

AACBIS
American Academy for the Certification
of Brain Injury Specialists

CERTIFICATION EXAM PREPARATION COURSE
Chapter 1: Overview of Brain Injury

MODULE OBJECTIVES


- Describe the incidence, prevalence and epidemiology of brain injury.
- Distinguish between traumatic brain injury and acquired brain injury.
- Describe the systems of care available in the rehabilitation continuum.
- List several of the funding issues for the support of persons with brain injury.
- Explain the TBI Act of 1996 and its impact on services and funding for persons with brain injury.

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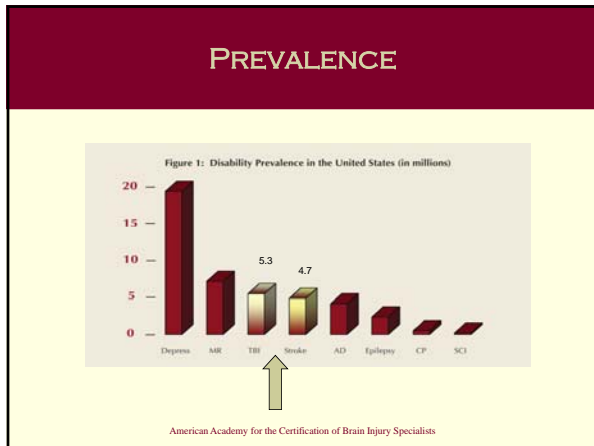
INTRODUCTION

Traumatic brain injury (TBI) has been called the *“silent epidemic.”*

- An estimated **10 million** Americans are affected by stroke and TBI
- This makes brain injury the **second** most prevalent injury and disability in the United States.



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DEFINITION OF TBI

TBI is an insult to the brain, not of a degenerative or congenital nature but caused by **an external physical** force, that may produce a diminished or altered state of consciousness, which results in an impairment of cognitive abilities or physical functioning. It can also result in the disturbance of behavioral or emotional functioning. These impairments may be either **temporary or permanent** and cause partial or total functional disability or psychosocial maladjustment.

National Head Injury Foundation (1996)

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- ### CAUSES OF TBI
- Motor Vehicle Crashes
 - Falls
 - Gunshot Wounds
 - Sports Injuries
 - Workplace Injuries
 - Child Abuse
 - Domestic Violence
 - Military Actions
 - Other injuries caused by trauma
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DEFINITION OF ACQUIRED BRAIN INJURY (ABI)


An ABI is an injury to the brain that has occurred after **birth** and is not hereditary, congenital or degenerative. The injury commonly results in a change in neuronal activity, which affects the physical integrity, the metabolic activity, or the functional ability of the cell. The term does not refer to brain injuries induced by birth trauma. Includes TBI and injuries caused by an **internal insult** to the brain.

Brain Injury Association of America (1997)

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CAUSES OF ABI

- TBI
- Tumor
- Blood clot
- Stroke
- Seizure
- Toxic exposure (e.g., substance abuse, ingestion of lead, inhalation of volatile agents)
- Infections (encephalitis, meningitis)
- Metabolic disorders (insulin shock, diabetic coma, liver and kidney disease)
- Neurotoxic poisoning
- Lack of **oxygen** to the brain (airway obstruction, strangulation, cardiopulmonary arrest, carbon monoxide poisoning, drowning)



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ABI EFFECTS

Acquired brain injury may result in mild, moderate, or severe impairments in one or more areas including:

- **Cognition** (i.e. speech-language communication, memory, attention and concentration, reasoning and abstract thinking)
- **Physical functions** (i.e. ambulating, seeing, hearing, balancing)
- **Psychosocial behavior** (i.e. social skills, anger management, impulsivity)

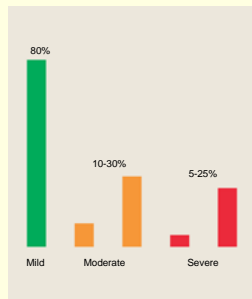
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UNDERSTANDING THE DEFINITIONS

- While it is important to understand the different definitions of brain injury, the term brain injury is used throughout this manual to refer to acquired brain injury.
- When reference is specifically made to injury caused by trauma due to external physical force, the term traumatic brain injury (TBI) is used.
- Much of the research has been done with persons with **TBI**.

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INJURY SEVERITY



Injuries are classified according to mild, moderate and severe injuries.

- 80% are mild
- 10-30% are moderate
- 5-25% are severe

Concussion: mild TBI that often goes undiagnosed as such

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EPIDEMIOLOGY OF TBI

- Every **23 seconds**, one person in the United States sustains a traumatic brain injury.

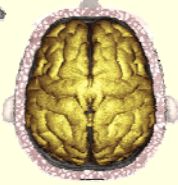


- More than **50,000** people die every year as a result of traumatic brain injury.
- 235,000 people are hospitalized each year with traumatic brain injury.
- 80,000-90,000 Americans experience the onset of a long-term disability following traumatic brain injury each year.

