

Supplementary Online Content

Papa L, Ladde JG, O'Brien JF, et al. Evaluation of glial and neuronal blood biomarkers compared with clinical decision rules in assessing the need for computed tomography in patients with mild traumatic brain injury. *JAMA Netw Open*. 2022;5(3):e221302. doi:10.1001/jamanetworkopen.2022.1302

eTable 1. Proportion of Variables in Each Clinical Decision Rule Among Enrolled Patients

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This supplementary material has been provided by the authors to give readers additional information about their work.

eTable 1. Proportion of Variables in Each Clinical Decision Rule Among Enrolled Patients

Variables from each clinical decision rule	All Patients (n=349) (%)
CANADIAN CT HEAD RULE	
High Risk (Total)	71 (20)
GCS score < 15 at 2 hours after injury	19 (5)
Suspected open or depressed skull fracture	14 (4)
Any sign of basal skull fracture	5 (1)
Vomiting ≥ 2 episodes	6 (1)
Age ≥ 65 years	33 (10)
Medium Risk (Total)	170 (49)
Amnesia before impact ≥ 30 minutes	51 (15)
Dangerous mechanism	194 (56)
Low Risk (Total)	108 (31)
CCHR Positive	241 (69)
NEW ORLEANS CRITERIA	
GCS < 15	35 (10)
Drug or alcohol intoxication	14 (4)
Headache	181 (52)
Age > 60 years	52 (15)
Vomiting	9 (3)
Persistent anterograde amnesia	26 (7)
Seizure	0 (0)
Trauma above the clavicle	188 (54)
NOC Positive	297 (85)
NEXUS II HEAD CT CRITERIA	
Evidence of significant skull fracture	8 (2)
Scalp hematoma	97 (28)
Age ≥ 65 years	33 (10)

Neurologic deficit	8 (2)
Altered level of alertness	70 (20)
Coagulopathy	8 (2)
Abnormal behavior	29 (8)
Persistent Vomiting	4 (1)
NEXUS Positive	173 (50)

^a Some patients have more than one characteristic

^b Percentages are rounded and may not equal 100%

eTable 2. Comparison of the AUROCs for Biomarkers and Clinical Decision Rules Independently Associated With Traumatic Intracranial Lesions on CT Scan of the Head

Variable	AUROC (95% CI)	P value
GFAP level cutoff 67 pg/mL	0.76 (0.67-0.85)	<.001
UCH-L1 level cutoff 189 pg/mL	0.62 (0.52-0.72)	.050
GFAP level cutoff 67 pg/mL and UCH-L1 level cutoff 189 pg/mL	0.62 (0.53-0.72)	.046
GFAP level cutoff 30 pg/mL	0.62 (0.52-0.72)	.053
UCH-L1 level cutoff 327 pg/mL	0.61 (0.50-0.72)	.08
GFAP level cutoff 30 pg/mL and UCH-L1 level cutoff 327 pg/mL	0.56 (0.44-0.67)	.38
CCHR	0.67 (0.58-0.75)	.008
NOC	0.58 (0.47-0.69)	.20
NEXUS II	0.67 (0.57-0.78)	.005

Abbreviations: AUROC, area under the receiver operating characteristic curve; CCHR, Canadian CT Head Rules; CT, computed tomography; GFAP, glial fibrillary acidic protein; NEXUS II, National Emergency X-Radiography Utilization Study II criteria; NOC, New Orleans Criteria; and UCH-L1, ubiquitin C-terminal hydrolase.

eTable 3. Level of ED Physician Comfort With Each Decision Rule and the Biomarkers

	CCHR (n=346) (%)	NOC (n=344) (%)	NEXUS II (n=345) (%)
How comfortable would you be in following this rule for this patient?			
Very comfortable	49 (14)	46 (13)	52 (15)
Comfortable	162 (47)	158 (46)	140 (41)
Neutral/Unsure	83 (24)	93 (27)	67 (19)
Uncomfortable	31 (9)	36 (11)	68 (20)
Very uncomfortable	21 (6)	11 (3)	18 (5)
	CCHR (n=338)	NOC (n=324)	NEXUS II (n=341)
Do you use this rule on a regular basis when evaluating MTBI patients for a head CT?			
I use this rule regularly	89 (26)	54 (16)	166 (49)