

| | | | | | | | | | | | | | | | |
|---------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT chest without and with IV contrast | Usually not appropriate | Limited | ☹☹☹ 1-10 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 10 | 2 | 1 | 1 | 0 | 1 | 0 | 0 | 0 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 12 (26226916) | | 1 | | | | | | | | | | | |
| | | 11 (26207003) | | 4 | | | | | | | | | | | |
| | | 13 (25680714) | | 4 | | | | | | | | | | | |
| | | 14 (24707937) | | 4 | | | | | | | | | | | |
| | | 10 (31054749) | | 4 | | | | | | | | | | | |
| FDG-PET/CT skull base to mid-thigh | Usually not appropriate | Expert Consensus | ☹☹☹☹ 10-30 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 10 | 2 | 2 | 1 | 0 | 0 | 0 | 0 | 0 |
| WBC scan chest | Usually not appropriate | Expert Consensus | ☹☹☹☹ 10-30 mSv | | 1 | 1 | 11 | 1 | 2 | 0 | 1 | 0 | 0 | 0 | 0 |

Variant 2: Nontraumatic chest wall pain. Known or suspected malignancy. Secondary evaluation after normal chest radiograph. Next imaging study.

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|------------------------------|--------------------------|---------------|--------------|---------------------|--------|--------|-------------------|---|---|---|---|---|----|----|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| CT chest with IV contrast | Usually appropriate | Limited | ☹☹☹ 1-10 mSv | ☹☹☹☹ 3-10 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 12 | 2 |
| | | References | | Study Quality | | | | | | | | | | | |
| | | 29 (21862774) | | 4 | | | | | | | | | | | |
| | | 15 (21466934) | | 4 | | | | | | | | | | | |
| | | 27 (27494286) | | 4 | | | | | | | | | | | |
| | | 31 (24585297) | | 3 | | | | | | | | | | | |
| | | 32 (21900839) | | 2 | | | | | | | | | | | |
| | | 30 (21571655) | | 4 | | | | | | | | | | | |
| | | 28 (19931110) | | 4 | | | | | | | | | | | |
| CT chest without IV contrast | Usually appropriate | Limited | ☹☹☹ 1-10 mSv | ☹☹☹☹ 3-10 mSv [ped] | 7 | 7 | 0 | 0 | 1 | 0 | 1 | 0 | 11 | 2 | 1 |

| References | Study Quality |
|---------------|---------------|
| 29 (21862774) | 4 |
| 15 (21466934) | 4 |
| 27 (27494286) | 4 |
| 31 (24585297) | 3 |
| 32 (21900839) | 2 |
| 30 (21571655) | 4 |
| 28 (19931110) | 4 |

| | | | | | | | | | | | | | | | |
|----------------------|---------------------|---------|--------------|----------------------|---|---|---|---|---|---|---|---|----|---|---|
| Bone scan whole body | Usually appropriate | Limited | ☼☼☼ 1-10 mSv | ☼☼☼☼☼ 3-10 mSv [ped] | 7 | 7 | 1 | 0 | 0 | 0 | 1 | 0 | 11 | 3 | 0 |
|----------------------|---------------------|---------|--------------|----------------------|---|---|---|---|---|---|---|---|----|---|---|

| References | Study Quality |
|---------------|---------------|
| 26 (30484853) | 4 |

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|-------------------------------|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI chest without IV contrast | May be appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 0 | 0 | 1 | 5 | 8 | 1 | 1 | 0 | 0 |
|-------------------------------|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 29 (21862774) | 4 |
| 41 (18373824) | 3 |
| 15 (21466934) | 4 |
| 42 (11128398) | 2 |
| 27 (27494286) | 4 |
| 38 (29613963) | 4 |
| 39 (23206603) | 4 |
| 30 (21571655) | 4 |
| 28 (19931110) | 4 |

| | | | | | | | | | | | | | | | |
|--|--------------------|---------|---------|---------------|---|---|---|---|---|---|----|---|---|---|---|
| MRI chest without and with IV contrast | May be appropriate | Limited | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 0 | 0 | 0 | 3 | 10 | 2 | 1 | 0 | 0 |
|--|--------------------|---------|---------|---------------|---|---|---|---|---|---|----|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 29 (21862774) | 4 |
| 41 (18373824) | 3 |
| 15 (21466934) | 4 |
| 42 (11128398) | 2 |

