

# EmergencyKT: Isolated Mild Traumatic Brain Injury

**Table 1: Types of Hemorrhages**

Subarachnoid hemorrhage, subdural hematoma, epidural hematoma, intraparenchymal hemorrhage, cerebral contusion

Examples of Head CT findings suitable for Observation Protocol:

1. Convexity Subarachnoid Hemorrhage
2. Punctate Contusions (no more than 5)
3. Rim Subdural along Convexity

**Table 2: Inclusions and Exclusions from Protocol**

***Inclusion Criteria:***

Adult patients who sustain an isolated head injury with a GCS 14 or 15 may be included in the ED mild TBI observation protocol. Patients may have a normal or abnormal head CT.

***Patients will be excluded from protocol if found to have any of the following features:***

1. Any patient with INR >3.0 is excluded. Patients with an INR  $\geq$ 1.5 may only have a hemorrhage listed in Table 4. Please see Table 4 for eligibility of patients on Coumadin.
2. Patient is on a factor Xa inhibitor or a direct thrombin inhibitor.
3. Objective new neurologic exam findings/deficits (e.g. aphasia, hemiparesis, weakness, etc.)
4. Intoxicated patients with negative head CT who need only to achieve sobriety prior to discharge
5. Patients who require intense nursing attention, direct line of sight and/or are restrained
6. Hemorrhages that require neurosurgical intervention or bleeds determined to be unsuitable for observation (please see Table 1)
7. Patients who are greater than 24 hours after their injury with new neurologic symptoms
8. Multiple traumatic injuries or any other severe traumatic injury
9. Patients with actively declining mental status
10. Vital sign abnormalities: BP>190/110 or <85/50; HR>120 or <45; O<sub>2</sub><91% on RA
11. Other active acute comorbid conditions (e.g. DKA, CHF, etc.)
12. Patients who require additional inpatient syncope workup as the cause of their fall
13. Greater than one seizure, or any seizure greater than 30 minutes after initial injury
14. INR greater than or equal to 1.5; unless patient has hemorrhage listed in Table 4.
15. Thrombocytopenia (Platelet count <100,000)
16. Patient is on Heparin or Low Molecular Weight Heparin

**Table 3: Observation Protocol Discharge Goals**

1. Education regarding concussions and mild TBI
2. Medication reconciliation, specifically, regarding use of Aspirin and Plavix
3. Return to sports requirements if necessary
4. Follow up established with a PCP
5. Patient is in care of family or friends
6. Patient is sober
7. Serial head CT's demonstrate no significant progression of ICH
8. Patient has been seen by the attending neurosurgeon
9. Neurotrauma nurse has been notified of patient in the emergency department, or the patient has been given the neurotrauma nurse hotline to call if needed. Phone # is 584-2804
10. Consider Internal Medicine Consultation for Medication Reconciliation / impact of mild TBI on medical co-morbidities (i.e., in relationship to continuation of home medications such as anti-platelet or anti-coagulation)
11. Evaluate for Return to Sports Requirement if indicated:  
<http://www.healthy.ohio.gov/concussion>

