ABSTRACT SUMMARY

Can Clinical Implementation of GFAP and UCH-L1 Decrease Brain CT Utilization? The Michigan Medicine Experience[1]

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BACKGROUND AND OBJECTIVES:

- The Food and Drug Administration has cleared assays of Glial Fibrillary Acidic Protein (GFAP) and Ubiquitin-Carboxyl Hydrolase L1 (UCH-L1) to aid in decision-making regarding brain computed tomography (CT) imaging during the evaluation of suspected mild traumatic brain injury.
- There are limited data on the effect of clinical implementation of these assays on brain CT scan utilization.
- This study was to evaluate the effect of clinical implementation of the *i-STAT TBI* cartridge on head CT utilization among patients evaluated for suspected TBI.

STUDY DESIGN:

- *i-STAT TBI* implemented by a multi-disciplinary team of emergency department (ED), clinical chemistry, neurosurgery, and radiology.
- ED faculty, residents, physician assistants, and nurses were educated about the tests through in-person and virtual lectures and via email correspondence.
- A clinical information sheet, featuring an algorithm developed based on a retrospective study of 1,960 patients, was widely disseminated.

RESULTS AND CONCLUSION:

- *i-STAT TBI* was performed on 262 patients with 182 (70%) having a 'Not Elevated' test result.
- Of the 182 patients with a 'Not Elevated' test result, 150 did not receive a CT scan.
- The 32 patients with a 'Not Elevated' test result who did receive a CT scan had negative CT results.
- 3 patients had positive CT scans (*i-STAT TBI* test interpretation was 'Elevated').
- In a single level I trauma center, the *i-STAT TBI* cartridge reduced CT scan rate by 57%.

Test Utilization Metrics

262 patients tested

'Elevated' test result - 80 (30%)
'Not Elevated' test result - 182 (70%)

'Not Elevated' test result and no CT scan performed - 150 (57%)

CT Scan Metrics

150
CT scans saved

Among persons who had both a biomarker test and a CT scan per clinician discretion

	CT (+)	CT (-)	Total
GFAP & UCH-L1 (+)	3	74	77*
GFAP & UCH-L1 (-)	0	32	32
Total	3	106	109

* 3 patients who had 'Elevated' test results either refused CT or left against medical advice

