Clinical Policy Title: Immediate post-concussion assessment and cognitive testing (ImPACT)

Clinical Policy Number: 09.01.02

Effective Date: September 1, 2013
Initial Review Date: February 18, 2013
Most Recent Review Date: April 27, 2016
Next Review Date: April 2017

Related policies:
None

ABOUT THIS POLICY: Arbor Health Plan has developed clinical policies to assist with making coverage determinations. Arbor Health Plan’s clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of “medically necessary,” and the specific facts of the particular situation are considered by Arbor Health Plan when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. Arbor Health Plan’s clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. Arbor Health Plan’s clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, Arbor Health Plan will update its clinical policies as necessary. Arbor Health Plan’s clinical policies are not guarantees of payment.

Coverage policy

Arbor Health Plan considers the use of immediate post-concussion assessment and cognitive testing (ImPACT) when performed by medical professionals to be clinically proven and, therefore, medically necessary in the assessment of acute head trauma.

Limitations:

All other uses of immediate post-concussion assessment and cognitive testing are not medically necessary.

- Eligible members may not have immediate post-concussion assessment and cognitive testing if the primary purpose is for assessment to return to athletics or for other nontherapeutic reasons.
- ImPACT testing is not separately reimbursable, as it is incidental to neurobehavioral status examination (CPT 96116) or neuropsychological tests (CPT 96118-96120).
Alternative covered services:

Members suffering head injuries may have evaluation by network physicians and testing that is covered by benefits as prescribed.

Background

The Centers for Disease Control and Prevention (CDC) estimates that 1.7 million people sustain a traumatic brain injury (TBI) annually and that TBI is a contributing factor to a third (30.5 percent) of all injury-related deaths in the United States. Further, the CDC estimates that 75 percent of TBIs that occur each year are concussions or other forms of mild TBI. This makes concussion and other TBI a significant population health concern.

TBIs are male-predominant in every age band. Children ages 0 – 4 years, adolescents ages 15 – 19 years and adults ages ≥65 years are most likely to sustain a TBI. However, the athlete requires more study than the normal individual because of the greater likelihood of repeated TBI on return to the athletic field.

The CDC has developed tools to assist physicians in the recognition and management of patients with TBI. Studies have indicated that the use of neurocognitive testing after sports-related concussion may assist the athletic director or coach in determining if TBI is present and its level of severity.

TBI management depends upon the specific symptoms and the degree to which the symptoms respond to therapy. The 2010 Position Paper by the American Academy of Neurology (AAN) makes the following recommendations for the athlete who has suffered a concussion:

- Any athlete who is suspected to have suffered a concussion should be removed from participation until he or she is evaluated by a physician with training in the evaluation and management of sports concussions.
- No athlete should be allowed to participate in sports if he or she is still experiencing symptoms from a concussion.
- Following a concussion, a neurologist or physician with proper training should be consulted prior to clearing the athlete for return to participation.
- A certified athletic trainer should be present at all sporting events, including practices, where athletes are at risk for concussion.
- Education efforts should be maximized to improve the understanding of concussion by all athletes, parents and coaches.

In nonsports-related TBI, the CDC recommendations call for clinical assessments to follow clinical progress in the return to normal mentation and physical well-being.

Searches

Arbor Health Plan searched PubMed and the databases of:

- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality’s National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services.
Searches were conducted on March 28, 2016, using the terms “traumatic brain injury (MeSH)” and “ImPACT testing (MeSH).” Included were:

- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews.**
- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

**Findings**

- Half of the 3.8 million concussions each year in the United States occurring during competitive sports and recreational activities go unreported.
- There are no studies that demonstrate that early detection of concussion improves outcomes; however, studies indicate that early detection and removal of risk for further head injuries can reduce the risk of worsening neurologic symptoms.
- According to the American Medical Society for Sports Medicine (AMSSM), “Graded symptom checklists provide an objective tool for assessing a variety of symptoms related to concussions, while also tracking the severity of those symptoms over serial evaluations.”
- An RCT inclusive of 70 non-concussed patients (Hope 2015) studied the effects of acute sleep loss on both subjective symptoms and objective neurocognitive performance on ImPACT. Subjects reporting sleep of less than seven hours the night prior to baseline testing had worse cognitive, affective and vegetative symptoms and had poorer objective performance on verbal memory, visual memory and reaction time tasks when compared to those that slept seven to nine hours.

