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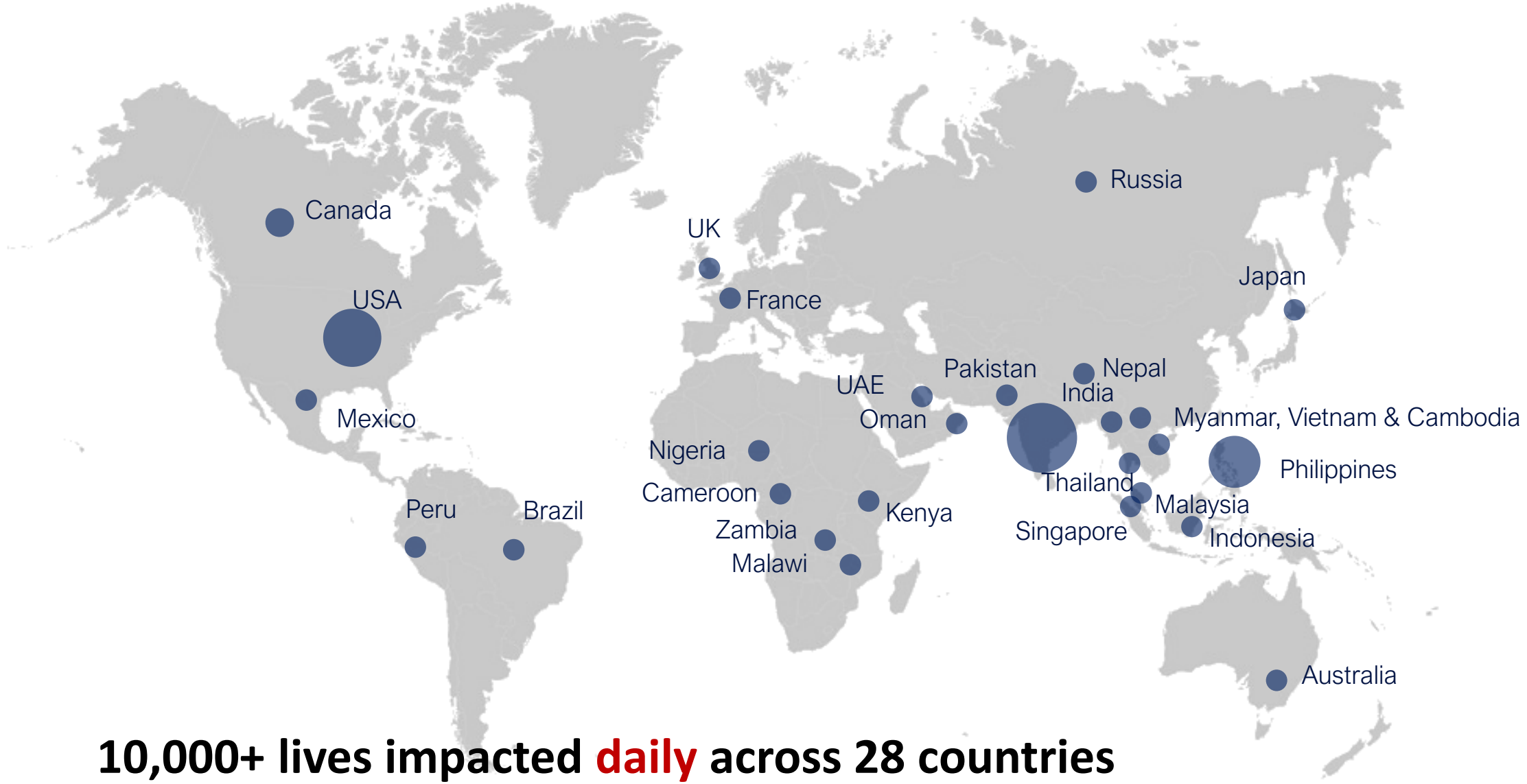
AI-powered solutions for TB & COVID-19



