American College of Radiology  
ACR Appropriateness Criteria®

Chest Pain-Possible Acute Coronary Syndrome

Variant 1:  Chest pain, low to intermediate probability for acute coronary syndrome. Initial imaging.

<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>CTA coronary arteries with IV contrast</td>
<td>Usually appropriate</td>
<td>Strong</td>
<td>☢☢☢ 1-10 mSv</td>
<td></td>
<td>8</td>
<td>8</td>
<td>0 0 1 1 0 0 7 7</td>
</tr>
</tbody>
</table>

References

<table>
<thead>
<tr>
<th>References</th>
<th>Study Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 (17692738)</td>
<td>4</td>
</tr>
<tr>
<td>59 (17010819)</td>
<td>4</td>
</tr>
<tr>
<td>60 (19406338)</td>
<td>2</td>
</tr>
<tr>
<td>64 (17549487)</td>
<td>4</td>
</tr>
<tr>
<td>63 (17398185)</td>
<td>3</td>
</tr>
<tr>
<td>62 (17075011)</td>
<td>2</td>
</tr>
<tr>
<td>61 (17320744)</td>
<td>2</td>
</tr>
<tr>
<td>68 (27006119)</td>
<td>2</td>
</tr>
<tr>
<td>67 (27220653)</td>
<td>3</td>
</tr>
<tr>
<td>66 (26577263)</td>
<td>2</td>
</tr>
<tr>
<td>65 (26052677)</td>
<td>2</td>
</tr>
<tr>
<td>72 (22055795)</td>
<td>M</td>
</tr>
<tr>
<td>71 (22449295)</td>
<td>1</td>
</tr>
<tr>
<td>70 (22830462)</td>
<td>1</td>
</tr>
<tr>
<td>69 (21939822)</td>
<td>3</td>
</tr>
<tr>
<td>75 (23255742)</td>
<td>3</td>
</tr>
<tr>
<td>74 (23538167)</td>
<td>4</td>
</tr>
<tr>
<td>73 (19007693)</td>
<td>1</td>
</tr>
<tr>
<td>Study Quality</td>
<td>O 0 mSv</td>
</tr>
<tr>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>76 (25863305)</td>
<td>Inadequate</td>
</tr>
<tr>
<td>75 (25863242)</td>
<td>1 (28279382)</td>
</tr>
<tr>
<td>74 (26475068)</td>
<td>80 (26476506)</td>
</tr>
<tr>
<td>73 (27886161)</td>
<td>79 (27885614)</td>
</tr>
<tr>
<td>72 (26764061)</td>
<td>78 (26764061)</td>
</tr>
<tr>
<td>71 (25713467)</td>
<td>77 (25713467)</td>
</tr>
<tr>
<td>70 (27718140)</td>
<td>84 (27718140)</td>
</tr>
<tr>
<td>69 (22895647)</td>
<td>83 (22895647)</td>
</tr>
<tr>
<td>68 (28290782)</td>
<td>82 (28290782)</td>
</tr>
<tr>
<td>67 (25711274)</td>
<td>81 (25711274)</td>
</tr>
<tr>
<td>66 (25752898)</td>
<td>87 (25752898)</td>
</tr>
<tr>
<td>65 (23617513)</td>
<td>86 (23617513)</td>
</tr>
<tr>
<td>64 (24255127)</td>
<td>85 (24255127)</td>
</tr>
<tr>
<td>63 (24486266)</td>
<td>92 (24486266)</td>
</tr>
<tr>
<td>62 (22922562)</td>
<td>91 (22922562)</td>
</tr>
<tr>
<td>61 (22032711)</td>
<td>90 (22032711)</td>
</tr>
<tr>
<td>60 (27470449)</td>
<td>89 (27470449)</td>
</tr>
<tr>
<td>59 (28109933)</td>
<td>88 (28109933)</td>
</tr>
<tr>
<td>58 (27050025)</td>
<td>93 (27050025)</td>
</tr>
</tbody>
</table>

**References**

<table>
<thead>
<tr>
<th>Study Quality</th>
<th>47 (20554154)</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>46 (26511125)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>45 (21562726)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>44 (17884363)</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>43 (24768667)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>42 (12671809)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>41 (25635106)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>40 (27865485)</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

