Harvard Pilgrim Health Care | TUFTS Health Plan

Point32Health companies

Payment Policy:

Laboratory: Serum Testing for Evidence of Mild Traumatic Brain Injury

Applies to:

Commercial Products

☒ Harvard Pilgrim Health Care Commercial products
☐ Tufts Health Plan Commercial products

Public Plans Products

☐ Tufts Health Direct – A Massachusetts Qualified Health Plan (QHP) (a commercial product)
☐ Tufts Health Together – MassHealth Accountable Care Partnership Plans
☐ Tufts Health RITogether – A Rhode Island Medicaid Plan
☐ Tufts Health One Care – A dual-eligible product

Senior Products

☐ Tufts Health Plan Senior Care Options (SCO) (a dual-eligible product)
☐ Tufts Medicare Preferred HMO/PPO (Medicare Advantage products)

Policy

Traumatic brain injury (TBI) is characterized by pathologic injuries to the brain resulting from external forces or trauma. A broad range of sequela of varying clinical severity include focal contusions and hematomas, diffuse axonal injury, cerebral edema and swelling, and a cascade of molecular injury mechanisms.

Concussion refers to the trauma-induced alteration in mental status, which may or may not involve loss of consciousness, after a mild TBI. Measurement of blood and other fluid biomarkers has been proposed as a way of evaluating mild traumatic brain injury.

Indications and/or Limitations of Coverage

Application of coverage criteria is dependent upon an individual's benefit coverage at the time of the request.

The following does not meet coverage criteria due to a lack of available published scientific literature confirming that the test(s) is/are required and beneficial for the diagnosis and treatment of an individual's illness.

1. For the evaluation of mild traumatic brain injury (TBI), measurement of concussion markers (e.g., S100B, GFAP, and UCH-L1) in the blood, saliva, and/or cerebrospinal fluid (CSF) **DOES NOT MEET COVERAGE CRITERIA**.
2. Panels designed to measure biomarkers of TBI (e.g., i-STAT TBI Plasma, Alinity® i TBI) **DO NOT MEET COVERAGE CRITERIA**.

Applicable CPT/HCPCS Procedure Codes

Procedure codes appearing in policy documents are included only as a general reference tool for each policy. They may not be all-inclusive.

Coding

Code	Description
83516	Immunoassay for analyte other than infectious agent antibody or infectious agent antigen; qualitative or semiquantitative, multiple step method
84999	Unlisted chemistry procedure
0570U	Neurology (traumatic brain injury), analysis of glial fibrillary acidic protein (GFAP) and ubiquitin carboxylterminal hydrolase L1 (UCHL1), immunoassay, whole blood or plasma, individual components reported with the overall result of elevated or non-elevated based on threshold comparison

Code	Description
	Proprietary test: i-STAT TBI Lab/Manufacturer: Abbott Point of Care

