

NASEM findings, recommendations and actions

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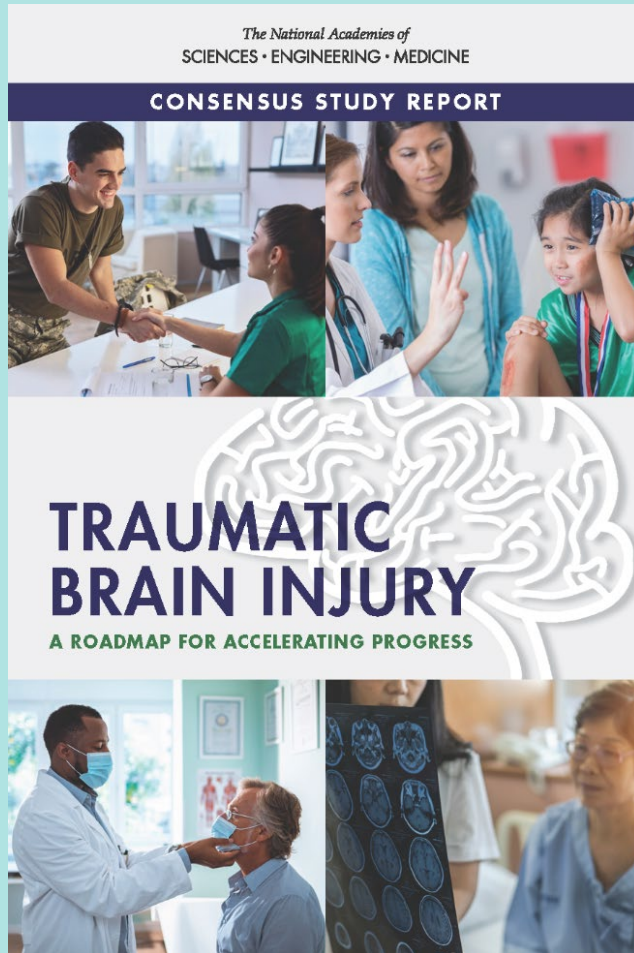
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What have we accomplished so far?



