ARTERYS

Improved Efficiency

How Arterys Lung AI improves radiologists
reading times

Introduction

A multi-center, multi-reader retrospective clinical assessment was designed to investigate if reads augmented by Arterys Lung AI[1] detection improved radiologist reading times.

Materials and Methods

A set of thirty thoracic CTs, not used for model training or validation, were randomly selected from the NLST[2] dataset to form a lung cancer screening population. The studies were selected randomly from screening examinations with nodules.

Five radiologists from five separate institutions read all studies twice; with and without Arterys Lung AI detection. The reading order was randomized and a cool-off period of 7 days was set between the reads.

For the reads without detection the radiologist was instructed to add nodules, using a distance tool, requiring two clicks per nodule to mark the longest axial axis. For the reads using detection, detected nodules were reviewed by the radiologist and were either accepted or rejected (by deletion). Any missed nodule was added using the distance tool. Each radiologist was instructed to keep a spreadsheet to track the total reading time. The reading time started once the case was opened and finished once no more nodules that would typically be reported by the radiologist could be found.

Results

The use of AI reduced the reading times for all radiologists. The time savings for individual radiologists varied between 35% and 55%. The average number of reported nodules per study was higher for reads with AI at 2.9 nodules/study versus 2.5 nodules/study when not using AI.

For all readers using AI on average improved the reading times to 2:03 (min:sec) from 3:40 (min:sec) when not using AI. This on average produced a time saving of 44% across all radiologists and all studies.

Conclusion

This clinical assessment demonstrates how augmenting the radiologists with Arterys Lung AI[1] detection can reduce reading times. Using AI, radiologists have the potential to improve study throughput by over 40%.

1. Arterys Lung AI v18.09

2. National Cancer Institute - NLST database: https://biometry.nci.nih.gov/cdas/nlst/

Average reading times

● Without AI   ● With AI

	Without AI	With AI
Reader 1	4:31	2:26
Reader 2	1:53	0:51
Reader 3	5:37	2:50
Reader 4	2:58	1:56
Reader 5	3:21	2:09

Graph 1.0
The average reading times per reader with and without AI. Reading time is represented in (minutes:seconds)

Average reading times

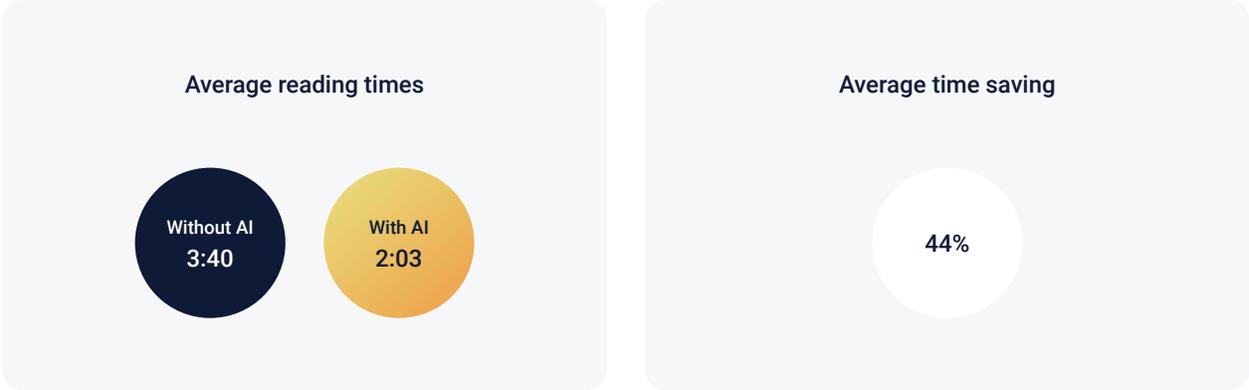Without AI
3:40

With AI
2:03

Average time saving

44%

Figure 1.0 and 2.0
The average reading time (minutes:seconds) and percentage time saving for all readers with and without AI

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