

## **CLINICAL PREDICTION RULE UNIT**

### **CT Head Rule for Minor Head Injury**

#### **Objectives:**

To learn to assess the clinical usefulness of published clinical prediction or decision rules. Appropriate application of clinical decision rules to the care of individual patients, as well as to the development of clinical policies.

This includes:

1. Determining the proper ranking in an ascending hierarchy of evidence for a particular clinical prediction or decision rule.
2. Assessing the rule's applicability to and likely impact on your clinical practice.

#### **Assignment:**

1. Read the attached scenario.
2. Read the attached guidelines for reading articles pertaining to clinical prediction or decision rules.
3. Use the attached worksheet as a guide to your assessment and decide on disposition for the patient.

In approaching this exercise, it will be useful to keep in mind that the development of a prediction or decision instrument generally involves multiple studies. Study designs pertaining to issues of diagnosis, prognosis and therapy are commonly encountered, depending on the nature of the instrument, the phase of development and the inclinations of the investigators. The learner will find knowledge of the therapy, diagnosis and prognosis modules useful and prerequisite to comfortable completion of this exercise.

#### **Clinical Scenario:**

You are a family physician with a particular interest in evidence-based practice and teaching. You are supervising your Resident Outpatient Clinic. One of your residents presents to precept a 45 year old man who had fallen on the ice and struck the back of his head and shoulder this morning while leaving the house to go to work at the local bank. He was not intoxicated at the time but was transiently disoriented. He had no loss of consciousness, seizure or amnesia at the time, has had one episode of vomiting and no focal neurological complaints. He is complaining of a sore left shoulder and on review of systems endorses a mild headache and nausea. On examination his vital signs are stable, he had no stigmata of basal skull fracture or indication of a skull fracture, he did have a small bump on the occiput, neurologic examination was unremarkable, and he had some trapezius spasm on the left. Your resident is concerned that the gentleman might require a CT of the head and is wondering if they should proceed to the ED for

further evaluation. You feel quite reassured by the clinical presentation but wish to bolster the clinical decision to defer testing with a review of the literature. You remember that you received a daily InfoPOEM from the Canadian Medical Association on the topic a few months ago.

You pull up medline to do a search while your resident sees their next patient. You enter “computed tomography and head” (3831 citations), “minor head injury” (364 citations), and “rules and decision rules” (521 citations). You cross reference the three searched and it yields 2 citations of interest regarding the Canadian CT Rule and the New Orleans Criteria for CT scanning in patients with minor head injury. A further search by the author yields the original derivation of the CCHR. You are pleased to see that there is also an article on external validation of the rules.

### **Enclosed Materials:**

1. Guyatt G, Rennie D, Meade MO, Cook DJ. Users' Guides to the Medical Literature: A Manual for Evidence-based Clinical Practice. 3rd ed. New York, NY: McGraw-Hill; 2015. Chpt 19.4 pg 407-418 Clinical Prediction Rules.
2. Stiell IG, Wells, GA, Vandemheen K, Clement C, Lesiuk H, Laupacis A, McKnight RD, Verbeek R, Brison R, Cass D, Eisenhauer MA, Greenberg GH, Worthington J The Canadian CT Head Rule for patients with minor head injury. Lancet 2001; 357: 1391-96
3. Stiell IG, Clement CM, et al. Comparison of the Canadian CT Head Rule and the New Orleans Criteria in patients with minor head injury, JAMA, 294(12), 2005, pp 1511-1518.
4. Smits M, Dippel DWJ, et al. External validation of the Canadian CT Head Rule and the New Orleans Criteria for CT scanning in patients with minor head injury, JAMA, 294(12), 2005, pp.1519-1525.
5. Worksheet for evaluating a clinical prediction or decision rule.

### **Background Derivation of the CCHR – Derivation, Validation and Economic Analysis (Optional)**

1. Stiell IG, Lesiuk H, Wells GA, et al. The Canadian CT Head Rule Study for patients with minor head injury: rationale, objectives, and methodology for phase 1 (derivation). Ann Emerg Med. 2001; 38:160-169.
2. 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.