
New Guidelines for Children with Blunt Head Trauma and a Normal CT Scan



Children seen in the emergency department with a recent history of minor blunt head trauma who are found to have a normal computed tomography (CT) scans do not require hospitalisation for further observation, according to a large, national multi-centre study published online today in the *Annals of Emergency Medicine*.

Each year in the United States, blunt head trauma in children results in approximately 3,000 deaths, 50,000 hospitalisations, and 650,000 emergency department (ED) visits. Trauma of all kind is a leading cause of death in children older than 1 year. Traumatic brain injury (TBI) accounts for more than 70% of fatal childhood injuries.

Children often are admitted to the hospital for additional observation after blunt head trauma to allow frequent neurologic examinations. However, studies in adults have found that neurological problems following minor blunt head trauma are rare and that hospitalization after a normal cranial CT scan is unnecessary.

James Homes, MD, professor of emergency medicine in the UC Davis School of Medicine, and colleagues conducted the study under the auspices of the groundbreaking Pediatric Emergency Care Applied Research Network (PECARN) to evaluate whether children with minor blunt head trauma and normal CT scans would safely be sent home.

Dr. Homes states, "We now have definitive evidence supporting discharging most neurologically normal children with head trauma after negative CT scans home from the Emergency Department."

The prospective, multicenter observational cohort study involved 13,543 children younger than 18 years with minor blunt head trauma (including isolated head or multisystem trauma) at 25 emergency departments between 2004 and 2006. The patients' median age was about 9 years old; 63% were boys.

The researchers analyzed individuals with initial Glasgow Coma Score (GCS) of 14 or 15 who had normal cranial CT scan results during ED evaluation. An abnormal imaging study result was defined by any intracranial hemorrhage, cerebral edema, pneumocephalus, or any skull fracture.

Patients with normal CT scan results who were hospitalized were followed to determine neurologic outcomes. Patients with normal CT scans who were discharged to home from the ED received telephone/mail follow-up (nearly 80% were reached) to assess for subsequent neuroimaging, neurologic complications, or neurosurgical intervention.

Of the 13,543 children, less than 1% had subsequent abnormal CT scans or MRIs and none required neurosurgical intervention. The study authors conclude that "hospitalization of children with minor head trauma after normal CT scan results for neurologic observation is generally unnecessary."

"One of the goals in the evaluation of children with minor head trauma is to try to avoid CT scan use, if possible. If you do a CT scan and the scan is negative, and the child is well, then for goodness sakes let the child go home," said study senior author Nathan Kuppermann, professor of pediatrics and emergency medicine and chair of the Department of Emergency Medicine in the UC Davis School of Medicine.

"Admitting these children after normal CT scans is costly, causes them to spend time away from their families and loved ones, and potentially exposes them to other health risks, such as hospital-borne infections," Kuppermann said.

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