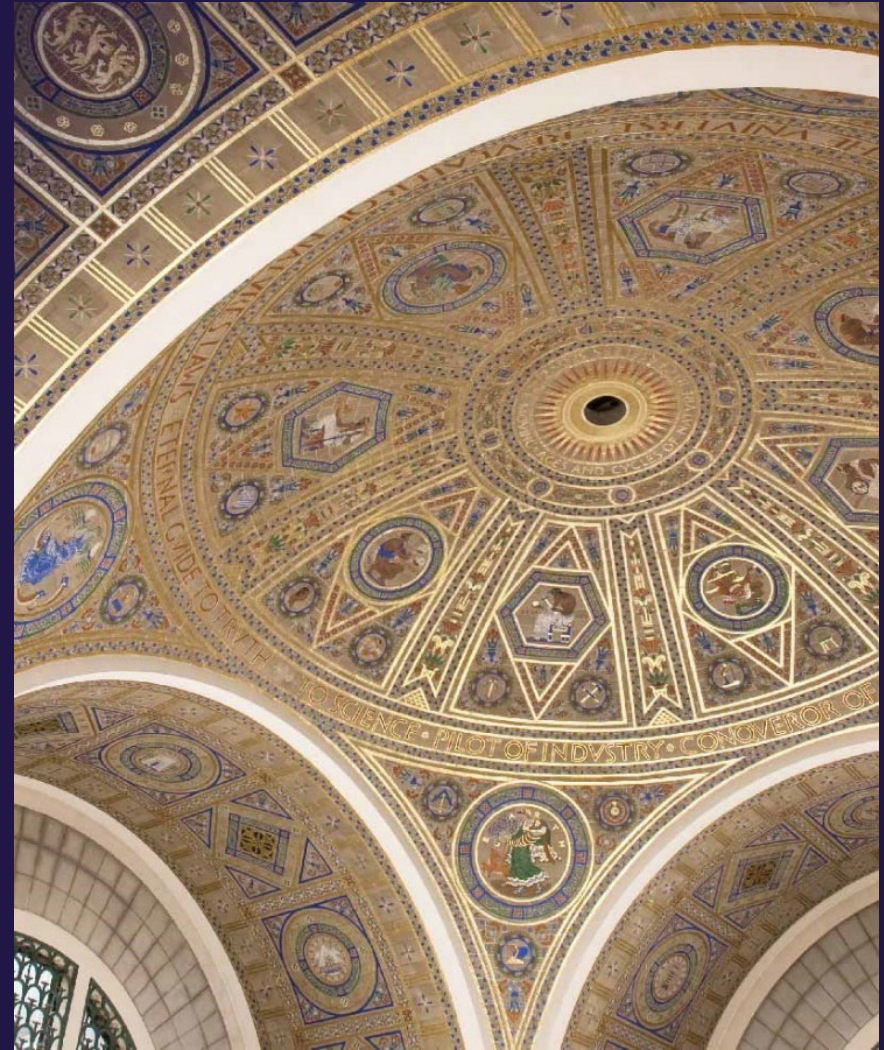
RECOMMENDATIONS

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NATIONAL
ACADEMIES

Sciences
Engineering
Medicine

Forum on Traumatic Brain Injury



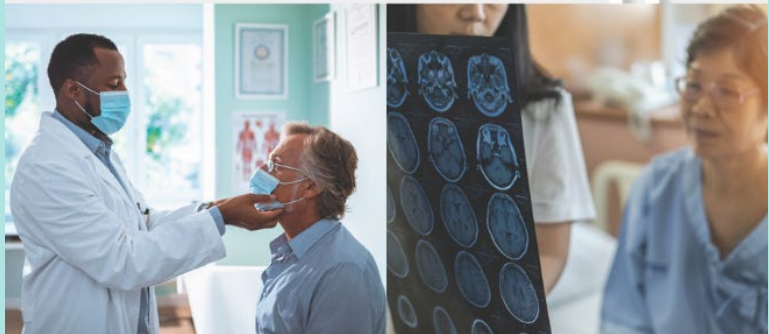
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CONSENSUS STUDY REPORT



TRAUMATIC BRAIN INJURY

A ROADMAP FOR ACCELERATING PROGRESS



Consensus study released February 2022

Roadmap of eight recommendations to advance care and research

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NINDS Traumatic Brain Injury (TBI) Classification and Nomenclature Workshop

January 22-23, 2024 | NIH Campus | Bethesda, MD

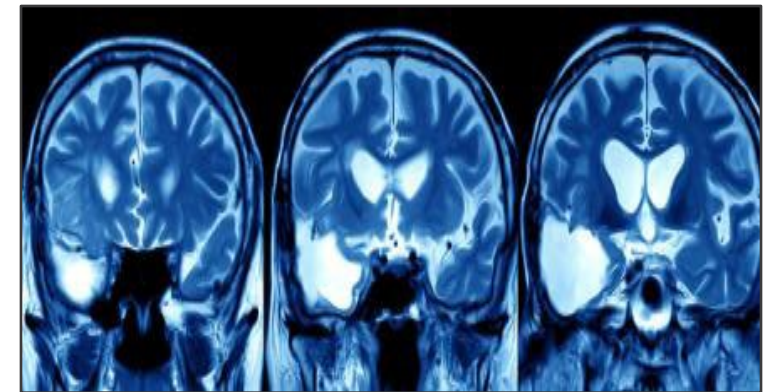


3 Feb 2022
Military.com | By Patricia Kime

The terms "mild," "moderate" and "severe," used by doctors to categorize head injuries in roughly 2 million Americans each year, are outdated and imprecise, and treatments based on those terms are leading to increased medical costs and preventable deaths, a group of medical experts wrote in a report published Feb. 1.

At least 439,000 U.S. service members have been diagnosed with brain injuries since 2000, with more than 83% of those classified as "mild" and roughly 36,000 defined as "moderate" or "severe."

