

To scan or not to scan: Is Box Hill hospital emergency department Choosing Wisely in cases of head injury?

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Background

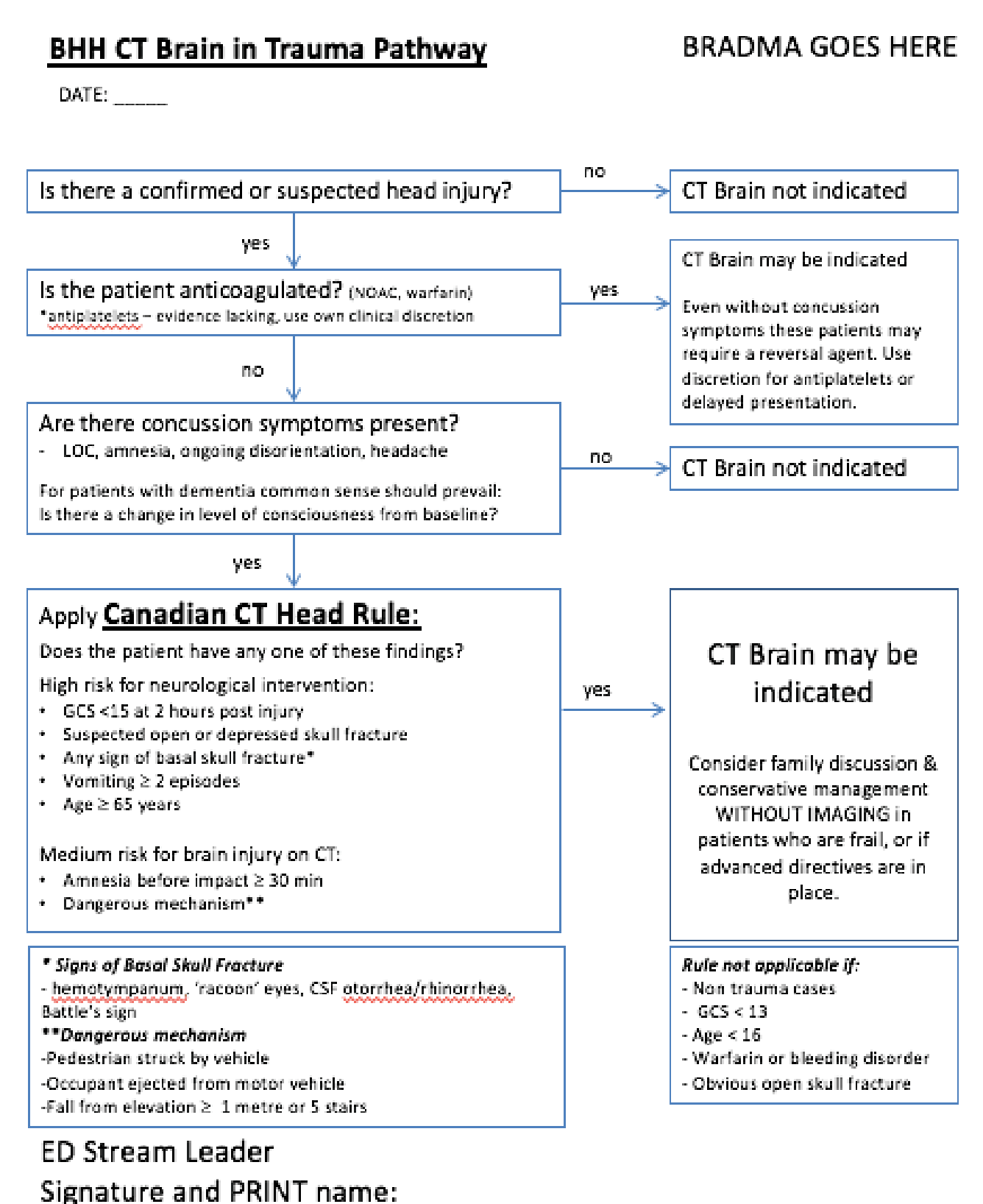
Choosing Wisely in conjunction with ACEM and RANZCR recommend; "Don't request computed tomography (CT) head scans in patients with a head injury, unless indicated by a validated clinical decision rule".¹ The Canadian CT Head Rule is a well known and highly sensitive decision rule that can guide the use of CT brain for patients with minor head injury, categorising risk factors into high risk for neurological intervention and medium risk for neurological injury.² Correct use of this rule has the potential to standardise management of patients with head injury and reduce both unnecessary CT scanning and hospital length of stay. Despite being in use for more than 15 years in our department, we hypothesised that a large number of scans were being performed that failed to meet the rule's criteria and that a program of audit and feedback might improve this.