**US echocardiography transthoracic stress**

<table>
<thead>
<tr>
<th>Usually</th>
<th>Strong</th>
<th>O 0 mSv</th>
<th>O 0 mSv [ped]</th>
<th>7</th>
<th>7</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>3</th>
<th>7</th>
<th>9</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>76 (25863305)</td>
<td>Inadequate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 (25863242)</td>
<td>1 (28279382)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>74 (26475068)</td>
<td>80 (26476506)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>73 (27886161)</td>
<td>79 (27885614)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>72 (26764061)</td>
<td>78 (26764061)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>71 (25713467)</td>
<td>77 (25713467)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 (27718140)</td>
<td>84 (27718140)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>69 (22895647)</td>
<td>83 (22895647)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>68 (28290782)</td>
<td>82 (28290782)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67 (25711274)</td>
<td>81 (25711274)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66 (25752898)</td>
<td>87 (25752898)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 (23617513)</td>
<td>86 (23617513)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>64 (24255127)</td>
<td>85 (24255127)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63 (24486266)</td>
<td>92 (24486266)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>62 (22922562)</td>
<td>91 (22922562)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61 (22032711)</td>
<td>90 (22032711)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 (27470449)</td>
<td>89 (27470449)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>59 (28109933)</td>
<td>88 (28109933)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>58 (27050025)</td>
<td>93 (27050025)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test Description</td>
<td>Usually appropriate</td>
<td>Limited</td>
<td>☢ &lt;0.1 mSv</td>
<td>☢ &lt;0.03 mSv [ped]</td>
<td>☢☢☢☢ 10-30 mSv</td>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------</td>
<td>---------</td>
<td>-------------</td>
<td>------------------</td>
<td>-----------------</td>
<td>------------</td>
<td>---------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Radiography chest</td>
<td></td>
<td>Limited</td>
<td>☢ &lt;0.1 mSv</td>
<td>☢ &lt;0.03 mSv [ped]</td>
<td>☢☢☢☢ 10-30 mSv</td>
<td>7</td>
<td>7</td>
<td>0  0  0  1  1  2  8  6  2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>31 (24595499)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tc-99m SPECT/CT MPI rest and stress</td>
<td>Usually appropriate</td>
<td>Limited</td>
<td>☢☢☢☢ 10-30 mSv</td>
<td></td>
<td></td>
<td>7</td>
<td>n/a</td>
<td>0  0  0  0  0  0  0  0  0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>39 (22877811)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>38 (21258084)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>37 (24026478)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>36 (23414823)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35 (23255769)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>34 (14522503)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>US echocardiography transthoracic resting</td>
<td>May be appropriate</td>
<td>Strong</td>
<td>☢ 0 mSv</td>
<td>☢ 0 mSv [ped]</td>
<td></td>
<td>5</td>
<td>5</td>
<td>2  0  2  2  9  1  0  0  0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>41 (25635106)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48 (24745875)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>49 (21111923)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>57 (26349786)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>56 (23582354)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>55 (20185525)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>54 (24612899)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>53 (20159647)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>52 (15917277)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>51 (15215802)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50 (22014426)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI heart with function and vasodilator stress perfusion without and with IV contrast</td>
<td>May be appropriate</td>
<td>Strong</td>
<td>☢ 0 mSv</td>
<td>☢ 0 mSv [ped]</td>
<td></td>
<td>5</td>
<td>5</td>
<td>0  0  0  3  9  7  0  1  0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>41 (25635106)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>48 (24745875)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>49 (21111923)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>57 (26349786)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>56 (23582354)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>55 (20185525)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>54 (24612899)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>53 (20159647)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>52 (15917277)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>51 (15215802)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>50 (22014426)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td>Expert Opinion</td>
<td>Dose Range</td>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>----------------</td>
<td>-----------------</td>
<td>------------</td>
<td>---------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rb-82 PET/CT heart stress</td>
<td>May be appropriate (Disagreement)</td>
<td>☢☢☢☢ 10-30 mSv</td>
<td>5</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 0 0 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tc-99m SPECT/CT MPI rest only</td>
<td>May be appropriate</td>
<td>☢☢ 1-10 mSv</td>
<td>5</td>
<td>n/a</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 0 0 0 0 0 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CTA chest with IV contrast</td>
<td>May be appropriate</td>
<td>☢☢☢ 3-10 mSv [ped]</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0 2 5 5 7 0 1 0 0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### References