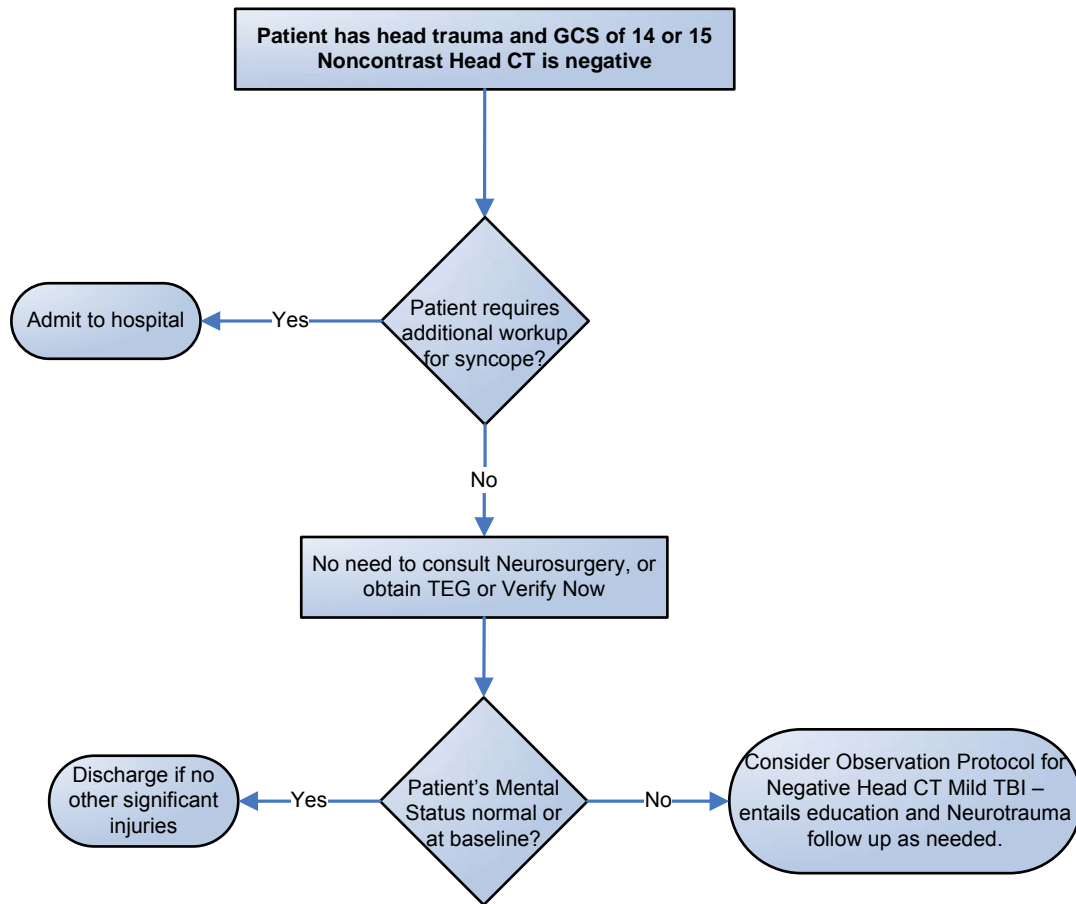
**Table 4: Low Risk Hemorrhages in Patients Therapeutic (1.6-3.0) on Coumadin**

