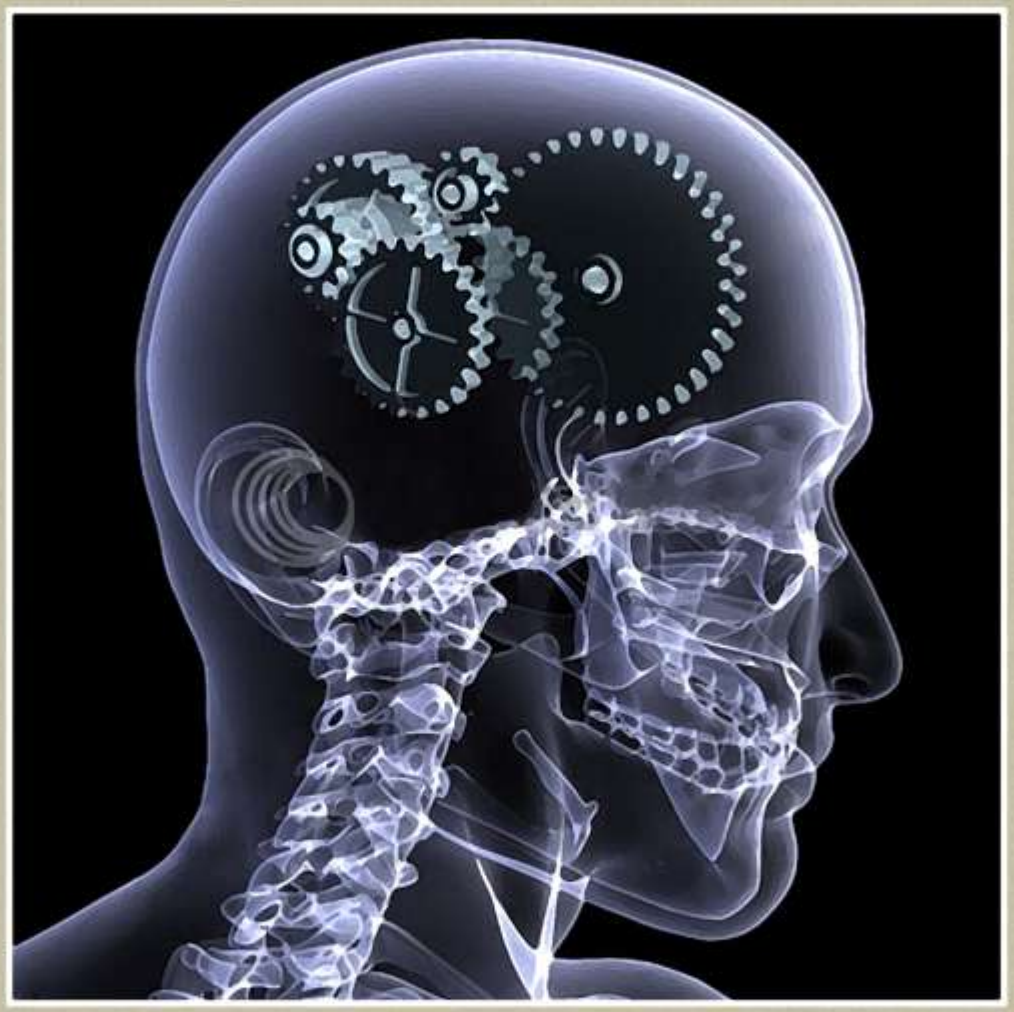
Maryland

TBI Advisory Board



2011

Annual Report

November 29, 2011

c/o Mental Hygiene Administration
Spring Grove Hospital/ Dix Building
55 Wade Avenue
Catonsville, MD 21228

The Honorable Martin O'Malley, Governor
State House - 100 State Circle
Annapolis, Maryland 21401 - 1925

Thomas V. Mike Miller, Jr., President of Senate
State House, H-107
Annapolis, Maryland 21401 - 1991

Michael Erin Busch, Speaker of House of Delegates
State House, H-101
Annapolis, Maryland 21401 – 1991

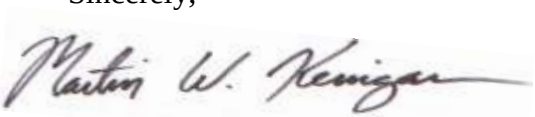
Dear Governor O'Malley, Senator Miller, and Delegate Busch:

The Maryland State Traumatic Brain Injury Advisory Board is required to issue an annual report to the Governor and the General Assembly by §13-2105(6) of the Health General Article in accordance with § 2-1246 of the State Government Article. The enclosed report summarizes the actions of the Advisory Board and contains recommendations pertaining to the unmet needs of Marylanders with brain injury and appropriate services to best meet those needs. The State of Maryland has an opportunity to address the long-term care and medical care needs of individuals with brain injury as it implements the provisions of the Affordable Care Act and reforms Maryland's long term care system.

The enclosed report contains five recommendations which the Board believes represent the needs of individuals with brain injuries, their families, and significant others living in the state of Maryland. It is critical that the State of Maryland implement these recommendations, which are essential to improving the lives of individuals with brain injuries and their families living in the state. The recommended actions will lead to better outcomes for individuals with brain injuries, and will ultimately save the state of Maryland money

If you have any questions or require additional information, please contact me through Stefani O'Dea, Chief of Long Term Care, Maryland Mental Hygiene Administration at (410) 402- 8476, or by email to sodea@dhmh.state.md.us

Sincerely,



Martin Kerrigan, Chair

Table of Contents

Executive Summary:

There were a total of 48,372 emergency department visits, hospitalizations and deaths for TBI in 2008/09, an increase of 53% over 2004/05.

The Maryland Traumatic Brain Injury Advisory Board has five recommended actions for the State of Maryland in the coming year. Though there are many issues affecting Marylanders living with brain injury and their families and caregivers, the Advisory Board feels that these five recommendations are crucial to the continued improvements in successful outcomes for residents of Maryland living with brain injury.

Recommendations

1. Fund brain injury resource coordination (case management) services statewide;
2. Establish the State of Maryland Brain Injury Dedicated Trust Fund;
3. Modify Eligibility for the Home and Community-Based Services Waiver for Adults with Traumatic Brain Injury to include: (a) change in the definition of traumatic brain injury, and (b) inclusion of individuals in private nursing facilities in program eligibility;
4. Develop a continuum of care to meet the complex neurobehavioral and medical needs of individuals with brain injuries; and
5. Properly identify, place, and provide services for students with Traumatic Brain Injury (TBI).

