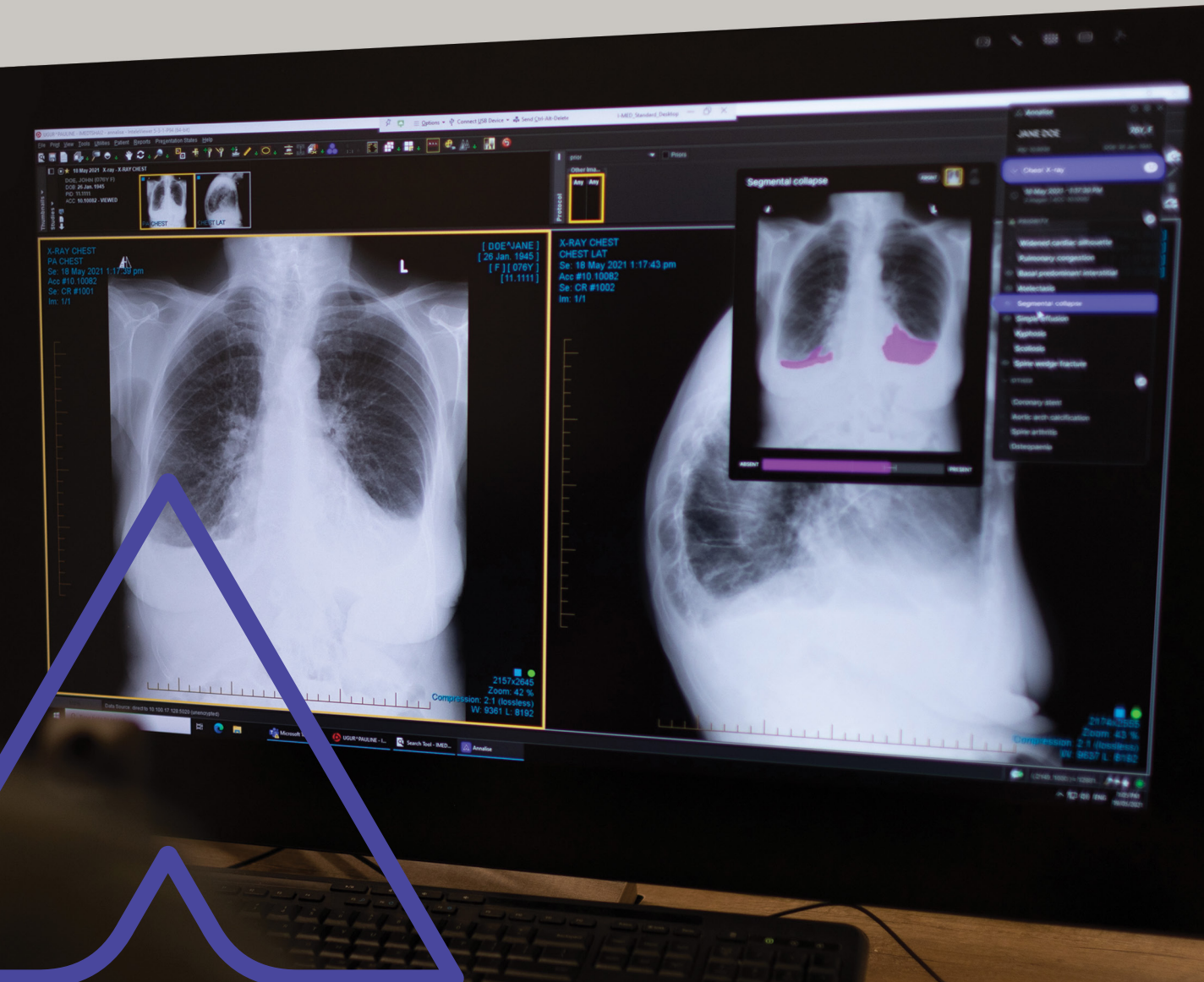# ⌂ annalise.ai

Annalise Enterprise CXR

The evolution of diagnostic-support AI for chest X-ray

This is not just a simple pneumothorax tool. This is not just a pleural effusion tool.

This is a comprehensive decision-support solution for chest radiographs capable of detecting up to 124 findings.

Designed by clinicians for clinicians.

1. **A second pair of eyes:** a reassuring second-read that never tires, for clinicians dealing with fatigue, frequent interruptions and increasing workloads.

2. **Worklist prioritisation:** AI-enhanced triage, designed to optimise the reporting workflow with on configurable priority grouping based on the AI results, such as flagging cases you deem critical or cases you deem unremarkable.*

3. **Improve efficiency:** report cases faster, saving valuable time that can be spent elsewhere in the clinical workflow, such as additional examinations, enhancing the interaction with patients, etc.

4. **Improve accuracy:** Radiologists assisted by the tool on average perform better than unassisted radiologists in detecting present findings.

*Specific features may not be available in all regions.

See the chest like never before.