10,000+ lives impacted daily across 28 countries

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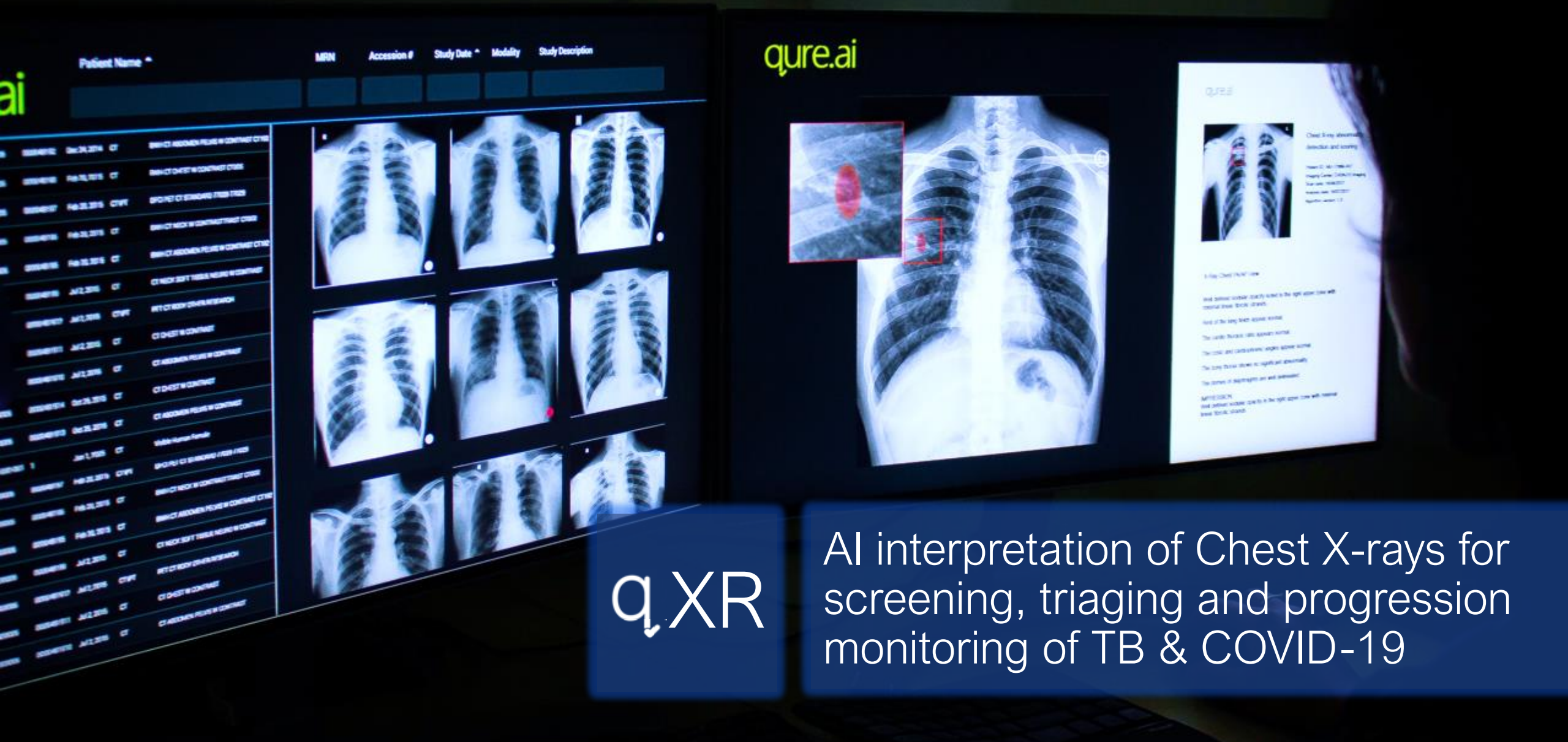
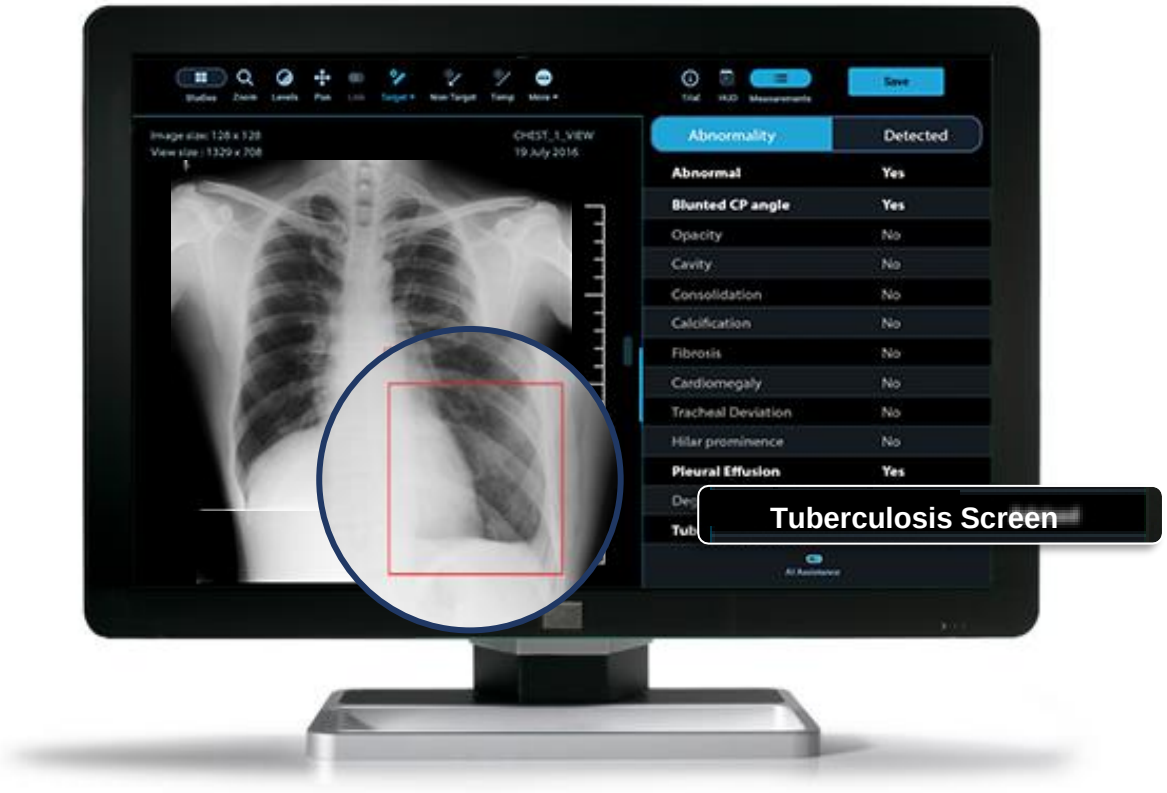


qXR

AI interpretation of Chest X-rays for screening, triaging and progression monitoring of TB & COVID-19

qXR – DIFFERENTIATOR



LARGEST TRAINING DATASET

Underlying convolutional neural networks trained with **2.5 Million scans**, generalize well to new data. Clinically validated in multiple geographies

DETECTS AND LOCALIZES 20+ ABNORMALITIES INCLUDING TB & COVID-19

RESULTS PROCESSED IN SECONDS ON CLOUD OR ON PREMISE

HARDWARE AGNOSTIC

Tested with X-rays from all major manufacturers (DR and CR)

