

Annalise Enterprise CTB

The evolution of diagnostic-support AI for non-contrast CT Brain



This is not just a stroke tool. This is not just an intracranial haemorrhage tool. This is not just a trauma tool. This is a comprehensive decision-support solution for non-contrast CT Brain studies (NCCTB) capable of detecting 130 findings.

Designed to empower clinicians to make accurate and fast decisions. When every second counts, count on Annalise.



1. **Reduce 'near-misses':** reviewing each case for up to 130 findings is intended to reduce the likelihood of missing critical findings like subtle bleeds.



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



3. **Worklist triage:** designed to reduce time to action critical findings by providing additional information to assist radiologists to report the most urgent cases first.*



4. **Improve efficiency:** report cases faster, saving valuable time to diagnoses and treatment or time that can be spent elsewhere in the clinical workflow.

*Specific features may not be available in all regions.

See the complete picture

Annalise Enterprise CTB can identify the suspected presence of up to 130 findings, highlights the localisation of specific findings and is intelligently designed to help users review AI results quickly.



130

1. **Detect up to 130 findings:** including Intracranial haemorrhage, Haematomas (acute subdural/extradural), Fractures, Pneumocephalus, Infarct, Mass effect & midline shift, Obstructive hydrocephalus, Intraaxial mass, Transependymal oedema, Colloid cyst, Vasogenic oedema, and many others.



2. **Three projection views:** View the findings in sagittal, axial and coronal projections.



3. **View findings in five pre-set windows:** View findings within subdural, bone, brain, soft tissue and stroke windows, providing additional context to the AI results. Hovering over a finding will present the recommended projection and slice window view to help users review AI results quickly.



4. **Identify the location of findings:** Localisation of certain findings are highlighted in the Viewer and scroll bar, designed to quickly identify and assess AI results within the series. Localisation can be toggled on and off.



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



6. **Detailed granularity of findings:** Distinguishing between hyperdense mass vs hypodense mass is clinically relevant and can alter patient management.

Detailed results. Powered by clinically robust AI.

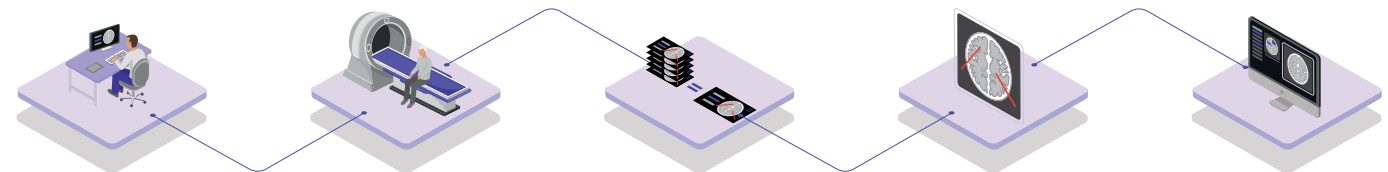
The size, quality and diversity of training data are essential to developing a high-performing and generalisable AI model. Hand-annotating each NCCTB study for a comprehensive number of findings also improves overall accuracy by providing extra findings for training that could otherwise be confused with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

Trained on one of the world's largest radiologist hand-annotated datasets of non-contrast CT brain studies.*

Data diversity

Dataset derived from inpatient and outpatient settings.

Data was captured by devices from various manufacturers, including Toshiba, GE Medical Systems, Siemens, Philips, Canon Medical Systems, Siemens Healthineers, PNMS, Mobius Imaging LLC, and others.



Trained by 140+ consultant radiologists trained in standardised labelling procedures to ensure a consistent and high-standard of labelling across all datasets.

From a dataset of 229,000+ unique non-contrast CT Brain studies with future and past context, including MRI imaging and clinical reports.

Labelled by at least 3 radiologists who independently hand-labelled each dataset. More than 140 radiologists were involved in data labelling.

Generating 269,000,000+ CTB labels with fully qualified radiologists.

To bring you 130 findings detected by Annalise Enterprise CTB.

*as of March 2022

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

Multi-reader multi-case validation study design summary



1. 32 radiologists took part in the study



2. all with specialist training (median = 8 years)



3. each interpreted all 2,848 cases with and without Annalise Enterprise CTB after a 4 month washout period



4. cases were ground truthed by x3 radiologists

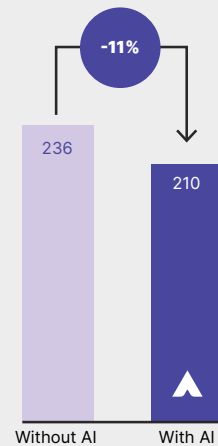
Accuracy Improvement

(Macro average AUC across 130 findings, starting at 0.5)



Efficiency Improvement

(Interpretation time per case, seconds)



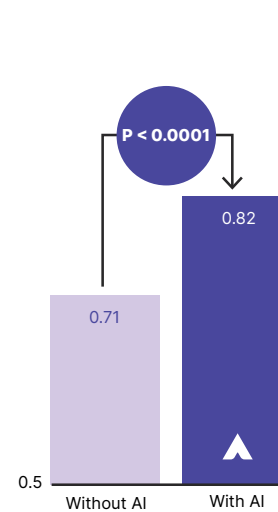
Significant finding improvements

Performance Improvement

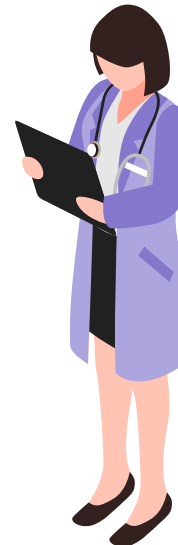
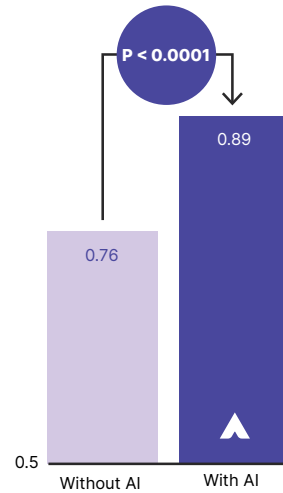
Acute Intraparenchymal Haemorrhage (AUC)



Acute Cerebral Infarct (AUC)



Cerebral Convexity Subarachnoid Haemorrhage (AUC)



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 when learning new solutions.

