Traumatic Brain Injury (TBI)

OBJECTIVE

The objective of this Clinical Practice Guideline (CPG) is to provide evidence-based practice recommendations for Traumatic Brain Injury (TBI). The CPG discusses TBI and behavioral health implications as well as objectives and measureable health outcomes with respect to Care Management. In addition, the CPG outlines the organizations that WellCare aligns with regarding Measureable Health Outcomes.

OVERVIEW

A traumatic brain injury (TBI) is caused by a bump, blow, or jolt to the head that disrupts the normal function of the brain. Severity can range from mild (a brief change in mental status or consciousness) to severe (an extended period of unconsciousness or memory loss after the injury). Most TBIs are mild (concussions). These injuries are a major cause of death and disability in the United States – they contribute to about 30% of all injury deaths (153 people die daily in the United States due to from injuries). Survivors of a TBI may have effects lasting a few days to the rest of their lives. Effects can include impaired thinking or memory, movement, sensation (e.g., vision or hearing), or emotional functioning (e.g., personality changes, depression). These also impact families and communities, as well as the survivor. In 2013, approximately 2.8 million TBI-related emergency department (ED) visits, hospitalizations, and deaths occurred in the United States; TBI contributed to nearly 50,000 deaths. Over 282,000 hospitalizations and 2.5 million ED visits had a diagnosis of TBI (either alone or TBI with other injuries). In 2012, almost 330,000 children age $\leq$ 19 were treated in EDs for sports and recreation-related with injuries that included a diagnosis of concussion or TBI. From 2001 to 2012, the rate of ED visits for sports and recreation-related injuries with a diagnosis of concussion or TBI, alone or in combination with other injuries, more than doubled among children (age $\leq$ 19).

Causes of TBI are often due to falls which accounted for 47% of all TBI-related ED visits, hospitalizations, and deaths in the United States in 2013. Over half of TBI-related ED visits hospitalizations, and deaths among children 0 to 14 years were caused by falls. Nearly 80% of TBI-related ED visits, hospitalizations, and deaths in adults aged 65 and older were caused by falls. The second leading cause of TBI is being struck by or against an object and account for 15% of cases. Among those age $\leq$ 15, 22% of cases were caused due to being struck by or against an object. Motor vehicle crashes are the third leading cause overall of TBI-related ED visits, hospitalizations, and deaths (14%).[1]

Hierarchy of Support

GUIDELINE HIERARCHY

CPGs are updated every two years or as necessary due to updates made to guidelines or recommendations by the United States Department of Veteran Affairs (VA) and the Brain Trauma Foundation (BTF). When there are differing opinions noted by national organizations, WellCare will default to the member's benefit structure as deemed by state contracts and Medicaid / Medicare regulations. If there is no specific language pertaining to TBI, WellCare will default (in order) to the following:

- National Committee for Quality Assurance (NCQA);
- United States Preventive Services Task Force (USPSTF), National Quality Strategy (NQS), Agency for

Healthcare Research and Quality (AHRQ);
- Specialty associations, colleges, societies, etc. (e.g., American Academy of Family Physicians, American Congress of Obstetricians and Gynecologists, American Cancer Society, etc.).

Links to websites within the CPGs are provided for the convenience of Providers. Listings do not imply endorsement by WellCare of the information contained on these websites. NOTE: All links are current and accessible at the time of MPC approval.

WellCare aligns with the VA and BTF on the topic of TBI. Highlights from their respective publications are noted below.

UNITED STATES DEPARTMENT OF VETERANS AFFAIRS

The United States Department of Veteran Affairs (VA) and the Department of Defense (DoD) published the guideline *Management of Concussion-mild Traumatic Brain Injury (mTBI).* The guideline offers recommendations on: Diagnosis and Assessment; Co-Occurring Conditions; Treatment; and Setting of Care. The guideline can be viewed here.[2]

BRAIN TRAUMA FOUNDATION

The Brain Trauma Foundation (BTF) published *Guidelines for the Management of Severe Traumatic Brain Injury (4th ed.)* to address treatment interventions, monitoring, and treatment thresholds specific to TBI. The guidelines were reviewed for evidence-based integrity and endorsed by the American Association of Neurological Surgeons (AANS) and the Congress of Neurological Surgeons. Highlights include:

- Treatment related recommendations cover the following: decompressive craniectomy; prophylactic hypothermia; hyperosmolar therapy; cerebrospinal fluid drainage; ventilation therapies; anesthetics, analgesics, and sedatives; steroids; nutrition; infection prophylaxis; deep vein thrombosis prophylaxis; and seizure prophylaxis.
- Monitoring related recommendations focus on intracranial pressure, cerebral perfusion pressure, and advanced cerebral monitoring.
- Threshold recommendations are provided regarding blood pressure, intracranial pressure, cerebral perfusion pressure, and advanced cerebral monitoring.

