Information Needed:

1. History: mechanism of injury, estimated force, helmet or restraint use, distance of ejection, damage to vehicle, windshield status, loss of consciousness, changes in consciousness since injury, seizure activity, memory loss, headache, nausea and vomiting, vision difficulty, neck pain; past medical hx; medications, drug or alcohol use.
2. Physical findings: neurologic status, orientation, confusion, perseveration and echolalia, loss sensation and movement in extremities, drainage from ears or nose, contusions and lacerations to head and face, unequal and poorly reactive pupils.

Treatment:

1. Manually stabilize head and neck.
2. Protect airway and assist ventilation as needed.
3. Administer moderate to high flow O_2 as needed.
4. Determine vital signs (pulse, blood pressure, respirations, SPO2).
5. Apply cardiac monitor.
6. Perform patient assessment, including GCS and neurologic examination.
7. Control hemorrhage with direct pressure.
8. Apply cervical/spinal immobilization. Elevate head if possible.
9. Establish venous access, draw blood tubes, determine BGL.
10. If GCS < 8
    a. Assist ventilations.
    b. Intubate via RSI protocol using drugs to blunt intracranial pressure (ICP) rise.
    c. Ventilate at adequate rate to maintain ETCO2 at targeted 35, unless pupils are unequal or dilated. Then use 30 as target.
    d. Consider further sedation, paralysis.
11. If GCS > or = 8:
    a. Assist ventilations and assess for need for intubation.
    b. If pupils are unequal of dilated with GCS between 8 and 10 consider intubation.

    c. If pupil vitals are good and respiratory drive present, transport without intubation.
    d. Be ready for vomiting, changes in breathing, changes in pupils.
    e. Consider chemical restraint.

Notes

1. Assume cervical/spinal injury with significant head injury, especially with altered LOC.
2. Head injury does not cause shock, look elsewhere for the cause.
3. Restlessness can be a sign of hypoxia.
4. Current guidelines for traumatic brain injury recommend:
    a. Control patients airway and ventilation if GCS = 8. The patients $ETCO_2$ should be targeted to 35. If signs of herniation are present, and then use 30 as the target for $ETCO_2$.
    b. Patients with an SPO2 drop below 90 at any time seem to have a poor outcome.
    c. Adults patients with systolic blood pressure drops below 90 do poorly. The ideal systolic BP is unknown, however hypovolemia and hypotension must be treated.
5. Before using sedation and paralytics, establish the patient's GCS and neurological status. This is important for continued patient care at the hospital.