Source: Buchlak, Q. et al. European Radiology; 2023.

*Specific features may not be available in all regions. Check current regulatory status with an Annalise.ai employee.

Trauma

- Fracture paranasal sinuses/facial bones
- Fracture of calvarium
- Fracture of skull base
- Petrous bone fracture
- Temporomandibular joint dislocation
- Pneumocephalus
- Scalp haematomas

Infarct

- Acute cerebral infarct
- Acute infarct petechial haemorrhage
- Acute lacunar infarct
- Acute cerebellar infarct
- Acute peripheral infarct
- Acute watershed infarct
- Insular ribbon sign
- Disappearing basal ganglia sign
- Acute brainstem infarct
- Diffuse hypoxic-ischaemic encephalopathy
- Hyperdense artery in anterior circulation

Neck, skin, scalp

- Parotid lesion
- Soft tissue mass in the neck
- Subcutaneous emphysema
- Face and neck haematomas
- Aggressive skin lesion
- Non-aggressive skin lesion

Ventricles

- Ventricular mass
- Ventricular cyst / xanthogranulomatous change
- Colloid cyst
- Communicating hydrocephalus / NPH
- Obstructive hydrocephalus
- Entrapment of lateral ventricle
- Transepandyml oedema

Paranasal sinuses

- Air fluid level paranasal sinuses
- Mucosal thickening
- Sinus soft tissue density lesion
- Chronic or fungal sinusitis

Intracranial haemorrhage

- Extradural haematoma
- Acute subdural/extradural haematoma
- Acute on chronic subdural haematoma
- Subacute subdural haematoma
- Chronic subdural haematoma
- Perimesencephalic / aneurysmal subarachnoid haemorrhage
- Cerebral convexity subarachnoid haemorrhage
- Acute haemorrhagic infarct
- Acute intraparenchymal haemorrhage
- Subacute intraparenchymal haemorrhage
- Haemorrhagic contusion
- Intraventricular haemorrhage

Extra-axial mass

- Aggressive extra-axial mass of soft tissue
- Aggressive meningeal thickening
- Non-aggressive extra-axial mass containing calcification
- Non-aggressive extra-axial mass without calcification or fat
- Meningioma with hyperostosis of adjacent calvarium

Intra-axial mass

- Intra-axial lesion calcification
- Intra-axial lesion complex cyst
- Intra-axial lesion haemorrhage
- Intra-axial lesion hyperdense
- Intra-axial lesion hypodense
- Intra-axial lesion isodense
- Intra-axial lesion heterogeneous
- Vasogenic oedema

Post-surgical

- Craniotomy/cranioplasty/craniectomy
- Craniotomy extra-axial collection
- Mastoidectomy
- Sino-nasal, oral, mandibular and maxillofacial surgery
- Transphenoidal surgery
- Resection cavity

Pineal

- Pineal mass or complex cyst
- Simple pineal cyst

Mass effect

- Tonsillar herniation
- Midline shift
- Effacement of basal cisterns
- Extracranial herniation
- Fourth ventricular effacement
- Left/Right ventricular effacement
- Sulcal effacement
- Third ventricular effacement
- Uncal herniation

Vascular

- Aneurysm
- Abnormal prominent vessels
- Focal intra-axial calcification

Petrous temporal bones

- Opacity in tympanic cavity
- Erosion of bone in tympanic cavity
- Hypopneumatized mastoid
- Mastoid opacification

Pituitary

- Empty sella
- Expanded pituitary fossa
- Haemorrhagic lesion in sella
- Sella or suprasellar cyst, mass or cystic mass

Indwelling devices

- Aneurysm coils
- Vascular clips
- Deep brain stimulation electrodes
- Cochlear implant
- Extracranial Ventricular Drain (EVD)
- Ventriculoperitoneal (VP) Shunt

Bones

- Aggressive bone lesion
- Generalised calvarial thickening
- Hyperostosis frontalis
- Osteoma
- Temporomandibular joint arthritis

Foreign bodies

- Foreign body face and neck
- Foreign body orbit
- Foreign body scalp

Orbits

- Chronic globe abnormality
- Prosthetic globe
- Intra-ocular silicone
- Vitreous haemorrhage
- Orbital mass inflammatory or malignant
- Orbital mass benign
- Orbital fat stranding
- Exophthalmos
- Dilated superior orbital vein

Congenital

- Corpus callosum agenesis/hypogenesis
- Chiari malformation
- Colpocephaly

Chronic

- Arachnoid cyst
- Cerebellar atrophy
- Cerebral atrophy
- Basal ganglia and dentate calcification
- Cortical laminar necrosis
- Cortical or leptomeningeal calcification
- Deep white or gray matter infarct
- Dural calcification
- Encephalomalacia
- Old lacunar infarct
- Striatocapsular slit-like chronic hemorrhage
- Prominent perivascular spaces
- Small vessel ischaemic disease
- Subependymal calcification or nodules

Artefacts

- Metallic artefact
- Movement artefact