The BTF guidelines can be viewed here.[3]

Evidence Based Practice

AGENCY FOR HEALTHCARE RESEARCH AND QUALITY (AHRQ)

The Agency for Healthcare Research and Quality (AHRQ) has not published reports on this topic.

MEASUREMENT OF COMPLIANCE

WellCare is committed to adhering to the measures and standards published by the Centers for Medicare and Medicaid Services (CMS) and the National Committee for Quality Assurance (NCQA). Please reference WellCare's Clinical Policy Guiding Document titled *Quality Improvement.*

NOTE: To access Clinical Policy Guiding Documents visit www.wellcare.com – select the Provider tab, then "Tools" and "Clinical Guidelines".

Care Management

A severe TBI may result in an extended period of unconsciousness (coma) or amnesia after the injury. For individuals hospitalized after a TBI, almost half (43%) have a related disability one year after the injury.[10] A TBI may lead to a wide range of short- or long-term issues affecting:

- **Cognitive Function** (e.g., attention and memory)
- **Motor function** (e.g., extremity weakness, impaired coordination and balance)
- **Sensation** (e.g., hearing, vision, impaired perception and touch)
- **Emotion** (e.g., depression, anxiety, aggression, impulse control, personality changes)

Approximately 5.3 million Americans are living with a TBI-related disability and the consequences of severe TBI can affect all aspects of an individual's life. This can include relationships with family and friends, as well as their ability to work or be employed, do household tasks, drive, and/or participate in other activities of daily living.

TBI Classification Systems. TBI injury severity can be described using several different tools. The Glasgow Coma Scale (GCS), a clinical tool designed to assess coma and impaired consciousness, is one of the most commonly used severity scoring systems. Persons with GCS scores of 3 to 8 are classified with a severe TBI, those with scores of 9 to 12 are classified with a moderate TBI, and those with scores of 13 to 15 are classified with a mild TBI. Other classification systems include the Abbreviated Injury Scale (AIS), the Trauma Score, and the Abbreviated Trauma Score. Despite their limitations, these systems are crucial to understanding the clinical management and the likely outcomes of this injury as the prognosis for milder forms of TBIs is better than for moderate or severe TBIs.[4]

MEASURABLE HEALTH OUTCOMES

Targeted Health Outcomes (Extended Program Goals) result from successful member self-management (see Case Management Objectives).

1. The Member experiences no fall related injuries requiring acute medical care and intervention. The case manager compares the recent utilization frequency for Traumatic Brain Injury to the frequency prior to CM engagement. CM monitors for ED and inpatient authorization/utilization related to falls. In absence of ED and inpatient utilization, authorizations and claims data, or to otherwise demonstrate less frequent need for acute medical intervention, CM may use Provider and/or Member narrative.
2. The Member reports fewer falls over a specific period of time after the start of Case Management engagement.

CASE MANAGEMENT GOALS

Case Goals should target specific care gaps and/or adherence issues, and measure the member's progress towards self-management and adherence which will lead to the targeted health outcomes above. Examples:

1. Member experiences no falls for a 60 day period with fall prevention strategies.
2. Member reports discussion regarding fall risks, concerns and prevention has occurred with doctor $\leq$ 60 days.
3. Member states implementation of appropriate interventions to minimize risk of injury within 45 days.
4. Member is able to verbalize 3 symptoms of TBI in 45 days.
5. Member/caregiver will list 3 new or worsening conditions to report with PCP/Specialist within 45 days.
6. Specific for Members requiring hospitalization: The Member participates in provider follow-up visit within 7 days of hospital discharge.

CASE MANAGEMENT OBJECTIVES

Case Management Objectives should focus on improving the member's self-management skills including:
Care Manager will educate member/caregiver on potential signs and symptoms of complications related to Traumatic Brain Injury (TBI) such as:

- Difficulty concentrating
- Memory problems
- Slowed thought process
- Confusion
- Difficulty speaking and/or being understood
- Problems reading and/or writing
- Difficulty understanding others
- Behavior changes
- Vision changes
- Hearing Changes
- Smell and/or taste changes
- Seizures
- Paralysis/spasticity
- Changes in bowel and/or bladder function
- Problems regulating body temperature

Care Manager will educate member/caregiver on basic treatment plan activities that help manage signs / symptoms:

- Importance of taking prescribed medications as directed
- Importance of attending all appointments as scheduled
- Importance of reporting new or worsening symptoms to PCP/Specialist

The Care Manager will also:

- Send educational materials to member/caregiver on traumatic brain injury
- Send educational material on fall prevention
- Encourage member to discuss fall risks / concerns and falls prevention with doctor

Care Manager will educate member on ways to prevent injury such as:

- Removing throw rugs
- Using night lights
- Using non-slip carpet
- Wearing non-slip shoes both inside and outside the house
- Using assistive devices (i.e. grab bars, hand rails, shower chairs, cane, walker)
- Non-slip mats in the bathtub and on shower floors
- Removing clutter from floor
- Improve the lighting in your home
- Don't change positions too quickly. From lying, sit for a while before you stand
- Keep items you use often in cabinets you can reach easily without using a step stool

Care Manager will discuss risks/barriers with provider to determine if any healthcare resources could address.

