GE Healthcare

Thoracic Care Suite

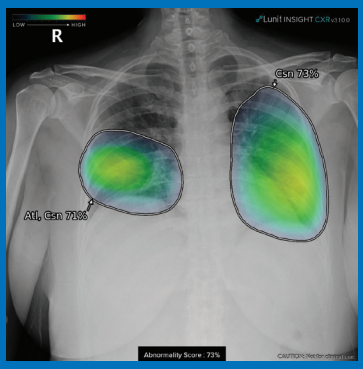
With Lunit INSIGHT CXR

gehealthcare.com

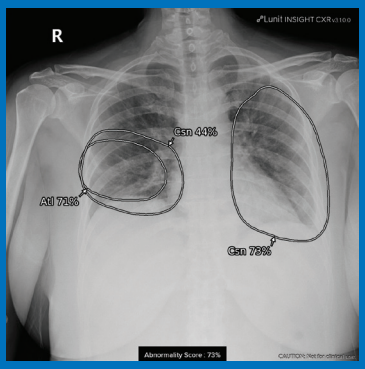
Quicker results. Streamlined workloads.

The Thoracic Care Suite, built for higher standards of care with significant throughput demands.

In the new normal, the high volume of cases is ever increasing and overwhelming radiologists, technologists, and physicians. They're particularly burdened by increased throughput pressure for chest screenings as 40% of all imaging exams are chest x-rays.[1] This increased pressure on their workload has punctuated the need for new tools and resources that can streamline their workload and help them focus where they're needed most—without sacrificing high standards of care. With the GE Healthcare **Thoracic Care Suite**, these mounting pressures can be alleviated to deliver the information clinicians need to provide the highest quality care to patients.



Combined map, showing a COVID-19 positive patient, showing the location of the suspicious areas for abnormalities via color and contouring.



Grayscale map, showing a COVID-19 positive patient, showing the location of the suspicious areas for abnormalities via contouring.

AI-driven insight for better care

Thoracic Care Suite automatically analyzes images for the presence of eight abnormal radiologic findings—featuring algorithms from Lunit INSIGHT CXR.

After an exam finishes (either on a fixed or mobile x-ray system), the chest x-ray image is sent to the Thoracic Care Suite on-premise Edge computer where a suite of Artificial Intelligence algorithms analyze and flag abnormal findings. The sooner these conditions are identified, the faster care can be given.

Augmented accuracy

AI detection accuracy of eight abnormal chest radiograph findings which also support Tuberculosis detection and help detect Pneumonia or ground glass opacities which are indicative of COVID-19. Eight findings include: atelectasis, calcification, cardiomegaly, consolidation, fibrosis, mediastinal widening, nodule, and pleural effusion detection.

Prioritized report

Generated upon analysis, this report gives an abnormality score for each of the eight possible findings, an image overlay, and a written location description.

Radiologic finding image overlay

Detected radiologic findings can be seen by GSPS overlay or on the secondary capture image sent to PACS.