1. Punctate Contusions
2. Convexity Subarachnoid Hemorrhage

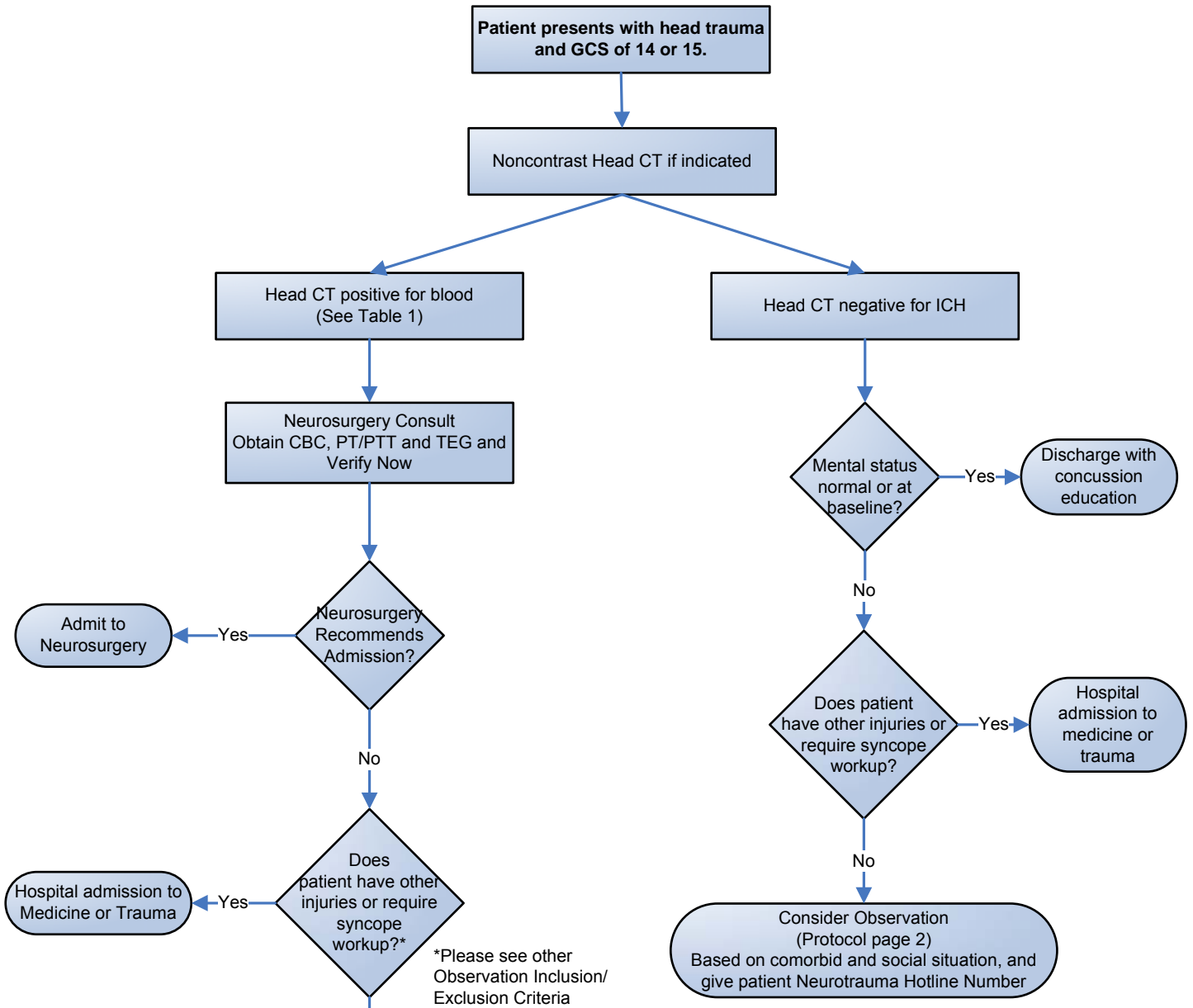
**Table 5: Low Risk Hemorrhage in Patients on Anti Platelet Therapy (Aspirin or Plavix):**

1. Punctate Contusions
2. Convexity Subarachnoid Hemorrhage
3. Rim Subdural Hematoma along Convexity

# ED Protocol for patients with mild TBI and a normal Head CT



ED Protocol for patients with mild TBI, but not on Anti-Platelet Medications or any Anti-coagulation (including Heparin or LMWH)



