Accuracy Of Clinician Practice Compared With Three Head Injury Rules In Children: A Prospective Cohort Study

SUMMARY

- Nobody wants to miss a head bleed in a child, much less one that needs neurosurgical intervention but we also don't want to expose pediatric patients to radiation, sedation and the risk of finding “incidentalomas” that we don’t know what to do with.
- There are multiple risk decision instruments to assist in determining which children’s should be scanned including: Pediatric Emergency Care Applied Research Network (PECARN),4 the Canadian Assessment of Tomography for Childhood Head Injury (CATCH) and the Children’s Head Injury Algorithm for the Prediction of Important Clinical Events (CHALICE).
- The question this paper answered is which decision instrument works best and do these decision instruments outperform clinical judgment.
- The authors from New Zealand and Australia conducted a prospective evaluation at 10 hospitals over 4 years. They enrolled kids with a GCS 13-15 who sustained head trauma and the doctors filled out the various decision aids and then decided who to scan – apparently according to their own judgment and not determined by the results of the decision aid.
- 18,913 kids were enrolled but ONLY 1691 scans were performed (8.9%). Of those, there were 160 bleeds.
- Physician judgment picked up 158/160 (98.8%), PECARN picked up 159/160 (99.2%), CATCH picked up 147 (92%) and CHALICE 148 (93%).
- The big differences came in specificity. Because the doctors only ordered scans on 1600 kids, the specificity was 92%, had the decision instruments been used significantly more scans would have been ordered (PECARN SPEC 55%, CATCH 70%, CHALICE 78%).

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EDITOR’S COMMENTARY: This was a planned secondary analysis of a prospective observational study of children younger than 18 years with head injuries who presented to 10 Australian and New Zealand emergency departments. The authors found that physician gestalt was just as sensitive as the decision rules but was much more specific. The authors therefore argue that these rules aren’t necessary because it wouldn’t have picked up any more cases and use of any of these rules would have resulted in more scans. This is not accurate few a few reasons – foremost is that these MDs calculated the rules before deciding on whether or not to scan, therefore they very likely incorporated the rule into their decision making plan. That is, if you were not planning to scan but all 3 rules were positive, you probably would have changed your mind. This is particularly likely when the treating providers have the form in front of them but it can be a little more insidious – that is you’ve heard the decision rules a bunch in your lifetime so much so that you’ve incorporated them into your general judgment – so that really your judgment is reflecting the decision rule. The other point is that these decisions rules were never intended for people who the provider didn’t want to image. They are always intended for use in the ambiguous case - the case in which the doctor would probably scan. The cohort to which these rules were applied here were obviously very different as only 10% of kids even got a scan - < 1% had any form of bleed – this is a low risk cohort and applying the rules to people who you know don’t have the disease can only result in false positives.