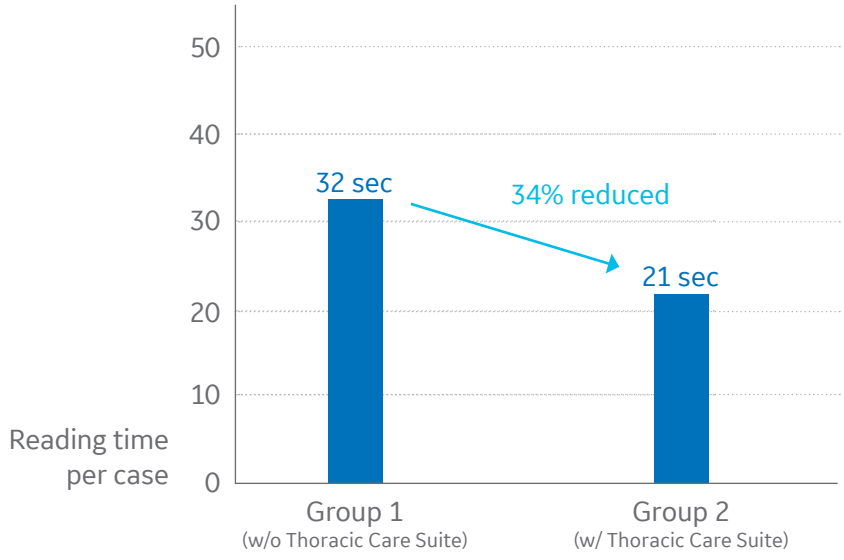
Proven results

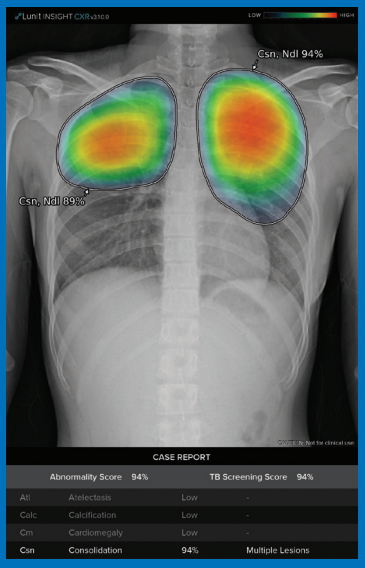
With 97-99% Area Under the Curve (AUC), the powerful algorithms behind the Thoracic Care Suite have been trained by over 200,000 chest x-ray images—and detect radiologic findings within seconds.

Improved productivity through per-case reading time reduction

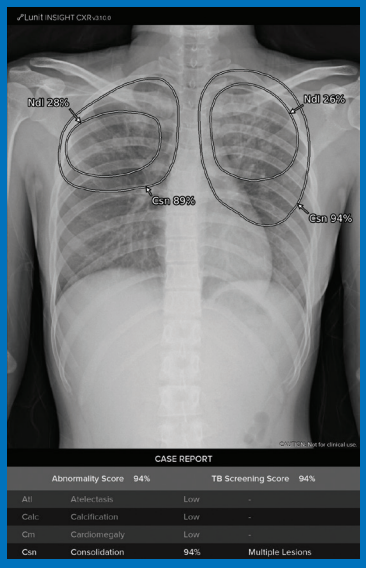
In order to study the impact these algorithms have on workflow efficiency, 200 chest x-ray images were collected from an emergency department and studied to determine the benefit to Radiologist reading time per case.

Divided into two groups of radiologists, the first group conducted normal interpretation in a random order while the second group interpreted with an order provided by AI-based worklist prioritization. The second group spent significantly less reading time than the first.





Combined map of a TB positive patient, showing the location of the suspicious areas for abnormalities via color and contouring.

