



Five Things Physicians and Patients Should Question

1

Do not perform routine imaging for evaluation of infant head shape.

Routine imaging for the evaluation of infant head shape is not necessary. It exposes the child to unnecessary radiation. Positional plagiocephaly can be diagnosed on clinical examination. Most craniosynostosis presentations can also be discerned on clinical examination. Imaging may be obtained by specialists to make the diagnosis in complex cases and, if necessary, for surgical planning.

2

Do not obtain imaging of the cervical spine following trauma in an awake and alert patient without considering the use of clinical decision making (CDM) tools for cervical spine clearance.

Consideration should be given to avoid unnecessary radiation exposure when appropriate. For instance, CDM tools incorporate 3 or more variables from history, physical examination, or simple clinical tests to guide patient management. Results from the National Emergency X-Radiography Utilization Study (NEXUS) and the Pediatric Emergency Care Applied Research Network (PECARN) provide a high negative predictive value for significant cervical spine injuries in pediatric patients. Low-risk criteria from NEXUS include: no posterior midline cervical spine tenderness; no evidence of intoxication; normal level of consciousness; no focal neurological deficit; and no painful distracting injuries. PECARN developed a model that was highly sensitive for a normal cervical spine in the absence of: altered mental status, focal neurologic findings, neck pain, torticollis, substantial torso injury, conditions predisposing to cervical spine injury, high-risk motor vehicle crash, and diving. In comparison to NEXUS, the PECARN model takes into account mechanism of injury and specific extent and location of other associated injuries.

3

Do not routinely perform imaging or routine elective procedures requiring sedation or general anesthesia for very young children with low-risk asymptomatic lesions.

Low-risk asymptomatic lesions such as small rubbery scalp masses representing dermoid cysts or shallow midline sacral dimples do not routinely require intervention as a young infant. Routine magnetic resonance imaging requiring anesthesia is typically not recommended. Given the US Food and Drug Administration's Drug Safety Communication on pediatric anesthesia (www.fda.gov/Drugs/DrugSafety/ucm532356.htm) warning that general anesthesia and sedation drugs used in children younger than 3 years for anesthesia of more than 3 hours or repeated use of anesthetics may affect the development of children's brains, risks and benefits of elective imaging or procedures should be carefully weighed (<http://smarttots.org/>). If imaging is necessary, consider approaches such as feed-and-wrap for MRI in infants or referral to specialists to develop a clinical follow-up plan and timing of intervention as appropriate.

4

Do not perform routine imaging for evaluation of VP shunt function in a patient without signs or symptoms of shunt malfunction.

Routine imaging to evaluate ventricle size in an asymptomatic patient with hydrocephalus is not necessary. When imaging is needed, performing a rapid brain MRI is a recommended option to prevent radiation exposure to the child. Surveillance imaging, if needed, should only be ordered by specialists who treat hydrocephalus.

5

Do not routinely obtain a CT or MRI scan for developmentally normal, clinically asymptomatic infants with macrocephaly.

Most infants with macrocephaly do not have abnormalities that require neuroimaging or neurosurgical evaluation. Imaging should generally be reserved for infants with clinical concerns such as abnormal neurological examination findings, significant developmental delay, or rapidly increasing head circumference measurements (such as those crossing growth curves). When imaging is indicated, head ultrasonography should typically be considered as the first-line test for infants with an open fontanelle.

How This List Was Created

The pediatric neurosurgery Choosing Wisely topics were chosen after discussion among the Section on Neurological Surgery (SONS) Executive Committee members regarding the most common pediatric neurosurgery issues and treatments general pediatricians see in their practices. Various expert committees and sections of the AAP reviewed and approved the list. The AAP Executive Committee then granted final approval of the list.

AAP's disclosure and conflict of interest policy can be found at www.aap.org.

Sources

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The Section on Neurological Surgery addresses issues common to pediatric neurosurgery to improve the care of infants, children, adolescents, and young adults with neurosurgical disorders.

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