CE CERTIFIED

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Nodule


Opacities


Cavity


Tuberculosis

qXR
PRODUCT CAPABILITY


Consolidation


Fibrosis


Blunted CP


Pneumothorax


Pleural Effusion


Hilar enlargement


Cardiomegaly


Other abnormalities

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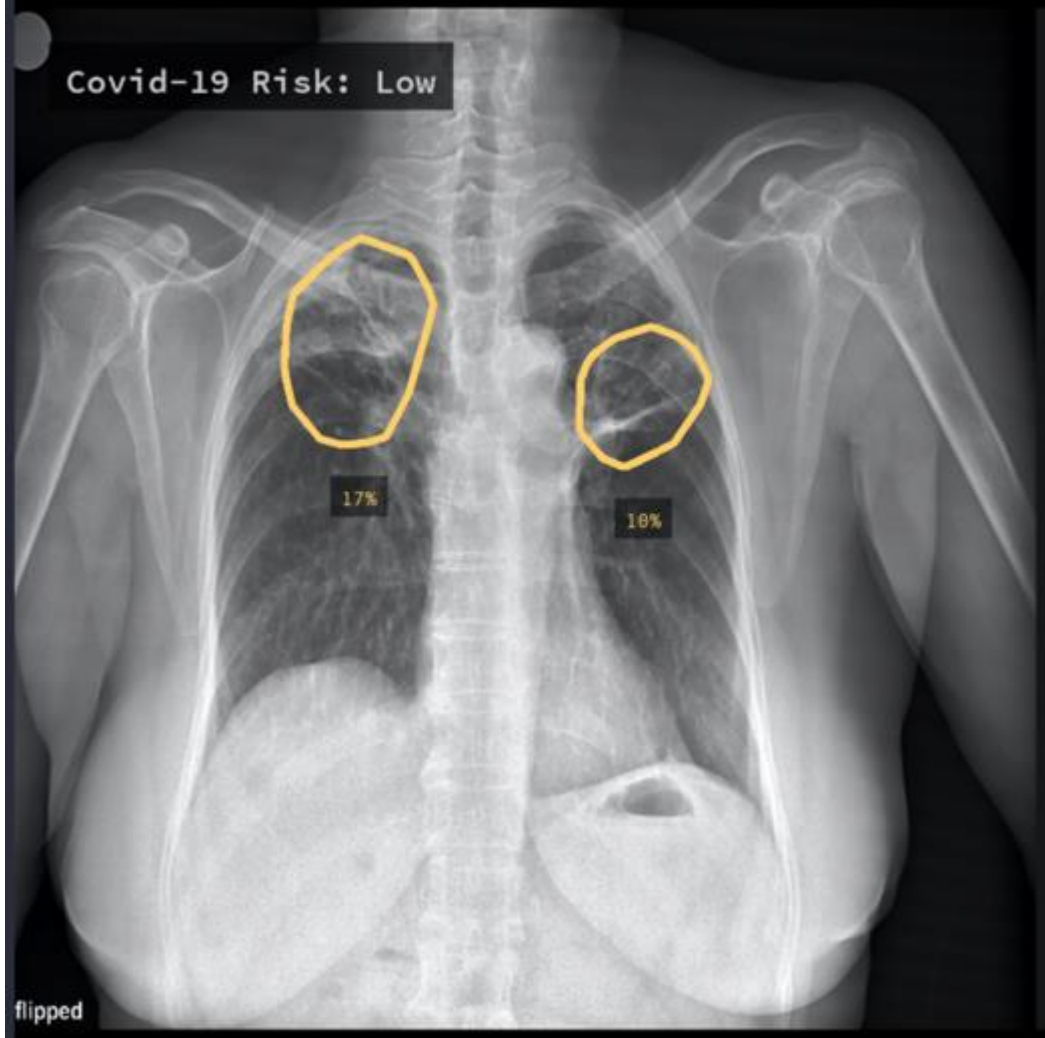
qXR detects and localizes multiple findings in a Chest X-ray including abnormal classification, different types of lung parenchymal opacities, pneumothorax, pleural effusion, cardiac enlargement, and anatomical variations seen in the chest.



qXR Interpretation

Abnormal	YES
Lungs	
Opacity	YES
Location: LU, LM, RU, RM	
Atelectasis	YES
Location: LM, RU	
Calcification	YES
Cavity	YES
Location: RU	
Consolidation	NO
Fibrosis	YES
Location: LU, RU	
Nodule	YES
Location: LU, LM, RU, RM	
Pleura	
Blunted Costophrenic Angle	NO
Pleural Effusion	NO
Mediastinum	
Hilar Enlargement	NO
Heart	
Cardiomegaly	NO
Tuberculosis	YES

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Opacity is observed in bilateral upper and mid zones