These common labels for defining a [traumatic brain injury](#) may obscure the severity of head injuries, however, leading to inadequate treatment and potential harm to the patient, according to a [report published this week](#) by the National Academies of Sciences, Engineering and Medicine.



NINDS WORKSHOP AIMS

This is the next step to leverage the findings over the past decade to move beyond mild, moderate, and severe TBI

- Produce a more precise framework for TBI Characterization, which will be validated and disseminated
- Identify current gaps and research topics that may inform refinement and updating of the new framework for TBI Characterization

*Development & Implementation of a Global Solution for
Multi-Dimensional TBI Characterization*

***MOVING US BEYOND “MILD, MODERATE,
SEVERE”***

What is wrong with Mild, Moderate, and Severe TBI?

- No modern TREATABLE disease uses such a coarse, imprecise classification
- Mild TBI is not always mild.....Severe TBI is not always severe
- Limited association with mechanism
- No effective targeted treatments for mild, moderate, severe
- These terms lead to treatment bias – nihilism in Severe, disregard for Mild
- **Patients and families do not want us to use these terms**

WORKING GROUPS

WG3: Blood-based Biomarkers



WG4: Psychosocial & Environmental Modifiers



WG2: Imaging Days 1 (CT/MRI) & 14 (MRI)



WG5: Knowledge to Practice



WG1: Clinical/Symptoms Days 1 & 14



WG6: Retrospective Classification



INHERENT CHALLENGES

MULTI-DIMENSIONAL NATURE OF THE EFFORT: Achieving Balance for a New Framework

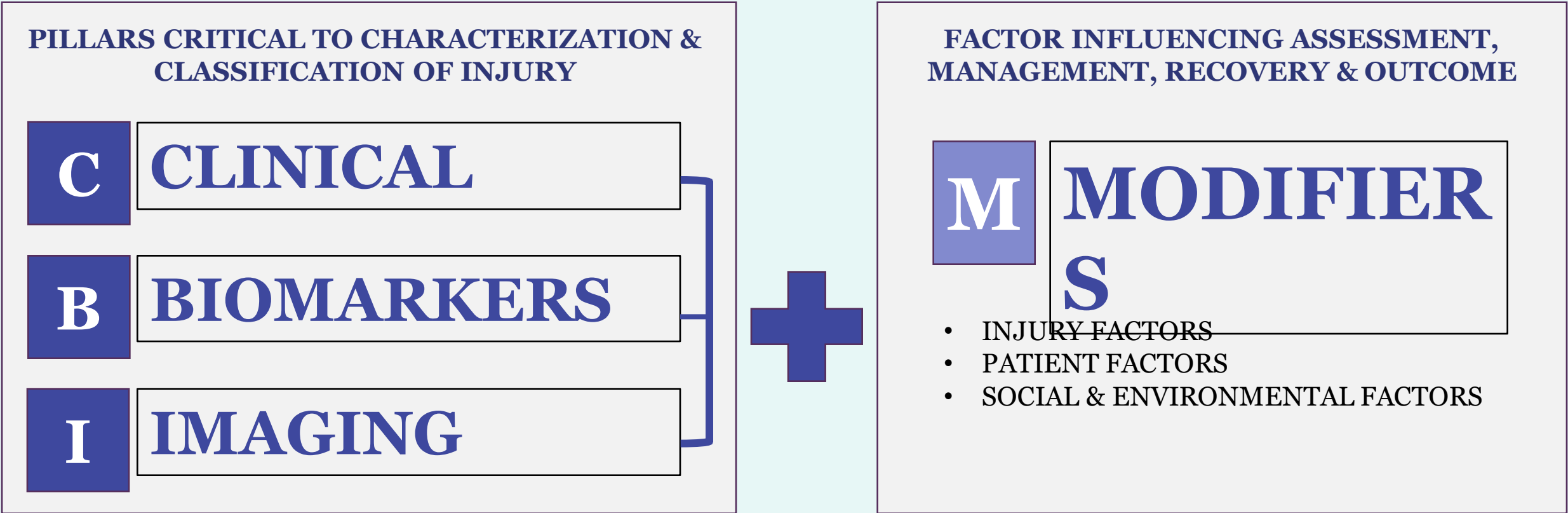
- Aspirational vs. Pragmatic
- Classification vs. Characterization
- Diagnostic vs. Prognostic
- Clinical vs. Research
- Acute vs. Retrospective
- Clinical Syndrome vs. Biological Disease
- Adult vs. Pediatric



