The KIIDS-TBI model has high sensitivity and moderate specificity for Risk stratification children with mTBI and intracranial injuries. Use of this CDS tool may help improve the safe, resource-efficient management of this important patient population [1)]

Case series

Greenberg et al. included children ≤18 years who presented to 1 of the 5 centers within 24 hours of TBI, had Glasgow Coma Scale scores of 13 to 15, and had an intracranial injury on neuroimaging. The data set was split into training (n = 1126) and testing (n = 374) cohorts. They used generalized linear modeling (GLM) and recursive partitioning (RP) to predict the composite of neurosurgery, intubation >24 hours, or death because of TBI. Each model's sensitivity/specificity was compared with the validated KIIDS-TBI model across 3 decision-making risk cutoffs (<1%, <3%, and <5% predicted risk).

The GLM and RP models included similar imaging variables (eg, epidural hematoma size) while the GLM model incorporated additional clinical predictors (eg, Glasgow Coma Scale score). The GLM (76%-90%) and RP (79%-87%) models showed similar specificity across all risk cutoffs, but the GLM model had higher sensitivity (89%-96% for GLM; 89% for RP). By comparison, the KIIDS-TBI model had slightly higher sensitivity (93%-100%) but lower specificity (27%-82%).

Although measures of ICI size have clear intuitive value, the tradeoff between higher specificity and lower sensitivity does not support the addition of such information to the KIIDS-TBI model [2)].

1)
Greenberg JK, Ahluwalia R, Hill M, Johnson G, Hale AT, Belal A, Baygani S, Olsen MA, Foraker RE, Carpenter CR, Yan Y, Ackerman L, Noje C, Jackson E, Burns E, Sayama CM, Selden NR, Vachhrajani S, Shannon CN, Kuppermann N, Limbrick DD Jr. Development and external validation of the KIIDS-TBI tool for managing children with mild traumatic brain injury and intracranial injuries. Acad Emerg Med. 2021 Dec;28(12):1409-1420. doi: 10.1111/acem.14333. Epub 2021 Aug 6. PMID: 34245632.
2)
Greenberg JK, Olsen MA, Johnson GW, Ahluwalia R, Hill M, Hale AT, Belal A, Baygani S, Foraker RE, Carpenter CR, Ackerman LL, Noje C, Jackson EM, Burns E, Sayama CM, Selden NR, Vachhrajani S, Shannon CN, Kuppermann N, Limbrick DD Jr. Measures of Intracranial Injury Size Do Not Improve Clinical Decision Making for Children With Mild Traumatic Brain Injuries and Intracranial Injuries. Neurosurgery. 2022 Mar 16. doi: 10.1227/NEU.0000000000001895. Epub ahead of print. PMID: 35285454.