into cells before they die.

Honored, Elected & Appointed

New Straub Chief of Staff: **Roy Adaniya**, pulmonologist, was appointed chief of staff replacing **Robert Flair** who resigned after serving 22 years.

New Straub COO **Gordon Yenokida**, is board certified in internal medicine, pulmonary medicine and critical care medicine and board eligible in allergy and immunology. Gordon was medical director of the Bakersfield California Family Medical Center where he directed a 130 physician primary care system, a 75 member IPA and a specialty network of 245 physicians.

Straub oncologist **Reuben Guerrero**, is the new president of the Philippine Medical Association.

Internist-endocrinologist **Leonard Krystin** has joined the Joslin Center for Diabetes at Straub as medical director.

Miscellany

Q. What do Viagra and Disney World have in common?

A. They both make you wait an hour for a 3 minute ride.

(As told by Pfizer Rep, J. Pang)

During the height of the Middle East crisis, the Israeli President invited the Pope to play a round of golf while they settled the pressing issues. The Pope assembled his Cardinals to find a golfer among them to represent him. But none played golf. Someone suggested that Jack Nicholas was a good Catholic. Why couldn't they make him a cardinal and represent the Pope. So the matter was settled...

Cardinal Nicholas reported back to the Pope after his trip. "Sir I never played better golf, but I lost by 3 strokes to a Rabbi Woods."

(Contributed by another Pfizer rep Mark Mertz)

Waiter to customers: "I'm sorry, but your man-aged care organization required us to substitute the fish for prime rib."

(Funny Times)

Overheard: "It's so cold this winter that I saw a lawyer with his hands in his own pockets."

(Late Night with Conan O'Brien)

Definition of a true music lover: "A man who, if he hears a woman singing in a shower, puts his ear to the key hole."

(General Features)

Letters to the Editor

(Advertiser Apr 28)

"Hawaii is an interesting place to live. To look at the admissions records of Kamehameha Schools, one needs a court order. Yet HMSA may look at one's medical records (which are more likely to contain private information) at its whim at any time and without your knowledge if you have been a HMSA member.

Yes, Hawaii is an interesting place to live."

Walter Young MD

Notable Omission re the Late Maurice S. Sullivan Contributions:

"The Cancer Research Centers of Hawaii also was a recipient of the immense generosity of Sully and his family.

In 1997, the Center received a \$1 million endowment for M.S. Sullivan Family Chair in Cancer Research.

Through this generous donation, we were able to attract **Dr Thomas Vogt** to become first holder of the chair."

Brian F. Issell MD

Director, Cancer Research Center of Hawaii

Medical Tidbits

Q. Tennis player would like to get a little quicker on his feet. He has tried swimming and jogging and endurance is better, but his speed isn't.

A. Plain running doesn't help tennis players or any other athlete who requires rapid stop and start motions. You need to increase strength and stimulate the fast twitch muscle fibers. You can increase your strength and power by doing weights. A good exercise is high speed peddling on a stationary bicycle. The key is rapid revolutions per minute. This would preferentially stimulate the fast twitch muscle fibers.

Dr. Fitness (Chet Nisenberg)

Advertiser Mar 15

Botulism Derivative used as Wrinkle Remover

More than 65,000 people were injected with botulinum toxin type A in 1997 per American Society for Aesthetic Plastic Surgery. Honolulu dermatologist and cosmetic surgeon **Gregory Herbach** has used botox in more than 100 patients in the past two years to reduce crow's feet and frown lines.

Oncology Conference. Thinner is Better

A 73-year-old oriental man with GI sy's had a sub total gastrectomy for Ca in Situ. Moderator **Ken Sumida** asked surgeon **Junji Machi** (originally from Japan) what he thought about the survival of gastric Ca.

Junji was up-beat. In Japan we have good postop results because patients are thin and extensive lymph node dissection is possible. In Hawaii, the Japanese patients are more obese and node dissection is more difficult. So the outcome is intermediate. In Pennsylvania where I trained, the patients were most obese and node dissection was even more difficult.

Oncologist **Kaye Kawahara** was curious: Do all gastric Ca patients in Japan get oral 5 FU?

Junji: Everyone gets 5 FU. Mucosal CA has 90% survival and overall survival is 50%.

Radiologist **Kanemori** was dismal: In the U.S. survival is 10% depending on the stage.

Potpourri

The patient was lying in bed, still groggy from the effects of the recent surgery. The doctor came in, looking very glum.

"I can't be sure what's wrong with you," the doctor said. "I think it's the drinking."

"Okay," the patient said. "Can we get an opinion from a doctor who's sober?"

