American College of Radiology
ACR Appropriateness Criteria®

Seizures — Child

**Variant 1:** Neonatal seizures.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
<th>Final Tabulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>US head</td>
<td>Usually appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>9</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>MRI head without IV contrast</td>
<td>May be appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>5</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>May be appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>4</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>3</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head without and with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢☢ 3-10 mSv [ped]</td>
<td>3</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head without IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>3</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>FDG-PET/CT head</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 10-30 mSv</td>
<td>☢☢☢☢ 3-10 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>SPECT head</td>
<td>Usually not appropriate</td>
<td>TBD TBD</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
</tbody>
</table>

**Variant 2:** Simple febrile seizures.
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT head with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>CT head without IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>CT head without and with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 3-10 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>MRI head without IV contrast</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>FDG-PET/CT head</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 10-30 mSv</td>
<td>☢☢☢ 3-10 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>US head</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>SPECT head</td>
<td>Usually not appropriate</td>
<td>TBD TBD</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

**Variant 3:** Complex febrile seizures.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI head without IV contrast</td>
<td>May be appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>4</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>May be appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>4</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Procedure</td>
<td>Appropriateness Category</td>
<td>SOE</td>
<td>Adults RRL</td>
<td>Peds RRL</td>
<td>Rating</td>
<td>Median</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>--------------------------</td>
<td>--------</td>
<td>------------------</td>
<td>----------------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>3</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>CT head without IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>3</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>CT head without and with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢☢ 3-10 mSv [ped]</td>
<td>3</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>SPECT head</td>
<td>Usually not appropriate</td>
<td>TBD TBD</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>FDG-PET/CT head</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 10-30 mSv</td>
<td>☢☢☢☢ 3-10 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>US head</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

**Variant 4:** Post-traumatic seizures.
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
<th>Final Tabulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDG-PET/CT head</td>
<td>Usually not appropriate</td>
<td>☢☢☢☢ 10-30 mSv</td>
<td>☢☢☢☢ 3-10 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>US head</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>SPECT head</td>
<td>Usually not appropriate</td>
<td>TBD TBD</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
</tbody>
</table>

**Variant 5:** Partial seizures.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
<th>Final Tabulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI head without IV contrast</td>
<td>Usually appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>9</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>Usually appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>7</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>May be appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>5</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head without and with IV contrast</td>
<td>May be appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 3-10 mSv [ped]</td>
<td>5</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>FDG-PET/CT head</td>
<td>May be appropriate</td>
<td>☢☢☢☢ 10-30 mSv</td>
<td>☢☢☢☢ 3-10 mSv [ped]</td>
<td>5</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>SPECT head</td>
<td>May be appropriate</td>
<td>TBD TBD</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>5</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head without IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>3</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>US head</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
</tbody>
</table>
Variant 6:  First generalized seizure (neurologically normal).

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
<th>Final Tabulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI head without IV contrast</td>
<td>May be appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>5</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head without IV contrast</td>
<td>May be appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>4</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>May be appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>4</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>CT head without and with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 1-10 mSv</td>
<td>☢☢☢☢ 3-10 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>FDG-PET/CT head</td>
<td>Usually not appropriate</td>
<td>☢☢☢ 10-30 mSv</td>
<td>☢☢☢ 3-10 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>SPECT head</td>
<td>Usually not appropriate</td>
<td>TBD TBD</td>
<td>☢☢☢ 0.3-3 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>US head</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
</tbody>
</table>

Variant 7:  Generalized seizures (neurologically abnormal).

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
<th>Final Tabulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI head without IV contrast</td>
<td>Usually appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>9</td>
<td>n/a</td>
<td>0 0 0 0 0 0 0 0 0</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td>Appropriateness Category</td>
<td>SOE</td>
<td>Adults RRL</td>
<td>Peds RRL</td>
<td>Rating</td>
<td>Median</td>
<td>Final Tabulations</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------</td>
<td>-----</td>
<td>------------</td>
<td>----------</td>
<td>--------</td>
<td>--------</td>
<td>-------------------</td>
</tr>
<tr>
<td>CT head without IV contrast</td>
<td>May be appropriate</td>
<td>☢☢☢</td>
<td>1-10 mSv</td>
<td>☢☢☢</td>
<td>0.3-3 mSv [ped]</td>
<td>6</td>
<td>n/a</td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>May be appropriate</td>
<td>O</td>
<td>0 mSv</td>
<td>O</td>
<td>0 mSv [ped]</td>
<td>6</td>
<td>n/a</td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢</td>
<td>1-10 mSv</td>
<td>☢☢☢</td>
<td>0.3-3 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>Usually not appropriate</td>
<td>☢☢☢</td>
<td>1-10 mSv</td>
<td>☢☢☢</td>
<td>0.3-3 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td>FDG-PET/CT head</td>
<td>Usually not appropriate</td>
<td>☢☢☢</td>
<td>10-30 mSv</td>
<td>☢☢☢</td>
<td>3-10 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td>SPECT head</td>
<td>Usually not appropriate</td>
<td>TBD</td>
<td>TBD</td>
<td>☢☢☢</td>
<td>0.3-3 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
</tr>
<tr>
<td>US head</td>
<td>Usually not appropriate</td>
<td>O</td>
<td>0 mSv</td>
<td>O</td>
<td>0 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
</tr>
</tbody>
</table>

**Variant 8:** Intractable or refractory seizures.

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Appropriateness Category</th>
<th>SOE</th>
<th>Adults RRL</th>
<th>Peds RRL</th>
<th>Rating</th>
<th>Median</th>
<th>Final Tabulations</th>
</tr>
</thead>
<tbody>
<tr>
<td>MRI head without IV contrast</td>
<td>Usually appropriate</td>
<td>O</td>
<td>0 mSv</td>
<td>O</td>
<td>0 mSv [ped]</td>
<td>9</td>
<td>n/a</td>
</tr>
<tr>
<td>FDG-PET/CT head</td>
<td>May be appropriate</td>
<td>☢☢☢</td>
<td>10-30 mSv</td>
<td>☢☢☢</td>
<td>3-10 mSv [ped]</td>
<td>6</td>
<td>n/a</td>
</tr>
<tr>
<td>Procedure</td>
<td>Appropriateness</td>
<td>Radiation (Siemens)</td>
<td>Radiation (GE)</td>
<td>Minimum Age</td>
<td>Maximum Age</td>
<td>males</td>
<td>females</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>----------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------</td>
<td>---------</td>
</tr>
<tr>
<td>MRI head without and with IV contrast</td>
<td>May be appropriate</td>
<td>O 0 mSv [ped]</td>
<td>O 0 mSv [ped]</td>
<td>6</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SPECT head</td>
<td>May be appropriate</td>
<td>TBD TBD</td>
<td>TBD TBD</td>
<td>6</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CT head without IV contrast</td>
<td>May be appropriate</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CT head with IV contrast</td>
<td>Usually not appropriate</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CT head without and with IV contrast</td>
<td>Usually not appropriate</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
<td>2</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>US head</td>
<td>Usually not appropriate</td>
<td>O 0 mSv</td>
<td>O 0 mSv [ped]</td>
<td>1</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

**Appropriateness Category**: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

**SOE**: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References**: The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality**: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

**RRL**: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

**Rating**: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Median**: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

**Final tabulations**: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at [www.acr.org/ac](http://www.acr.org/ac).