

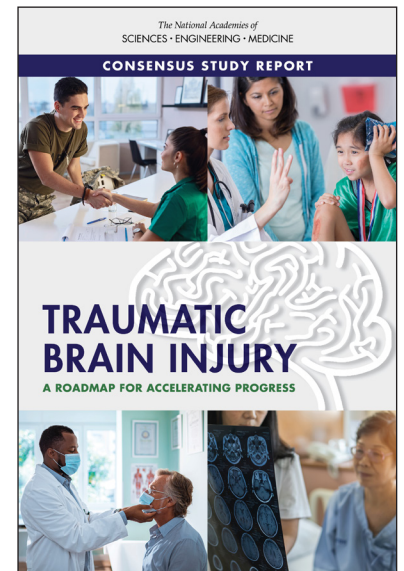


Traumatic Brain Injury: A Roadmap for Accelerating Progress

In the United States, almost 5 million people are evaluated in emergency departments for traumatic brain injury (TBI) each year. Over the past several decades, awareness of the magnitude and consequences of TBI has increased, particularly among athletes and military service members, with new processes emerging for screening and management. Despite progress and ongoing efforts, barriers and challenges remain, including unanswered questions about the most effective preventive, acute, rehabilitative, and long-term care for TBI. In addition, not all patients and families have access to quality care or integrated follow-up across the care and recovery continuum throughout their lives.

The Department of Defense's Combat Casualty Care Research Program requested that the National Academies of Sciences, Engineering, and Medicine convene an ad hoc committee of experts to examine how progress can be advanced in TBI care and research and to develop a roadmap to help guide the field. The committee came to four overarching conclusions: (1) TBI care in the United States often fails to meet the needs of individuals, families, and communities affected by this condition; (2) high-quality care for TBI requires that it be managed as a condition with both acute and long-term phases; (3) public and professional misunderstandings are widespread with respect to the frequency, manifestations, long-term consequences, and proper detection, treatment, and rehabilitation of TBI; and (4) the United States lacks a comprehensive framework for addressing TBI.

Because of the brain's complex roles, a TBI can affect not only how a person feels but also how they interact with the people and larger community around them. To understand and address a person's needs after TBI, it is important to consider not only the physical details of the injury but also the psychological and socio-ecological factors that affect a person's outcome and ability to return to school, work, family, and community to the greatest extent possible. For this reason, the report emphasizes the role of a bio-psycho-socio-ecological (BPSE) framework for TBI care and research.



CREATE AND IMPLEMENT AN UPDATED CLASSIFICATION SYSTEM FOR TBI

TBI is a multifaceted category, encompassing injuries of widely varying severity and causation. The overly broad and misleading taxonomic categories of “mild, moderate, and severe,” derived from clusters of scores on the Glasgow Coma Scale, are inadequate to capture or guide either the proper management of TBI or the accurate prognostication of its outcome. Clinicians, patients, and payers need a more nuanced, personalized, and evidence-guided taxonomy for TBI, using clinical and biological markers to support more effective assessment, treatment, prognosis, and rehabilitation. The report recommends that the National Institutes of Health convene a TBI Classification Workgroup to advance this goal. Regular reassessment is also essential as a person’s condition and needs change.