”THE 80% SOLUTION”: NEXT BIG STEP (NOT THE FINAL STEP)
TOWARD IMPROVED TBI CHARACTERIZATION

PROPOSED FRAMEWORK FOR IMPROVED TBI CHARACTERIZATION

THE CBI-M MODEL



For Clinical & Research Applications

WHERE DO WE GO FROM HERE?

KEY DO-OUTS & ACTION PLAN IN PROCESS

- Refine the CBI-M Pillars - **completed**
- Finalize CBI-M Framework (Basic + Expanded) - **completed**
- Prepare consensus document – **completed, November submission**
- Prepare working group manuscripts- **completed, November submission**
- Following consensus, pilot test in existing data sets - **initiated**
- Develop and execute implementation plan, in partnership with stakeholders – **early 2025**

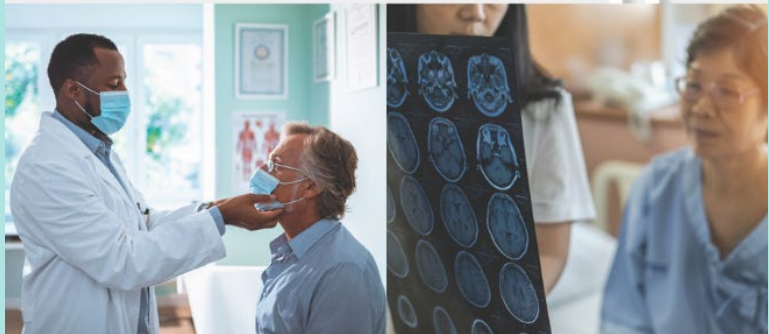
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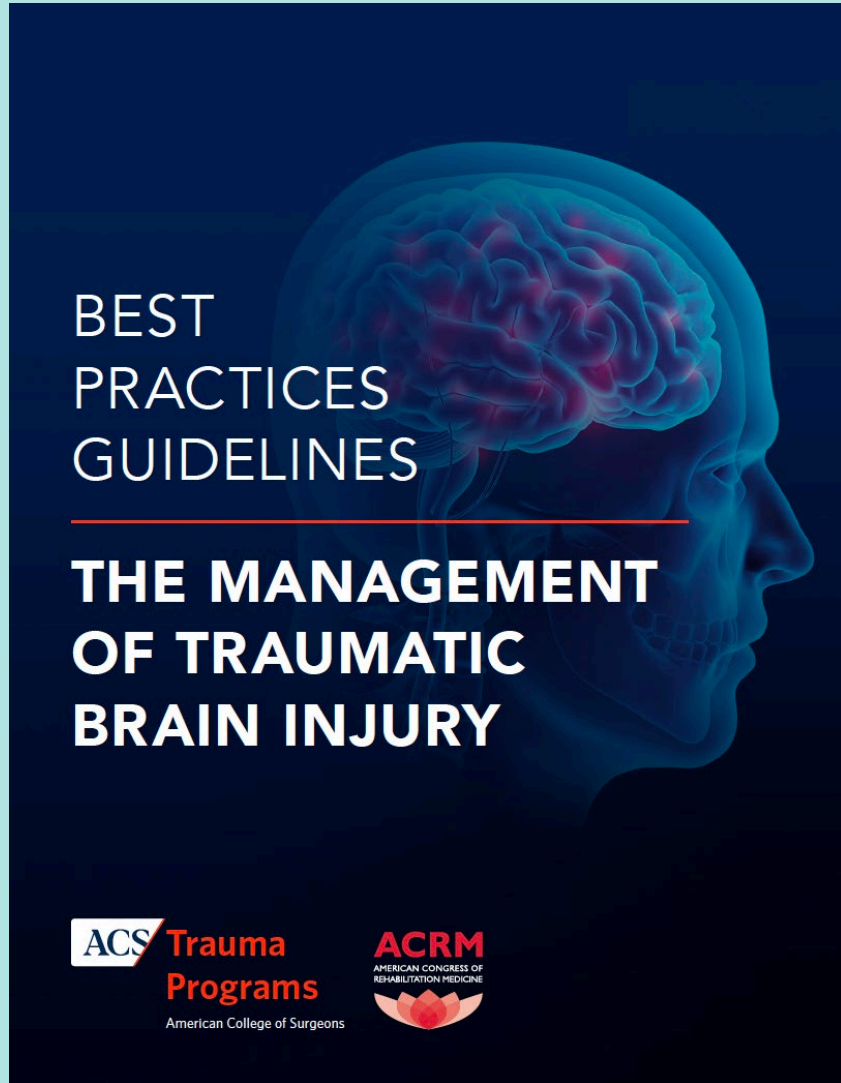
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Roadmap of eight recommendations to advance care and research