Projection area of the left lung affected - 9.9%

Projection area of the right lung affected - 17.2%

Atelectasis is observed in left mid zone and right upper zone

Inhomogeous Opacity, probable Cavitation is observed in right upper zone

Nodular Opacity observed in bilateral upper and mid zones

Fibrotic changes are observed in bilateral upper zone

Calcification is noted

Pleura appears normal

Heart appears normal

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TOOLS

Series

Zoom

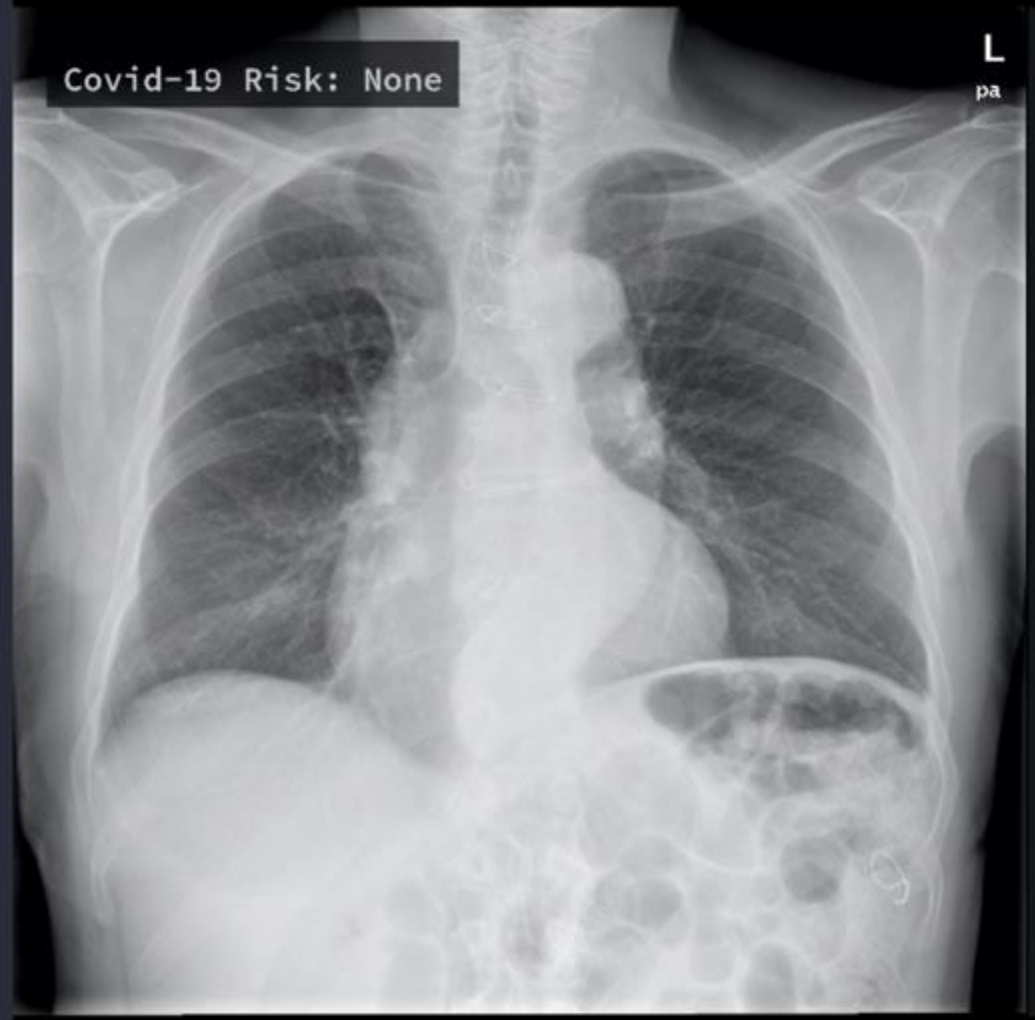
Rotate

Pan

Levels

Magnify

Invert



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Mediastinum	
Hilar Enlargement	NO
Heart	
Cardiomegaly	NO
Tuberculosis	NO

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Findings (Patient: 86667)

The Lungs are clear

Pleura appears normal

Heart appears normal

The mediastinum is within normal limits.

Covid19-Risk: none

Symptoms

N/A

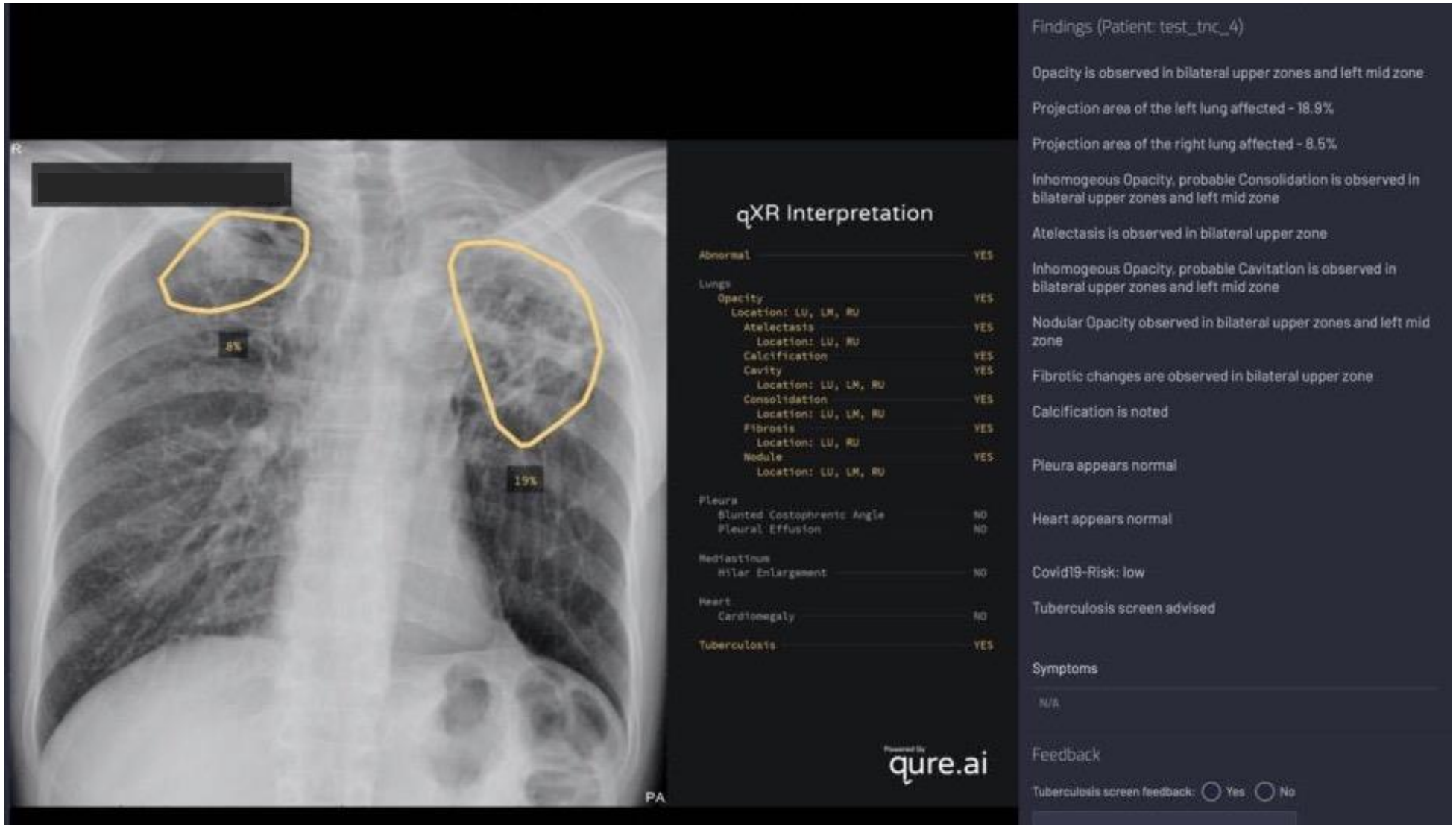
Feedback

Tuberculosis screen feedback: Yes No

SUBMIT FEEDBACK

- Detects signs of Classic and atypical pulmonary | Hilar | Pleural tuberculosis.
- Detects classical pulmonary TB, as well as atypical manifestations seen in immunocompromised patients

qXR-TB HIGHLIGHTS



PLOS ONE

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

MGH 1811 MASSACHUSETTS GENERAL HOSPITAL

HARVARD MEDICAL SCHOOL

Deep learning in chest radiography: Detection of findings and presence of change

Ramandeep Singh, Mannudeep K. Kalra, Chayanin Nitiwarangkul, John A. Patti, Fatemeh Homayounieh, Atul Padole, Pooja Rao, Preetham Putha, Victorine V. Muse, Amita Sharma, Subba R. Digumarthy

"There was no statistical difference between qXR and SOR for all abnormalities"

"The overall accuracy of DL algorithm was better or equal to test radiologists with different levels of experience."