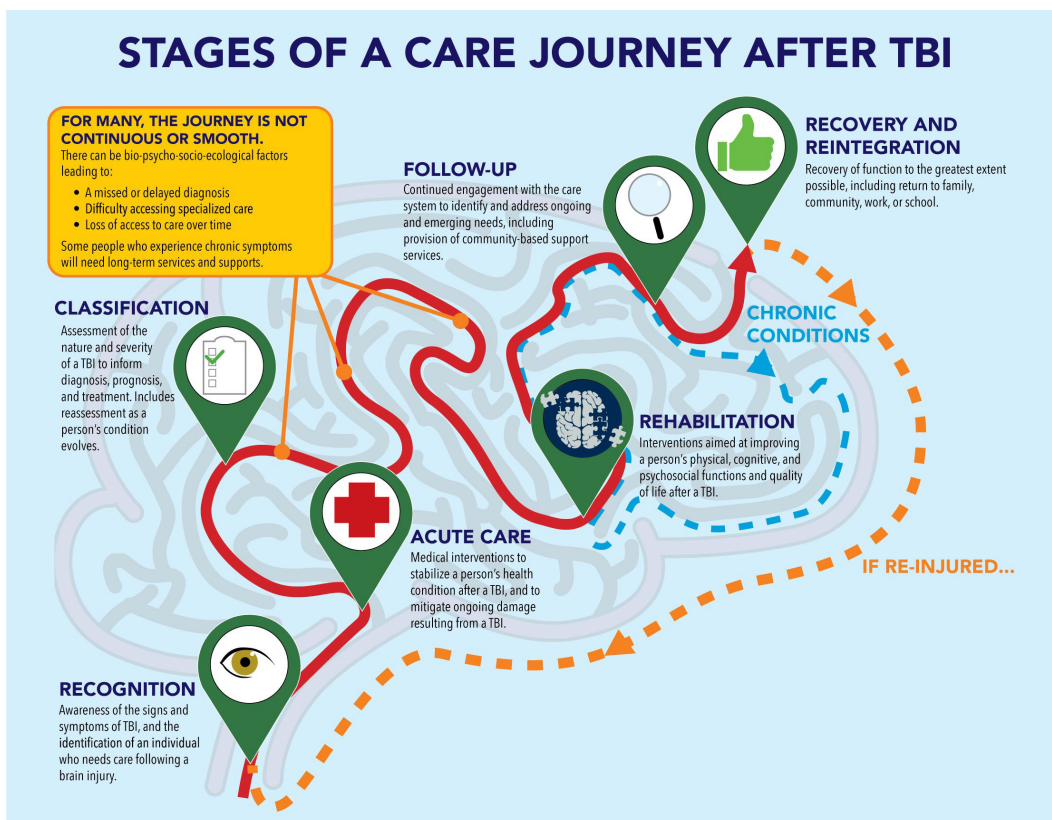
MANAGE TBI AS BOTH A COMPLEX ACUTE AND A CHRONIC CONDITION

A TBI can lead to long-term motor, sensory, psychological, behavioral, and cognitive problems. Evidence suggests that many people with TBI find themselves without continuity of care, integrated professional support, or adequate health insurance downstream from their acute injury. When TBI patients are lost to follow-up, there is no mechanism for measuring the long-term effects of this condition and using the information to improve care. TBI should be understood and managed as a condition with evolving symptoms that may present new challenges over time, and TBI patients should have reliable and timely access to integrated, multidisciplinary, and specialized care (see Figure 1).

ENSURE QUALITY AND CONSISTENCY OF CARE

Unwarranted variability and gaps in care guidance must be addressed by updating and harmonizing clinical practice guidelines with the best available evidence. Guidelines and best practices need to be promoted by professional societies in health and medicine and consistently implemented by providers. Public and private payers should also ensure coverage of TBI care is consistent with the latest clinical guidelines during all phases of care and rehabilitation. The evidence to inform TBI care decisions should be based on a range of rigorous

FIGURE 1 ILLUSTRATIVE STAGES OF A PERSON’S JOURNEY THROUGH RECOGNITION OF, TREATMENT FOR, AND RECOVERY AFTER TBI.



SOURCE: Graphic developed by Masai Interactive.

data collection methodologies, including randomized controlled trials and observational cohort and other study designs, as well as expert consensus on best practices.

ENHANCE AWARENESS AND UNDERSTANDING OF TBI

TBI care and outcomes can be improved with better understanding among clinicians, educators, and the public of the signs and clinical courses of these injuries, and of the medical and community supports that can help persons living with TBI and their families cope and thrive. Underinvestment in research on the causes, types, and treatment of TBI may reflect how the public and policy makers underestimate the burden of TBI, and as a result underestimate the progress that could be made if investments in TBI research were more commensurate with the magnitude of that burden. Ensuring broad awareness of and education about TBI can help engage experts and stakeholders in the effort to advance TBI care.

ESTABLISH AN EFFECTIVE LEARNING CARE SYSTEM FOR TBI

As in most aspects of the U.S. health care system, TBI care and outcomes demonstrate evidence of racial, geographic, and socioeconomic inequity. Achieving high-quality TBI care will require confronting these inequities at their sources and committing to measuring and monitoring progress toward resolution. Overcoming these obstacles will depend on a careful redesign of the TBI system of care that incorporates the properties of a “learning health care system.” In addition to care and research, such a system encompasses processes for continual quality improvement and education. To achieve this, the learning system needs inputs from national and regional TBI data systems that include thorough and accurate capture of population- and patient-level information. Individual patients would also benefit if clinicians and health care organizations had the capacity to provide TBI care within a BPSE model, and to do so continuously and repeatedly through the patient’s life journey.

INVEST IN CONTINUED RESEARCH

Scientific understanding of the pathophysiology of TBI continues to advance, including the ongoing development of injury biomarkers that can be incorporated into research and care. Further knowledge is needed, however, to evaluate which novel acute and post-acute treatments could achieve better outcomes and for which specific patients. As compared to other common chronic conditions, such as cancer and heart disease, biomedical research on TBI has had insufficient investment and no clear institutional ownership. Improving the quality and expanding the range of TBI studies and study designs requires a stronger level of investment in clinical and basic research, commensurate with the enormous burden of TBI.

PROVIDE LEADERSHIP TO DRIVE COLLABORATION AND CHANGE

A barrier to dramatic improvement in TBI care and research is the absence of a strategic framework and an organizational lead with a systemic view, responsibility for articulating goals and overseeing progress, the capacity to foster change, and the ability to convene the many stakeholders required to address the necessary multiple lines of effort. Absent a leadership entity, no one owns the problem, and major progress is unlikely. For this reason, federal leadership is needed to establish a strategic framework for dramatically improving TBI care. This framework will require the efforts of multiple partners and the investment of substantial resources, so it is essential to develop a clear implementation plan early on that includes a timeline and metrics of progress and is curated as circumstances change.

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