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Best Practice Guidelines: The Management of Traumatic Brain Injury



Based on the best available evidence or, if evidence is lacking, based upon consensus opinion of an expert panel

October 2025

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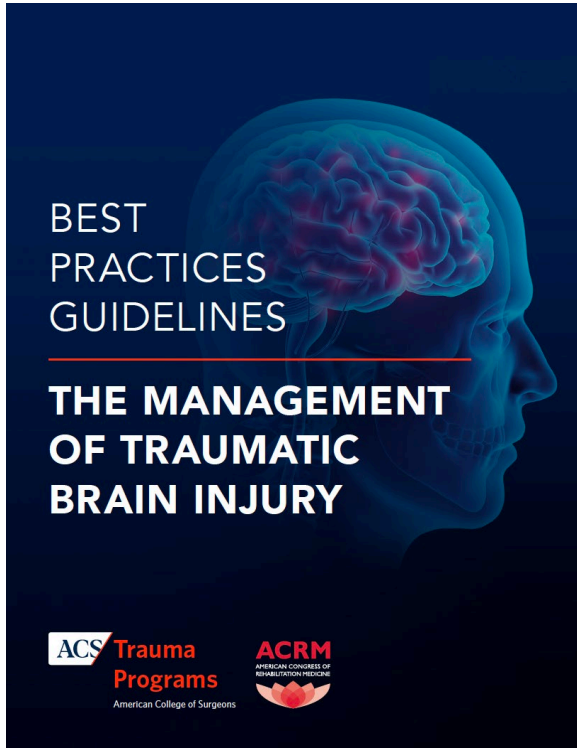
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TBI Best Practice Guidelines 2024

