

Pediatric Imaging Spine MRI and Spine CT Test Request Tip Sheet

- MRI is almost always preferred over CT scan; if ordering CT, CLEARLY document why MRI is not appropriate.
- In cases of back pain without “red flags,” six weeks of multi-modality *supervised* conservative therapy (without significant symptom improvement) must be completed before an imaging study can be approved.
- Clear documentation of all elements of conservative therapy is required, including details and dates of the physical therapy, home exercise program, or chiropractic care.
- *Reproducible* neurological deficits must be documented in the clinical notes by a thorough neurological physical examination.
- We follow “Choosing Wisely” recommendations for Low Back Pain as shown below.

Radiation Exposure

Spine MRI: 0 mSv

Spine CT: 6.5 mSv



Radiation exposure should be limited when possible.

With and without contrast doubles the radiation dose.

Choosing Wisely Recommendations¹

As part of Choosing Wisely, each participating specialty society has created lists of “Things Physicians and Patients Should Question” that provide specific, evidence-based recommendations physicians and patients should discuss to help make wise decisions about the most appropriate care based on their individual situation. The items below represent the recommendations associated with Spine CT and MRI.

- **Don’t do imaging for low back pain within the first six weeks, unless red flags are present.**
(American Academy of Family Physicians)
- **Don’t obtain imaging studies in patients with non-specific low back pain.**
(American College of Physicians)
- **Avoid imaging studies (MRI, CT or X-rays) for acute low back pain without specific indications.**
(American Society of Anesthesiologists - Pain Medicine)
- **Don’t recommend advanced imaging (e.g., MRI) of the spine within the first six weeks in patients with non-specific acute low back pain in the absence of red flags.**
(North American Spine Society)

¹ *Choosing Wisely*® is an initiative of the ABIM Foundation to help physicians and patients engage in conversations about the overuse of tests and procedures and support physician efforts to help patients make smart and effective care choices. Recognizing the importance of physicians and patients working together, leading specialty societies, along with Consumer Reports, have joined *Choosing Wisely* to help improve the quality and safety of health care in America.

Pediatric

Brain MRI and Brain CT Test Request Tip Sheet

- MRI is almost always preferred over CT scan; if ordering CT, CLEARLY document why MRI is not appropriate. CT imaging can be appropriate for evaluation of select cases of skull deformities.
- Chronic headache (including chronic migraine) is an indication for advanced imaging ONLY if the headaches are increasing in frequency or have changed in severity or new neurological deficits are present.
- We follow “Choosing Wisely” recommendations for headache and syncope (loss of consciousness) as shown below.

Radiation Exposure

Brain MRI: 0 mSv

Brain CT: 4 mSv



Radiation exposure should be limited when possible.

With and without contrast doubles the radiation dose.

Pediatric Considerations from Choosing Wisely¹

As part of Choosing Wisely, each participating specialty society has created lists of “Things Physicians and Patients Should Question” that provide specific, evidence-based recommendations physicians and patients should discuss to help make wise decisions about the most appropriate care based on their individual situation. The items below represent the recommendations associated with Brain CT and MRI.

- **Neuroimaging (CT, MRI) is not necessary in a child with simple febrile seizure.** (*American Academy of Pediatrics*)
- **Computed tomography (CT) scans are not necessary in the immediate evaluation of minor head injuries;** clinical observation/Pediatric Emergency Care Applied Research Network (PECARN) criteria should be used to determine whether imaging is indicated. (*American Academy of Pediatrics*)
- **Avoid computed tomography (CT) scans of the head in emergency department patients with minor head injury who are at low risk based on validated decision rules.** (*American College of Emergency Physicians*)

Other Imaging Considerations from Choosing Wisely¹

- **Don’t perform neuro-imaging studies in patients with stable headaches that meet criteria for migraine.** (*American Headache Society*)
- **Don’t perform computed tomography (CT) imaging for headache when magnetic resonance imaging (MRI) is available, except in emergency settings.** (*American Headache Society*)
- **In the evaluation of simple syncope and a normal neurological examination, don’t obtain brain imaging studies (CT or MRI).** (*American College of Physicians*)
- **Don’t do imaging for uncomplicated headache.** (*American College of Radiology*)
- **Don’t order computed tomography (CT) scan of the head/brain for sudden hearing loss.** (*American Academy of Otolaryngology —Head and Neck Surgery Foundation*)

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Pediatric 
Abdomen CT and Abdomen/Pelvis CT
Test Request Tip Sheet

- Abdomen and Abdomen/Pelvis CTs deliver a high radiation dose and performing them with and without contrast delivers roughly double the dose. Studies should be ordered sequentially if needed, not concurrently as the second study is rarely required.
- Ultrasound should always be considered as the first imaging study in the evaluation of abdominal complaints in children.
- Laboratory work that will confirm or rule out inflammatory conditions such as appendicitis should be completed and documented in the clinical record before the CT request is made.
- We follow “Choosing Wisely” recommendations for Functional Abdominal Pain and Pediatric Abdominal Pain/Suspected Appendicitis.