"Substantially better than the four test radiologists for presence or lack of changes in pulmonary opacities."

MENU SCIENTIFIC REPORTS

Article | Open Access | Published: 18 October 2019

Using artificial intelligence to read chest radiographs for tuberculosis detection: A multi-site evaluation of the diagnostic accuracy of three deep learning systems

Zhi Zhen Qin, Melissa S. Sander, Bishwa Rai, Collins N. Titahong, Santat Sudrungrot, Sylvain N. Laah, Lal Mani Adhikari, E. Jane Carter, Lekha Puri, Andrew J. Codlin & Jacob Creswell

Scientific Reports **9**, Article number: 15000 (2019) | Cite this article

8440 Accesses | **1** Citations | **210** Altmetric | Metrics

Stop TB Partnership

- Independent study by StopTB.
- qXR outperformed experienced human readers in differentiating people with bacteriologically confirmed TB and those without.
- Met FIND's Target Product Profile (TPP) for a triage test of ≥95% sensitivity and ≥80% specificity.

MENU SCIENTIFIC REPORTS

Article | Open Access | Published: 14 January 2020

Deep learning, computer-aided radiography reading for tuberculosis: a diagnostic accuracy study from a tertiary hospital in India

Madlen Nash, Rajagopal Kadavigere, Jasbon Andrade, Cynthia Amrutha Sukumar, Kiran Chawla, Vishnu Prasad Shenoy, Tripti Pande, Sophie Huddart, Madhukar Pai & Kavitha Saravu

Scientific Reports **10**, Article number: 210 (2020) | Cite this article

1363 Accesses | **25** Altmetric | Metrics

McGill UNIVERSITY

Manipal Hospitals LIFE'S ON

- Compared the performance of qXR on retrospectively collected cases from a tertiary hospital
- To detect signs of TB, qXR's sensitivity was higher than that of radiologists while the specificity for both was the same
- To differentiate between normal and abnormal CXRs in a tertiary care hospital, qXR's AUC was 0.87

FREUNDESKREIS FÜR INTERNATIONALE TUBERKULOSEHILFE

- Evaluation in a geriatric population for TB screening in Vietnam by FIT
- Evaluation of a total of 1181 cases where prevalence of microbiologically confirmed PTB was 12.53%.
- Sensitivity of the Field reader was found to be 90.9% and Specificity was 49.5%. At the same time qXR for TB screen had a sensitivity of 89.5% and Specificity of 53.9%

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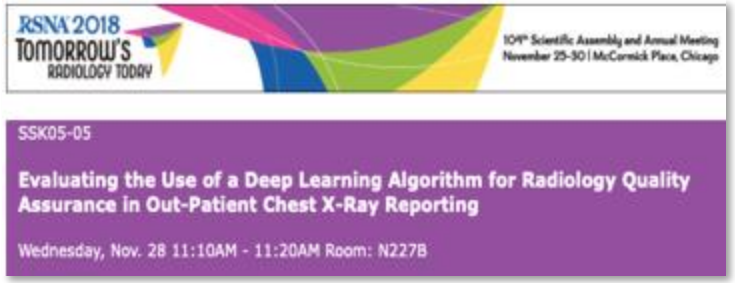

MAX HEALTHCARE

- Head-to-head comparison of Radiologist and AI reporting on 3945 scans
- the 3 radiologist-consensus agreed with the algorithm results in 64.9% of the cases, and with the original radiology report in the remaining 35.1%

HARVARD MEDICAL SCHOOL

MGH 1811
MASSACHUSETTS GENERAL HOSPITAL

- Evaluation of capability of the Algorithms to detect Change in Scans over time
- AUC of the Algorithm was found to be superior to the Radiologists in detecting Change

- Deep Learning algorithms can help identify ‘normal’ chest X-Rays with a high degree of confidence
- Study concluded with a sensitivity of 97.19% on classifying CXRs into abnormal form a total sample size of 430 from 5 different sites in New Delhi, India

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MAHAJAN IMAGING
From X-rays to Molecular Imaging

Solving real world problems

NITI Aayog: Surveillance screening for TB, Rajasthan

- Decreased Patient Dropout by alerting technician of TB +ve X-ray within 2 minutes of X-ray generation
- Decreased workload by fully automating referrals to TB Unit
- Detected 33% additional cases which would have been missed otherwise
- Time to treatment reduced from 5.7 to 3.2

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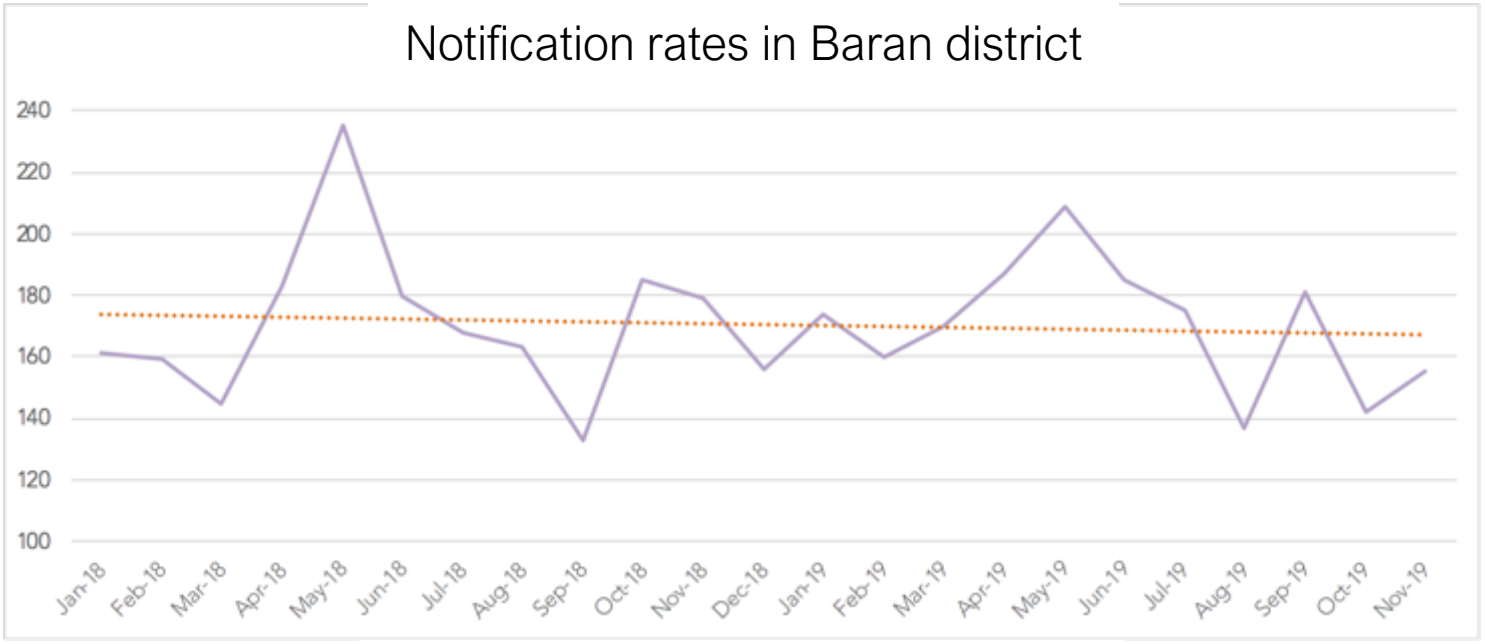