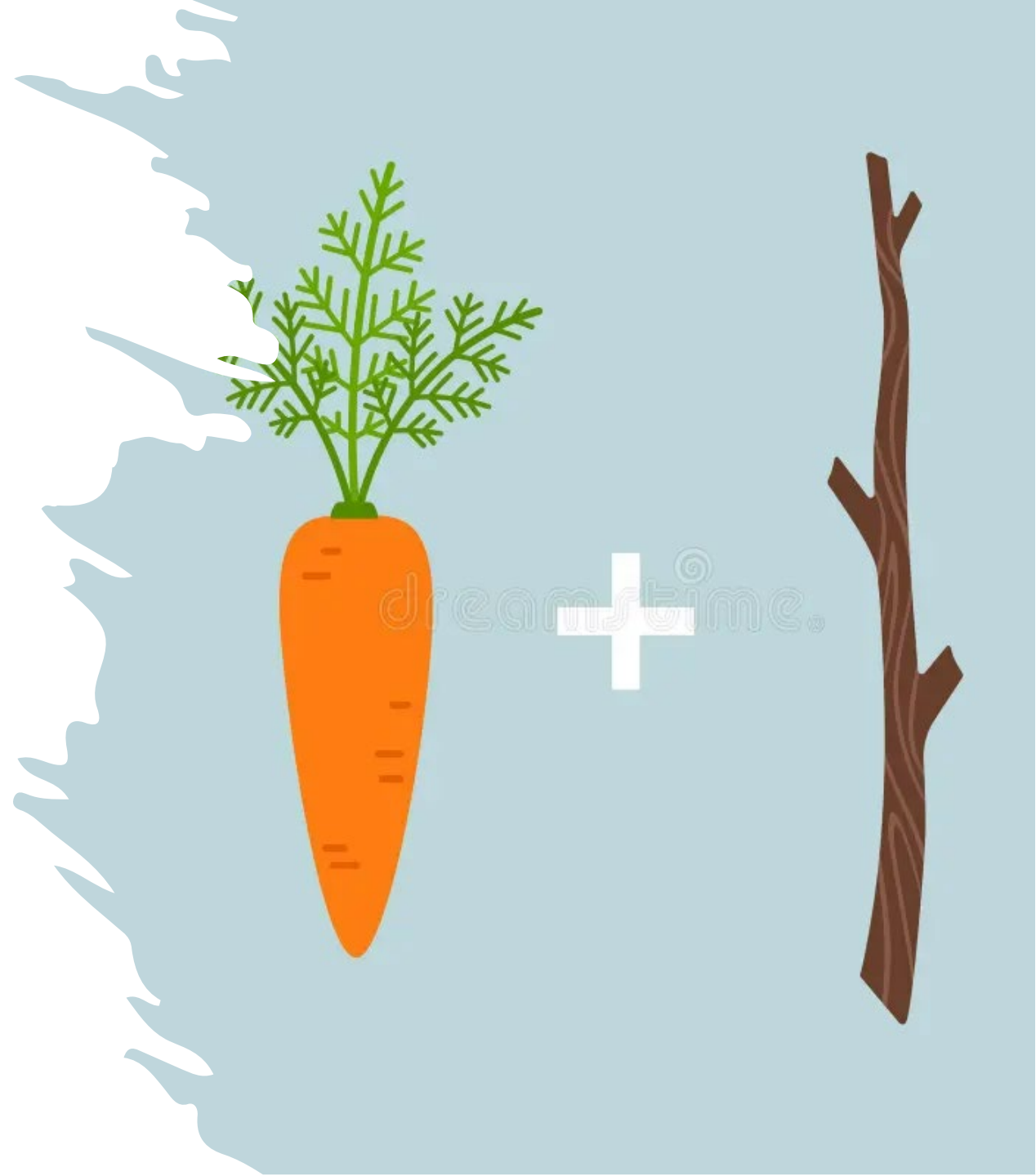
Introduction
Using the Glasgow Coma Scale
Triage and Transport
Goals of Treatment
Intracranial Pressure Monitoring
Management of Intracranial Hypertension
Advanced Neuromonitoring
Surgical Management
Nutritional Support
Ventilation and Tracheostomy
Timing of Secondary Procedures
Timing of Pharmacologic Venous Thromboembolism Prophylaxis
Management Considerations for Pediatric Patients with TBI
Management Considerations for Elderly Patients with TBI
Prognostic Decision-Making and Withdrawal of Medical Support
Outcome Assessment and Quality Improvement in TBI

2015

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Pharmacological Management
Prognostic Assessment and Family Communication
Post-traumatic Epilepsy
Management of TBI Patients with GCS 13-15
Outcome Assessment
Rehabilitation for TBI
Education and Follow Up
Integration and Implementation of the Guidelines



Culture Change in TBI



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Forum on Traumatic Brain Injury

Action Collaborative for TBI Care

Disclaimer: The Action Collaborative is an activity convened under the auspices of the National Academies Forum on Traumatic Brain Injury. The discussions held during this activity do not necessarily represent the views of the National Academies, the TBI Forum, or any one organization.



Action Collaborative (AC) on Traumatic Brain Injury Care

Goal: Create a nationwide, accessible, equitable, sustainable, and evidence-based system of post-acute care

STAGES OF A CARE JOURNEY AFTER TBI

FOR MANY, THE JOURNEY IS NOT CONTINUOUS OR SMOOTH.