Evidence-based Scientific References

1. Williamson C, Rajajee V. Traumatic brain injury: Epidemiology, classification, and pathophysiology. Updated December 3, 2025. https://www.uptodate.com/contents/traumatic-brain-injury-epidemiology-classification-and-pathophysiology
2. Evans RW, Whitlow CT. Acute mild traumatic brain injury (concussion) in adults. Updated April 17, 2026. https://www.uptodate.com/contents/acute-mild-traumatic-brain-injury-concussion-in-adults
3. CDC. Facts About TBI. Updated August 4, 2025. https://www.cdc.gov/traumatic-brain-injury/data-research/facts-stats/
4. CDC. Report to Congress on Traumatic Brain Injury Epidemiology and Rehabilitation | Concussion | Traumatic Brain Injury | CDC Injury Center. Centers for Disease Control and Prevention.; 2015. https://www.cdc.gov/traumaticbraininjury/pdf/tbi_report_to_congress_epi_and_rehab-a.pdf
5. Wright DW, Kellermann A, McGuire LC, Chen B, Popovic T. CDC Grand Rounds: Reducing Severe Traumatic Brain Injury in the United States. MMWR Morb Mortal Wkly Rep. 2013;62(27):549-52. https://www.cdc.gov/mmwr/preview/mmwrhtml/mm6227a2.htm
6. Silverberg ND, Iaccarino MA, Panenka WJ, et al. Management of Concussion and Mild Traumatic Brain Injury: A Synthesis of Practice Guidelines. Arch Phys Med Rehabil. Feb 2020;101(2):382-393. doi:10.1016/j.apmr.2019.10.179
7. Mondello S, Sorinola A, Czeiter E, et al. Blood-Based Protein Biomarkers for the Management of Traumatic Brain Injuries in Adults Presenting with Mild Head Injury to Emergency Departments: A Living Systematic Review and Meta-Analysis. Journal of neurotrauma. Oct 12 2021;doi:10.1089/neu.2017.5182
8. Mannix R, Eisenberg M, Berry M, Meehan WP, 3rd, Hayes RL. Serum biomarkers predict acute symptom burden in children after concussion: a preliminary study. Journal of neurotrauma. Jun 1 2014;31(11):1072-5. doi:10.1089/neu.2013.3265
9. FDA authorizes marketing of first blood test to aid in the evaluation of concussion in adults. WebContent. U.S. Food and Drug Administration; 2018. https://www.bioflorida.com/news/387169/Week%201%20Report
10. Truettner JS, Bramlett HM, Dietrich WD. Hyperthermia and Mild Traumatic Brain Injury: Effects on Inflammation and the Cerebral Vasculature. Journal of neurotrauma. Feb 9 2018;doi:10.1089/neu.2017.5303
11. Di Battista AP, Buonora JE, Rhind SG, et al. Blood Biomarkers in Moderate-To-Severe Traumatic Brain Injury: Potential Utility of a Multi-Marker Approach in Characterizing Outcome. Front Neurol. 2015;6doi:10.3389/fneur.2015.00110
12. Plog BA, Dashnaw ML, Hitomi E, et al. Biomarkers of traumatic injury are transported from brain to blood via the glymphatic system. The Journal of neuroscience : the official journal of the Society for Neuroscience. Jan 14 2015;35(2):518-26. doi:10.1523/jneurosci.3742-14.2015
13. McMahon PJ, Panczykowski DM, Yue JK, et al. Measurement of the Glial Fibrillary Acidic Protein and Its Breakdown Products GFAP-BDP Biomarker for the Detection of Traumatic Brain Injury Compared to Computed Tomography and Magnetic Resonance Imaging. Journal of neurotrauma. 2015;32(8):527-33. doi:10.1089/neu.2014.3635
14. Halford J, Shen S, Itamura K, et al. New astroglial injury-defined biomarkers for neurotrauma assessment. Journal of cerebral blood flow and metabolism : official journal of the International Society of Cerebral Blood Flow and Metabolism. Oct 2017;37(10):3278-3299. doi:10.1177/0271678x17724681
15. Mondello S, Jeromin A, Buki A, et al. Glial neuronal ratio: a novel index for differentiating injury type in patients with severe traumatic brain injury. Journal of neurotrauma. Apr 10 2012;29(6):1096-104. doi:10.1089/neu.2011.2092
16. Maas AIR, Menon DK, Adelson PD, et al. Traumatic brain injury: integrated approaches to improve prevention, clinical care, and research. The Lancet Neurology. Dec 2017;16(12):987-1048. doi:10.1016/s1474-4422(17)30371-x
17. Hier DB, Obafemi-Ajayi T, Thimgan MS, et al. Blood biomarkers for mild traumatic brain injury: a selective review of unresolved issues. Biomarker Research. 2021/09/16 2021;9(1):70. doi:10.1186/s40364-021-00325-5
18. Chmielewska N, Szyndler J, Makowska K, Wojtyna D, Maciejak P, Plaznik A. Looking for novel, brain-derived, peripheral biomarkers of neurological disorders. Neurologia i neurochirurgia polska. Feb 13 2018;doi:10.1016/j.pjnns.2018.02.002
19. Strathmann FG, Schulte S, Goerl K, Petron DJ. Blood-based biomarkers for traumatic brain injury: evaluation of research approaches, available methods and potential utility from the clinician and clinical laboratory perspectives. Clinical biochemistry. Jul 2014;47(10-11):876-88. doi:10.1016/j.clinbiochem.2014.01.028
20. Ingebrigtsen T, Romner B, Kock-Jensen C. Scandinavian guidelines for initial management of minimal, mild, and moderate head injuries. The Scandinavian Neurotrauma Committee. The Journal of trauma. Apr 2000;48(4):760-6. doi:10.1186/1741-7015-11-50
21. Unden L, Calcagnile O, Unden J, Reinstrup P, Bazarian J. Validation of the Scandinavian guidelines for initial management of minimal, mild and moderate traumatic brain injury in adults. BMC medicine. Dec 9 2015;13:292. doi:10.1186/s12916-015-0533-y
22. Piazza O, Storti MP, Cotena S, et al. S100B is not a reliable prognostic index in paediatric TBI. Pediatric neurosurgery. 2007;43(4):258-64. doi:10.1159/000103304