Overview:

The Maryland TBI Advisory Board (The Board) feels it is imperative to address the needs of all Marylanders affected by brain injuries. Brain Injuries can be caused by traumatic events such as motor vehicle accidents or falls or acquired as a result of a medical condition or problem such as lack of oxygen to the brain (anoxia) or brain tumors. Regardless of the cause, the impact of a brain injury can be devastating. The severity of brain injury is measured from mild to moderate to severe. The result of a brain injury can be chronic, debilitating and progressive in nature. The Brain Injury Association of America asserts in their March 2009 position paper, *Conceptualizing Brain Injury as a Chronic Disease*, that traumatic brain injury impacts multiple systems, is a disease causative and a disease accelerative, and should be paid for and managed on par with other diseases.

Individuals with brain injury, especially those with moderate to severe brain injury, experience severe and long lasting effects. They are at risk of a wide array of social and health related problems such as unemployment, substance abuse, social isolation, criminal activity, incarceration, suicide, homelessness, co-morbid medical and behavioral health conditions and may ultimately require long-term services and supports to promote the on-going recovery process. This subset of individuals with brain injury is also likely to utilize public healthcare such as that offered through Medicare and State Medicaid programs.

Nationally, TBI (during 1st year post injury) is associated with an estimated $642 million in lost wages, $96 million in lost income taxes and US dollars, $353 million in increased public assistance. (Source: D. Burnhill, Maryland Division of Rehabilitation Services ABI Initiative)

The potential high cost of care and services for individuals utilizing public healthcare systems presents the State of Maryland with an opportunity to implement programs and opportunities that will promote recovery and reduce the long term financial burden on public programs. Thirty years ago, only 50% of all people who sustained a brain injury survived. That number has now been increased to 78%. Trauma centers continue to save more individuals with brain injury, and advances in emergency medicine, improvements in diagnostic procedures, monitoring devices, and treatment methods have increased the survival rates from catastrophic injuries including brain injuries.

Maryland has a fragmented system of high quality services and programs. Valuable resources exist but the complexity of the system and the lack of coordination between public and private programs often precludes Marylanders from receiving the optimum care and support to promote recovery from brain injury. Maryland's existing community service system is complex and difficult to navigate**.** People with brain injuries may receive services from programs designed for other targeted populations with limited or no specialized services for their particular injury and resulting disability. Maryland state agencies providing services to individuals with disabilities do not currently disaggregate data to track individuals with brain injury, making it difficult to measure the effectiveness of the programs for this population or to plan for its growing needs.

Maryland also lacks service utilization and cost data for this population further challenging efforts related to planning and service capacity.

The lifetime cost of TBI is $39 billion for fatalities; $17 billion for hospitalization and $4 billion for non-hospital care. (Source: Finkelstein, Corso, Miller, et al. Incidence and Economic Burden of Injuries in the United States. Oxford Press, 2006.)

Data:

MARYLAND

In Maryland, an estimated 61,970 *individuals* are living with a long-term disability as a result of a brain injury, based on the Center for Disease Control (CDC) prevalence estimate of 1.1% applied to the state's 2008 population.

The Maryland Department of Health and Mental Hygiene, Family Health Administration, collects data on TBI-related deaths, hospitalizations, and emergency department (ED) visits. The most current data analysis available is for the years 2004-2008/09.

The available figures describe an escalating public health issue.

- During 2008/2009, nearly 7,000 Maryland residents were discharged from a Maryland hospital after inpatient treatment for TBI - an average of 19-20 discharges daily. The number of annual TBI-related discharges in 2009 had increased by about 5% over the number in 2005.
- Maryland residents have increasingly sought treatment for TBI in the state's Emergency Departments. During 2009, 40,725 TBI-related visits were recorded. This number is dramatically greater (68%) than the 24,312 observed just 4 years earlier (2005).

UNITED STATES

Every 19 seconds in the United States a brain injury occurs.

A CDC funded study reported in December 2008 found that a conservatively estimated 1.1% of the U.S. civilian population or 3.17 million people were living with a long-term disability from TBI at the beginning of 2005.

According to the most current data from the CDC, each year there are an estimated 1.7 million people in the United States that sustain a TBI including:

- 51,538 deaths
- 275,146 non-fatal hospitalizations (not resulting in death)
- 1,364,797 ED visits not resulting in hospitalizations or death
- Total 1,691,481 estimated annual average number of emergency department visits, hospitalizations and deaths from TBI

TBIs comprise 4.8% of all injuries seen in emergency department visits and 15.1% of all hospitalizations. Of all the injury related deaths in the United States, TBI was a contributing factor 30.5% of the time.

During the period 2002 through 2006:

- TBI-related emergency department visits increased by 14.4%,
- Hospitalizations increased by 19.5%

Recommendations:

RECOMMENDATION # 1

Fund Brain Injury Resource Coordination (Case Management) Services Statewide

FACT: *In 2009, there were 6,946 individuals with TBI admitted to hospitals and 40,765 individuals diagnosed with a TBI, treated and released from emergency rooms across the State of Maryland, an increase of 68% over the past 4 years.*

JUSTIFICATION:
For many individuals who experience a brain injury, the effects of the injury can be severe and long lasting. Individuals with brain injury, especially those with moderate to severe injuries, are at risk of a wide array of social and health related problems such as substance abuse, social isolation, criminal activity, suicide, homelessness, and co-morbid medical and behavioral health conditions. Rates of unemployment following brain injury range from 60-90%. Available literature suggests that resource facilitation (coordination) has a positive and significant impact on employment and community integration for individuals with brain injury (Journal of Head Trauma Rehabilitation, 2010).

Brain injury can cause long-term catastrophic changes to an individual and their family. Many individuals who sustain a brain injury are unable to navigate Maryland's complex human service system in order to access the services they need to maximize their function and potential to return to work/school/family role. Additionally, human service professionals are not familiar with brain injury and the type of specialized rehabilitation this population needs. Access to trained case managers/resource coordinators who can assess changes in an individual's level of functioning, navigate individuals through the service delivery system as their needs change, and advocate for individuals within the various service settings is critical (Brain Injury Professional Journal 2010, Vol. 7/ issue 4).

The Mental Hygiene Administration (MHA) utilized federal grant funding in 2003-2008 to establish a model of Brain Injury Resource Coordination in Maryland. **However, due to the reduction in federal grant money and lack of State funding, only 5 out of Maryland's 24 jurisdictions currently have access to Brain Injury Resource Coordination services**. Program outcomes include improved access to medical and behavioral health services and supports, increase in employment and income, improvement in housing, access to needed transportation, and assistance with legal issues. The guiding principals of MHA's Brain Injury Resource Coordination model are person centered planning and interagency coordination. Current Resource Coordination efforts are focused on individuals who are transitioning out of long term care facilities and individuals who are at risk of entering a long term care facility (diversion and deinstitutionalization). See Appendix D for program outcomes.