There can be bio-psycho-socio-ecological factors leading to:

- A missed or delayed diagnosis
- Difficulty accessing specialized care
- Loss of access to care over time

Some people who experience chronic symptoms will need long-term services and supports.

CLASSIFICATION

Assessment of the nature and severity of a TBI to inform diagnosis, prognosis, and treatment. Includes reassessment as a person's condition evolves.

RECOGNITION

Awareness of the signs and symptoms of TBI, and the identification of an individual who needs care following a brain injury.

FOLLOW UP

Continued engagement with the care system to identify and address ongoing and emerging needs, including provision of community-based support services.

RECOVERY & REINTEGRATION

Recovery of function to the greatest extent possible, including return to family, community, work, or school.

REHABILITATION

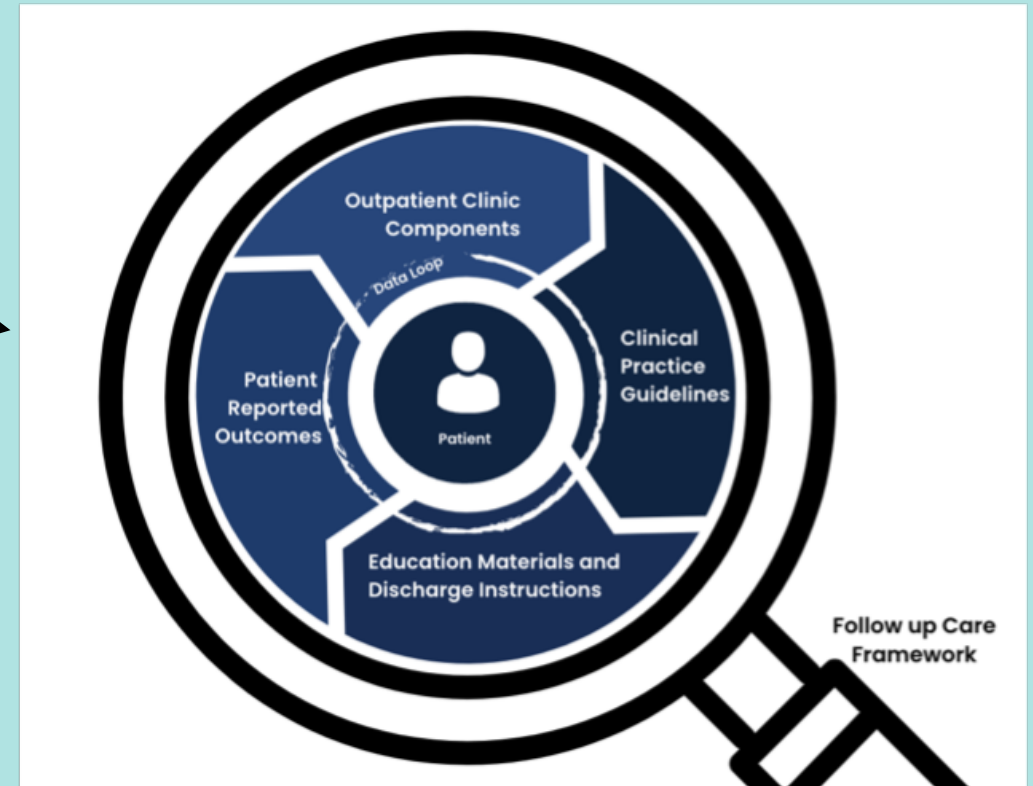
Interventions aimed at improving a person's physical, cognitive, and psychosocial functions and quality of life after a TBI.

ACUTE CARE

Medical interventions to stabilize a person's health condition after a TBI, and to mitigate ongoing damage resulting from a TBI.

CHRONIC CONDITIONS

IF RE-INJURED...



