## Variant 1: Hepatocellular carcinoma: Solitary tumor <3 cm.

<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>Systemic chemotherapy</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Resection</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transplantation</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>9</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Chemical ablation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Thermal ablation</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Stereotactic body radiotherapy (SBRT)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial embolization</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Selective internal radiation therapy (SIRT)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>
Variant 2:  Hepatocellular carcinoma: Solitary tumor 5 cm.

<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>Systemic chemotherapy</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Resection</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transplantation</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>9</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Chemical ablation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Thermal ablation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Stereotactic body radiotherapy (SBRT)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>4</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial embolization</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>6</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE)</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>7</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Selective internal radiation therapy (SIRT)</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>7</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE) combined with thermal ablation</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>7</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

Variant 3:  Hepatocellular carcinoma: More than one tumor, at least one of them >5 cm.
<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>Systemic chemotherapy</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>6</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resection</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transplantation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chemical ablation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thermal ablation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stereotactic body radiotherapy (SBRT)</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transarterial embolization</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>7</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE)</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selective internal radiation therapy (SIRT)</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE) combined with thermal ablation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>6</td>
<td>n/a</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Variant 4:** Intrahepatic cholangiocarcinoma: 4 cm in diameter, no evidence of biliary obstruction.

<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>Systemic chemotherapy</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td></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>Resection</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transplantation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Chemical ablation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Thermal ablation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Stereotactic body radiotherapy (SBRT)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>4</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial embolization</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>4</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Selective internal radiation therapy (SIRT)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE) combined with thermal ablation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

**Variant 5:** Metastatic liver disease: Multifocal metastatic neuroendocrine tumor (includes carcinoid tumors as well as islet cell tumors of the pancreas).

<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>Long-acting octreotide</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>9</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Systemic chemotherapy</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Resection</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td>0</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>
<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>Transplantation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Chemical ablation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Thermal ablation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>3</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Stereotactic body radiotherapy (SBRT)</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial embolization</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>7</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE)</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Selective internal radiation therapy (SIRT)</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE) combined with thermal ablation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0</td>
</tr>
</tbody>
</table>

**Variant 6: Metastatic liver disease: Multifocal colorectal carcinoma (liver dominant or isolated).**
## Variant 7: Solitary colorectal liver metastasis.

<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>Systemic chemotherapy</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>9</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Resection</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>9</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Transplantation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>1</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Chemical ablation</td>
<td>Usually not appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>2</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Thermal ablation</td>
<td>Usually appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>8</td>
<td>n/a</td>
<td>0</td>
<td>0 0 0 0 0 0 0 0 0 0</td>
</tr>
<tr>
<td>Procedure</td>
<td>Appropriateness</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>-----------------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>----</td>
<td>----</td>
</tr>
<tr>
<td>Stereotactic body radiotherapy (SBRT)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hepatic arterial chemotherapy infusion</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>4</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Transarterial embolization</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>5</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>6</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Selective internal radiation therapy (SIRT)</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>6</td>
<td>n/a</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Transarterial chemoembolization (TACE) combined with thermal ablation</td>
<td>May be appropriate</td>
<td>N/A</td>
<td>N/A</td>
<td>6</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).