| | |
|---------------|---|
| 27 (27494286) | 4 |
| 38 (29613963) | 4 |
| 40 (24947314) | 3 |
| 39 (23206603) | 4 |
| 30 (21571655) | 4 |
| 28 (19931110) | 4 |

| | | | | | | | | | | | | | | | |
|------------------------------------|--------------------|--------|----------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| FDG-PET/CT skull base to mid-thigh | May be appropriate | Strong | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 5 | 5 | 1 | 0 | 0 | 3 | 7 | 2 | 1 | 2 | 0 |
|------------------------------------|--------------------|--------|----------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|

| | |
|---------------|---------------|
| References | Study Quality |
| 37 (21354739) | Good |
| 36 (28884133) | 4 |
| 33 (22850222) | 3 |
| 32 (21900839) | 2 |
| 34 (17954662) | 4 |
| 35 (24361174) | 3 |

| | | | | | | | | | | | | | | | |
|-----------------------|--------------------|---------|--------------|--|---|---|---|---|---|---|---|---|---|---|---|
| Radiography rib views | May be appropriate | Limited | ☼☼☼ 1-10 mSv | | 5 | 5 | 1 | 2 | 1 | 3 | 9 | 0 | 0 | 0 | 0 |
|-----------------------|--------------------|---------|--------------|--|---|---|---|---|---|---|---|---|---|---|---|

| | |
|---------------|---------------|
| References | Study Quality |
| 16 (24209723) | 4 |

| | | | | | | | | | | | | | | | |
|----------|-------------------------|--------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| US chest | Usually not appropriate | Strong | ○ 0 mSv | ○ 0 mSv [ped] | 3 | 3 | 4 | 2 | 4 | 2 | 4 | 0 | 0 | 0 | 0 |
|----------|-------------------------|--------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| | |
|---------------|---------------|
| References | Study Quality |
| 43 (25911140) | 1 |
| 27 (27494286) | 4 |
| 44 (25038014) | 2 |
| 39 (23206603) | 4 |
| 46 (22675711) | 2 |
| 32 (21900839) | 2 |
| 45 (17951616) | 1 |

| | | | | | | | | | | | | | | | |
|---------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| CT chest without and with IV contrast | Usually not appropriate | Limited | ☹☹☹ 1-10 mSv | ☹☹☹☹ 3-10 mSv [ped] | 1 | 1 | 13 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | | References | Study Quality | | | | | | | | | | | | |
| | | 29 (21862774) | 4 | | | | | | | | | | | | |
| | | 15 (21466934) | 4 | | | | | | | | | | | | |
| | | 27 (27494286) | 4 | | | | | | | | | | | | |
| | | 31 (24585297) | 3 | | | | | | | | | | | | |
| | | 30 (21571655) | 4 | | | | | | | | | | | | |
| | | 28 (19931110) | 4 | | | | | | | | | | | | |
| WBC scan chest | Usually not appropriate | Expert Consensus | ☹☹☹☹ 10-30 mSv | | 1 | 1 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Variant 3: Nontraumatic chest wall pain. Suspected infectious or inflammatory condition. Secondary evaluation after normal chest radiograph. Next imaging study.

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|------------------------------|--------------------------|---------------|---------------|---------------------|--------|--------|-------------------|---|---|---|---|---|----|----|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| CT chest with IV contrast | Usually appropriate | Strong | ☹☹☹ 1-10 mSv | ☹☹☹☹ 3-10 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 10 | 4 |
| | | References | Study Quality | | | | | | | | | | | | |
| | | 51 (25742551) | 2 | | | | | | | | | | | | |
| | | 50 (20878342) | 3 | | | | | | | | | | | | |
| | | 52 (28363377) | 4 | | | | | | | | | | | | |
| | | 48 (24515885) | 4 | | | | | | | | | | | | |
| | | 53 (22119315) | 1 | | | | | | | | | | | | |
| | | 54 (21834915) | 1 | | | | | | | | | | | | |
| CT chest without IV contrast | Usually appropriate | Strong | ☹☹☹ 1-10 mSv | ☹☹☹☹ 3-10 mSv [ped] | 7 | 7 | 0 | 0 | 0 | 0 | 2 | 1 | 12 | 1 | 0 |
| | | References | Study Quality | | | | | | | | | | | | |
| | | 51 (25742551) | 2 | | | | | | | | | | | | |