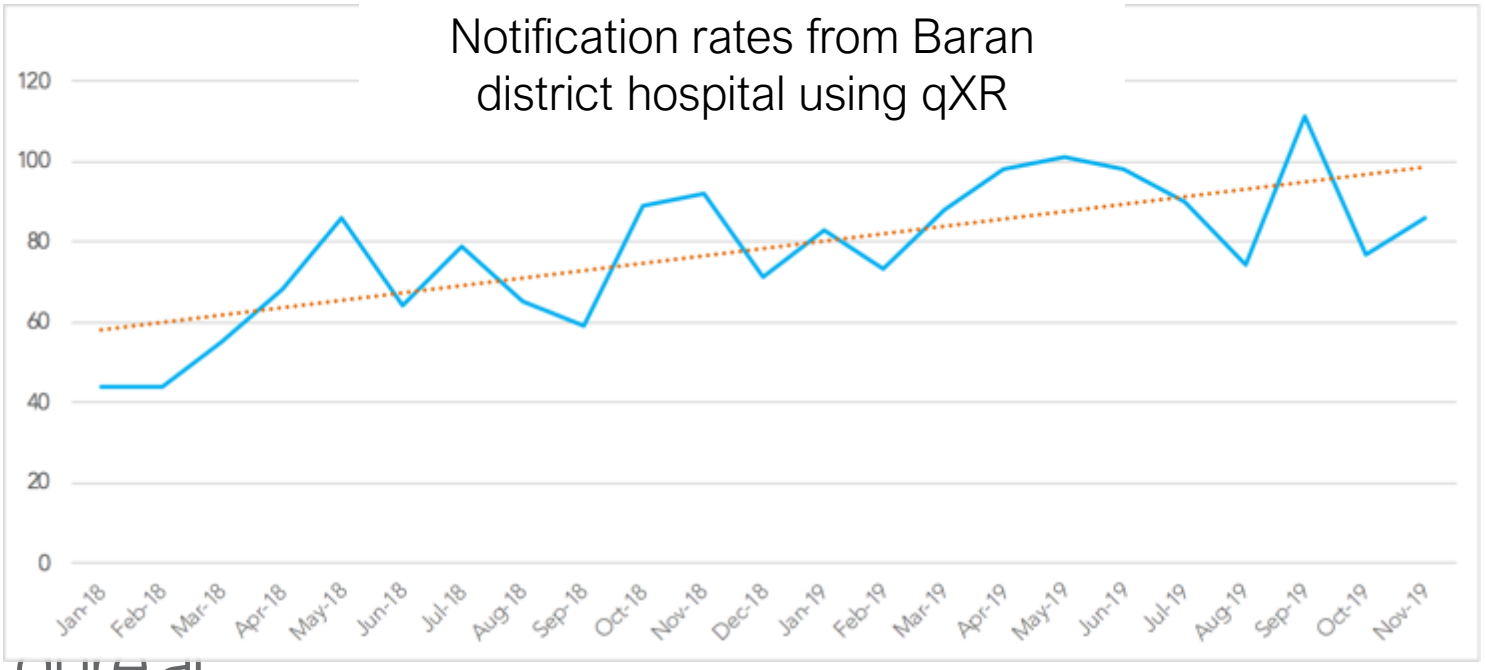

32.9% increase in notifications with qXR

qure.ai

11% additional cases detected by qXR which were missed by radiologists

Reduced X-ray interpretation time from 3 weeks to 1 minute significantly reducing lost to follow-up cases

$40 cost saved per notified case, due to:

- More cases detected with a smaller number of GXP tests
- Reduced cost of read as compared to a radiologist
- Due to instant sputum collection, lost to follow-up cases are 0.

PBSP
Philippine Business for Social Progress
Business United. Lives Uplifted.

