

| Cough | Goroll | Porter | Abercrombie | Eisenberg | Gomella | Kaspar | Wasson | Paulman | Seller | TOTAL |
|---|--------|--------|-------------|-----------|---------|--------|--------|---------|--------|-------|
| COPD (chronic bronchitis and emphysema) | x | x | x | x | x | x | x | | x | 8 |
| Asthma | x | x | | x | x | | x | x | x | 7 |
| GERD | x | x | | x | x | | x | x | x | 7 |
| Lung cancer | x | x | | x | | x | x | x | x | 7 |
| ACE inhibitors | x | x | | x | x | | x | | x | 6 |
| Foreign body | | x | | x | x | x | x | | x | 6 |
| Bronchiectasis | x | | x | x | x | | | | x | 5 |
| Congestive heart failure | x | x | | | | | x | x | x | 5 |
| Pneumonia | x | x | | x | x | | | x | | 5 |
| Cigarette smoke | x | | | x | | x | x | | | 4 |
| Aspiration | x | x | x | | | | | | | 3 |
| Dry, cold, or hot air | x | | | | | x | | | x | 3 |
| External auditory canal ds | x | | | | x | | | | x | 3 |
| Interstitial lung disease | x | | | | x | | | | x | 3 |
| Lung abscess | | | x | x | | x | | | | 3 |
| Pneumoconiosis | x | | x | x | | | | | | 3 |
| Sinusitis | x | | | | x | | | | x | 3 |
| Mediastinal lymphadenopathy | x | | | | x | | | | x | 3 |
| Thoracic aneurysm | x | | | | x | | | | x | 3 |
| URI | x | x | | | | | x | | | 3 |
| Rhinitis | x | x | | | | | | | x | 3 |
| Dust | x | | | | | x | | | | 2 |
| Pollution | x | | | | | | | | x | 2 |
| Pulmonary edema | | | x | | x | | | | | 2 |
| Pulmonary embolism | | x | x | | | | | | | 2 |
| Chemical pneumonitis | | | x | x | | | | | | 2 |
| Popcorn lung disease | | | x | | | | | | | 1 |
| Mitral valve stenosis | | | | | | | x | | | 1 |
| Vocal cord polyps | | | | | | | | | x | 1 |

CAUSES OF COUGH ORGANIZED BY SYSTEM

| Cause | Clinical Features | Imaging Findings |
|--|--|---|
| Pulmonary and Airway Abnormalities | | |
| Pneumonia – community acquired, aspiration, pneumocystis, and tuberculosis | All, including community acquired pneumonia (CAP): Fever (may be absent in elderly), SOB, crackles or dullness, productive cough, chills, HA, elevated WBC count (>10,400). Aspiration pneumonia: Obtundation from dementia, stroke, drugs, or alcohol. Pneumocystis: known HIV/AIDS or risk factors for HIV/AIDS. Pneumonia from tuberculosis: As pneumonia with night sweats and involuntary weight loss. | XR, CT: consolidation and/or pleural effusion (a normal XR does <i>not</i> rule out pneumonia if the pre-test probability is high); unilateral relatively dense lobar consolidation is more likely CAP; bilateral less dense consolidation is typical of pneumocystis; apical consolidation is more typical of pneumonia from tuberculosis. |
| COPD/Emphysema | Smoking; cough; distant breath sounds; productive cough with chronic bronchitis; abnormal (fixed) PFTs. | XR, CT: hyperinflation, bullae, straightened pulmonary vasculature; associated pneumonia |
| Asthma | Abnormal breath sounds (especially wheezing) activated by recognizable trigger (e.g. exercise, cold, animal dander); chest pain; dyspnea; abnormal (reversible) PFTs, response to challenge test. | Usually normal and not done except for excluding pneumonia, pneumothorax, or pulmonary collapse. XR, CT: hyperinflation; increased peribronchial markings, |
| Lung Cancer | Smoking; involuntary weight loss; hemoptysis; shortness of breath (from associated COPD/Emphysema); chest pain (from pleural invasion or bone lesions). | XR, CT: lung mass with possible “upstream” pneumonia with consolidation; additional pulmonary nodules/masses; effusions; lymphadenopathy; bone lesions from metastatic deposit. |
| Foreign body | History of obtundation or known aspiration or swallowing difficulty or choking episode. | XR, CT: visualization of a radiodense foreign body; CT: visualization of an isodense or radiolucent foreign body in the trachobronchial tree. |
| Bronchiectasis | Copious sputum production; repeated prior bouts of pneumonia. | XR, CT: dilated bronchi with tubular nontapering bronchi seen in profile and “signet ring” sign (bronchi larger than associated bronchial artery) in cross section; bronchi extending to within 3 cm of the pleural surface. |
| Pneumoconiosis and other diffuse infiltrative lung disease | Dry cough; exposure to inciting agent (Organic: hay, cotton, grain; Mineral: asbestosis, silicosis, coal; Idiopathic: sarcoid, connective | XR, CT: ground glass lung opacity; honeycombing; small nodules; air trapping. |

| | | |
|---|--|---|
| | tissue disease (e.g., scleroderma or systemic lupus erythematosis); Wegener's granulomatosis | |
| Cardiovascular Diseases | | |
| Congestive heart failure | Shortness of breath with pulmonary edema; chest pain with myocardial ischemia; dependent edema. | XR, CT: increased lung opacity in either a ground glass or consolidation pattern; septal lines; pleural effusions; cardiomegaly. |
| Thoracic aortic aneurysm | Chest pain (with ulceration or dissection) | XR, CT: dilated, tortuous aorta distorting the trachea. |
| Pulmonary embolism | Chest pain and dyspnea; history of lower deep venous thrombosis (usually lower extremity); hypercoagulable states. | XR, CT: peripheral wedge-shaped lung opacity ("Hampton's hump") with infarction; pleural effusion; CT: filling defects in the arterial tree; VQ scan: ventilation perfusion mismatches. |
| Mitral valve stenosis | Dyspnea; fatigue; dependent edema; heart palpitations. | XR, CT: cardiomegaly with left atrial enlargement; increased lung opacity in either a ground glass or consolidation pattern; septal lines; pleural effusions. |
| Other Diseases | | |
| Gastroesophageal reflux disease | Heartburn; known hiatal hernia | No direct findings; XR, CT may show a hiatal hernia. |
| Goiter with compression of the trachea | With accompanying hypothyroidism: fatigue, constipation, depression, cold sensitivity, weight gain. | XR, CT, US: enlarged thyroid with extrinsic compression of the trachea. |
| Lymphadenopathy with compression of the trachea | With malignant lymphadenopathy, constitutional symptoms such as fatigue and weight loss. | XR, CT: enlarged lymph nodes. |
| COUGH WITH NO IMAGING FINDINGS ON CHEST IMAGING STUDIES | | |
| ACE inhibitors; cigarette smoke; dry, cold, or hot air; sinusitis; rhinitis; dust; pollution; vocal cord polyps; external auditory canal disease (impacted foreign bodies or cerumen); bronchitis including nonasthmatic eosinophilic bronchitis; premature ventricular contractions (PVCs); influenza (unless there is also pneumonia) | | |
| ABBREVIATIONS | | |
| CT = computed tomography; MR = magnetic resonance imaging; US = ultrasound; VQ = (nuclear medicine) ventilation/perfusion lung scan; WBC = white blood cell count; XR = x-ray radiography. | | |

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