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EPIDEMIOLOGY OF TBI

- After one traumatic brain injury, the risk for a second injury is *three times greater*; after the second injury, the risk for a third injury is *eight times greater*.
- 2/3 of firearm-related traumatic brain injuries are classified as suicidal in intent.
- **91%** of firearm-related TBI's result in death.

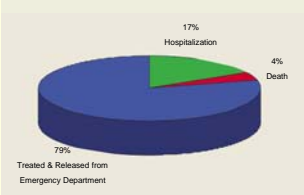


Courtesy Centre for Neuro Skills

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INCIDENCE OF TBI

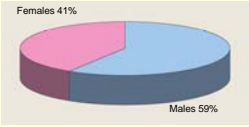
- 1.4 Million Traumatic Brain Injuries occur every year.
- Deaths = 4%
- Hospitalizations = 17%
- Emergency Department Visits = 79%



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INCIDENCE & GENDER

- Males Sustain 59% of TBI's
- Females Sustain 41% of TBI's
- In other words, males sustain 1.5 times as many brain injuries as females.
- Males have higher rates of Hospitalization, Death and Emergency Department Visits




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INCIDENCE & GENDER




- **Intimate violence** is the leading cause of serious injury to American women between the ages of 15 and 44 and frequently results in TBI.



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INCIDENCE & RACE

- Blacks have the highest overall incidence rate (486 per 100,000)
- American Indian/Alaskan Native & Asian/Pacific Islander have the lowest incidence (252/100,000)
- Whites account for 81% of TBI's



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INCIDENCE & AGE



- Incidence of TBI is highest in the 0-4 age group (1121 per 100,000)
- Deaths from TBI are highest in the 75 or older age group (51 per 100,000)
- Emergency Department visits are highest in the 0-4 age group (1035 per 100,000)

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INCIDENCE - ED VISITS



- Males aged 0-4
- Females aged 0-4
- Blacks aged 0-4
- Whites aged 0-4

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INCIDENCE - HOSPITALIZATIONS



- Males ≥ 75 years
- Females ≥ 75 years
- Blacks ≥ 75 years
- Whites ≥ 75 years

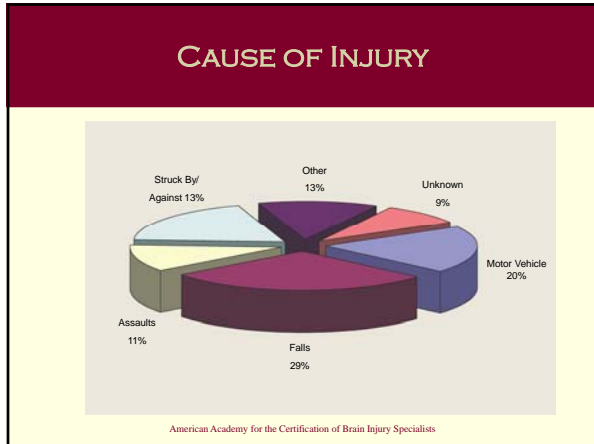
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INCIDENCE & AGE




- Males ≥ 75 years
- Females ≥ 75 years
- Blacks 20-24 years
- Whites ≥ 75 years

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CAUSE OF INJURY



Alcohol is a significant factor in injury etiology:

- In a review of publications examining alcohol intoxication at the time of injury, rates ranged from 37% to 51%.

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SYSTEMS OF CARE

Hospital-Based Services

- Acute Hospital Care
- Acute Rehabilitation

Post-Hospital Services

- Skilled Nursing Facility (Sub-acute)
- Post-Acute Rehabilitation
- Outpatient Services
- Supported Living



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NATIONAL ACCREDITATION & STATE LICENSURE


- National accreditation organizations have established set standards for rehabilitation programs.
 - **JCAHO:** Joint Commission on the Accreditation of Healthcare Organizations
 - **CARF:** Commission on the Accreditation of Rehabilitation Facilities
- A number of states have required **licenses** for programs serving persons with brain injury.
- The goal of accreditation standards and licensure is to ensure that **the organization has the capacity** to meet the needs of individuals with disabilities.

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COSTS OF TRAUMATIC BRAIN INJURY

- Traumatic brain injuries cost more than **\$60 billion** annually.
- Estimated lifetime costs for one year of those injuries are \$406 billion.


The costs are often due to the resultant life-long disability.



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FUNDING

Approximately **5%** of individuals with severe brain injuries have adequate funding for long-term treatment.