Annalise Enterprise CXR can identify the suspected presence of up to 124 findings, highlights the localisation of specific findings and is intelligently designed to help users review AI results quickly.

124

1. **Detect up to 124 findings:** including pneumothorax, lung nodules, pneumomediastinum, fractures (ribs, clavicle, humerus), nasogastric tube positioning, and many more.

2. **Lateral and frontal views:** view the findings in lateral and frontal views (PA or AP), analysing up to three images per study.*

3. **Identify the location of findings:** localisation of certain findings are highlighted in the Viewer. Localisation can be toggled on and off.*

4. **Interpret with confidence:** the confidence bar displays the likelihood of the finding and uncertainty of the AI model, assisting clinicians to interpret with confidence.

* Available with the Annalise Viewer.

Detailed results. Powered by clinically robust AI.

The size, quality and diversity of training data are essential to developing a high-performing and generalisable AI model. Hand-annotating each chest X-ray study for a comprehensive number of findings also improves overall accuracy by providing extra findings for training that could otherwise be confused with a single finding.

Trained on one of the world's largest radiologist hand-annotated chest X-ray datasets.

Data diversity

Dataset derived from inpatient and outpatient settings, gathered from three continents.
Data was captured by devices from various manufacturers, including FujiFilm, Canon, Carestream, Kodak, Philips, Siemens, and others.
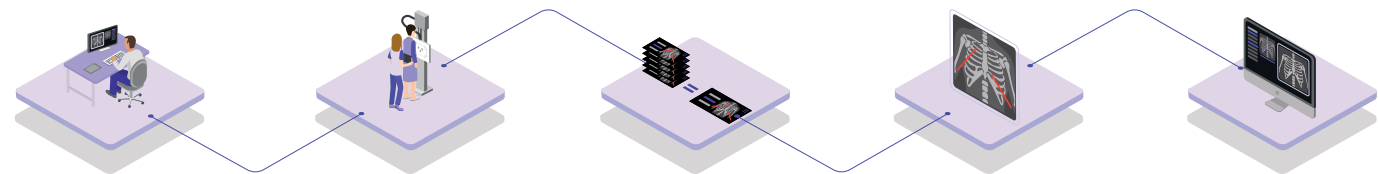
Trained by
145+ consultant radiologists trained in standardised annotating procedures to ensure a consistent and high-standard of annotations across all data-sets.

From a data-set of
782,000+ unique CXR studies.

Labelled by
at least **3** radiologists, who independently hand-annotated each CXR study.

Generating
280,000,000+ CXR annotations.

To bring you
124 findings detected by Annalise Enterprise CXR.

Annalise Enterprise CXR improves radiologist accuracy when used as an assist tool

Multi-reader multi-case validation study design summary

1. 20 radiologists took part in the study

2. All with substantial clinical experience after radiology specialist training (median = 10.5 years)
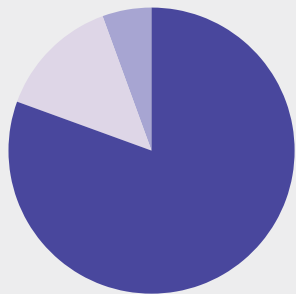
3. Each interpreted all 2,568 cases with and without Annalise Enterprise CXR after a 3-month washout period

4. Cases were ground truthed by x3 specialist thoracic radiologists

AI-assisted vs. unassisted radiologist accuracy

- superior
- non-inferior
- inconclusive

Reporting accuracy is non-inferior in 95% (n=121) of all clinical findings and delivers better diagnostic accuracy in 80% (n = 102) of clinical findings.
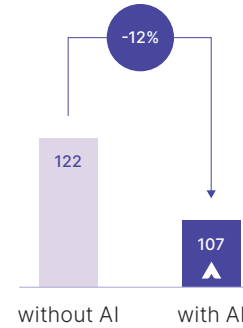
Significant performance improvements

Accuracy Improvement
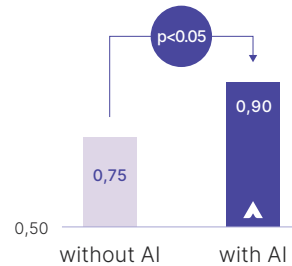(Macro average AUC across all findings, starting at 0.5)

+45%

0,71 — without AI
0,81 — with AI
0,50
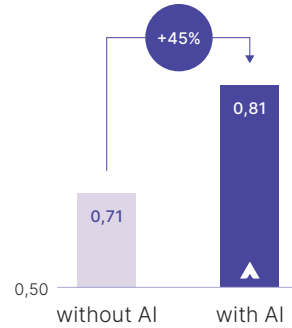
Efficiency improvement
(Interpretation time per case, seconds)

-12%

122 — without AI
107 — with AI

Significant finding improvements

Simple Pneumothorax (AUC)

$p<0.05$

0,75 — without AI
0,90 — with AI
0,50

Rib Lesion (AUC)

$p<0.05$

0,74 — without AI
0,89 — with AI
0,50
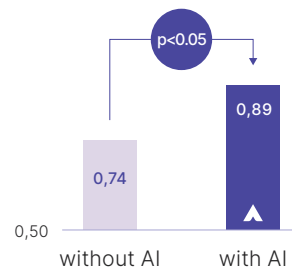
The Annalise Enterprise advantage

Annalise Enterprise is an enterprise IT solution offering hospitals and radiology providers access to Annalise.ai's comprehensive AI modules, including CXR and CTB, intended to assist clinicians with the interpretation of radiological imaging studies.