Care Manager will educate member regarding importance of:

- Taking medications as directed
- Getting to a safe place if you experience auras (e.g., sit or lie down)
- Following state laws for driving
- Padding sharp corners of furniture
- Placing barriers in front of fireplaces and hot stoves
- Making sure someone has a key to enter your home to check on you
- Avoiding baths; using showers to prevent drowning
- Using grab bars and shower chair to prevent slips/falls
- Keeping seizure diary to share with PCP/Specialist

Care Manager will assist member with contacting support resources, setting up support resources to address barrier(s). The care team should also conduct risk screening and treat anxiety and depression, if applicable.

MEDICAL BEHAVIORAL INTEGRATION

Studies have shown that after a TBI, patients have higher rates of depression and panic disorder than the general population. It may be difficult to accurately diagnose depression after a TBI because symptoms such as fatigue, decreased involvement in activities, insomnia, and lack of appetite and concentration overlap with TBI symptoms. Tricyclic antidepressants for the treatment of depression in the TBI patient should be avoided, due to anticholinergic effects worsening cognitive impairment. PTSD can also occur after a TBI, even if the patient does not remember the event, although patients who did not remember the event or were unconscious had fewer incidences and symptoms of PTSD. Patients with co-occurring chronic pain and TBI had more PTSD symptoms. Falls, or other accidents and injuries due to alcohol use, are one of the most common causes of TBIs and alcohol use is also a risk factor in developing a psychiatric diagnosis after a TBI. Many patients who drank heavily prior to the TBI went back to their alcohol use after they gained more independence in recovery from the injury. Those with TBI and alcohol use had higher rates of depression, anxiety and suicidal thoughts and violent behavior. TBIs may also cause personality changes, with apathy being the most common symptom of personality change. Other common personality changes include lability and aggression.[5]

MEMBER EDUCATIONAL RESOURCES

WellCare contracts with Krames/StayWell for Member educational materials utilized by Case Managers. Items are available to review with Members to address knowledge gaps. Case Managers verbally educate Members on the topics below related to Fall Prevention. (Titles may also be sent to the member).

NOTE: Links are internal for WellCare Care Management staff. Please see below for public links.

- Preventing Falls Making Changes in Your Living Space
- Preventing Falls Moving Safely Out of a Chair and Bed
- Preventing Falls Moving Safely Using a Cane or Walker
- Exercises to Prevent Falls
- Preventing Falls Make Your Health a Priority

Providers may wish to research the titles above related to asthma that Case Managers utilize with Members.

Related WellCare Guidelines

In addition to the information contained in this document, please reference the following CPGs: *Anxiety Disorders: HS-1057; Depressive Disorders Adults, Children & Adolescents: HS-1022; Post-Traumatic Stress Disorder: HS-1048; Substance Use Disorders: HS-1031;* and *Suicidal Behavior: HS-1027.*

NOTE: Clinical Policies can be accessed by going to www.wellcare.com – select the Provider tab, then "Tools" and "Clinical Guidelines".

References

1. Traumatic Brain Injury and Concussion: TBI – get the facts. Centers for Disease Control and Prevention Web site. https://www.cdc.gov/traumaticbraininjury/get_the_facts.html. Published April 27, 2017. Accessed June 27, 2018.
2. Management of Concussion-mild Traumatic Brain Injury (mTBI). United States Department of Veteran Affairs Web site. https://www.healthquality.va.gov/guidelines/Rehab/mtbi/. Published 2016. Accessed June 27, 2018.
3. Guidelines for the Management of Severe Traumatic Brain Injury (4th ed.). Brain Trauma Foundation Web site. https://braintrauma.org/uploads/03/12/Guidelines_for_Management_of_Severe_TBI_4th_Edition.pdf. Published September 2016. Accessed June 27, 2018.
4. Traumatic Brain Injury and Concussion: Severe TBI. Centers for Disease Control and Prevention Web site. https://www.cdc.gov/traumaticbraininjury/severe.html. Published March 30, 2017. Accessed June 27, 2018.
5. Schwarzbold, Marcelo et al. "Psychiatric Disorders and Traumatic Brain Injury." *Neuropsychiatric Disease and Treatment* 4.4 (2008): 797–816. Print.

Disclaimer

Medical Policy Committee Approval History

Date	History and Revisions by the Medical Policy Committee
7/12/2018	• Approved by MPC. No changes.
8/18/2017	• Approved by MPC. New.