

## Canadian Head CT Rule

Summary by Dr. Patrick Archambault. Reviewed by Dr. Tim Chaplin & Dr. Teresa Chan.

Topic	Trauma – Minor Head Injury Adults			
Citation:	Canadian CT Head Rule, Stiell et al. JAMA 2005			
Clinical Question:	Compare the clinical performance of the Canadian CT Head Rule (CCHR) and New Orleans Criteria (NOC) decision rules for detecting the need for neurosurgical intervention and clinically important brain injury.			
PICO	P:	Prospective cohort study in 9 Canadian ED 1822 Patients		
		<table border="1"> <tr> <td><b>Inclusions:</b> Blunt trauma with LOC, amnesia, disorientation GCS 13+ Injury within 24 hours</td> <td><b>Exclusions:</b> &lt;16 years old Minimal head injury Penetrating injury, depressed skull fracture, focal neurological deficits, unstable vitals Seizure Bleeding disorder or anticoagulants Pregnant</td> </tr> </table>	<b>Inclusions:</b> Blunt trauma with LOC, amnesia, disorientation GCS 13+ Injury within 24 hours	<b>Exclusions:</b> <16 years old Minimal head injury Penetrating injury, depressed skull fracture, focal neurological deficits, unstable vitals Seizure Bleeding disorder or anticoagulants Pregnant
	<b>Inclusions:</b> Blunt trauma with LOC, amnesia, disorientation GCS 13+ Injury within 24 hours	<b>Exclusions:</b> <16 years old Minimal head injury Penetrating injury, depressed skull fracture, focal neurological deficits, unstable vitals Seizure Bleeding disorder or anticoagulants Pregnant		
	I:	Application of CDR		
	C:	CT head or Outcome measure at 14 days without headache absent or mild, no complaints of memory or concentration problems, no seizure or focal motor findings, and returned to normal daily activities		
O:	Need for neurosurgical intervention or clinically important brain injury on CT			
Methods	As above, all assessed by residents or ED physicians trained with 1 our lecture, on standardized report forms. Some independent assessments done for interobserver agreement.			
Conclusion	<p>8 patients (0.4%) required neurosurgical intervention and 97 (5.3%) had clinically important brain injury. The NOC and the CCHR both had 100% sensitivity but the CCHR was more specific (76.3% vs 12.1%, P&lt;.001) for predicting need for neurosurgical intervention.</p> <p>Clinically important brain injury, the CCHR and the NOC had sensitivity (100% vs 100%; 95% confidence interval [CI], 96%-100%) but the CCHR was more specific (50.6% vs 12.7%, P&lt;.001), and would result in lower CT rates (52.1% vs 88.0%, P&lt;.001).</p> <p>The kappa values for physician interpretation of the rules, CCHR vs NOC, were 0.85 vs 0.47.</p>			
THP	CCHR is a highly sensitive rule for ruling out significant head injuries.			
Caveats & Limitations	<p>Possible familiarity bias towards CCHR, not all patients underwent CT. Not all patients enrolled, voluntary assessment and completion of forms by ED physicians, loss of follow up.</p> <p>This is a validation and a head-to-head comparison of the previously derived rules.</p> <p>Original papers:                      1) Derivation – Stiell IG, Wells GA, Vandemheen K, et al. The Canadian CT Head Rule for patients with minor head injury. Lancet. 2001;357:1391-1396.                      2) Validation - Stiell IG, Lesiuk H, Wells GA, et al. Canadian CT Head Rule Study for patients with minor head injury: methodology for phase II (validation and economic analysis). Ann Emerg Med. 2001;38:317-322.</p>			