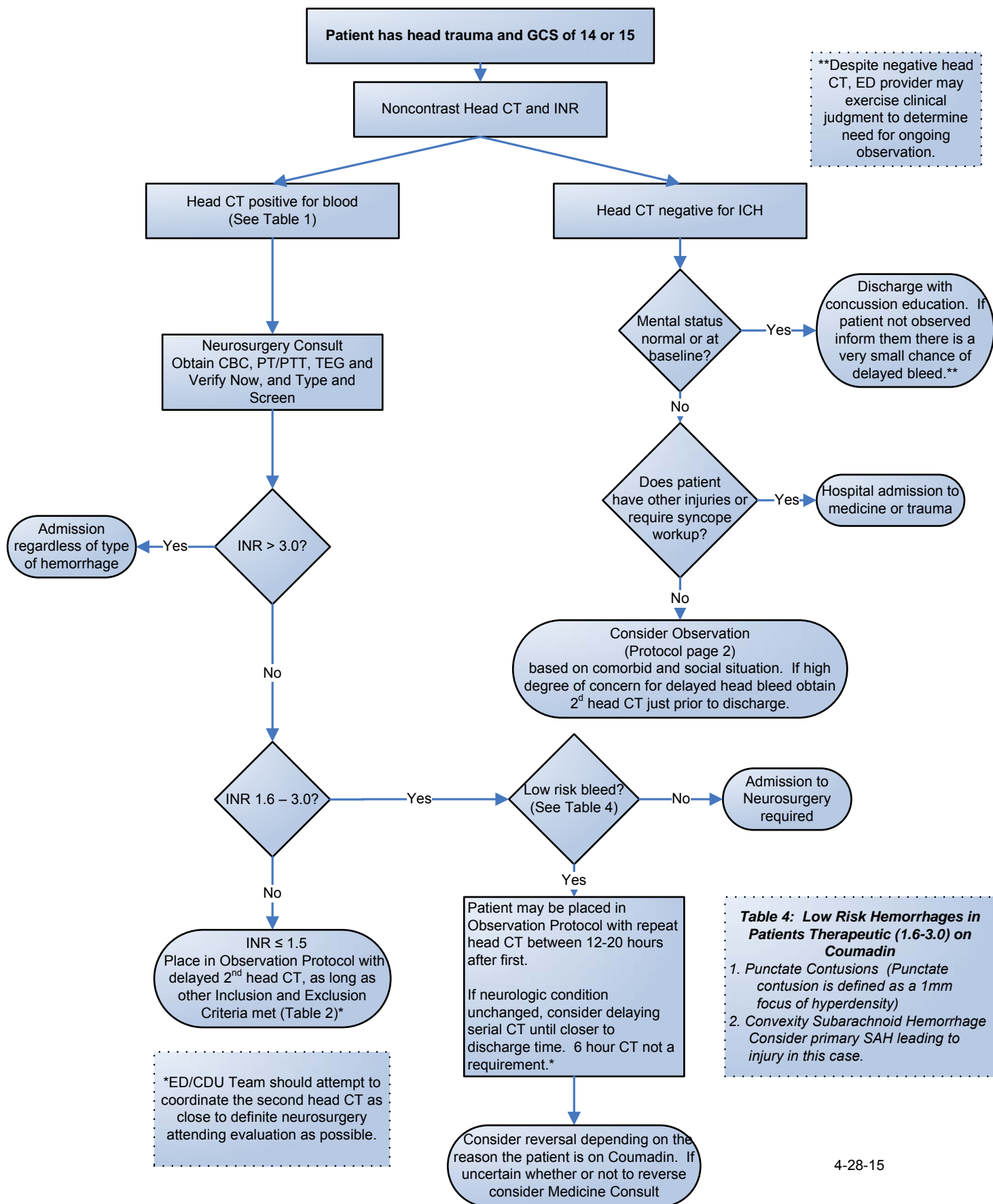
\*Please see other Observation Inclusion/ Exclusion Criteria

**Table 1: Types of Hemorrhages**  
 Subarachnoid hemorrhage, subdural hematoma, epidural hematoma, intra-parenchymal hemorrhage, cerebral contusion

Examples of Head CT findings suitable for Observation Protocol:

1. Convexity Subarachnoid Hemorrhage
2. Punctate Contusions (no more than 5) (*Punctate hemorrhage is defined as a 1mm focus of hyperdensity*)
3. Rim Subdural along Convexity (*A rim subdural is defined as ≤2mm with no mass effect.*)

