



CALIFORNIA ACEP
AMERICAN COLLEGE OF EMERGENCY PHYSICIANS

Talking to Parents about Head CTs in Children with Minor Head Trauma

For a child who is LOW-RISK on the PECARN prediction rules, and who does not need a head CT:

I'm sorry your child has been hurt, but I'm really happy to see that he (or she) is looking normal in terms of his behavior. He has no signs of any serious injury, and I'm glad to hear that he hasn't had any vomiting or severe headache. Based on lots of research, your child meets all the criteria for being very low risk for any important injury to the brain, and s/he does not need a CT scan of the head. We'd like to watch your child here in the ER for just an hour or two, and if s/he continues to act normally, we can let you go home with some instructions for observation at home.

For a child who is INTERMEDIATE-RISK on the PECARN prediction rules, in whom you wish to do a period of observation in the ED, and shared decision-making with the parents about whether or not to do a CT:

I'm sorry your child has been hurt, and I understand this is a difficult time for you and your family. I want to begin by explaining that based on our evaluation of your child, we think that he (or she) has had a concussion. A concussion is a head injury where there may have been a brief loss of consciousness, or where the child has a headache or some nausea and vomiting, but is not having any severe symptoms such as confusion, severe headache, repeated vomiting, or signs of a skull fracture. It is highly likely that if we do a CT scan in children that we think have a concussion, there will be no sign of brain damage or serious bleeding inside the brain.

Concussions can cause ongoing symptoms, like nausea, occasional vomiting, headache, dizziness, difficulty remembering or concentrating, acting grumpy, and fatigue. These are all very common in a concussion. These symptoms vary from child to child, but the good news is that they almost always go away completely over a few days to a few weeks, and the vast majority of patients don't have any long-term problems.

"You're saying my child has had a concussion. What do we do now?"

Your child does not currently have any severe symptoms, so your child is at low risk for a serious brain injury. We have a couple of options. One option is observation in the ER. This means that we will be monitoring him (or her) in the ER for a few hours. We will be looking for any changes in his symptoms or appearance, particularly any worsening. We expect to see his symptoms improve, at which point we can



release your child with some instructions for continued observation when you get home. During the observation period, if we notice your child's symptoms are getting worse, then we will want to keep him in the ER and consider getting a head CT scan to rule out the possibility of a more severe brain injury.

Another option is to get a head CT scan immediately, which we usually reserve for patients with more severe symptoms or signs of a skull fracture. This isn't our recommendation in your child's case, however, because we think your child has had a concussion, and lots of research shows that an immediate CT scan is not necessary in children with a concussion. We want you to be comfortable, though, and if you are very concerned about getting a CT scan right away, we're open to discussing that option.

"I don't want to miss anything -- why shouldn't my child get a head CT just in case?"

One of the reasons why we try not to perform head CT scans on children is because of the radiation exposure. Radiation from one CT scan amounts to about 200 chest X-rays. This is a lot for an adult and even more for a child. According to the National Cancer Society, radiation exposure has been proven to increase cancer risk. Because your child is so young, we want to prevent any unnecessary radiation accumulation over their lifetime. We don't know what your child's health will be like many years from now and if he or she will need any additional CT scans, so any exposure to radiation that we can prevent right now is a good thing.

For the symptoms that your child is experiencing, we don't recommend a CT scan right away—we recommend waiting and observing your child to see how he does over a few hours. We usually recommend head CT scans only for more severe head injuries that may require brain surgery or other invasive procedures, or for some minor injuries when the symptoms worsen or don't resolve.

"What if my child gets worse—what should I watch for?"

That's a great question. We would be concerned about a more severe head injury if your child develops a severe or worsening headache, seizures, ongoing vomiting, abnormal behavior, or confusion. Luckily, in your child's case, she does not have signs of a severe head injury at this moment. Our plan is to observe your child here in the ER to make sure she doesn't develop any more serious symptoms. If your child has more symptoms during the observation period, then we can get the CT scan at that time, but we think this won't be necessary based on how your child looks right now. Just so you know, research shows that it is a safe to observe and wait a while before getting a CT scan, and even patients who end up needing surgery don't have any different outcomes due to a period of observation before deciding whether to get a CT scan.



“How should my child follow up after the concussion?”

You should make an appointment with your child’s primary physician as part of her follow up and treatment plan. Your child’s symptoms can last from a few days to weeks or longer. This is called “post-concussion syndrome.” Usually, this goes away completely over time, but each child is different. Your primary physician will usually recommend rest and sometimes medication to treat symptoms like headache or nausea. Also, your child should avoid sports or physical activities until she is evaluated by your primary physician or is no longer having any more symptoms.

For a child who is HIGH-RISK on the PECARN prediction rules, and who needs a head CT:

I’m so sorry your child has been hurt. I know you must be very worried, and we’re going to take very good care of him. The thing I’m concerned about as I examine him is that he doesn’t seem to be acting normally, and seems a little more drowsy and confused than I would like, plus you’ve told me he’s vomited a few times [or whatever PECARN predictors are present]. It’s possible this is just due to a severe concussion, and there may be nothing serious going on, but I’d like to get a CT scan of his head to see if there’s been any serious injury to the brain.

“Won’t that involve being exposed to some radiation?”

Yes, there is some radiation involved in getting a head CT scan, but in your child’s case, I think the benefit outweighs the risk, because of his abnormal behavior (vomiting/headache/signs of fracture/etc.). We need to make sure there’s no bleeding in the brain that could need surgery. Bleeding in the brain would obviously be a much greater risk to his health than the small risk of the radiation.

“What is the risk of getting cancer from getting a CT of the head?”

The risk from a single CT scan is anywhere from one in a thousand to one in five thousand over the course of your child’s lifetime, and in this case we think that’s less than the risk from an injury to your child’s brain.

More resources for physicians:

http://www.cdc.gov/concussion/headsup/physicians_tool_kit.html

<http://www.mdcalc.com/pecarn-pediatric-head-injury-trauma-algorithm/>

<http://www.cdc.gov/concussion/headsup/pdf/ACE-a.pdf>