RECOMMENDED ACTION:

- Expand Resource Coordination statewide and explore opportunities through the Affordable Care Act, such as 1915(i) option or targeted case management, to maximize federal matching funds. The estimated cost to the state, if federal funding is maximized, is $600,000.

RECOMMENDATION # 2

Establish the State of Maryland Dedicated Brain Injury Trust Fund

FACT: *In 2012 more than 40,000 Marylanders will sustain a life-altering Traumatic Brain Injury (TBI) requiring an Emergency Department and/ or Hospital visit. More than 7,000 people will be hospitalized. In addition, many wounded warriors receiving treatment in Maryland for TBI will choose to remain here once separated from the armed forces.*

JUSTIFICATION:

These staggering statistics put a large burden on an already revenue-strapped state budget. To help alleviate that situation, the Maryland Traumatic Brain Injury Advisory Board to the Governor (The Board) urges the immediate creation of a State Dedicated Brain Injury Trust Fund (The Trust Fund) to provide services that are urgently needed now for the increasing numbers of our residents who have, or will have, a TBI and who have exhausted all other resources. The need for The Trust Fund has been demonstrated, the revenue funding sources are available, and grassroots support is strong; **Maryland cannot afford to wait any longer to create The Trust Fund; its creation will save the state money by minimizing Maryland's rising financial burden with respect to TBI.**

Based on review of the other 21 state TBI Trust Funds (with 7 additional states actively considering a similar fund), the Trust Fund Committee of The Board, with input from members of the Legislature, the Brain Injury Association of Maryland, the Maryland Brain Injury Providers Council, and Brain Injury Support Groups throughout the state, developed legislation for creation of The Trust Fund. In lieu of the Governor submitting the TBI Trust Fund as an Administrative Bill with $2.5 million annual funding, the Board recommends the main source of funding be an additional charge to persons fined under Maryland Motor Vehicle Laws. In addition to this main funding source, the Board recommends donations could be accepted from the public and business communities.

Some of the urgently needed services/supports include: cognitive and physical rehabilitation, neuropsychological evaluations, specialized transitional services, nursing home and institutional diversion services, neurobehavioral health services, individual case management, assistive technology assessment and equipment, community re-entry services, housing/residential needs, transportation services, and support of prevention and awareness programs. These critical services are essential to the rehabilitation and recovery of individuals with a brain injury, allowing them to reach their full potential and return as productive members of our communities as well as preventing and minimizing the impact of future brain injuries.

RECOMMENDED ACTION:

- The Board strongly recommends that the Governor submit the TBI Trust fund as an administrative bill in the 2012 legislative session. However, if the Governor does not agree, the Board suggests funding the Trust fund through an additional charge to persons fined under motor vehicle laws. The Board looks forward to working with the Governor and legislators with these continuing collaborative efforts to secure the creation of The Trust Fund.

RECOMMENDATION # 3

Modify eligibility for the Home and Community-Based Waiver for Individuals with Traumatic Brain Injury.

- **Implement the new proposed definition of brain injury (see below).**
- **Include individuals with brain injury residing in private nursing facilities in the technical eligibility criteria for the program.**

FACT: *On June 22, 2009, the Center for Medicare and Medicaid Services (CMS) published in the Federal Register an advanced notice of proposed rules making two major changes to the HCBS Waiver program. One is to offer States the option to develop waivers based on need as opposed to waivers based on categorical or diagnostic conditions. CMS noted that many States have used a HCBS waiver as a component of their Olmstead Plan compliance to provide options for community services and supports in lieu of institutionalization. CMS has proposed this rule to remove barriers so that services and supports are based on needs, rather than diagnosis or existing dedicated funding streams.*

JUSTIFICATION:

While the Department of Health and Mental Hygiene (DHMH) has expanded access to the TBI waiver via Maryland's Money Follows the Individual policy, the TBI waiver remains closed to individuals with non-traumatic brain injuries such as anoxia or brain tumors even if the service needs of the individual mirrors the needs of an individual who sustained a traumatic brain injury such as a closed head injury resulting from a fall or motor vehicle accident. Additionally, the TBI Waiver remains closed to individuals with brain injury residing in private nursing facilities, yet over 2000 Marylanders with TBI currently reside, and receive long term care services, in private nursing facilities in Maryland according to results from a study conducted by The Hilltop Institute at the University of Maryland, Baltimore Campus (UMBC). The study also found that the longer a person with TBI stays in a nursing facility, the higher the Medicaid costs over time. Additionally, the average costs to Medicaid for a long stay (over 300 days) is $101,064 for Medicaid beneficiaries with brain injury and a few individuals have costs as high as $423,006 annually.

DHMH created a TBI Waiver program Advisory committee and charged that committee with creating and proposing an alternate definition of brain injury that is inclusive of non-traumatic brain injuries. The advisory committee proposes the following definition:
An insult to the brain caused by an external or internal mechanism that occurs after birth and is not related to a congenital or degenerative disease, which results in cognitive, physical, behavioral, or emotional impairment that is documented in the medical record.

RECOMMENDED ACTIONS:

- Modify the definition of brain injury found in the TBI Waiver Program regulations (COMAR 10.09.46).
- Require the Department of Health and Mental Hygiene to screen Money Follows the Person participants for a history of brain injury and report to the TBI Advisory Board the number of individuals with brain injury who transition from nursing facilities to available waiver programs, the service plan needs of the population, the number of denials to Living at Home and Older Adults Waiver programs, and the rate of reinstitutionalization.

RECOMMENDATION # 4

Develop a continuum of care to meet the complex neurobehavioral and medical needs of individuals with brain injuries.

FACT: *Maryland does not have a continuum of care to meet the complex neurobehavioral needs of individuals with brain injuries. In 2008/9, Maryland reported a total of 48,372 traumatic brain injuries. The literature suggests that up to ten percent (10%) of individuals who sustain a brain injury require long term, intensive supports because of neurobehavioral issues (BIAA/McMorrow). Therefore; 1,451 to 4,837 Marylander's require some degree of neurobehavioral services that do not exist in our state. The lack of appropriate long term intensive services increases costs for Maryland Medicaid and Maryland Department of Corrections because the unmet needs result in inappropriate state paid services and incarceration.*

JUSTIFICATION:

While awareness of the cognitive and physical changes that occur after a brain injury and the subsequent rehabilitative needs are becoming increasingly familiar to the public and to healthcare providers, the behavioral changes and challenges remain an under-recognized and under-treated issue. Yet behavioral deficits are a major impediment to the brain injury recovery process and impact an individual's ability to engage in rehabilitation, return home to family, return to work, maintain personal safety, and adapt to societal expectations. Common behavioral challenges include verbal and physical aggression, agitation, limited self-awareness, altered sexual functioning, impulsivity and social disinhibition *(NASHIA, 2006)*. The literature suggests that agitation and aggression develops in 20-49% of children who sustain a TBI and 25-33% of adults who sustain a TBI, usually within one year of sustaining the injury *(Kim et. al. 2007 & Baguley, Cooper, Flemingham 2006)*.