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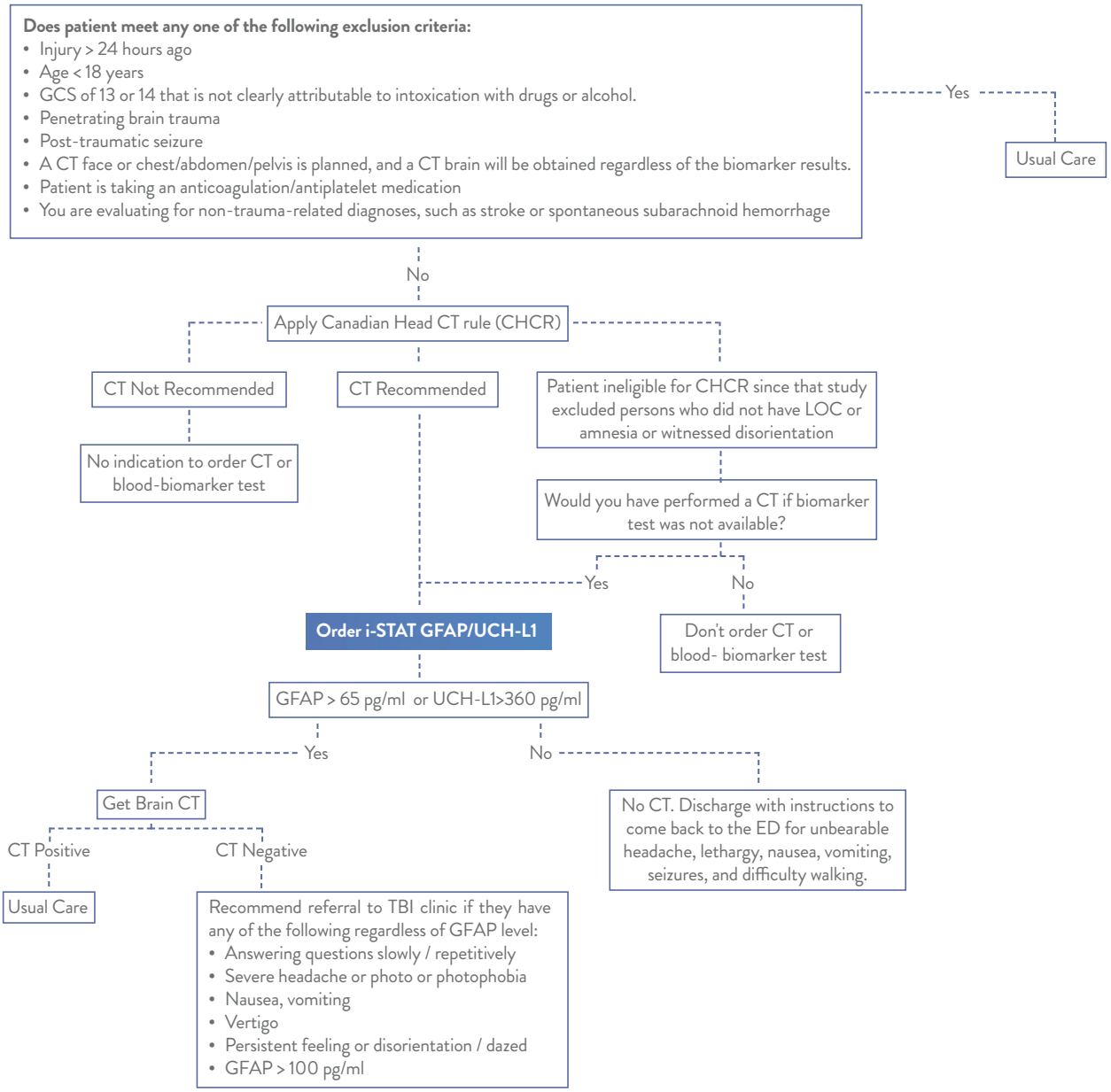
MICHIGAN ALGORITHM:

Algorithm for evaluating clinically significant traumatic intracranial hemorrhage in persons with suspected TBI. This algorithm was developed based on a retrospective study of 1,960 patients



Reference:

1. Korley et al. "Can Clinical Implementation of GFAP and UCH-L1 Decrease Brain CT Utilization? The Michigan Medicine Experience." Military Health System Research Symposium (MHSRS) Abstract (2025)

Intended Use:

The i-STAT TBI test is a panel of in vitro diagnostic immunoassays for the quantitative measurements of glial fibrillary acidic protein (GFAP) and ubiquitin carboxyl-terminal hydrolase L1 (UCH-L1) in whole blood and a semi-quantitative interpretation of test results derived from these measurements, using the i-STAT Alinity instrument. The interpretation of test results is used, in conjunction with other clinical information, to aid in the evaluation of patients, 18 years of age or older, presenting with suspected mild traumatic brain injury (Glasgow Coma Scale score 13-15), which may include one of the following four clinical criteria: 1) any period of loss of consciousness, 2) any loss of memory for events immediately before and after the accident, 3) any alteration in mental state at the time of accident, and/or 4) focal neurological deficits, within 24 hours of injury, to assist in determining the need for a CT (computed tomography) scan of the head. A 'Not Elevated' test interpretation is associated with the absence of acute traumatic intracranial lesions visualized on a head CT scan.

The test is to be used with venous whole blood collected with EDTA anticoagulant in point of care or clinical laboratory settings by a healthcare professional.

i-STAT TBI and the *i-STAT Alinity System* is for *in vitro* diagnostic use. Not all products are available in all regions.
For complete product information, visit www.globalpointofcare.abbott.

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