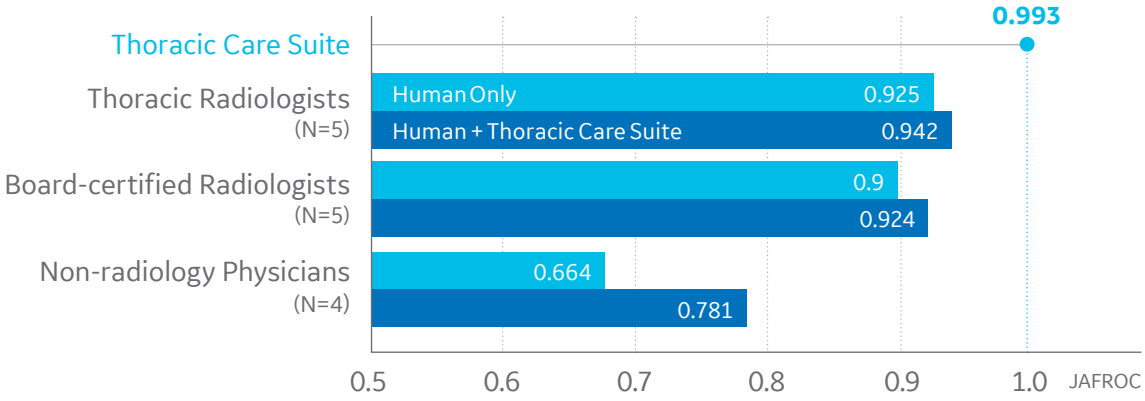


Grayscale map of a TB positive patient, showing the location of suspicious areas for abnormalities via contouring.

Tuberculosis detection

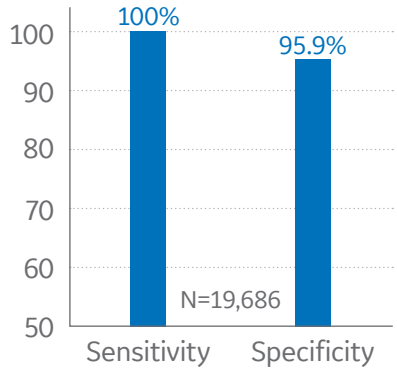
A study for detection of tuberculosis in chest radiography showed that the algorithms recorded accuracy among 15 physicians. Using these algorithms, physicians of different expertise levels showed statistically significant increases in performance.[2]

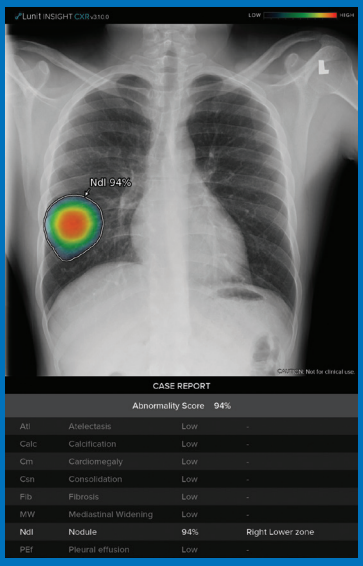
Development and validation of deep learning based automatic detection algorithm for active pulmonary TB on chest radiographs



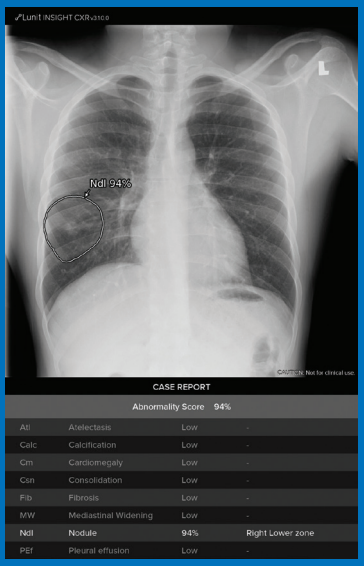
Performance validation of AI-based active pulmonary tuberculosis detection on chest radiographs

To validate tuberculosis detection performance, a chest x-ray image of 19,686 individuals was gathered for analysis. All five active pulmonary tuberculosis cases within the individual group were correctly detected, with 100% sensitivity and 96% specificity.[3]





Combined map with a ground truth-confirmed nodule, showing the location of the suspicious areas for abnormalities via color and contouring.