While the prevalence of significant, chronic neurobehavioral disorders is low, the acuity of the problem is high. Individuals with brain injury who experience significant neurobehavioral and neuropsychiatric challenges require specialized and integrated treatment programs designed for those with brain injury that do not exist in Maryland. These programs are essential to ensuring the safety of this population as well as the communities they live in. Those who reach this level of need have almost always depleted any personal resources they or their family may have and are often reliant upon publicly funded programs, or are incarcerated. Unfortunately, these programs are not equipped to deal with complex neurobehavioral issues that are also often coupled with co-occurring mental health and substance abuse disorders. States have experienced class action lawsuits on behalf of individuals with brain injury who are institutionalized in nursing facilities or state psychiatric hospitals because of the lack of available resources in the community. The CDC reports that as much as 87% of the prison population in the U.S. has sustained at least one TBI. Individuals get "stuck" in emergency departments and community hospitals because appropriate and safe discharge options are not available. When appropriate services are not available within a state, many states (including Maryland) resort to paying for specialized services out of state ranging in price from $800-$1200.00 per day for the few who manage to access those services.

RECOMMENDED ACTION:

- Require the Department of Health and Mental Hygiene to obtain stakeholder input, including service consumers, and develop a plan to meet the complex neurobehavioral

needs, both for inpatient and outpatient treatment options, so Marylander's can receive needed services in-state.

- The plan should include expansion of Maryland's neuro-rehabilitation programs to address the neurobehavioral needs of individuals with brain injury and expansion of the TBI Waiver program as a step down from the inpatient programs.
- The plan should require all Home and Community-Based Waiver services include neurobehavioral treatment options so that individuals with brain injury who utilize waivers can remain in the community and not be forced into institutions.

- Require the Department of Health and Mental Hygiene to consider the needs of individuals with brain injury as they pursue Medicaid "rebalancing" initiatives that embrace consumer choice and care in the home or community.
    - Explore how The Affordable Care Act can support Maryland's efforts to rebalance long-term services and supports for people with brain injuries including 1915(i), Money Follows the Person Demonstration, Nursing Home Diversion Programs, Health Homes, and Aging and Disability Resource Centers.
    - Include brain injury, as defined in recommendation #3, in the list of chronic conditions eligible for Health Homes for Individuals with Chronic Conditions, under The Affordable Care Act.

RECOMMENDATION # 5

Appropriately identify and provide services for children and youth with brain injuries.

FACT: *"In Maryland, in 2009 alone there were 1,112 documented hospital admissions from individuals aged birth – 21 that received the diagnosis of traumatic brain injury (TBI). The total for the years 2005 – 2009 is 6,571. At the same time there are only 306 students identified, statewide in both public and non-public educational settings, as having TBI."*

JUSTIFICATION:

There is a significant discrepancy between medical data and data from the Maryland State Department of Education (MSDE) regarding the number of school aged individuals that incur a TBI every year compared to the number of students currently identified as having a TBI. Without proper identification, students with a diagnosis of TBI cannot be served appropriately and therefore their ability to be successful in school as well as in their transition to adulthood is compromised. As a result, the lack of proper identification increases the likelihood of this population of children consuming valuable State resources both now and in the future, as adults. MSDE and the Brain Injury Association of Maryland (BIAM) have collaborated on several initiatives including concussion awareness and the provision of training in several counties related to TBI. In addition, the MSDE has provided grant funds to support local school systems' attendance at the annual BIAM conference.

RECOMMENDED ACTION:

- Require MSDE to increase public and professional awareness of brain injury in children and youth through the following:
    - Identify students with brain injuries and provide strategies and resources to support them.
    - Target key stakeholders in the diagnosis process, including parents/guardians as well as school staff such as school psychologists, school nurses, guidance counselors, general and special educators, pupil personnel workers, athletic directors, trainers and coaches.
    - Include a question regarding TBI or any form of "head trauma" on screening paperwork, Individual Education Plan team meetings and in response to intervention (RTI) meetings.
    - Provide training opportunities to families, students, and school personnel related to all degrees of brain injury.
    - Require mandatory parental notification and education when a student hits their head or has any possible head trauma in any school setting.
    - Increase the awareness of "moderate" and "mild" TBI including concussions and their prevalence in school-aged children, as well as improve dissemination of concussion awareness trainings to athletic departments, coaches, and trainers.
    - Create a "Brain Injury Specialist" position to be piloted in a specific region. This position would include providing technical assistance, support, and trainings to local education agencies (LEAs).
    - Update the existing brain injury education module and disseminate the resource to LEAs.

History of the Board:

The Maryland Traumatic Brain Injury (TBI) Advisory Board was established in 2005 by House Bill 309 (Article Health General Section 13-2101 through 13-21-06) and was given the charge of advising the state legislature and the governor on the impact of brain injury on the state of Maryland. The Board is responsible for writing an annual report with recommendations regarding needed services and supports for individuals living with brain injury as well as prevention efforts. The board consists of experts in the field of brain injury, professionals who work with individuals with brain injuries, representatives from state agencies, advocacy organizations, individuals with brain injury and family members and caregivers of individuals with brain injuries. A list of Advisory Board members is attached as Appendix A.

The Board has established one standing committee, SAFE (Survivors and Families Empowered). The SAFE committee was created as a place for the members of the Maryland Traumatic Brain Injury Advisory Board who are living with a brain injury or who are family members of individuals with brain injuries, to feel support and to foster a sense of unity in board matters.

Prior to each Advisory Board, the SAFE Committee meets for an hour to review issues and allows survivors and family members to work together to be able to "speak" for individuals and families living with brain injury. One of the main goals of the committee is to ensure that individuals with brain injury and family members are active participants in Advisory Board meetings and activities. The "meetings before the meeting" allow members to clarify any misunderstandings as well as provide members the opportunity to join together and discuss issues with which they are living as survivors of brain injury and as family members. It is this sense of camaraderie that is one of the most valued aspects of the SAFE subcommittee. The Board is truly fortunate to have the SAFE committee and Maryland is fortunate to have this consumer led Advisory Board.

