

VinDr-CXR: An open dataset of chest X-rays with radiologist's annotations (Supplementary materials)

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1 List of DICOM tags

Table 1. The list of DICOM tags that were retained for loading and processing raw images. All other tags were removed for protecting patient privacy. Details about all these tags can be found from DICOM Standard Browser at <https://dicom.innolitics.com/ciods>.

| DICOM Tag | Attribute Name | Description |
|--------------|--------------------------------|--|
| (0010, 0040) | Patient's Sex | Sex of the named patient. |
| (0010, 1010) | Patient's Age | Age of the patient. |
| (0010, 1020) | Patient's Size | Length or size of the patient, in meters. |
| (0010, 1030) | Patient's Weight | Weight of the patient, in kilograms. |
| (0028, 0010) | Rows | Number of rows in the image. |
| (0028, 0011) | Columns | Number of columns in the image. |
| (0028, 0030) | Pixel Spacing | Physical distance in the patient between the center of each pixel, specified by a numeric pair - adjacent row spacing (delimiter) adjacent column spacing in mm. |
| (0028, 0034) | Pixel Aspect Ratio | Ratio of the vertical size and horizontal size of the pixels in the image specified by a pair of integer values where the first value is the vertical pixel size, and the second value is the horizontal pixel size. |
| (0028, 0100) | Bits Allocated | Number of bits allocated for each pixel sample. Each sample shall have the same number of bits allocated. |
| (0028, 0101) | Bits Stored | Number of bits stored for each pixel sample. Each sample shall have the same number of bits stored. |
| (0028, 0102) | High Bit | Most significant bit for pixel sample data. Each sample shall have the same high bit. |
| (0028, 0103) | Pixel Representation | Data representation of the pixel samples. Each sample shall have the same pixel representation. |
| (0028, 0106) | Smallest Image Pixel Value | The minimum actual pixel value encountered in this image. |
| (0028, 0107) | Largest Image Pixel Value | The maximum actual pixel value encountered in this image. |
| (0028, 1050) | Window Center | Window center for display. |
| (0028, 1051) | Window Width | Window width for display. |
| (0028, 1052) | Rescale Intercept | The value b in relationship between stored values (SV) and the output units specified in Rescale Type (0028,1054). Each output unit is equal to $m \cdot SV + b$. |
| (0028, 1053) | Rescale Slope | Value of m in the equation specified by Rescale Intercept (0028,1052). |
| (7FE0, 0010) | Pixel Data | A data stream of the pixel samples that comprise the image. |
| (0028, 0004) | Photometric Interpretation | Specifies the intended interpretation of the pixel data. |
| (0028, 2110) | Lossy Image Compression | Specifies whether an image has undergone lossy compression (at a point in its lifetime). |
| (0028, 2114) | Lossy Image Compression Method | A label for the lossy compression method(s) that have been applied to this image. |
| (0028, 2112) | Image Compression Ratio | Describes the approximate lossy compression ratio(s) that have been applied to this image. |
| (0028, 0002) | Samples per Pixel | Number of samples (planes) in this image. |
| (0028, 0008) | Number of Frames | Number of frames in a multi-frame image. |

2 Definition of findings and diseases

Table 2. Definition of findings and diseases used in the study.

| | Pathology label | Definition |
|---------------|-------------------------------------|--|
| Local Label | 1. Aortic enlargement | An abnormal bulge that occurs in the wall of the major blood vessel. |
| | 2. Atelectasis | Collapse of a part of the lung due to a decrease in the amount of air in the alveoli resulting in volume loss and increased density. |
| | 3. Cardiomegaly | Enlargement of the heart, occurs when the heart of an adult patient is larger than normal and the cardiothoracic ratio is greater than 0.5. |
| | 4. Calcification | Deposition of calcium salts in the lung. |
| | 5. Clavicle fracture | A break in the collarbone. |
| | 6. Consolidation | Any pathologic process that fills the alveoli with fluid, pus, blood, cells (including tumor cells) or other substances resulting in lobar, diffuse or multifocal ill-defined opacities. |
| | 7. Edema | Fluid accumulation in the tissur and air space of the lungs. |
| | 8. Emphysema | A condition of the lung characterized by an abnormal increase in the size of air spaces distal to the terminal bronchioles. |
| | 9. Enlarged PA | Dilatation of the pulmonary artery - a defect characterized by a wider than normal main pulmonary artery. |
| | 10. Interstitial lung disease (ILD) | Involvement of the supporting tissue of the lung parenchyma resulting in fine or coarse reticular opacities or small nodules. |
| | 11. Infiltration | An abnormal substance that accumulates gradually within cells or body tissues or any substance or type of cell that occurs within or spreads as through the interstices (interstitium and/or alveoli) of the lung, that is foreign to the lung, or that accumulates in greater than normal quantity within it. |
| | 12. Lung cavity | Thick-walled abnormal gas-filled spaces within the lung. They are usually associated with a nodule, mass, or area of consolidation. A fluid level within the space may be present. |
| | 13. Lung cyst | Lung cysts refer to round, thin-walled, low attenuation spaces/lucencies in the lung. |
| | 14. Lung opacity | Any abnormal focal or generalized opacity or opacities in lung fields (blanket tag including but not limited to consolidation, cavity, fibrosis, nodule, mass, calcification, interstitial thickening, etc.). |
| | 15. Mediastinal shift | The deviation of the mediastinal structures towards one side of the chest cavity. |
| | 16. Nodule/Mass | Any space occupying lesion either solitary or multiple. |
| | 17. Pulmonary fibrosis | An excess of fibrotic tissue in the lung. |
| | 18. Pneumothorax | The presence of gas (air) in the pleural space. |
| | 19. Pleural thickening | Any form of thickening involving either the parietal or visceral pleura. |
| | 20. Pleural effusion | Abnormal accumulations of fluid within the pleural space. |
| | 21. Rib fracture | A common injury that occurs when one of the bones in your rib cage breaks or cracks. |
| | 22. Other lesion | Other lesions that are not on the list of findings or abnormalities mentioned above. |
| Global labels | 23. Lung tumor | The result of abnormal rates of cell division or cell death in lung tissue, or in the airways that lead to the lungs. |
| | 24. Pneumonia | An infection that inflames the air sacs in one or both lungs. |
| | 25. Tuberculosis | Any sign suggesting pulmonary or extrapulmonary tuberculosis. |
| | 26. Other diseases | Other diseases that are not on the list of diseases mentioned above. |
| | 27. COPD | Chronic obstructive pulmonary disease (COPD) is defined as a condition characterized by persistent airflow limitation that is usually progressive and associated with an enhanced chronic inflammatory response in the airways and the lung to noxious particles or gases. |
| | 28. No finding | The absence of all pathologies from the chest radiograph. |