| | |
|---------------|---|
| 50 (20878342) | 3 |
| 52 (28363377) | 4 |
| 48 (24515885) | 4 |
| 53 (22119315) | 1 |
| 54 (21834915) | 1 |

| | | | | | | | | | | | | | | | |
|----------------|--------------------|---------|----------------|--|---|---|---|---|---|---|---|---|---|---|---|
| WBC scan chest | May be appropriate | Limited | ⊕⊕⊕⊕ 10-30 mSv | | 6 | 6 | 0 | 1 | 0 | 2 | 4 | 5 | 3 | 1 | 0 |
|----------------|--------------------|---------|----------------|--|---|---|---|---|---|---|---|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 60 (25475377) | 4 |
| 56 (25917543) | 4 |
| 61 (29452615) | 4 |
| 55 (23359660) | 4 |

| | | | | | | | | | | | | | | | |
|-------------------------------|-----------------------------------|----------------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI chest without IV contrast | May be appropriate (Disagreement) | Expert Opinion | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 0 | 1 | 1 | 2 | 7 | 3 | 2 | 0 | 0 |
|-------------------------------|-----------------------------------|----------------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 58 (20558917) | 4 |
| 52 (28363377) | 4 |
| 48 (24515885) | 4 |
| 49 (22798267) | 2 |
| 59 (22226453) | 1 |
| 53 (22119315) | 1 |

| | | | | | | | | | | | | | | | |
|--|--------------------|--------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI chest without and with IV contrast | May be appropriate | Strong | ○ 0 mSv | ○ 0 mSv [ped] | 5 | 5 | 0 | 0 | 1 | 1 | 9 | 0 | 3 | 2 | 0 |
|--|--------------------|--------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 58 (20558917) | 4 |
| 52 (28363377) | 4 |
| 48 (24515885) | 4 |
| 49 (22798267) | 2 |
| 59 (22226453) | 1 |
| 53 (22119315) | 1 |

| | |
|---------------|---|
| 53 (22119315) | 1 |
| 54 (21834915) | 1 |

Variant 4: Nontraumatic chest wall pain. History of prior chest intervention. Secondary evaluation after normal chest radiograph. Next imaging study.

| Procedure | Appropriateness Category | SOE | Adults RRL | Peds RRL | Rating | Median | Final Tabulations | | | | | | | | |
|---------------------------|--------------------------|--------|--------------|---------------------|--------|--------|-------------------|---|---|---|---|---|---|----|---|
| | | | | | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| CT chest with IV contrast | Usually appropriate | Strong | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕⊕ 3-10 mSv [ped] | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 11 | 3 |

| References | Study Quality |
|---------------|---------------|
| 66 (26129745) | 4 |
| 71 (23415550) | 2 |
| 8 (22821673) | 2 |
| 69 (30850215) | 4 |
| 73 (30403979) | 2 |
| 70 (25910220) | 4 |
| 74 (23558226) | 4 |
| 72 (22815325) | 4 |
| 65 (21995807) | 1 |
| 67 (19775906) | 4 |
| 64 (30300004) | 4 |
| 68 (15627194) | 2 |

| | | | | | | | | | | | | | | | |
|------------------------------|---------------------|--------|--------------|---------------------|---|---|---|---|---|---|---|---|----|---|---|
| CT chest without IV contrast | Usually appropriate | Strong | ⊕⊕⊕ 1-10 mSv | ⊕⊕⊕⊕ 3-10 mSv [ped] | 7 | 7 | 0 | 0 | 0 | 0 | 1 | 2 | 10 | 3 | 0 |
|------------------------------|---------------------|--------|--------------|---------------------|---|---|---|---|---|---|---|---|----|---|---|

| References | Study Quality |
|---------------|---------------|
| 66 (26129745) | 4 |
| 71 (23415550) | 2 |
| 8 (22821673) | 2 |
| 69 (30850215) | 4 |
| 73 (30403979) | 2 |

| | |
|---------------|---|
| 70 (25910220) | 4 |
| 74 (23558226) | 4 |
| 72 (22815325) | 4 |
| 65 (21995807) | 1 |
| 67 (19775906) | 4 |
| 64 (30300004) | 4 |
| 68 (15627194) | 2 |