Maryland Accomplishments:

Since the establishment of the Maryland TBI Advisory Board progress has been made to improve the system of services and supports available to Marylanders with brain injury. Through active participation in a multitude of committees, workgroups, and task forces, the Board has been able to promote public and private collaborations. Some of the Board's successes include:

- On May 19, 2011, Governor Martin O'Malley signed a concussion bill mandating the implementation of concussion awareness programs throughout the state and requiring student athletes who demonstrate signs of a concussion to be removed from practice or play. Additionally, the injured student athlete may only return to play after receiving clearance by a licensed health care professional trained in the diagnosis and treatment of concussions. The law will help to reduce the severity of some brain injuries, provide individuals access appropriate medical services sooner, and will have a profound impact on the brain injury community by increasing awareness. This bill was a collaborative effort between: Lifebridge Health/Sinai Hospital; National Children's Hospital; Brain Injury Association of Maryland and the NFL.

- Initiated in July 2006, the goal of the Governor's Employment Initiative for People with Acquired Brain Injuries, administered by the Maryland Division of Rehabilitation

Services, is to assure the employment success of individuals with acquired brain injuries who require long-term ongoing support services through the provision of intensive vocational rehabilitation services. To date 180 individuals have been identified for the program with an active census of 135; the rehabilitation rate is an impressive 77%; the average wage is $10.70 per hour and the average hours employed per week is 24.

- Maryland families and the provider community continually advised the Board about the lack of insurance coverage for medical and rehabilitative services for both acute and long-term care needs. Responding to these concerns, the Board requested that the Maryland Insurance Administration (MIA) conduct a market analysis to identify patterns and practices of insurers, health maintenance organizations and non-profit health service plans. While the MIA survey did not find a pattern of inappropriate denials of care for this population, it did uncover problems with prompt payment to providers of rehabilitation services. It also underscored the need for carriers and providers to work together to assist families coping with brain injury to understand coverage limitations and to explore other options for coverage. The Board thanks Delegate Kumar Barve for his responsiveness to the TBI Advisory Board and his leadership in this initiative.

- Board members have successfully advocated against the repeal of Maryland's motorcycle helmet law. The Board is committed to brain injury prevention and minimizing the severity of injury after an accident and wearing motorcycle helmets has been proven to prevent or minimize the severity of injury. Louisiana's all-rider helmet repeal in 1999 caused motorcycle deaths to double (*National Highway Traffic Safety Administratio*n *[NHTSA] 2003*). This resulted in reinstatement of Louisiana's helmet law in 2004. Texas repealed its all-rider helmet law in 1997. The number of motorcycle fatalities increased by 31 percent. Arkansas also repealed its all-rider helmet law in 1997 and experienced a 21 percent increase in motorcycle deaths (NHTSA 2000). An evaluation of data collected for the Florida Department of Transportation demonstrates that since its all helmet law repeal in 2000, motorcycle deaths have risen almost 42 percent (NHTSA).

APPENDIX A

Maryland Traumatic Brain Injury Advisory Board Members

Grace Anyadike
Department of Health and Mental Hygiene
Alcohol and Drug Abuse Administration
Catonsville, Maryland

Angela Baldwin-Austin
Representing Individuals with Brain Injury
District Heights, Maryland

Mary Beachley
Maryland Institute for Emergency Medical Services Systems
Baltimore, Maryland

Jan Caughlan
Healthcare for the Homeless
Baltimore, Maryland

Mary Lou Coppinger
Representing Families/Caregivers of Individuals with Brain Injury
Baltimore, Maryland

Sandy Davis
Brain Injury Association of Maryland
Owings Mills, Maryland

Christine Deeley Wood
Representing Families & Caregivers
Montgomery County, Maryland

Laurie Elinoff
Representing Individuals with Brain Injury
Millersville, Maryland

Janet Furman
Department of Health and Mental Hygiene
Developmental Disabilities Administration
Baltimore, Maryland

Pamela Harman
Veteran's Administration
Washington D.C.

Paul Hartman
Representing Individuals with Brain Injury
Frederick, Maryland

Renata Henry
Representing Maryland Department of Health and Mental Hygiene
Baltimore, Maryland

Linda Hutchinson- Troyer
Brain Injury Association of Maryland
Baltimore, Maryland

Teresa Ingle
Representing Individuals with Brain Injury
Annapolis, Maryland

Martin Kerrigan
Representing Individuals with Brain Injury
Columbia, Maryland

Terry Kirtz
Representing Families/Caregivers of Individuals with Brain Injury
Washington Grove, Maryland

Vassilis Koliatsos, MD
The Neuropsychiatry Program at Sheppard Pratt
Baltimore, Maryland

Ileana Luciani
Maryland Disability Law Center
Baltimore, Maryland

Jo Anne Materkowski
Maryland State Department of Education
Baltimore, Maryland

Karen McQuillan
R Adams Cowley Shock Trauma Center
Baltimore, Maryland

Stefani O'Dea
Department of Health and Mental Hygiene
Mental Hygiene Administration
Catonsville, Maryland

Bryan Pugh
Brain Injury Association of Maryland
Baltimore, Maryland

Major Randall B. Russin
Representing Maryland Law Enforcement
Baltimore County Police Department
Towson, Maryland

Theresa Thompson
Department of Health and Mental Hygiene
Office for Genetics and Children with Special Healthcare Needs
Baltimore, Maryland

George Thorpe
Family Health Administration
Department of Health and Mental Hygiene
Baltimore, Maryland

Diane Triplett
Brain Injury Association of Maryland
Baltimore, Maryland

Adrienne Walker-Pittman
Representing Individuals with Brain Injury
Baltimore, Maryland

Cari Watrous
Maryland Department of Disabilities
Baltimore, Maryland

Michael Weinreich, PhD
National Institute of Health
Bethesda, Maryland

Sharon West
Maryland State Department of Education
Baltimore, Maryland

Sean Westley
Representing Families/Caregivers of Individuals with Brain Injury
Baltimore, Maryland

Denise White
Department of Health and Mental Hygiene
Baltimore, Maryland

Richard Zeidman
Representing Families/Caregivers of Individuals with Brain Injury
Rockville, Maryland

Staff to the Board
Nikisha Marion
Mental Hygiene Administration
Catonsville, Maryland

Victor Henderson
Maryland Department of Disabilities
Baltimore, Maryland

APPENDIX B

Maryland Data

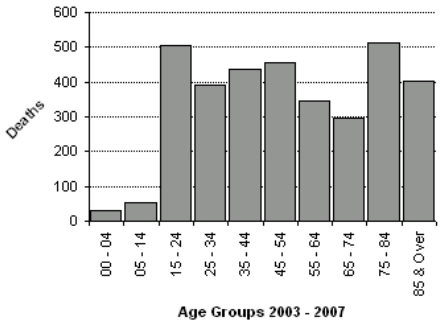
Traumatic Brain Injury (TBI-related) Deaths, Hospitalizations, and Emergency Department Visits – Five Year Experience, 2003 – 2007, Family Health Administration, Maryland Department of Health and Mental Hygiene

See data tables and charts prepared by Family Health Administration on pages 20 to 22.