3 Examples of disagreements between radiologists

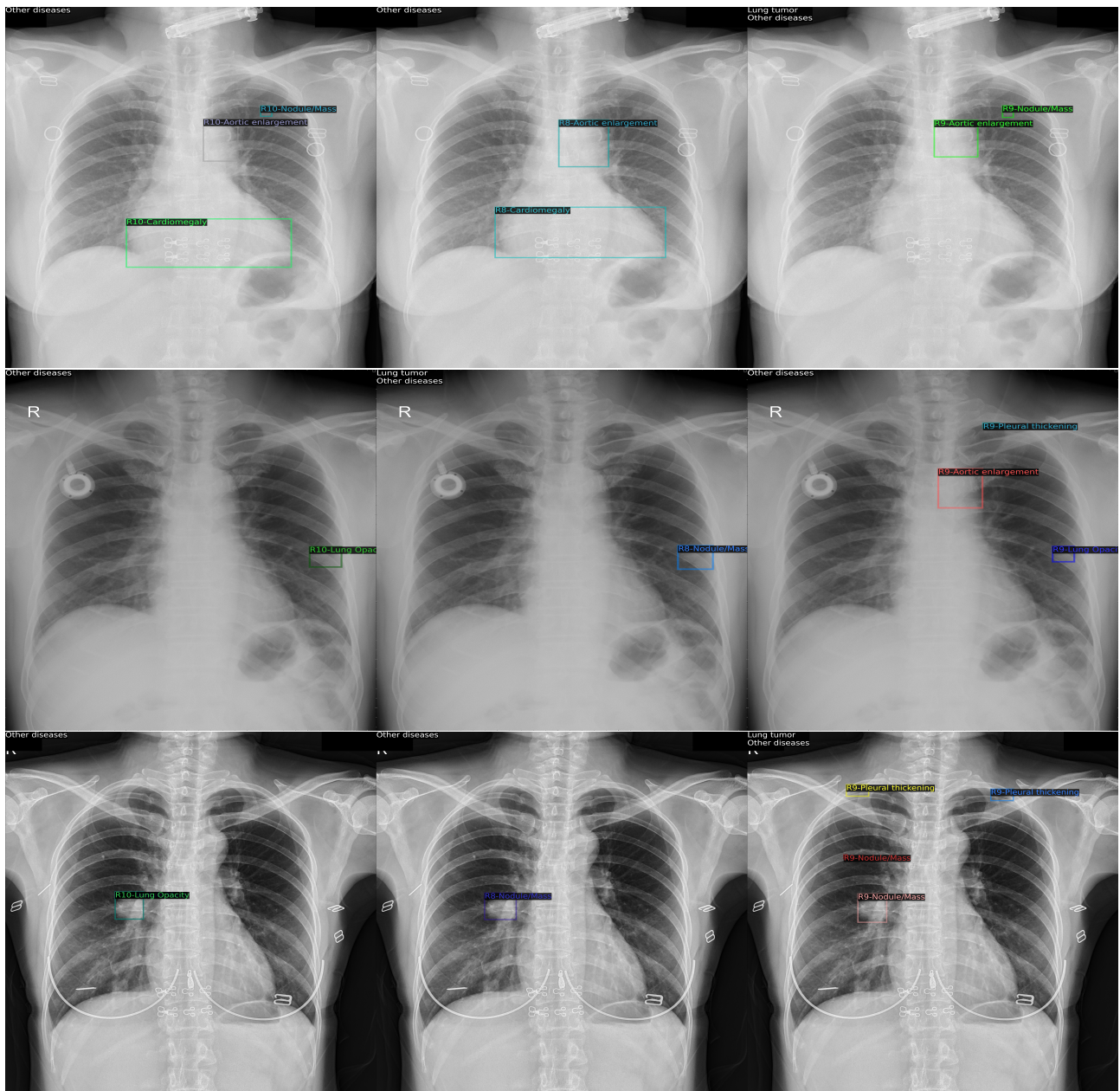


Figure 1. Examples of disagreements between radiologists. Abnormal findings are marked by radiologists via rectangle bounding boxes. R8, R9, R10 are referred to three independent radiologists.