- **Rb-82 PET/CT heart stress**
  - 109 (22554604)
  - 108 (15937302)
  - 107 (19618180)
  - 106 (18342769)
  - 105 (20660808)

- **Tc-99m SPECT/CT MPI rest only**
  - 36 (23414823)
  - 35 (23255769)
  - 34 (14522503)
  - 33 (12460092)
  - 32 (14752467)

- **CTA chest with IV contrast**
  - 45 (21562726)
  - 114 (23664718)
  - 113 (23578348)
  - 112 (26268824)
  - 111 (19787721)
  - 110 (19772587)
  - 121 (22992411)
  - 120 (18208849)
  - 119 (22196944)
  - 118 (18381373)
  - 117 (17868810)
<table>
<thead>
<tr>
<th>Procedure</th>
<th>May be appropriate</th>
<th>Radiation Dose</th>
<th>References</th>
<th>Study Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT coronary calcium</td>
<td>Moderate 1-10 mSv</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100 (24513880)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99 (22825529)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>98 (28390834)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>97 (25937196)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>96 (22820732)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>95 (27765299)</td>
<td>Good</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>94 (20360291)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI heart function and morphology without and with IV contrast</td>
<td>Strong 0 mSv [ped]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110 (19772587)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111 (19787721)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>126 (19332480)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125 (20510215)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>124 (18678772)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>123 (15582315)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>122 (12566362)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>129 (26590396)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>128 (26146527)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>127 (28645959)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>131 (28005512)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130 (22309452)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI heart with function and inotropic stress without IV contrast</td>
<td>Strong 0 mSv [ped]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>References:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>131 (28005512)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130 (22309452)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI heart with function and inotropic stress without and with IV contrast</td>
<td>May be appropriate</td>
<td>Strong</td>
<td>0 mSv</td>
<td>0 mSv [ped]</td>
</tr>
<tr>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 (21562726)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>114 (23664718)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>113 (23578348)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>112 (26268824)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111 (19787721)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110 (19772587)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>116 (20883929)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>115 (20977757)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT chest with IV contrast</td>
<td>Usually not appropriate</td>
<td>Limited</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
</tr>
<tr>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101 (27593539)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102 (26883335)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CT chest without and with IV contrast</td>
<td>Usually not appropriate</td>
<td>Limited</td>
<td>1-10 mSv</td>
<td>3-10 mSv [ped]</td>
</tr>
<tr>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101 (27593539)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102 (26883335)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI heart function and morphology without IV contrast</td>
<td>Usually not appropriate</td>
<td>Strong</td>
<td>0 0 mSv</td>
<td>O 0 mSv [ped]</td>
</tr>
<tr>
<td>---------------------------------------------------</td>
<td>--------------------------</td>
<td>-------</td>
<td>--------</td>
<td>-------------</td>
</tr>
<tr>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>110 (19772587)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>111 (19787721)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>126 (19332480)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125 (20510215)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>124 (18678772)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>123 (15582315)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>122 (12566362)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>129 (26590396)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>128 (26146527)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>127 (28645959)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>131 (28005512)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>130 (22309452)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CT chest without IV contrast</th>
<th>Usually not appropriate</th>
<th>Limited</th>
<th>☢☢☢ 1-10 mSv</th>
<th>☢☢☢☢ 3-10 mSv [ped]</th>
<th>2</th>
<th>2</th>
<th>6</th>
<th>7</th>
<th>2</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>1</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102 (26883335)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>101 (27593539)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Arteriography coronary                            | Usually not appropriate  | Limited | ☢☢☢ 1-10 mSv |                      | 2 | 2 | 4 | 5 | 4 | 0 | 1 | 1 | 1 | 0 | 0 |
|---------------------------------------------------|--------------------------|---------|---------------|                      |---|---|---|---|---|---|---|---|---|---|---|
| References                                        | Study Quality            |         |               |                      |   |   |   |   |   |   |   |   |   |   |   |
| 30 (26810814)                                     | 4                        |         |               |                      |   |   |   |   |   |   |   |   |   |   |   |