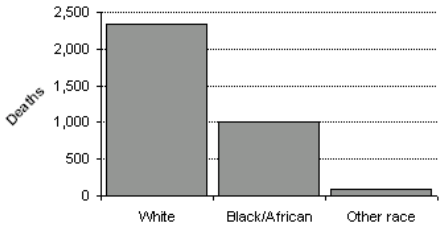
TBI- related Deaths, Maryland Residents, 5-year experience: 2004-2008 inclusive

	Years					
	2004	2005	2006	2007	2008	04-08
No. of Deaths	*667*	*661*	*675*	*730*	*701*	***3,434***
Age of decedents - 2 records did not specify the decedent's age (less than 0.06%)						
00 - 04	XX	XX	XX	XX	XX	***32***
05 - 14	18	7	6	11	10	***52***
15 - 24	103	112	107	104	78	***504***
25 - 34	77	73	79	78	86	***393***
35 - 44	94	86	86	99	72	***437***
45 - 54	88	89	90	84	104	***455***
55 - 64	62	67	79	79	59	***346***
65 - 74	58	61	58	59	61	***297***
75 - 84	90	101	85	117	120	***513***
85 & Over	72	60	75	90	106	***403***
Gender of decedents						
Female	149	152	171	194	202	***868***
Male	518	509	504	536	499	***2,566***
Race of decedents						
White	450	447	449	508	493	***2,347***
Black/African	200	197	213	205	188	***1,003***
Other race	17	17	13	17	20	***84***
Mechanism [or agent] of injury						
Firearm	274	298	295	280	282	***1,429***
Fall	185	193	209	244	246	***1,077***
MV traffic	108	78	95	108	94	***483***
Struck by/against	XX	XX	XX	XX	XX	***32***
Poisoning	XX	XX	XX	XX	XX	***17***
Suffocation	XX	XX	XX	XX	XX	***14***
Drowning	XX	XX	XX	XX	XX	***10***
Other/ unspecified	78	72	67	87	68	***372***

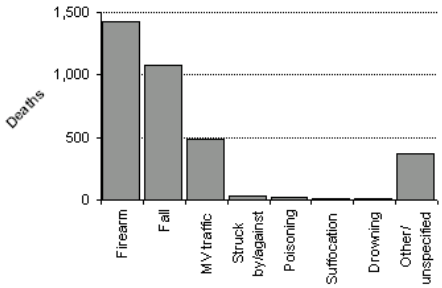
XX = suppressed cell counts to preserve confidentiality



Age Groups 2003 - 2007

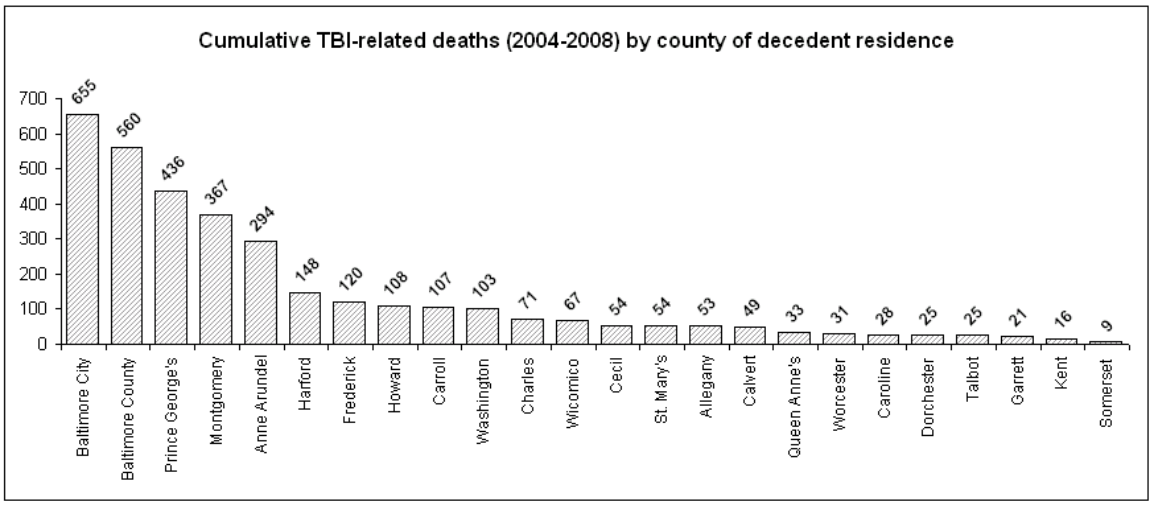


Racial Distinction 2003 - 2007



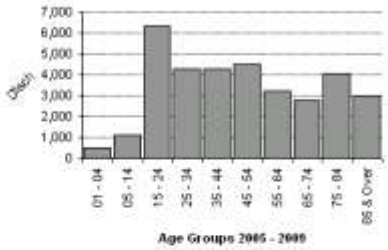
Mech. Of Injury 2003 - 2007

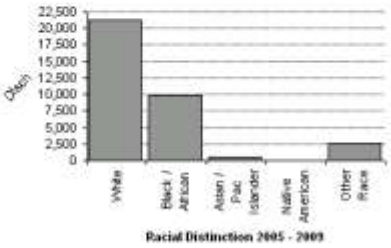
Geography: Decedent's County of Residence

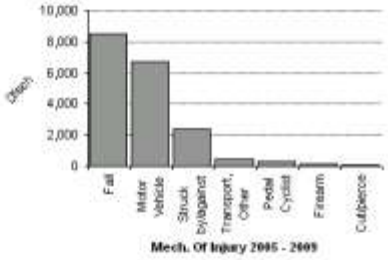


TBI- related Inpatient Hospital Discharges (non-fatal), Maryland Residents/Maryland Hospitals
5-year experience: 2005-2009 inclusive