# ED Protocol for patients with mild TBI, and on Coumadin

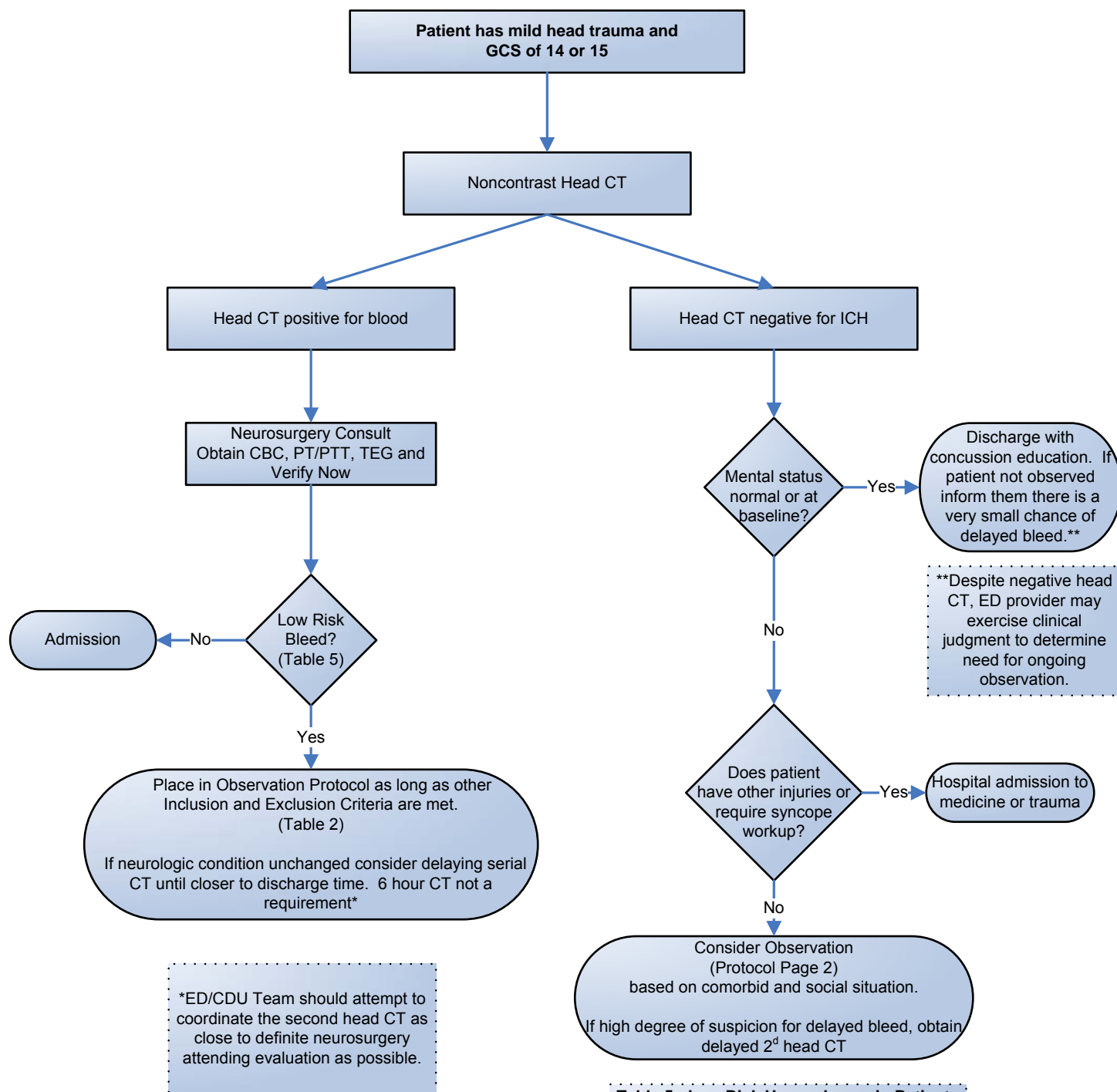


\*\*Despite negative head CT, ED provider may exercise clinical judgment to determine need for ongoing observation.

**Table 4: Low Risk Hemorrhages in Patients Therapeutic (1.6-3.0) on Coumadin**

1. Punctate Contusions (Punctate contusion is defined as a 1mm focus of hyperdensity)
2. Convexity Subarachnoid Hemorrhage Consider primary SAH leading to injury in this case.

# ED Protocol for patients with mild TBI, and on Aspirin, Plavix, Aggrenox, or Prasugrel



**Table 5: Low Risk Hemorrhages in Patients on Anti Platelet Therapy (Aspirin or Plavix):**

1. Punctate Contusions (Defined as a 1mm focus of hyperdensity)
2. Convexity Subarachnoid hemorrhage Consider primary SAH leading to injury in this case
3. Rim Subdural Hematoma along Convexity (Defined as  $\leq 2\text{mm}$  with no mass effect)

## References

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