23. Papa L, Silvestri S, Brophy GM, et al. GFAP Out-Performs S100β in Detecting Traumatic Intracranial Lesions on Computed Tomography in Trauma Patients with Mild Traumatic Brain Injury and Those with Extracranial Lesions. Journal of neurotrauma. 2014;31(22):1815-22. doi:10.1089/neu.2013.3245
24. Anderson RE, Hansson LO, Nilsson O, Dijlai-Merzoug R, Settergren G. High serum S100B levels for trauma patients without head injuries. Neurosurgery. Jun 2001;48(6):1255-8; discussion 1258-60. doi:10.1097/00006123-200106000-00012
25. Wang KK, Yang Z, Zhu T, et al. An update on diagnostic and prognostic biomarkers for traumatic brain injury. Expert Rev Mol Diagn. 2018;18(2):165-180. doi:10.1080/14737159.2018.1428089
26. Lei J, Gao G, Feng J, et al. Glial fibrillary acidic protein as a biomarker in severe traumatic brain injury patients: a prospective cohort study. Critical care (London, England). Oct 12 2015;19:362. doi:10.1186/s13054-015-1081-8
27. Diaz-Arrastia R, Wang KK, Papa L, et al. Acute Biomarkers of Traumatic Brain Injury: Relationship between Plasma Levels of Ubiquitin C-Terminal Hydrolase-L1 and Glial Fibrillary Acidic Protein. Journal of neurotrauma. 2014;31(1):19-25. doi:10.1089/neu.2013.3040
28. Mondello S, Akinyi L, Buki A, et al. Clinical Utility of Serum Levels of Ubiquitin C-Terminal Hydrolase as a Biomarker for Severe Traumatic Brain Injury. Neurosurgery. Mar 2012;70(3):666-75. doi:10.1227/NEU.0b013e318236a809
29. Chiollaz A-C, Pouillard V, Seiler M, et al. IL6 in Combination with Either NfL, NTproBNP, or GFAP to Safely Discharge Children with Mild Traumatic Brain Injury. Journal of neurotrauma. 2026;43(3-4):248-258. doi:10.1177/08977151251385576
30. Welch RD, Ayaz SI, Lewis LM, et al. Ability of Serum Glial Fibrillary Acidic Protein, Ubiquitin C-Terminal Hydrolase-L1, and S100B To Differentiate Normal and Abnormal Head Computed Tomography Findings in Patients with Suspected Mild or Moderate Traumatic Brain Injury. Journal of neurotrauma. Jan 15 2016;33(2):203-14. doi:10.1089/neu.2015.4149
31. Mondello S, Kobeissy F, Vestri A, Hayes RL, Kochanek PM, Berger RP. Serum Concentrations of Ubiquitin C-Terminal Hydrolase-L1 and Glial Fibrillary Acidic Protein after Pediatric Traumatic Brain Injury. Sci Rep. Jun 20 2016;6:28203. doi:10.1038/srep28203
32. Takala RS, Posti JP, Runtti H, et al. Glial Fibrillary Acidic Protein and Ubiquitin C-Terminal Hydrolase-L1 as Outcome Predictors in Traumatic Brain Injury. World Neurosurg. Mar 2016;87:8-20. doi:10.1016/j.wneu.2015.10.066
33. Gan ZS, Stein SC, Swanson R, et al. Blood Biomarkers for Traumatic Brain Injury: A Quantitative Assessment of Diagnostic and Prognostic Accuracy. Front Neurol. 2019;10:446. doi:10.3389/fneur.2019.00446
34. Kim H. A-389 Development of a Sensitive Lateral Flow Immunoassay for Simultaneous Detection of GFAP, FABP, and UCH-L1 in Mild Traumatic Brain Injury Management. Clinical Chemistry. 2025;71(Supplement_1)doi:10.1093/clinchem/hvaf086.373
35. Korley FK, Jain S, Sun X, et al. Prognostic value of day-of-injury plasma GFAP and UCH-L1 concentrations for predicting functional recovery after traumatic brain injury in patients from the US TRACK-TBI cohort: an observational cohort study. The Lancet Neurology. 2022;21(9):803-813. doi:10.1016/S1474-4422(22)00256-3
36. Abbott Receives FDA 510(K) Clearance for the First Rapid Handheld Blood Test for Concussions. January 11, 2021, 2021. https://abbott.mediaroom.com/2021-01-11-Abbott-Receives-FDA-510-k-Clearance-for-the-First-Rapid-Handheld-Blood-Test-for-Concussion
37. MPR. FDA Clears Lab-Based Blood Test to Aid in Concussion Assessment. Updated March 8, 2023. https://www.empr.com/home/news/fda-clears-lab-based-blood-test-to-aid-in-concussion-assessment/
38. Jagoda AS, Bazarian JJ, Bruns JJ, et al. Clinical Policy: Neuroimaging and Decisionmaking in Adult Mild Traumatic Brain Injury in the Acute Setting. Journal of Emergency Nursing. 2009/03/01/ 2009;35(2):e5-e40. doi:10.1016/j.jen.2008.12.010
39. Valente JH, Anderson JD, Paolo WF, et al. Clinical Policy: Critical Issues in the Management of Adult Patients Presenting to the Emergency Department With Mild Traumatic Brain Injury: Approved by ACEP Board of Directors, February 1, 2023 Clinical Policy Endorsed by the Emergency Nurses Association (April 5, 2023). Ann Emerg Med. May 2023;81(5):e63-e105. doi:10.1016/j.annemergmed.2023.01.014
40. CDC. CDC Pediatric mTBI Guideline Diagnostic Recommendations. https://www.cdc.gov/traumatic-brain-injury/media/pdfs/2018-mTBI_AtAGlance_Diagnosis-508.pdf
41. Lumba-Brown A, Yeates KO, Sarmiento K, et al. Centers for Disease Control and Prevention Guideline on the Diagnosis and Management of Mild Traumatic Brain Injury Among Children. JAMA Pediatr. Nov 1 2018;172(11):e182853. doi:10.1001/jamapediatrics.2018.2853
42. VA/DoD. VA/DoD clinical practice guidelines for the management of post-acute mild traumatic brain injury. Version 3.0. Management of Concussion-mild Traumatic Brain Injury Working Group. Updated November 14, 2025. https://www.healthquality.va.gov/guidelines/rehab/mtbi/
43. Herring SA, Cantu RC, Guskiewicz KM, et al. Concussion (mild traumatic brain injury) and the team physician: a consensus statement--2011 update. Medicine and science in sports and exercise. Dec 2011;43(12):2412-22. doi:10.1249/MSS.0b013e3182342e64
44. Harmon KG, Clugston JR, Dec K, et al. American Medical Society for Sports Medicine Position Statement on Concussion in Sport. Clin J Sport Med. Mar 2019;29(2):87-100. doi:10.1097/jsm.0000000000000720
45. Halstead ME, Walter KD, Moffatt K. Sport-Related Concussion in Children and Adolescents. Pediatrics. 2018;142(6):e20183074. doi:10.1542/peds.2018-3074
46. Davis GA, Schneider KJ, Anderson V, et al. Pediatric Sport-Related Concussion: Recommendations From the Amsterdam Consensus Statement 2023. Pediatrics. 2023;153(1):e2023063489. doi:10.1542/peds.2023-063489