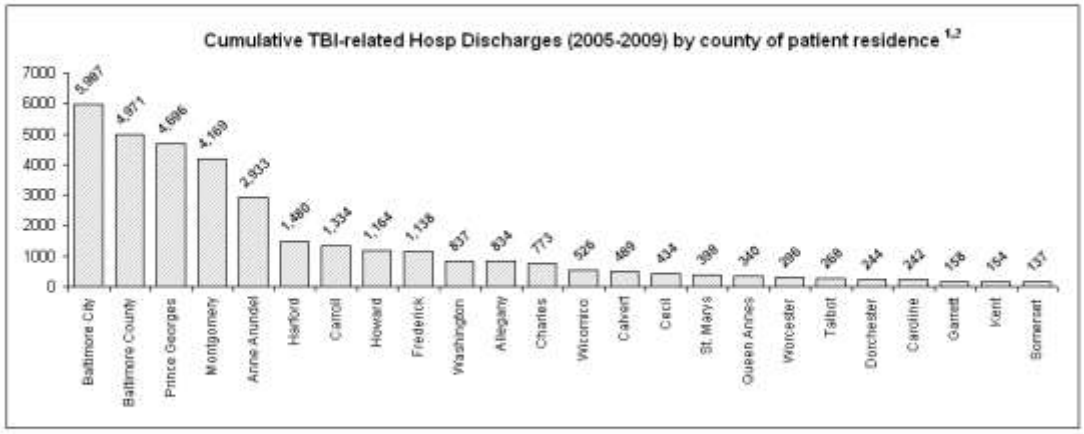
	Years					
	2005	2006	2007	2008	2009	05-09
Hospital Discharges [1,2]	6,619	6,792	7,039	7,056	6,946	*34,452*
Age of Injured [1,2] - 2 discharges did not specify the patient's age (less than 0.01%)						
00 < 01	89	82	99	95	107	*472*
01 - 04	102	103	97	93	96	*491*
05 - 14	240	226	251	191	194	*1,102*
15 - 24	1,311	1,394	1,322	1,238	1,045	*6,310*
25 - 34	862	890	868	878	770	*4,268*
35 - 44	944	898	877	805	750	*4,274*
45 - 54	850	881	882	944	957	*4,514*
55 - 64	595	610	640	674	710	*3,199*
65 - 74	479	453	571	605	658	*2,766*
75 - 84	696	740	827	871	898	*4,032*
85 & Over	479	515	605	662	761	*3,022*
Gender of Injured [1,2] - 12 discharges did not specify the patient's gender (less than 0.04%)						
Male	4,234	4,344	4,411	4,397	4,258	*21,644*
Female	2,380	2,448	2,625	2,655	2,688	*12,796*
Race of Injured [1,2] - 108 discharges did not specify the patient's race (approx 0.3%)						
White	3,997	4,124	4,417	4,433	4,308	*21,279*
Black / African	1,944	2,020	1,981	1,938	1,975	*9,858*
Asian / Pac Islander	86	92	109	113	121	*521*
Native American	6	6	13	10	21	*56*
Other Race	525	543	498	551	513	*2,630*
Mechanism of injury [1,3] - based on 20,729 discharges having *Principal Dx* of TBI						
Fall	1,450	1,467	1,776	1,824	1,964	*8,481*
Motor Vehicle Traffic	1,369	1,551	1,427	1,256	1,100	*6,703*
Struck by/against	490	544	440	472	453	*2,389*
Transport, Other	109	99	92	70	68	*437*
Pedal Cyclist (not MVA)	65	54	66	61	61	*307*
Firearm	28	41	35	21	34	*159*
Cut/pierce	21	30	31	19	9	*110*
Other/ Unspecified	461	369	404	482	427	*2,143*







Geographical distribution [1,2] - County of Residence - not including 450 discharges of Marylanders whose resident county was not specified.



[1] All cases are Discharges of persons who *Survived* to discharge. Any hospital stay during which the victim died is not counted.

[2] Based on cases where a TBI diagnosis was identified anywhere among the several diagnoses associated with the patient's hospitalization.

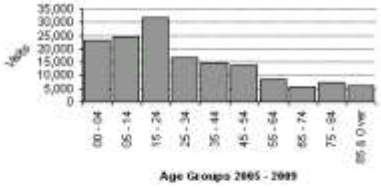
[3] Table is limited to cases where a TBI diagnosis was the Principal Discharge Diagnosis - clearly the main reason for the hospital stay.
A valid External Cause code found in the primary 'E-Code' position of the discharge record indicates the mechanism.
If no valid E-Code was found, then the record was classified to the 'Other/Unspecified' category.

TBI- related Emergency Department Contacts, Maryland Residents/Maryland Hospitals
5-year experience: 2005-2009 inclusive

	Years					
	2005	2006	2007	2008	2009	05-09
Emerg. Dept. Visits [1]	24,312	24,995	30,867	31,980	40,725	**152,872**

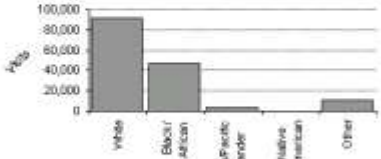
Age of Injured [1] - 2 visits did not specify the patient's age (less than 0.002%)

00 - 04	3,714	3,897	4,667	4,718	6,128	**23,124**
05 - 14	4,076	4,052	4,907	4,921	6,641	**24,597**
15 - 24	5,101	5,478	6,461	6,601	8,216	**31,857**
25 - 34	2,749	2,689	3,361	3,596	4,451	**16,846**
35 - 44	2,497	2,532	3,042	3,086	3,668	**14,825**
45 - 54	2,141	2,152	2,726	2,909	3,779	**13,707**
55 - 64	1,214	1,261	1,684	1,833	2,521	**8,513**
65 - 74	829	866	1,216	1,238	1,683	**5,832**
75 - 84	1,124	1,162	1,547	1,671	1,983	**7,487**
85 & Over	867	905	1,246	1,410	1,654	**6,082**



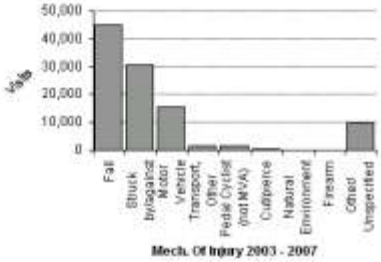
Gender of Injured [1] - 20 visits did not specify the patient's gender (less than 0.02%)

Male	13,621	13,953	17,238	17,487	21,627	**83,926**
Female	10,690	11,041	13,618	14,489	19,088	**68,926**



Race of Injured [1] - 479 visits did not specify the patient's race (approx 0.3%)

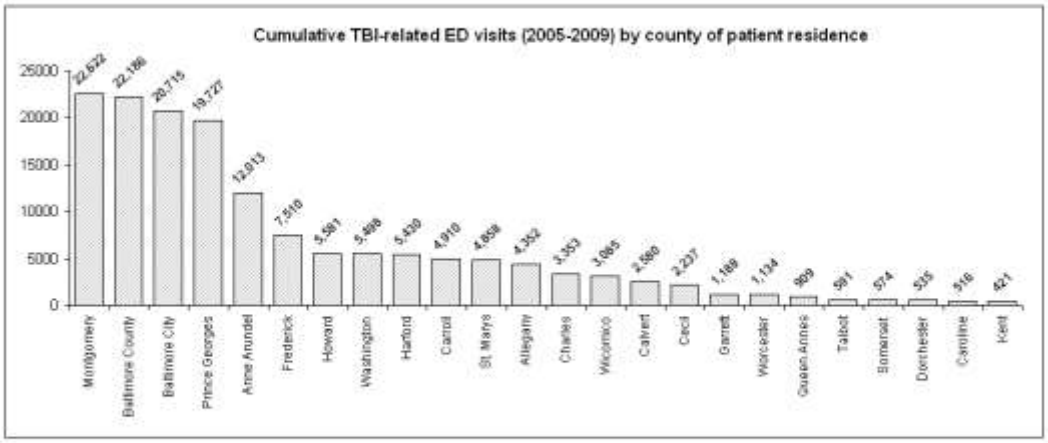
White	14,690	15,466	18,574	18,854	24,250	**91,833**
Black/ African	7,547	7,391	9,494	10,089	12,600	**47,121**
Asian/Pacific Islander	407	449	547	569	775	**2,747**
Native American	53	52	87	86	87	**365**
Other	1,527	1,564	2,052	2,289	2,895	**10,327**