ACCESSTB, Philippines funded by The Global Fund

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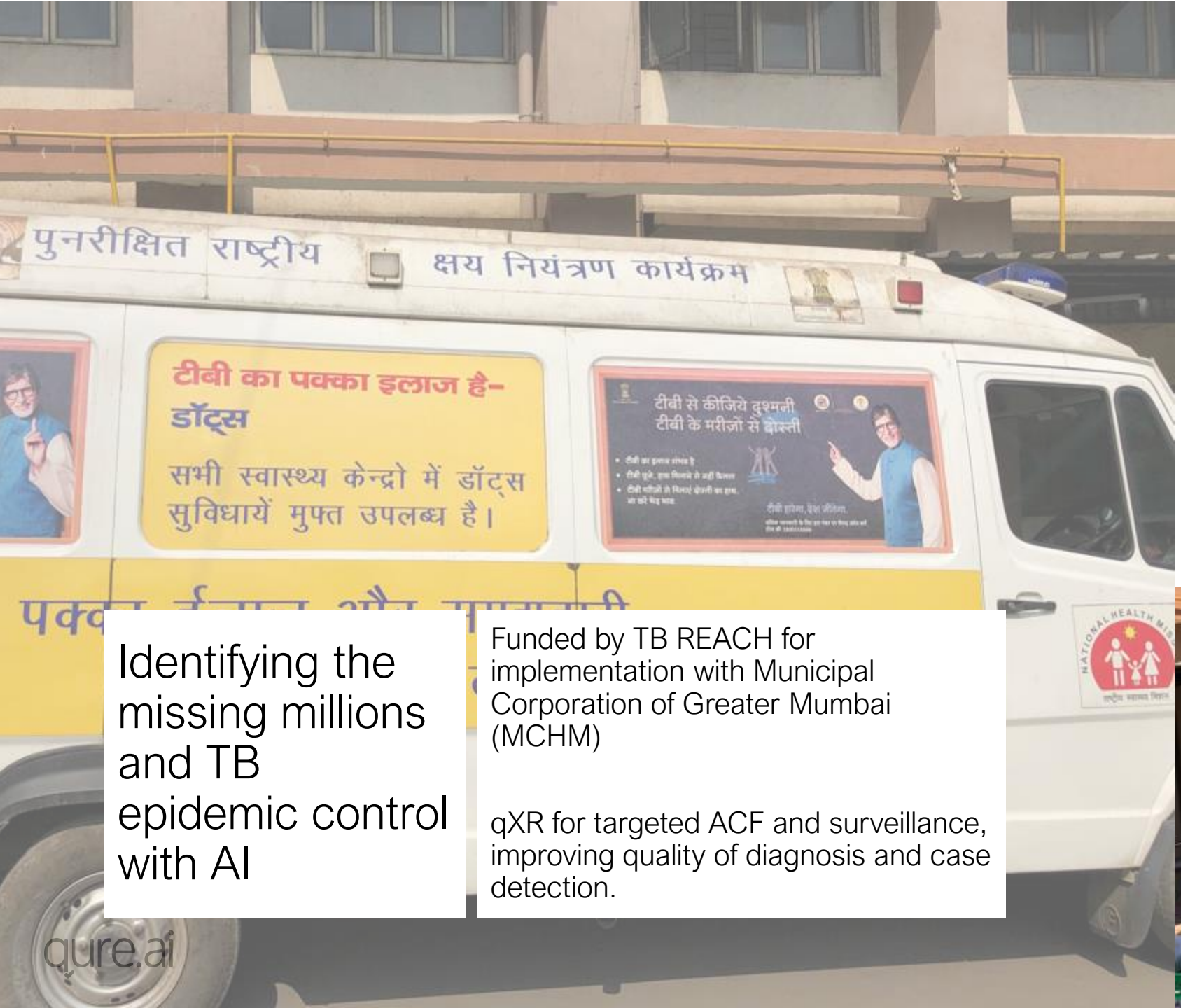
DEMO OF qTRACK portal used by PBSP



Identifying the missing millions and TB epidemic control with AI

Funded by TB REACH for implementation with Municipal Corporation of Greater Mumbai (MCHM)

qXR for targeted ACF and surveillance, improving quality of diagnosis and case detection.

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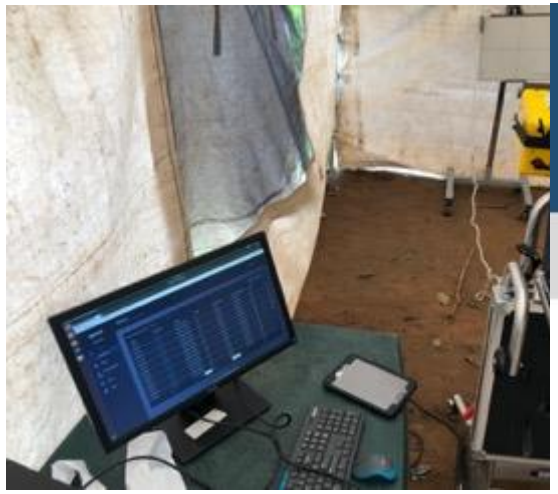
MUNICIPAL CORPORATION OF GREATER MUMBAI
बृहन्मुंबई महानगरपालिका

Stop TB Partnership
TB REACH

- Part of the SCALE study in Blantyre, Malawi led by Dr. Elizabeth Corbett, LSHTM and funded by the Wellcome Trust, project aims at large community screening across 72 clusters in Blantyre.

- Qure.ai deployed a hybrid offline-online software to enable routine workflow in tents set up in villages with no network connectivity and research outcomes with reviewers in London.



LONDON SCHOOL of HYGIENE &TROPICAL MEDICINE

LSTM LIVERPOOL SCHOOL OF TROPICAL MEDICINE

a wellcome programme

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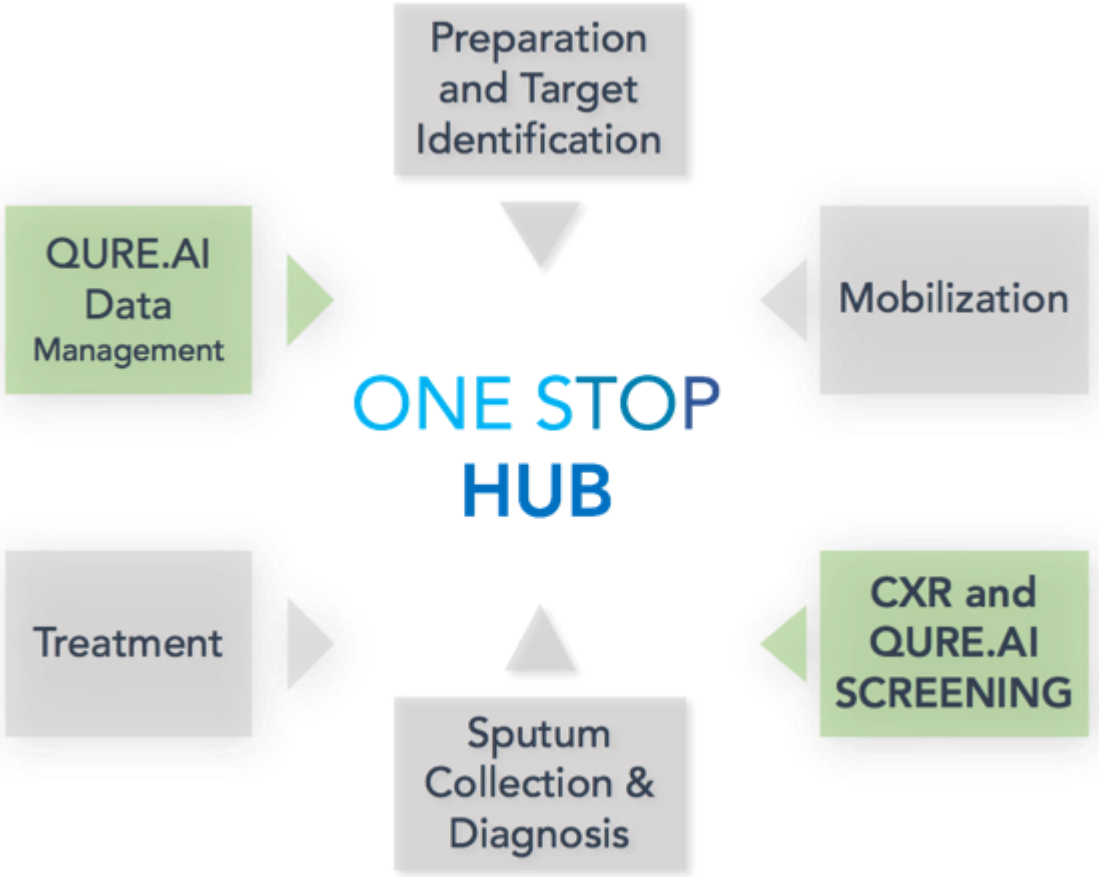
SCALE, Malawi by LSHTM