"I'm so worried," the nervous patient said as the nurse plumped up his pillows.

"Last week, I read about a man who was in the hospital because of heart trouble and he died of malaria."

"Relax," the nurse said, smiling. "This is a first rate hospital. When we treat someone for heart trouble, he dies of heart trouble."

On a stifling hot day, a man fainted in the middle of a busy intersection. As traffic began to pile up in all directions, a woman rushed to help him. As she knelt down to loosen his collar, a man emerged from the crowd, pushed her aside, and said, "It's all right, honey. I've had a course in first aid."

She stood up and watched as he took the man's pulse and prepared to administer artificial respiration. Then she tapped him on the shoulder.

"When you get to the part about calling a doctor," she said, "I'm already here."

Continued on Page 636

News and Notes

Continued from Previous Page

Conference Notes

Acute Exacerbations of Chronic Bronchitis
Lecture by VP **Ronald Grossman**, Prof Medicine, Univ. of Toronto, Ontario, Canada: QMC, Fri am, July 31

Chronic Bronchitis:

Clinical dx: excessive cough, productive, lasting 3 mos to 2 years.
Risk factors: smoking, dust, air pollutants
Cost: 14 x 10⁶ physician visits/yr in U.S.

Classification of Chronic Bronchitis:

Class I

Acute tracheobronchitis
Criteria or Risk Factors:
No underlying disease
Pathogens:
Usually virus
Treatment:
1st: None unless sy's persist
2nd: Amoxicillin or macrolide

Class II

Chronic bronchitis
Criteria or Risk Factors:
FEV₁ > 50%
↑ sputum vol or purulence
Pathogens:
H. Flu
M. Catarrhalis
S. Pneumoniae
Treatment:
1st: Amoxicillin or Cipro (if H. Flu prevalence)
2nd: Cipro, Augmentin or macrolide, tetracycline, or trimet/sulfa

Class III

Chronic bronchitis c complications
Criteria or Risk Factors:
FEV₁ < 50% ↑ sputum vol & purulence; elderly, or comorbidity
Pathogens:
Same as Class II
Also K. pneumoniae
P. aeruginosa, other gm neg
Treatment:
1st: Cipro
2nd: 3rd gen cephalosporin, Augmentin, or Zithromax

Class IV

Chronic bronchial infection
Criteria or Risk Factors:
Same as Class III plus yr long production purulent sputum
Pathogens:
Same as Class III
Treatment:
1st: High dose Cipro or parenteral Cipro;
Imipenem-clastatin or ceftazidime followed by high dose Cipro

Classified Notices

To place a classified notice:

HMA members.—Please send a signed and typewritten ad to the HMA office. As a benefit of membership, HMA members may place a complimentary one-time classified ad in HMJ as space is available.

Nonmembers.—Please call 536-7702 for a nonmember form. Rates are \$1.50 a word with a minimum of 20 words or \$30. Not commissionable. Payment must accompany written order.

Misc.

Mask & Glove Relief.—Sensitivity barrier gel reduces irritation from latex, nitrile, polyethylene face masks & gloves. Free evaluation sample to USA physicians (1 per office). Sahara Cosmetics Oahu 808-735-8081, USA toll free 1-877-280-2020, record complete delivery address.

Vacation Rental.—3 Bedroom vacation home rental on the island of Lanai. Please call (808) 565-7519.

Office Space

Pearl City Business Plaza.—Tenant Improvement Allowances for Long Leases; 680+ sq ft; 24-hr security; free tenant/customer pkg; Gifford Chang 581-8853 DP, 593-9776, 531-3526.

Office Condo for Sale.—Kuakini Medical Plaza, 591 sq. ft., Leasehold-\$185,000. Call William Joor (B), Chaney Brooks & Co. (808) 544-9564.

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The Neuropsychology Department at Hawaii State Hospital

Continued From Page 621

ously underserved populations such as schizophrenics are being developed. This is a particularly exciting area as cognitive deficits have recently been shown to be a rate limiting factor in the recovery of this population.⁶ Finally, the department has started work on the second edition of the neurotraining book that was published in 1981.

The first 25 years has certainly been a productive and innovative one for the Hawaii State Hospital Neuropsychology Department. With our current projects and community support we hope to continue this legacy for the next 25 years and beyond.