Action Collaborative Working Groups Deliverables

Each demonstration clinic will receive the following deliverables from the AC Working Groups:

- ✓ **Follow up Care:** Best Practice Framework of Follow up Care for TBI
- ✓ **TBI Educational Materials and Discharge Instructions:** Improved adult educational materials and discharge instructions for TBI (CDC)
- ✓ **Clinical Components:** Clinical elements of a multidisciplinary TBI clinic
- ☐ **Clinical Practice Guidelines:** Priority evidence-based clinical management recommendations for optimizing recovery and wellness of people with TBI

Post-Acute Care Clinic Implementation

Each demonstration clinic will address the following elements:

1. Automated patient engagement tools
2. Enhanced standardized education and discharge instructions on TBI
3. Standardized assessment tools (e.g., NSI, GAD-7, PHQ-9, ISI, HIT-6)
4. Implementation of **clinical practice guidelines** which includes training for guideline application and development of quality measures
5. Data platform
6. Implementation of continuous lessons learned – **Learning Health Care System**

Post-Acute Care Clinic System

We currently have 3 demonstration clinics in our post-acute care clinic network:

- ✓ University of California San Francisco
- ✓ University of Pennsylvania
- ✓ Medical College of Wisconsin

We have started working with key players at 2 potential sites:

- ☐ University of Pittsburgh
- ☐ West Virginia University

Post-Acute Care Clinic Implementation

2025 Goals

- We aim to have **3-5** demonstration clinics implementing program elements in 2025
- Create a cohesive and connected network among the demonstration clinics
- Explore GetWell Loop and EPIC MyChart Care Companion
- Collect preliminary de-identified data from PAC-TBI clinics

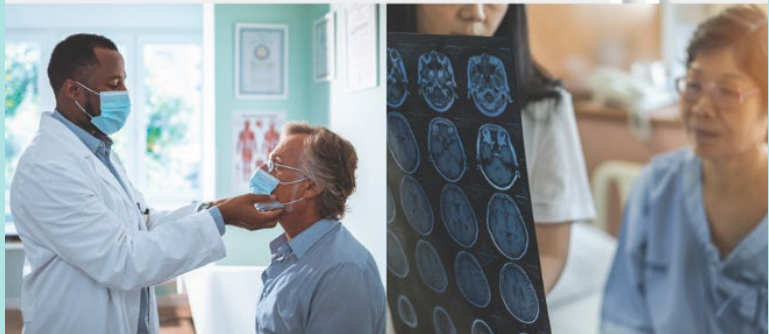
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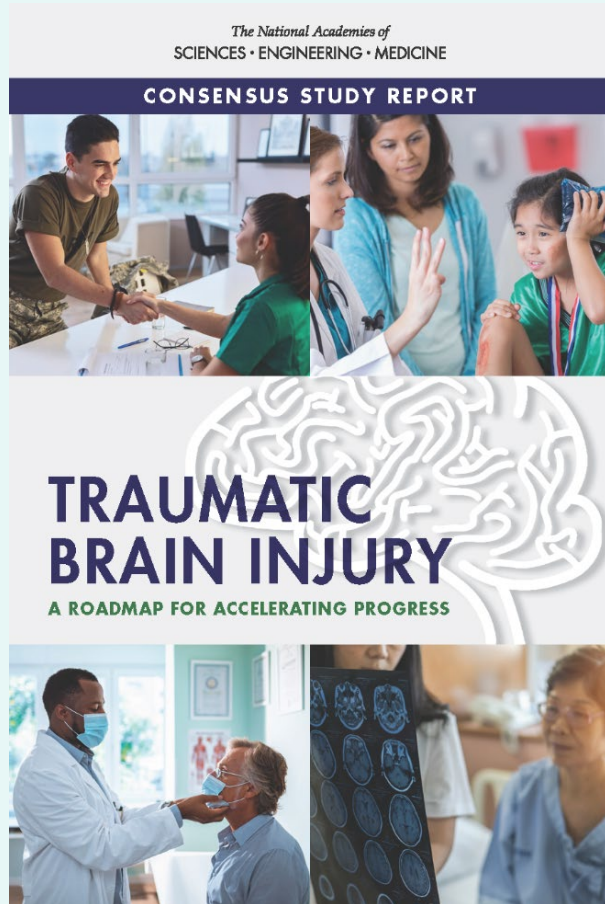
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A NEW ERA IN TBI



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