Mechanism [or agent] of injury [2] - based on 105,091 visits w/ *Principal Dx* of TBI

Fall	6,982	7,059	8,940	9,253	12,910	**45,144**
Struck by/against	4,931	5,393	5,967	5,992	8,356	**30,639**
Motor Vehicle Traffic	2,647	2,726	3,084	3,142	4,010	**15,611**
Transport, Other	283	324	351	329	400	**1,687**
Pedal Cyclist (not MV	279	248	296	333	447	**1,603**
Cut/pierce	45	50	50	79	60	**284**
Natural Environment	24	30	34	38	51	**177**
Firearm	17	38	38	20	29	**142**
Other/ Unspecified	1,537	1,742	2,028	1,984	2,513	9,804

Geographical distribution [1] - County of Residence - not including 347 Emergency visits of Marylanders whose resident county was not specified



[1] Based on cases where a TBI diagnosis was identified anywhere among the several diagnoses associated with the patient's visit AND a specific Emergency Dept. service charge was recorded in the outpatient/ambulatory care record.

After July 2007, it is possible to discern that during 1180 of these visits, the patient died in the Emergency Department.

[2] Table is limited to cases where a TBI diagnosis was the *Principal Emergency Diagnosis* - clearly the main reason for the visit. A valid External Cause code found in the primary 'E-Code' position of the discharge record indicates the mechanism.

If no valid E-Code was found, then the record was classified to the 'Other/Unspecified' category.

After July 2007, it is possible to discern that during 966 of these visits, the patient died in the Emergency Department.

APPENDIX C

Trust Fund Development At A Glance

"A Look at TBI Trust Fund Programs" 2006. Department of Health and Human Services Health Resource and

TRUST FUND DEVELOPMENT AT-A-GLANCE

Date Ratified	State	Revenue Sources	Estimated Revenue	Program Focus
1985	PA	All traffic violations	$3 million	Assessment, short-term community-based rehabilitation services, transition case management
1988	CA	.066 of state penalty fund	$1 million	7 regionally based projects addressing community support needs
1988	FL	DUI, BUI, moving viol, motorcycle tag, temp license tag	$17 million	Acute care, rehabilitation, community integration, nursing home transition, case management, Medicaid match, prevention, registry, special project grants
1991	MA	speeding, DUI	$6.8 million	Non-recurring, short-term community support services
1991	MN	DUI	$1 million	Registry, resource and service coordination
1991	TX	felonies and misdemeanor	$10.5 million	Inpatient, outpatient, and post-acute rehabilitation services
1992	AZ	civil & criminal	$2 million	Public information, prevention, education, community rehabilitation, transitional living, surveillance
1993	AL	DUI	$1.5 million	Registry, resource coordination
1993	LA	DUI, speeding	$1.5 million	Community-based services and supports
1993	TN	speeding, reck. op., DUI, rev. license.	$750-950,000	Registry, grants for 10 community-based projects
1996	MS	DUI moving viol.	$3.5 million	Registry, waiver match, services, transitional living, prevention, education, recreation
1997	NM	moving violations	$1.5 million	Service coordination, life skills training, crisis interim services
1997	VA	license reinst. fee	$1.2 million	Grants for community-based rehabilitation projects, applied research projects
1998	GA	DUI	$2.3 million	Community-based services and supports, support groups, AT
1998	KY	percent of court costs	$3.3 million	Community-based services and supports, surveillance registry
2002	CO	speeding DUI	$1.5 million	Care coordination, services, research, education
2002	HI	traffic offenses	$600,000	Service coordination, education, public awareness, registry
2002	MO	Cost of court	$800,000	Counseling, mentoring, education
2002	NJ	car registration	$3.8 million	Community-based services and supports, public awareness, education
2003	MT	car registration	$8,117	Advisory Council, grants for public awareness, prevention education
2004	CT	reckless driv., speeding DUI	$300,000	Undetermined – may focus on resource coordination

APPENDIX D

Maryland Resource Coordination Program
Managed by the Mental Hygiene Administration

Availability of Resource Coordination Maryland

The Mental Hygiene Administration (MHA) utilized federal grant funding in 2003-2008 to establish a model of Brain Injury Resource Coordination in Maryland. However, due to funding limitations, only 5 counties out of 24, currently have access to brain injury resource coordination services.

Programmatic Outcomes

According to data collected by MHA during fiscal year 2010, individuals who received resource coordination services achieved the following outcomes:

- improved access to medical and behavioral health services and supports
- increase in employment and income
- improvement in housing
- access to needed transportation
- assistance with legal issues

Resource Coordination services assist individuals with accessing the services and supports that they need to live in the most independent and integrated setting possible. Timely access to appropriate services improves outcomes such as access to housing and achieving employment and also decreases the need for costly long term care services.

The following is a letter from the mother of a young woman who sustained a brain injury and received services from a Brain Injury Resource coordinator in Howard County- **one of the 5 Maryland counties where Brain Injury Resource Coordination services are available**:

> *To whom it may concern:*
> *I would like to both thank and commend (Brain Injury Resource Coordinator for Howard county) for the continuing assistance she has provided to me and my daughter, M., who has a brain injury. From her initial home visit she has been both available and helpful whenever we needed information, guidance or hands on help. She provided us with contacts and information that would have remained a mystery had she not been there. She has even gone out of her way at times to help me when I was mired in a mess. One day specifically, she came and picked us up and drove us to Baltimore Social Services and knew exactly whom to speak with in order to finally get our case transferred to Howard County. A process I had been trying to achieve for many months with no success. She is always our backup and the person I feel I can turn to when things are just not working.*
>
> *She has a sunny disposition, is always interested in hearing my sad stories and then presto like Aladdin rubbing her magic lamp she provides me with the information and contacts I may need to straighten things out. In a society where one can often feel overwhelmed and alone with ones problems she has been a blessing; someone to whom I can turn to and know both wisdom and help will be offered.*