Aim

To determine whether implementation of a flowchart guiding correct application of The Canadian CT Head Rule in the Box Hill Hospital ED combined with weekly audit and feedback would reduce the number of unnecessary CT brain scans being performed in patients with minor head injury.

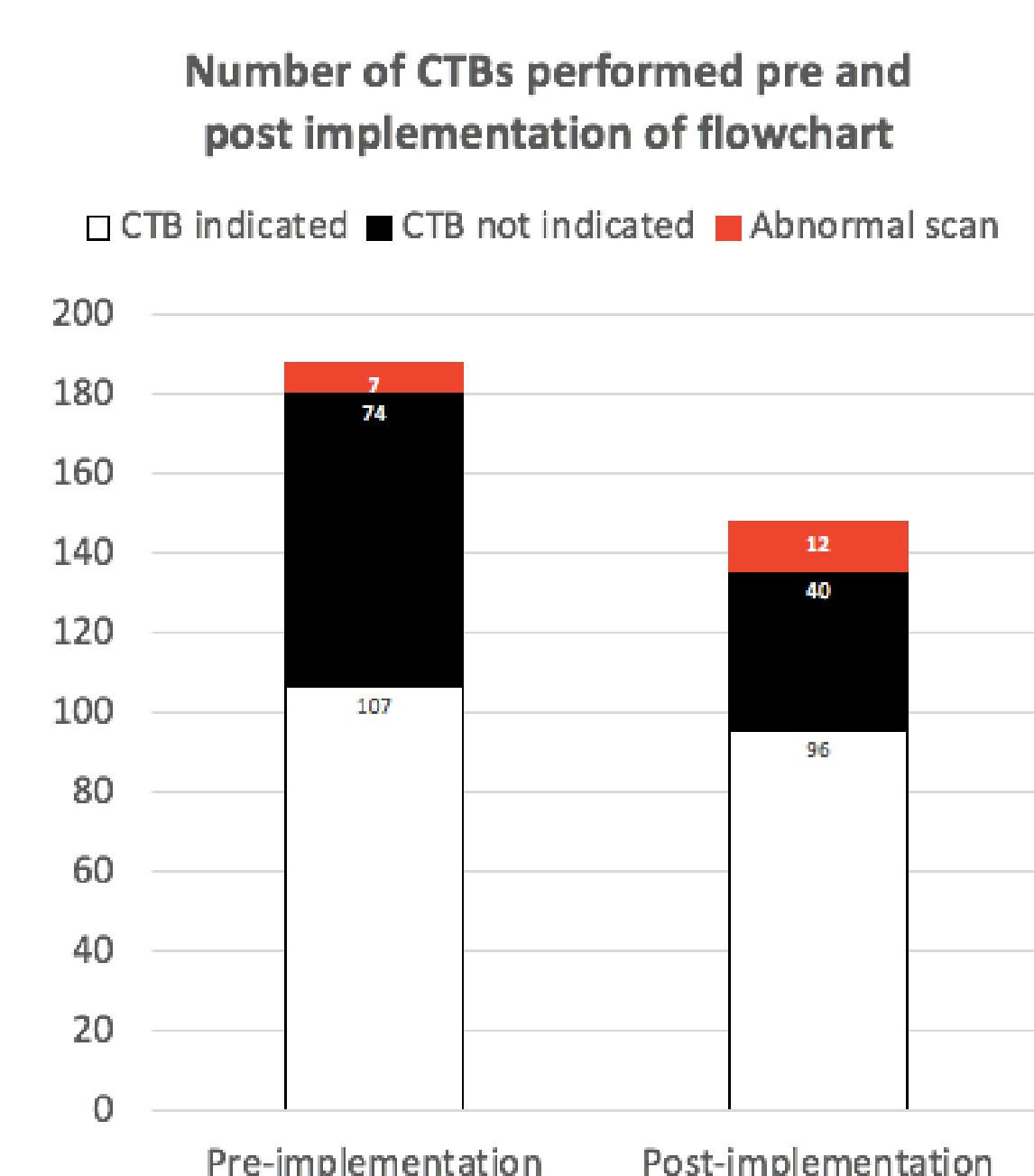
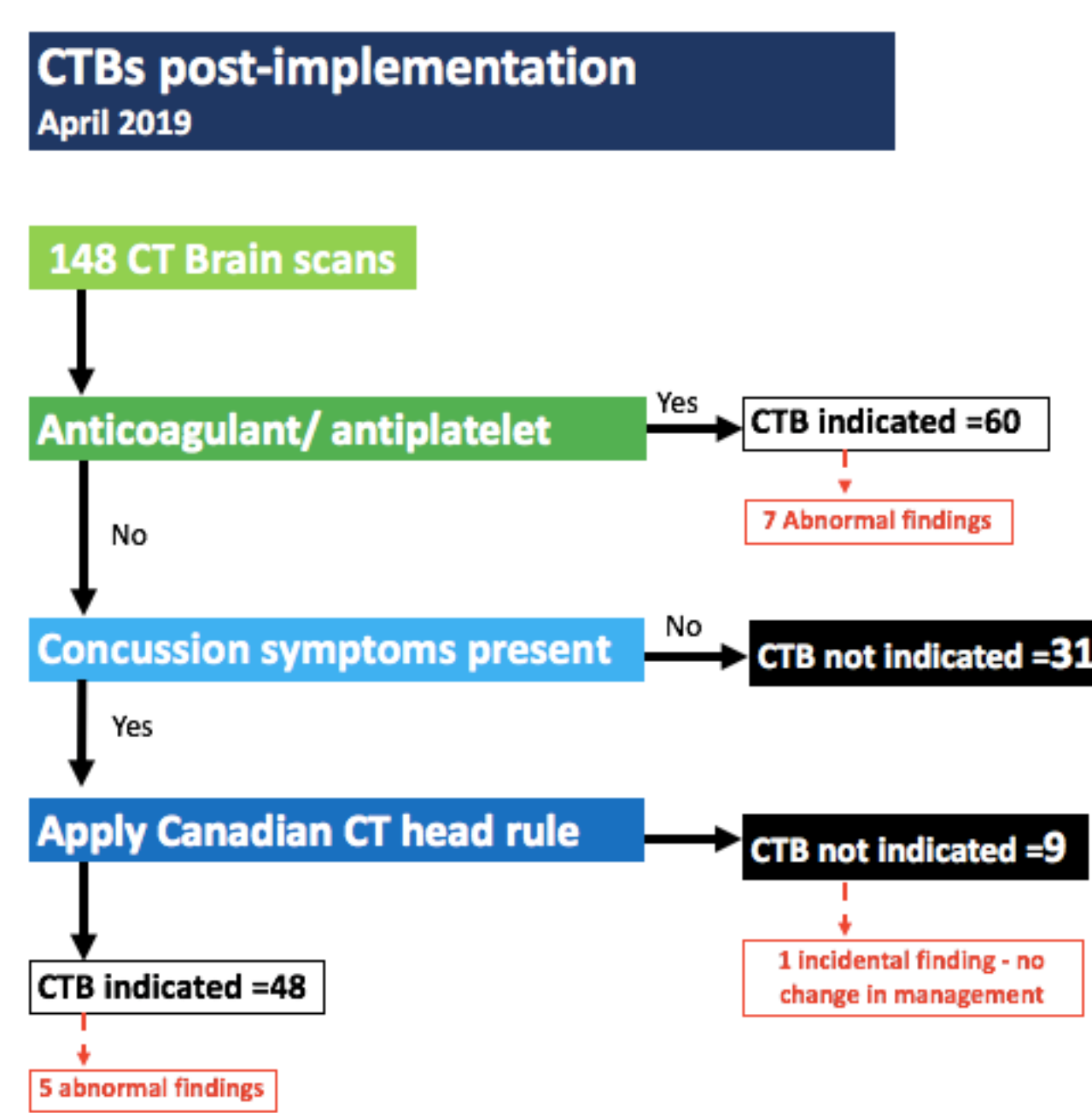
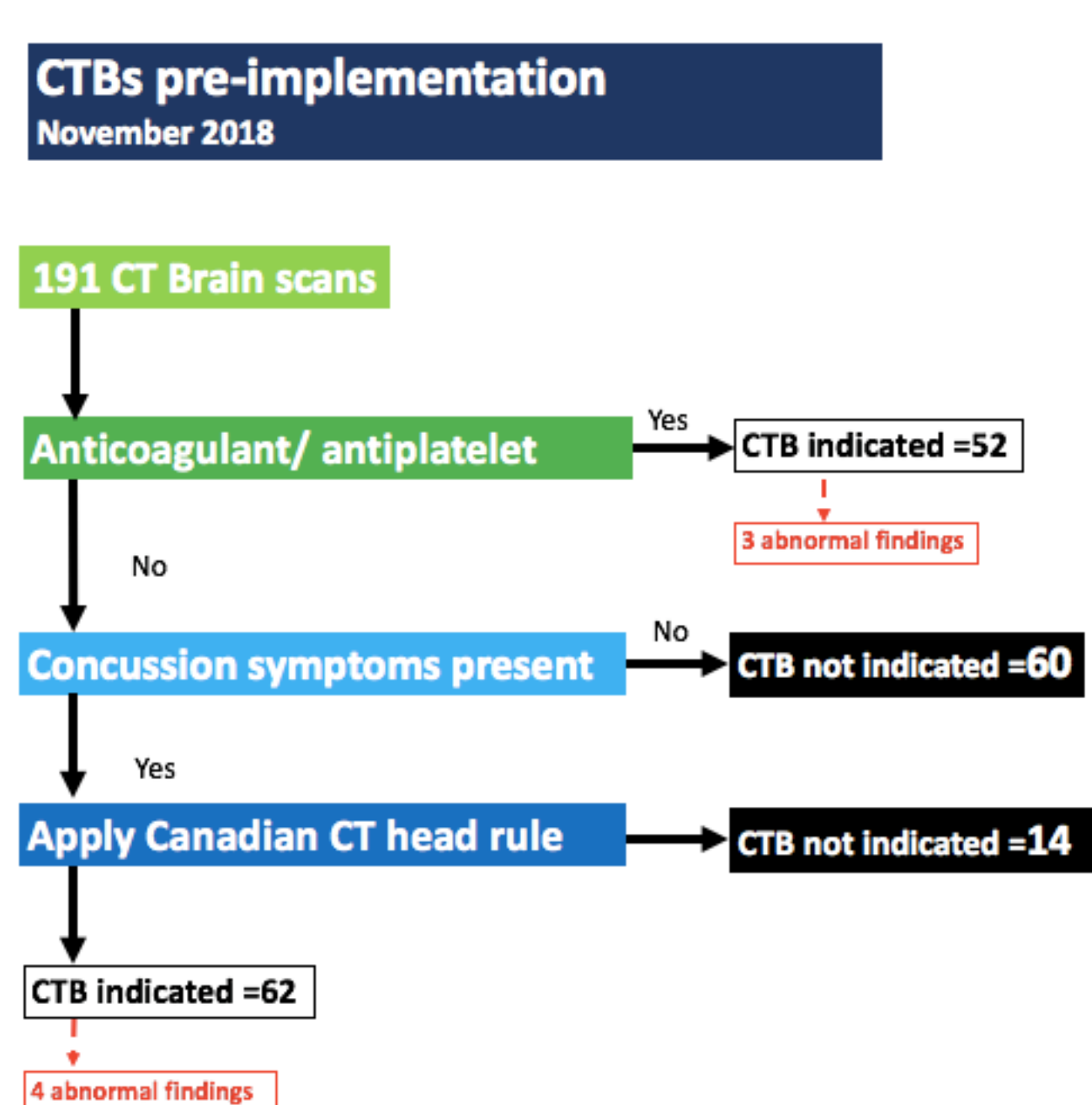
Method