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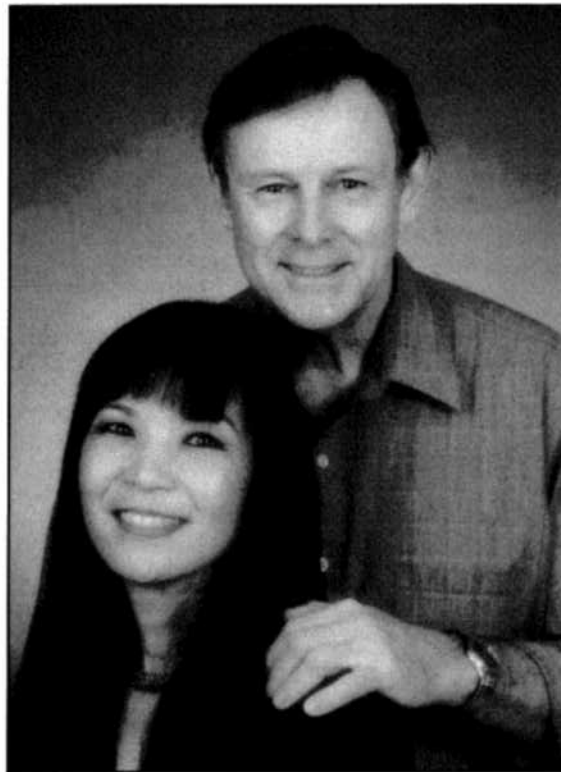
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State Senate[Ⓛ], District I**



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Our forefathers threw out the British to relieve us of a fat, insensitive wasteful government—Nice try, guys.

That wonderful bureaucracy, Health Care Financing Administration, has done it again. To curb abuses in the home health industry, Stark II of the Balanced Budget Act of 1997 requires owners to post a \$50,000 bond for anyone who supplies durable medical equipment, prosthetics or orthotics. In aiming to eliminate the cheating companies that give fake addresses, provide false billing, and fail to provide services, HCFA has gone overboard. HCFA defines cataract eye glasses as durable medical equipment, so as it stands right now, any optical shop providing for Medicare patients after eye surgery will have to post a \$50,000 bond. You know they are off base when even doctor-hating Pete Stark has said that HCFA is wrong.

Don't be first. Don't be last. Never volunteer. (Motto USMC)

When no doctor answered the request over the cabin address system, the flight attendant found me. I was asked to evaluate an exhausted, overweight, sick, male tourist returning to Chicago. He admitted to gorging and boozing at a Kaaanapali luau before departing for the airport, and the captain was considering an emergency landing in Denver. After examining the man, I did not recommend an emergency landing, and United Air Lines in a gesture of gratitude for saving them big \$\$\$, sent me.....a putter (and I don't play golf). The next time you are high in that huge kerosene queen of the skies, you might be called to render first aid to a passenger in distress. Previously, airlines provided a very modest medical kit, but now American Airlines expects to have defibrillators installed on all domestic and international flights. United and Delta are expected to follow suit this summer. Also, they plan to install expanded kits containing medications to treat heart attacks, diabetes, asthma, and allergic reactions. Defibrillators are not required by FAA regulations, but the Feds are reviewing their standards. Congress recently passed legislation that protects airlines and individuals from liability in passenger medical emergencies, and President Clinton signed the law.

Exceptions prove the rule, and wreck the budget.

Who should pay for *Viagra*? Federal health officials have been notifying states their Medicaid programs must pay for *Viagra*, but announced that policy may be discontinued if it becomes evident that the drug is being abused. Abused?? Who would decide, Martha Stewart, Hugh Hefner, Dr Ruth, Billy Graham, Dear Abby, or perhaps the *Viagra* poster boy in the Oval office? *Pfizer Inc.*'s new impotence drug has a retail price of \$10/pill, and some insurers, such as *Kaiser Permanente* in Oakland and *Aetna/U.S. Healthcare* won't cover the drug because of cost. Kaiser estimated an expense of \$100 million a year if it covered *Viagra*. Two other major health insurers *Prudential Ins. Co of America* and *Humana Inc.*, have decided not to pay either, but they are citing concerns over risks, claiming that they were not assured of the drug's long term safety. As of mid-June, the FDA had received about 30 reports of men dying after taking *Viagra*, but many of these were elderly and had known serious health problems. Since the drug became available in April, about 2 million men have used the drug. Medical industry analysts have said the real concern is cost not safety, but since managed care is the prime example of what is wrong with health care, they fear denial on the basis of cost.

Teamwork is essential. It allows you to blame someone else.

Item - The recent AMA House of Delegates meeting in Chicago brought forth an anguished cry from around the country over the planned evaluation and management (E&M) codes that HCFA is intending for Medicare documentation. The truth is that organized medicine helped create this monster, but supposedly did not recognize what would ultimately arrive. HCFA has delayed implementation for the present, but eventually the bean-counters will force this upon us. In fact, the ophthalmology codes were well organized and structured, and found to be acceptable. Sadly, the other specialty organizations failed to similarly prepare, and got the "garbage in - garbage out" result.