**Summary of clinical evidence:**

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
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<tbody>
<tr>
<td>Hope (2015)</td>
<td><strong>Key points:</strong></td>
</tr>
</tbody>
</table>
| Acute sleep loss affects symptom report but not performance on immediate post-concussion assessment and cognitive testing (ImPACT). | - Randomized controlled trial (RCT) of 70 non-concussed patients studied acute sleep loss on both subjective symptoms and objective neurocognitive performance.  
  - Subjects reporting sleep of less than seven hours the night prior to baseline testing had worse cognitive, affective, and vegetative symptoms and had poorer objective performance on verbal memory, visual memory and reaction time tasks when compared to those who slept seven to nine hours.  
  - The authors concluded that both acute sleep restriction and sleep deprivation conditions resulted in worsened next-day cognitive and sleep symptoms, but not in diminished neurocognitive performance. |
Harmon, AMSSM (2013)

Key points:

- A position paper based upon evidence-supported literature for the AMSSM.
- Neuropsychological (NP) tests are an objective measure of brain-behavior relationships and are more sensitive for subtle cognitive impairment than clinical exam.
- Most concussions can be managed appropriately without the use of NP testing.
- Computerized neuropsychological (CN) testing should be interpreted by trained health care professionals.
- Additional research is needed to validate current assessment tools, delineate the role of NP testing and improve identification of those at risk of prolonged postconcussive symptoms or other long-term complications.

Giza, AAN (2013)

Key points:

- Update of the 1997 AAN practice parameter.
- Diagnostic tools to help identify individuals with concussion include graded symptom checklists, the Standardized Assessment of Concussion, neuropsychological assessments and the Balance Error Scoring System.
- Risk factors for recurrent concussion include history of multiple concussions, particularly within 10 days after initial concussion.
- Risk factors for chronic neurobehavioral impairment include concussion
- Exposure and APOE ε4 genotype.
- Data is insufficient to show that any intervention enhances recovery or diminishes long-term sequelae postconcussion.

Glossary

Concussion — The U.S. National Library of Medicine defines a concussion as “a minor TBI that may occur when the head hits an object or a moving object strikes the head. It can affect how the brain works for a while, can lead to a bad headache, and cause changes in alertness or loss of consciousness.”

Immediate post-concussion assessment and cognitive testing (ImPACT) — A methodological practice of immediate evaluation and diagnosis of individuals who may have suffered a concussion, often conducted within minutes of the incident of injury and loss of consciousness.

Medical professional — For purposes of this policy, the term “medical professional” refers to an appropriately trained and licensed individual in the medical profession. This may include medical doctor, osteopathic physicians, advanced nurse practitioners, physician assistants and psychologists.

Postconcussion syndrome (PCS) — A complex of symptoms following a concussion that may last for weeks or months. Typically, there may be headache, dizziness, cognitive dysfunction, and sleep or mood disorders. Treatments for PCS are aimed at the specific symptom complex.

References

Professional society guidelines/other:

American Congress of Rehabilitation Medicine, Brain Injury-Interdisciplinary. Seel RT, Sherer M, Whyte J, et al. Assessment scales for disorders of consciousness: evidence-based recommendations for clinical practice and


Peer-reviewed references:


**Clinical trials:**

Searched clinicaltrials.gov on March 30, 2016 using terms “post-concussion assessment” and “ImPACT” | Open Studies. 14 studies found, 2 relevant.


**National Coverage Determinations (NCDs):**

No NCDs were identified at the writing of this policy.

**Local Coverage Determinations (LCDs):**

No LCDs were identified at the writing of this policy.

**Commonly submitted codes**

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill accordingly.

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comment</th>
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<tbody>
<tr>
<td>96116</td>
<td>Neurobehavioral status exam: Clinical assessment of thinking, reasoning and judgment (e.g., acquired knowledge, attention, language, memory, planning and problem solving, and visual-spatial abilities) per hour of psychologist’s or physician’s time, both face-to-face with the patient and interpreting test results and preparing the report</td>
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<tr>
<td>ICD-10 Code</td>
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<tr>
<td>S06.0X0A</td>
<td>Concussion without loss of consciousness, initial encounter</td>
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<tr>
<td>S06.0X1A</td>
<td>Concussion with loss of consciousness of 30 minutes or less, initial encounter</td>
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<tr>
<td>S06.0X2A</td>
<td>Concussion with loss of consciousness of 31 minutes to 59 minutes, initial encounter</td>
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<tr>
<td>S06.0X3A</td>
<td>Concussion with loss of consciousness of 1 hour to 5 hours 59 minutes, initial encounter</td>
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<tr>
<td>S06.0X4A</td>
<td>Concussion with loss of consciousness of 6 hours to 24 hours, initial encounter</td>
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<tr>
<td>S06.0X5A</td>
<td>Concussion with loss of consciousness greater than 24 hours with return to pre-existing conscious level, initial encounter</td>
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<tr>
<td>S06.0X6A</td>
<td>Concussion with loss of consciousness greater than 24 hours without return to pre-existing conscious level with patient surviving, initial encounter</td>
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<tr>
<td>S06.0X7A</td>
<td>Concussion with loss of consciousness of any duration with death due to brain injury prior to regaining consciousness, initial encounter</td>
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<tr>
<td>S06.0X8A</td>
<td>Concussion with loss of consciousness of any duration with death due to other cause prior to regaining consciousness, initial encounter</td>
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<tr>
<th>HCPCS Level II</th>
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