Brain Injury Association of America

Whatever the funding source, it is essential that:

- Advocacy is provided
- Available funding is appropriately and cost effectively managed

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PRIVATE FUNDING

Indemnity Insurance

- Insurer assumed the responsibility of paying medical benefits for services performed and covered under the policy in return for premium payments

Managed Care

- Health Maintenance Organizations (HMOs)
- Preferred Provider Organizations (PPOs)
 - Gate-keeping
 - Elective contracting with providers
 - Quality controls
 - Risk-sharing



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PUBLIC FUNDING

Medicaid provides health care for more than **40 million** people throughout the US:

- Low-income families
- People who are blind
- People age 65 and older
- People who have disabilities

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PUBLIC FUNDING

State Home and Community-Based Services Waivers (HCBS)

- A state with Centers for Medicare and Medicaid approval can waive one or more of the requirements of eligibility for funding and provision of services.
- **Increases** accessibility to services.
- Encourages the development of new approaches for health care delivery to meet the special needs of particular areas or groups of people (e.g., persons with brain injury).

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HOME AND COMMUNITY BASED SERVICES

- Case management
- Home health aide services
- Adult day health
- Respite care
- Homemaker service
- Personal care
- Habilitation services
- Day treatment or other partial hospitalization services, psychosocial rehabilitation services, clinic services for individuals with chronic mental illness
- Expanded habilitation services (i.e., prevocational services to prepare an individual for paid or unpaid employment)
- Other: emergency response systems, assistive technology, etc.

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ACCESS TO SERVICES

Those most likely to have difficulty accessing services are individuals:

- With *cognitive impairment* but who lack physical disabilities
- Without an effective *advocate*
- With *problematic or unmanageable* behaviors *

* Without treatment, individuals with problematic or unmanageable behaviors are the most likely to become *homeless, institutionalized in a mental facility, or imprisoned.*
Government Accounting Office (GAO)

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GAO REPORT

- The 1997 GAO report on Traumatic Brain Injury determined that Medicaid and Home and Community Based Waiver programs covered an estimated 2,478 individuals and spent \$118 million.
- By comparison in the same year, waivers covered an estimated 236,000 individuals with mental retardation/developmental disabilities and spent approximately \$5.8 billion!

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THE OLMSTEAD DECISION

- It requires states to administer their services, programs, and activities “in the *most integrated setting* appropriate to the needs of qualified individuals with disabilities.”
- The ADA and the *Olmstead decision* apply to all qualified individuals with disabilities regardless of *age*.
- The decision has resulted in several federal and state initiatives that will make living in *the community* a reality for more people with disabilities.

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**ADVOCACY:
BRAIN INJURY ASSOCIATION OF AMERICA**


- In 1980, a group of *family members* of persons with traumatic brain injuries founded the National Head Injury Foundation, now BIAA.
- The organization has grown into a *national* organization, including 42 chartered state affiliates.

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TRAUMATIC BRAIN INJURY ACT (1996)

Purpose

- To expand efforts to identify methods of *preventing* traumatic brain injury
- Expand biomedical research efforts or minimize the severity of dysfunction as a result of such an injury
- To improve the *delivery and quality of services* through State demonstration projects



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TRAUMATIC BRAIN INJURY ACT (1996)

TBI Act authorized:

- The Centers for Disease Control and Prevention (CDC) to establish projects to *prevent and reduce the incidence of* traumatic brain injury
- The National Institutes of Health to *award grants* to conduct basic and applied research on developing new methods for more effective diagnosis, therapies, and a continuum of care.

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THE HEALTH RESOURCES AND SERVICES ADMINISTRATION (HRSA)

- Provides grants to states to carry out demonstration programs to implement systems that ensure statewide access to comprehensive and coordinated TBI services.
- States who receive grants must implement the following components:
 - Statewide TBI advisory board
 - Staff responsible for TBI activities
 - Statewide needs assessment to address the full spectrum of services
 - Statewide action plan to develop a comprehensive, community-based system of care (HRSA 1999).

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RESEARCH

- A *traumatic brain injury* can happen to a child or adult of any age, race, gender, religion or socioeconomic status.
- It is important to quantify the problem by conducting *surveillance*.
 - *Surveillance* is the ongoing and systematic collection, analysis and interpretation of data used to describe and monitor a health event.

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TRAUMATIC BRAIN INJURY (TBI) MODEL SYSTEMS OF CARE (TBIMS) (1987)

- Funding provided by US Department of Education's National Institute on Disability and Rehabilitation Research (NIDRR), which maintains the TBI Model Systems National Database
- To develop a *model system of care* for persons with traumatic brain injury, emphasizing continuity and comprehensiveness of care
- To maintain a standardized national database for innovative analyses of *TBI treatment* and outcomes.
- Each center provides a coordinated system of emergency care, acute neurotrauma management, comprehensive inpatient rehabilitation and long-term interdisciplinary follow-up services.

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NIH RESEARCH

The National Institutes of Health conducted research on the development of new methods and modalities for:

- More effective diagnosis
- Measurement of degree of injury
- Post-injury monitoring
- Assessment of *care models* for brain injury recovery and long term care

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