<table>
<thead>
<tr>
<th>MRA coronary arteries without IV contrast</th>
<th>Usually not appropriate</th>
<th>Moderate</th>
<th>O 0 mSv</th>
<th>O 0 mSv [ped]</th>
<th>2</th>
<th>2</th>
<th>5</th>
<th>10</th>
<th>5</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>References</td>
<td>Study Quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>119 (22196944)</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>135 (26965732)</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>134 (20828652)</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### MRA coronary arteries without and with IV contrast

<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>Arteriography coronary</td>
<td>Usually not appropriate</td>
<td>Strong</td>
<td>-</td>
<td>☢☢☢ 1-10 mSv</td>
<td>9</td>
<td>9</td>
<td>0 0 0 0 0 0 3 5 8</td>
</tr>
</tbody>
</table>

**References**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>133 (20513610)</td>
<td>4</td>
</tr>
<tr>
<td>132 (18586979)</td>
<td>4</td>
</tr>
</tbody>
</table>

### US echocardiography transesophageal

<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>Arteriography coronary</td>
<td>Usually not appropriate</td>
<td>Strong</td>
<td>-</td>
<td>☢☢☢ 1-10 mSv</td>
<td>9</td>
<td>9</td>
<td>0 0 0 0 0 0 3 5 8</td>
</tr>
</tbody>
</table>

**References**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>119 (22196944)</td>
<td>3</td>
</tr>
<tr>
<td>134 (20828652)</td>
<td>2</td>
</tr>
<tr>
<td>133 (20513610)</td>
<td>4</td>
</tr>
<tr>
<td>132 (18586979)</td>
<td>4</td>
</tr>
</tbody>
</table>

**Variant 2:** Chest pain, high probability for acute coronary syndrome. Initial imaging.

<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>Arteriography coronary</td>
<td>Usually not appropriate</td>
<td>Strong</td>
<td>-</td>
<td>☢☢☢ 1-10 mSv</td>
<td>9</td>
<td>9</td>
<td>0 0 0 0 0 0 3 5 8</td>
</tr>
</tbody>
</table>

**References**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Study Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 (22923432)</td>
<td>4</td>
</tr>
<tr>
<td>139 (25260718)</td>
<td>4</td>
</tr>
<tr>
<td>138 (23247304)</td>
<td>4</td>
</tr>
<tr>
<td>137 (19393152)</td>
<td>4</td>
</tr>
<tr>
<td>136 (9103133)</td>
<td>4</td>
</tr>
<tr>
<td>143 (18594042)</td>
<td>Good</td>
</tr>
<tr>
<td>142 (19458363)</td>
<td>1</td>
</tr>
<tr>
<td>141 (20045278)</td>
<td>2</td>
</tr>
<tr>
<td>Procedure</td>
<td>Study Quality</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>References</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Study Quality</td>
<td></td>
</tr>
<tr>
<td>Procedure</td>
<td>Appropriateness</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Tc-99m SPECT/CT MPI rest only</td>
<td>May be appropriate</td>
</tr>
<tr>
<td>CTA coronary arteries with IV contrast</td>
<td>May be appropriate</td>
</tr>
<tr>
<td>Tc-99m SPECT/CT MPI rest and stress</td>
<td>Strong</td>
</tr>
<tr>
<td>CTA chest with IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>CT chest with IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>MRI heart function and morphology without IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>Procedure</td>
<td>Appropriateness</td>
</tr>
<tr>
<td>-----------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>CT coronary calcium</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>CT chest without IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>References</td>
<td></td>
</tr>
<tr>
<td>101 (27593539)</td>
<td>3</td>
</tr>
<tr>
<td>102 (26883335)</td>
<td>4</td>
</tr>
<tr>
<td>CT chest without and with IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>References</td>
<td></td>
</tr>
<tr>
<td>101 (27593539)</td>
<td>3</td>
</tr>
<tr>
<td>102 (26883335)</td>
<td>4</td>
</tr>
<tr>
<td>MRA coronary arteries without IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>MRA coronary arteries without and with IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>US echocardiography transesophageal</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>MRI heart with function and vasodilator stress perfusion without and with IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>MRI heart with function and inotropic stress without and with IV contrast</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>Rb-82 PET/CT heart stress</td>
<td>Usually not appropriate</td>
</tr>
<tr>
<td>MRI heart with function and inotropic stress without IV contrast</td>
<td>Usually not appropriate</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.