47. NICE. Head injury: assessment and early management. Updated May 18, 2023. https://www.nice.org.uk/guidance/ng232
48. Huie JR, Mondello S, Lindsell CJ, et al. Biomarkers for Traumatic Brain Injury: Data Standards and Statistical Considerations. Journal of neurotrauma. Sep 15 2021;38(18):2514-2529. doi:10.1089/neu.2019.6762
49. American College of Surgeons. Best Practices Guidelines: The Management of Traumatic Brain Injury. https://www.facs.org/media/vgfgjpfk/best-practices-guidelines-traumatic-brain-injury.pdf
50. FDA. I-STAT TBI Plasma Cartridge With The I-STAT Alinity System. Updated May 24, 2022. https://www.accessdata.fda.gov/cdrh_docs/pdf20/K201778.pdf

Publication History

11/01/2026: Annual policy review; administrative edits
09/01/2025: Policy created to support coverage guidelines, effective for dates of service beginning Nov. 1, 2025

Background and Disclaimer Information

This policy applies to the products of Harvard Pilgrim Health Care and Tufts Health Plan and their affiliates, as identified in the check boxes on the first page for services performed by contracted providers.

Payment is based on member benefits and eligibility on the date of service, medical necessity review, where applicable, and the provider's network participation agreement with the Plan. As every claim is unique, this policy is neither a guarantee of payment, nor a final indication of how specific claim(s) will be adjudicated. Claims payment is subject to member eligibility and benefits on the date of service, coordination of benefits, referral/authorization, and utilization management requirements (when applicable), adherence to Plan policies and procedures, and claims editing logic. An authorization is not a guarantee of payment.

Point32Health reserves the right to amend a payment policy at its discretion. CPT and HCPCS codes are updated as applicable; please adhere to the most recent CPT and HCPCS coding guidelines.

We reserve the right to conduct audits on any provider and/or facility to ensure accuracy and compliance with the guidelines stated in this payment policy. If such an audit determines that a provider/facility did not comply with this payment policy, Harvard Pilgrim Health Care and Tufts Health Plan will expect the provider/facility to refund all payments related to noncompliance.