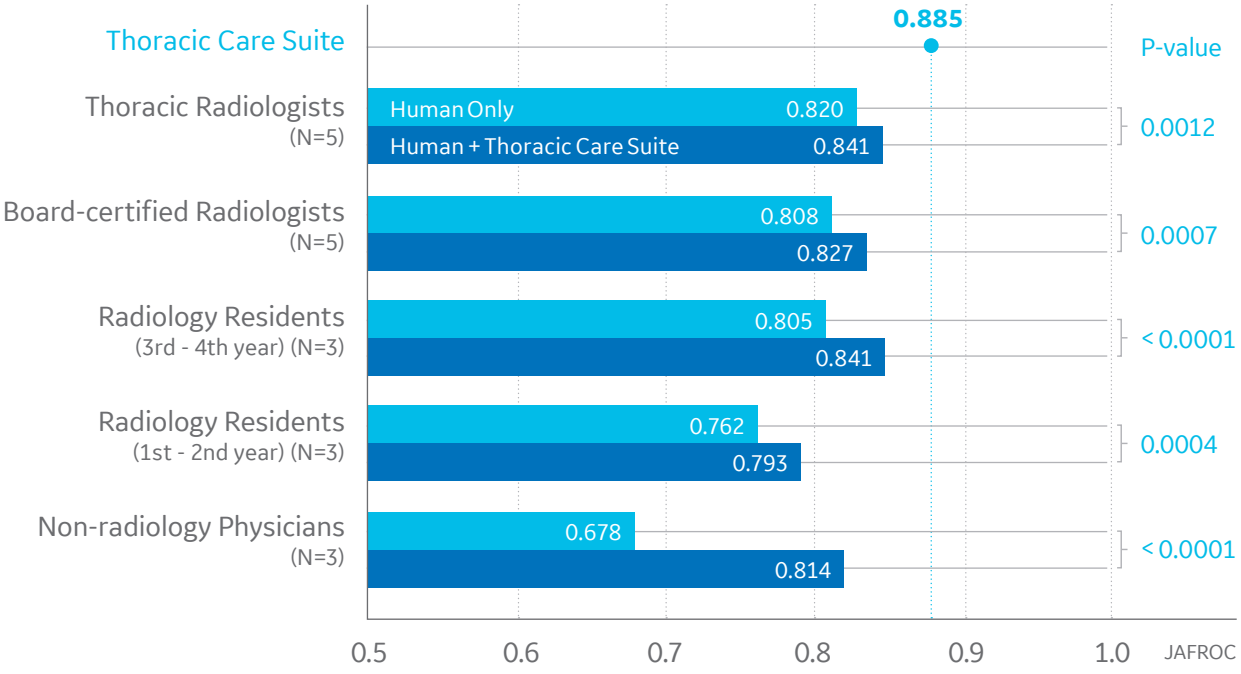


Grayscale map with a ground truth-confirmed nodule, showing the location of the suspicious areas for abnormalities via color and contouring.

Detection of lung nodules

A study for detection of lung nodules in chest radiography showed that the algorithms recorded accuracy. Using these algorithms, physicians of different expertise levels showed statistically significant increases in performance.[4]

Accuracy in detection of lung nodules



Discover AI-driven radiography

Learn how the Thoracic Care Suite can enhance your radiography department by contacting your GE Healthcare sales team.

References

[1] Communicating radiation risks in pediatric imaging: information to support healthcare discussions about benefit and risk. http://www.who.int/ionizing_radiation/pub_meet/radiation-risks-paediatric-imaging/en/. Published 2016. Accessed December 28, 2017. Google Scholar

[2] Hwang EJ*, Park SG*, et al. Development and Validation of a Deep Learning-Based Automatic Detection Algorithm for Active Pulmonary Tuberculosis on Chest Radiographs. Clinical Infectious Diseases. 2018 Nov 12.

[3] Lee JH et al. Deep-Learning based Automated Detection Algorithm for Active Pulmonary Tuberculosis on Chest Radiographs: Diagnostic Performance in Systematic Screening of Asymptomatic Individuals, RSNA 2019

[4] Nam JG*, Park SG*, et al. Development and Validation of Deep Learning-Based Automatic Detection Algorithm for Malignant Pulmonary Nodules on Chest Radiographs. Radiology. 2018 Sep 25:180237.

[5] Hwang EJ et al. Deep Learning for Chest Radiograph Diagnosis in the Emergency Department, Radiology. 2019 Oct 22

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