Radiation Exposure

Abdomen CT: 8

Abdomen/Pelvis CT: 14 mSv

Radiation exposure should be limited when possible.

With and without contrast doubles the radiation dose.



Pediatric Considerations from Choosing Wisely¹ 

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- **Computed tomography (CT) scans are not necessary in the routine evaluation of abdominal pain.** *(American Academy of Pediatrics)*
- **Don’t do computed tomography (CT) for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.** *(American College of Radiology)*
- **Don’t do computed tomography (CT) for the evaluation of suspected appendicitis in children until after ultrasound has been considered as an option.** *(American College of Surgeons)*

Other Imaging Considerations from Choosing Wisely¹

- **For a patient with functional abdominal pain syndrome (as per ROME III criteria) computed tomography (CT) scans should not be repeated unless there is a major change in clinical findings or symptoms.** *(American Gastroenterological Society)*

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Pediatric 
Extremity (Hand, Wrists, Knee, Shoulder) MRI
Test Request Tip Sheet

- An examination of the joint involved with documentation of findings consistent with the suspected diagnosis must be submitted as part of the clinical information when requesting an MRI.
- In cases of persistent pain or suspected fracture, a plain x-ray should be documented in submitted clinical information before MRI is ordered.
- Four weeks of conservative therapy without significant pain relief should be documented in submitted clinical information before MRI is ordered for chronic/persistent pain.
- We follow “Choosing Wisely” recommendations for MRI monitoring of Rheumatoid disease.

Radiation Exposure
MRIs have no radiation exposure.

Choosing Wisely Recommendations¹
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- **Do not perform MRI of the peripheral joints to routinely monitor inflammatory arthritis. Data evaluating MRI for the diagnosis and prognosis of RA are currently inadequate to justify widespread use of this technology for these purposes in clinical practice. (American College of Rheumatology)**

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Pediatric Sinus CT Test Request Tip Sheet

- The primary use of Sinus CT scans is to aid in management of chronic sinusitis.
 - Thus, Sinus CT for sinusitis is appropriate ONLY after completion of a trial of observation to rule out the most common cause, viral rhinosinusitis.
 - This must be followed by a trial of medical antihistamines and antibiotic therapy without significant improvement in signs/symptoms.

Radiation Exposure

Sinus CT: 4 mSv

Radiation exposure should be limited when possible.

With and without contrast doubles the radiation dose.




- Routine imaging in children with acute sinusitis is not recommended. (American Academy of Pediatrics)
- Performing CT imaging in children younger than 6 is not recommended. (American Academy of Pediatrics)
- Brain/Sinus CT combination studies are rarely indicated since Brain CT almost always provides adequate views of the sinuses.
- We follow “Choosing Wisely” recommendations for Radiographic monitoring of Rhinosinusitis including plain films.

Choosing Wisely Recommendations¹

As part of Choosing Wisely, each participating specialty society has created lists of “Things Physicians and Patients Should Question” that provide specific, evidence-based recommendations physicians and patients should discuss to help make wise decisions about the most appropriate care based on their individual situation. The items below represent the recommendations associated with Sinus CT.

- **Don’t order sinus computed tomography (CT) or indiscriminately prescribe antibiotics for uncomplicated acute rhinosinusitis.** (American Academy of Allergy, Asthma & Immunology)
- **Don’t routinely obtain radiographic imaging for patients who meet diagnostic criteria for uncomplicated acute rhinosinusitis. Imaging of the paranasal sinuses, including plain film radiography, computed tomography (CT) and magnetic resonance imaging (MRI) is unnecessary in patients who meet the clinical diagnostic criteria for uncomplicated acute rhinosinusitis.** (American Academy of Otolaryngology — Head and Neck Surgery Foundation)

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Pediatric Imaging 
Facility Recommendations
Test Request Tip Sheet

- Ensure the decision to order imaging in a child will significantly affect the treatment or aid in the diagnosis of a condition.
- Realize that some children will require sedation or other medications in order to perform the requested study. Look for facilities with established pediatric protocols and pediatric anesthesia capabilities.
- Ensure the facility practices the Imaging Gently or ALARA (as low as reasonably achievable) approach for children.

Radiation Exposure

Women and children are more sensitive to the harmful effects of radiation.