## Supplementary



**Figure S1** Mobile CT (NeuViz, Neusoft Medical, China). The mobile CT was transported by truck to the surrounding small-to-medium size cities and towns to collect chest CT scans from adults aged between 40–69 years who were willing to take part in this lung disease screening program. Then, all images were sent to West China hospital and interpreted by assigned chest radiologists.

Table S1 Subjective evaluation of the AI work performance

Content of evaluation	Answers of each radiologist						
	R1	R2	R3	R4	R5	R6	R7
Nodule detection performance							
Radiologist alone	9	8	8	8	9	8	8
Al alone	10	10	7	9	9	9	8
Radiologist with resident	9	8	8	8	9	8	8
Radiologist with AI system	10	10	8	9	9.5	9	9
The benefit of AI system in nodule detection	8	8	8	9	9	7	8
Nodule classification performance							
Radiologist alone	7	7	9	8	7	8	8
Al alone	8	5	8	7	6	7	5.5
Radiologist with resident	7	7	9	8	7	8	8
Radiologist with AI system	8	7	9	8.5	7.5	8	8
The benefit of AI system in nodule classification	8	6	7	6	6	5	3

The scoring range for each question was 0-10; Rx represent an individual participated radiologist in this study.

## Appendix 1 Image characteristics analysis by AI

The image characteristics of every pulmonary nodule were reported by the AI-based diagnostic system and corrected manually if necessary. In detail, the pulmonary nodule was first detected by the deep learning-based detection model, as labeled with 3D bounding-boxes. The boundary of the pulmonary nodule (voxel of interest, VOI) was further automatically segmented, and the nodule density was calculated by averaging Housfield unit (HU) of the voxels inside the VOI. Similarly, the size of each detected nodule, including the maximal dimension and volume were also calculated by AI. In addition, AI also reported qualitative descriptions of the nodule including spiculation, lobulation, irregular shape, and pleural involvement.

## **Appendix 2 Image quality evaluation**

To compare the image quality of CT scans acquired through mobile CT and through conventional in-hospital CT scanner, an additional 15 patients scanned through the mobile CT and 15 patients (1:1 matching) who were referred to chest CT in our hospital were prospectively included using the following matching variables: age and gender.

Regarding objective image quality evaluation, for each patient, a region of interest (covering 75% of the targeted area) was put at the descending aorta and trachea bifurcation level, and the mean CT attenuation value was recorded.

Regarding subjective image quality evaluation, each case was evaluated separately by two radiologists with over 3-years working experience in chest imaging who were blinded to the group and other patient information. Both radiologists were required to observe the lung parenchyma, the trachea, and segmental bronchus and assess the image quality according to structure resolution and artifacts caused by body motion, breathing, and heart and arterial pulse motion, using a three-point scale scoring system (36). Scores from the above four facets were summed as the subjective image quality score.

In addition, volumetric CT dose index (CTDIvol) in milli-gray (mGy) and dose-length product (DLP) in milli-graycentimeter (mGy·cm) for each case were recorded by the scanner. Then, the effective dose (ED) in millisieverts (mSv) was estimated for each patient as the product of the DLP in mGy·cm times a conversion coefficient of 0.014 mSv/(mGy·cm), as referred to the European CT guideline for chest (37) and compared between the two patient groups.

No significant differences in the measured CT value ( $49.2\pm3.01 vs. 47.3\pm1.79 HU$ , P=0.221), total subjective image quality scores ( $8.8\pm0.31 vs. 9.1\pm0.41$ , P=0.175), or ED ( $2.07\pm0.11 vs. 2.19\pm0.12 mSv$ , P=0.151) were found between the patients scanned with mobile CT or conventional in-hospital CT scanner.

## References

- Zhu Y, Li Z, Ma J, et al. Imaging the infant chest without sedation: Feasibility of using single axial rotation with 16-cm widedetector CT. Radiology 2018;286:279-85.
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