| | | | | | | | | | | | | | | | |
|-------------------------------|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI chest without IV contrast | May be appropriate | Limited | 0 0 mSv | 0 0 mSv [ped] | 5 | 5 | 0 | 1 | 2 | 1 | 7 | 4 | 0 | 1 | 0 |
|-------------------------------|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 27 (27494286) | 4 |
| 63 (26351442) | 4 |
| 69 (30850215) | 4 |
| 79 (30443994) | 4 |

| | | | | | | | | | | | | | | | |
|--|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| MRI chest without and with IV contrast | May be appropriate | Limited | 0 0 mSv | 0 0 mSv [ped] | 5 | 5 | 0 | 0 | 1 | 2 | 7 | 4 | 1 | 1 | 0 |
|--|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 27 (27494286) | 4 |
| 63 (26351442) | 4 |
| 69 (30850215) | 4 |
| 79 (30443994) | 4 |

| | | | | | | | | | | | | | | | |
|------------------------------------|--------------------|--------|----------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|
| FDG-PET/CT skull base to mid-thigh | May be appropriate | Strong | ☼☼☼☼ 10-30 mSv | ☼☼☼☼ 3-10 mSv [ped] | 4 | 4 | 2 | 1 | 1 | 7 | 4 | 1 | 0 | 0 | 0 |
|------------------------------------|--------------------|--------|----------------|---------------------|---|---|---|---|---|---|---|---|---|---|---|

| References | Study Quality |
|---------------|---------------|
| 75 (26756408) | 2 |
| 77 (30196022) | 1 |
| 76 (22228342) | 4 |
| 78 (31456858) | 2 |

| | | | | | | | | | | | | | | | |
|----------|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|
| US chest | May be appropriate | Limited | 0 0 mSv | 0 0 mSv [ped] | 4 | 4 | 1 | 2 | 2 | 3 | 6 | 1 | 0 | 0 | 0 |
|----------|--------------------|---------|---------|---------------|---|---|---|---|---|---|---|---|---|---|---|

| | | References | Study Quality | | | | | | | | | | | | |
|---------------------------------------|-------------------------|------------------|----------------|---------------------|---|---|----|---|---|---|---|---|---|---|---|
| | | 70 (25910220) | 4 | | | | | | | | | | | | |
| Bone scan whole body | Usually not appropriate | Limited | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 2 | 2 | 8 | 2 | 4 | 0 | 1 | 0 | 1 | 0 | 0 |
| | | References | Study Quality | | | | | | | | | | | | |
| | | 62 (23585956) | 4 | | | | | | | | | | | | |
| | | 63 (26351442) | 4 | | | | | | | | | | | | |
| | | 64 (30300004) | 4 | | | | | | | | | | | | |
| Radiography rib views | Usually not appropriate | Expert Consensus | ☼☼☼ 1-10 mSv | | 2 | 2 | 8 | 6 | 1 | 0 | 1 | 0 | 0 | 0 | 0 |
| WBC scan chest | Usually not appropriate | Limited | ☼☼☼☼ 10-30 mSv | | 2 | 2 | 5 | 3 | 2 | 1 | 3 | 1 | 0 | 0 | 0 |
| | | References | Study Quality | | | | | | | | | | | | |
| | | 80 (11973486) | 2 | | | | | | | | | | | | |
| | | 81 (8462208) | 4 | | | | | | | | | | | | |
| CT chest without and with IV contrast | Usually not appropriate | Strong | ☼☼☼ 1-10 mSv | ☼☼☼☼ 3-10 mSv [ped] | 1 | 1 | 15 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 |
| | | References | Study Quality | | | | | | | | | | | | |
| | | 66 (26129745) | 4 | | | | | | | | | | | | |
| | | 71 (23415550) | 2 | | | | | | | | | | | | |
| | | 8 (22821673) | 2 | | | | | | | | | | | | |
| | | 69 (30850215) | 4 | | | | | | | | | | | | |
| | | 73 (30403979) | 2 | | | | | | | | | | | | |
| | | 70 (25910220) | 4 | | | | | | | | | | | | |
| | | 74 (23558226) | 4 | | | | | | | | | | | | |
| | | 72 (22815325) | 4 | | | | | | | | | | | | |
| | | 65 (21995807) | 1 | | | | | | | | | | | | |
| | | 67 (19775906) | 4 | | | | | | | | | | | | |
| | | 64 (30300004) | 4 | | | | | | | | | | | | |
| | | 68 (15627194) | 2 | | | | | | | | | | | | |

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.