- All patients who received a non-contrast CT brain scan in November 2018 were audited and the Canadian CT Head rule was applied retrospectively.
- An orange coloured flowchart, consisting of the Canadian CT head rule + guidance around inclusion criteria was implemented within the ED. Clinicians were asked to circle the particular criteria that their patient's met when requesting a CT scan, and to have the flowchart signed off by a senior clinician.
- Radiographers were instructed to assist in implementing a "no flowchart – no scan" policy.
- Clinicians who failed to use the form or who did not follow the flowchart were emailed weekly and provided with an opportunity to respond.
- Frequent education sessions and email communication were used to ensure that all clinicians were familiar with the project.
- In April 2019 a repeat audit was performed using the same criteria as that from November 2018 to provide direct comparison.



Results

- Pre-implementation, 39% of CT brain scans performed were deemed unnecessary on application of the Canadian Head CT rule. No intracranial pathology was found in any of these scans.
- Post-implementation, 27% of scans considered unnecessary. No intracranial bleeds were identified in any of these scans, however there was 1 incidental finding in this group; a patient with stage 4 lung cancer was found to have metastatic brain cancer. This finding did not lead to any change in management or disposition for the patient.
- The number of traumatic bleeds identified increased from 7 in the pre-implementation group to 12 in the post implementation group.



Conclusion

The improvement in Canadian CT Head rule use that we observed resulted in a 23% reduction in relevant CT brain scans and a 70% increase in yield. The most frequent reason for non-compliance with the Canadian CT head rule in our population was patients not on anticoagulants or antiplatelet agents who were scanned despite having no signs or symptoms of a minor head injury.

References

- Choosing Wisely Australia. Australasian College for Emergency Medicine: tests, treatments and procedures clinicians and consumers should question [Internet]. Sydney NSW: NPS MedicineWise [cited 2019 May 17]. Available from <http://www.choosingwisely.org.au/recommendations/acem>
- Stiell IG, Wells GA, Vandemheen K, Clement C, Lesiuk H, Laupacis A. The Canadian CT Head Rule for patients with minor head injury. Lancet 2001 May 05;357: 1391-96.