One platform for comprehensive AI

Annalise Enterprise seamlessly integrates directly within RIS/PACS and can be launched from either platform. With infrastructure in place, Enterprise partners are the first in line to simply expand AI capabilities with subsequent comprehensive AI modules as they're released.

Worklist Triage*

Annalise Enterprise's AI models analyse studies as they're acquired and provide a notification of urgent cases in your site's reporting worklist. With the comprehensive number of findings and integration with your PACS, RIS or reporting worklist system, radiologists can more efficiently prioritise their work and report on the cases they deem most urgent first.

Consistent user interface experience

Radiologists appreciate the similar user experience and Annalise Viewer Interface across Annalise Enterprise, saving time and reducing frustration learning new solutions. Secondary capture output is also available.

⚠ Radiological findings covered by Annalise Enterprise CXR

Technical Factors
Patient rotation
Cervical flexion
Underinflation
Underexposed
Overexposed
Incompletely imaged chest
Image obscured

Lines and Tubes
In position central line (CVC)
In position endotracheal tube (ETT)
In position nasogastric tube (NGT)
In position pulmonary arterial catheter (PAC)
Intercostal drain
Suboptimal central line (CVC)
Suboptimal endotracheal tube (ETT)
Suboptimal nasogastric tube (NGT)
Suboptimal pulmonary arterial catheter (PAC)

Cardiac Devices
Electronic cardiac devices
Cardiac valve prosthesis
Sternotomy wires

Orthopaedic Implants
Rib fixation
Shoulder fixation
Shoulder replacement
Rotator cuff anchor
Clavicle fixation
Spinal fixation

Scapula
Scapular fracture

Cardiomediastinum
Widened cardiac silhouette
Inferior mediastinal mass
Superior mediastinal mass
Hilar lymphadenopathy
Calcified hilar lymphadenopathy
Pneumomediastinum
Unfolded aorta
Widened aortic contour
Aortic arch calcification
Pulmonary congestion
Pulmonary artery enlargement
Pericardial fat pad

Airspace Opacity
Focal airspace opacity
Multifocal airspace opacity
Diffuse lower airspace opacity
Diffuse upper airspace opacity
Perihilar airspace opacity
Diffuse airspace opacity

Interstitial
Upper zone fibrotic volume loss
Lower zone fibrotic volume loss
Upper interstitial thickening
Basal interstitial thickening
Diffuse interstitial thickening
Diffuse fibrotic volume loss
Diffuse nodular / miliary lesions
Upper zone bullae
Lower zone bullae
Diffuse bullae

Pulmonary Lesion
Solitary lung nodule
Solitary lung mass
Multiple masses or nodules
Cavitating mass(es)
Cavitating mass with content
Calcified granuloma (< 5mm)
Calcified mass (> 5mm)
Nipple shadow

Airways
Reduced lung markings
Peribronchial cuffing
Hyperinflation
Bronchiectasis
Tracheal deviation

Pneumothorax
Simple pneumothorax
Tension pneumothorax

Pleural Thickening
Calcified pleural plaques
Pleural mass
Diffuse pleural thickening

Collapse
Atelectasis
Segmental collapse
Lung collapse
Post resection volume loss

Non-surgical Foreign Body
Internal foreign body

Abdomen
Subdiaphragmatic gas
Distended bowel
Hiatus Hernia
Gallstones
Gastric band
Suboptimal gastric band

Clavicle
Acute clavicle fracture
Chronic clavicle fracture

Humerus
Acute humerus fracture
Chronic humerus fracture
Shoulder dislocation
Shoulder arthritis

Diaphragmatic Contour
Diaphragmatic elevation
Diaphragmatic eventration

Spine
Kyphosis
Scoliosis
Spinal wedge fracture
Spinal arthritis
Diffuse spinal osteophytes
Osteopaenia

Chest Wall Contour
Pectus carinatum
Pectus excavatum

Soft Tissues
Subcutaneous emphysema
Mastectomy
Breast implant
Calcified axillary nodes
Calcified neck nodes

Bone Lesion
Spinal lesion
Scapular lesion
Humeral lesion
Rib lesion
Clavicle lesion

Surgical Clips and Stents
Mediastinal clips
Neck clips
Axillary clips
Abdominal clips
Lung sutures
Aortic stent
Coronary stent
Airway stent
Oesophageal stent
Biliary stent

Ribs
Acute rib fracture
Chronic rib fracture
Rib resection

Pleural Effusion
Simple effusion
Loculated effusion

CE 2797

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