ITEM - Regarding the *Sunbeam* fiasco, the House turned up the heat on the Trustees, but could get few answers on monetary damages, not for lack of candor, but because so much is hanging in legal limbo. Suffice to say, there are many bills yet to pay, big time.

ITEM - E. Ratcliffe Anderson MD (he wants to be called Andy, not Ratty) the new executive vice-president (CEO) was introduced, and gave a rousing speech. He has the daunting task of restoring confidence and trust in the leadership.

ITEM - The next interim House of Delegates meeting will be in Honolulu in December at the Hilton, so plan to attend at least one session and observe this most democratic of all medical assemblies. Would that our AAO Council were similarly empowered!

The art of medicine is to amuse the patient until nature cures the disease.

How many of your patients are into alternative therapy for medical problems? A study in the journal of the American Academy of Pediatrics revealed that 51% of families (those without cancer) indulged in alternative therapies, while 65% of families with cancer used alternative treatments. Specifically, the healing practices used were therapeutic massage, acupuncture, imagery, energy healing, prayer and medicinal herbs. Putting it more simply, at least half of your patients are not content with your therapeutic prescription, but resort to addition or substitution to obtain the desired end. Personal experience here on Maui is that some of my "organic" patients first used mother's milk or herbal tea before seeking help for a red eye.

If you want a friend in this life, get a dog.

That warm and fuzzy, lovable Hawaii Blues organization (HMSA), has decided to send questionnaires to our patients asking them to evaluate the care received from their doctors. Some patients have been surprised and confused by the forms, and wonder if the doctor is being investigated for misbehavior or malpractice. The pretense is to "award" good physicians, but of course, the opposite effect is perhaps just as likely. That is, doctors could be reprimanded by HMSA for negative reports when patients perceive an unnecessary delay, or too short a visit, or the doctor was uncommunicative, or whatever. Let us balance this interrogative. Why not evaluate the health plan as was done by the MEDSTAT Group in New England. 81,000 patients and 40,000 physicians across the country were asked to rate their satisfaction with various health plans. In a similar action, in February the Department of Health and Human Services surveyed 130,000 Medicare beneficiaries asking them to rate their managed-care plan on a scale of 1 to 10, and later they will survey fee-for-service plans. Its is time! Let's find out if you like your health plan with a series of pointed questions about delays, coding systems, telephone responses, downgrading claims, appeal mechanisms, etc.


The C students run the world.

The Clinton administration caused a flurry of excitement when it filed suit against *United Parcel Service* for refusing to hire drivers who have "monocular" vision. The Americans With Disabilities Act (ADA) awarded damages to a former Omaha policeman who had lost sight in one eye, and suffered peripheral loss in the other. The police chief refused to rehire the man and the ADA awarded \$200,000. In another case the employer prevailed in court when it dismissed a forklift truck driver who was blind in one eye, and had three forklift accidents. As every eye surgeon knows, there is a great difference between the "blindness" of 20/200 visual acuity and absence of an eye. Moreover, occupational risks such as construction labor or police work, cannot be compared to a maritime officer or taxi driver, yet that is what the ADA and the EEOC rules imply. The issue demands a careful professional opinion and not an arbitrary statutory rule, and the law should be so structured.

Addenda

- ❖ Oskar Wilde's father was an ophthalmologist and in 1853 was the first appointed ophthalmologist to Queen Victoria.
- ❖ Moderation is a fatal thing. Nothing succeeds like excess. (*Oscar Wilde*)
- ❖ The average human eye takes 14 years to grow to its maximum size.
- ❖ Medical fact: pigs can catch swine flu from humans.
- ❖ Never kick a fresh turd on a hot day. (*Harry S. Truman*)

Aloha and keep the faith—rts ■



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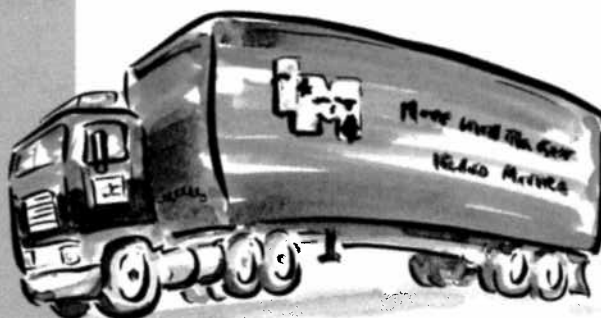
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