TB Innovations & Health Systems Strengthening, Philippines, funded by USAID



15.4% Yield
CXR AI Positives

1

10 Minute
Walk Through
From the HUB

2

qTRACK app demo

qure.ai

qXR for COVID-19

qXR for COVID19

qXR is **CE certified** and can interpret Chest X-rays in less than a minute.

a. Detect findings such as **ground glass opacities** and consolidation indicative of COVID19

b. Localize the lesions - indicate whether the lesions are **bilateral** and in which zones

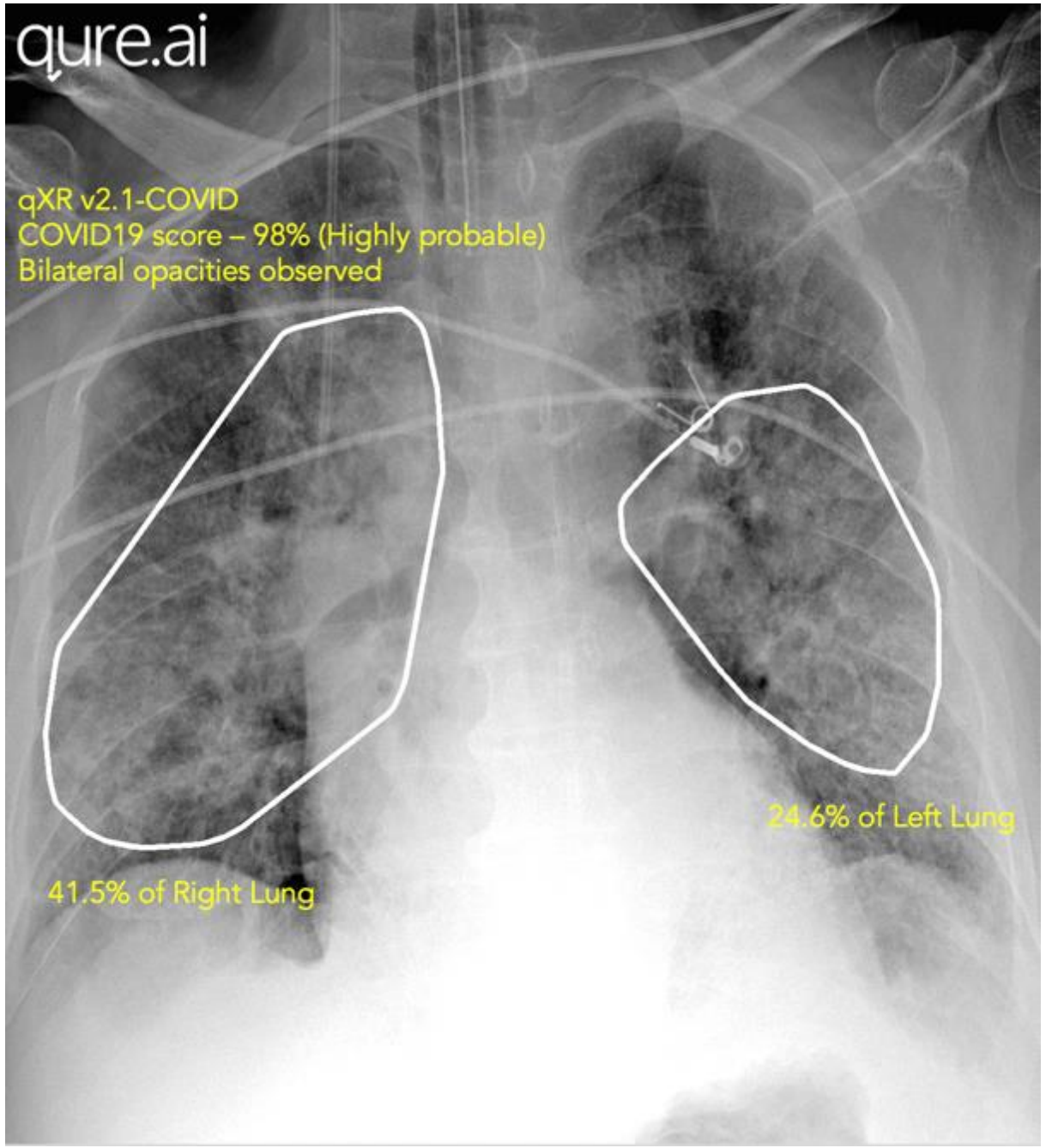
c. Detect the presence of cavities, nodules, pleural effusions, fibrosis and lymphadenopathy for an alternative diagnosis ruling out COVID19

d. **Quantification of lesions** can assist in monitoring progression of COVID19 patients

This capability is now being used at **35 sites** in India, Italy, Pakistan, Mexico & US to:

a. Determine which patients need to be tested further, home quarantined or admitted to the hospital

b. Monitor progression of COVID19 patients



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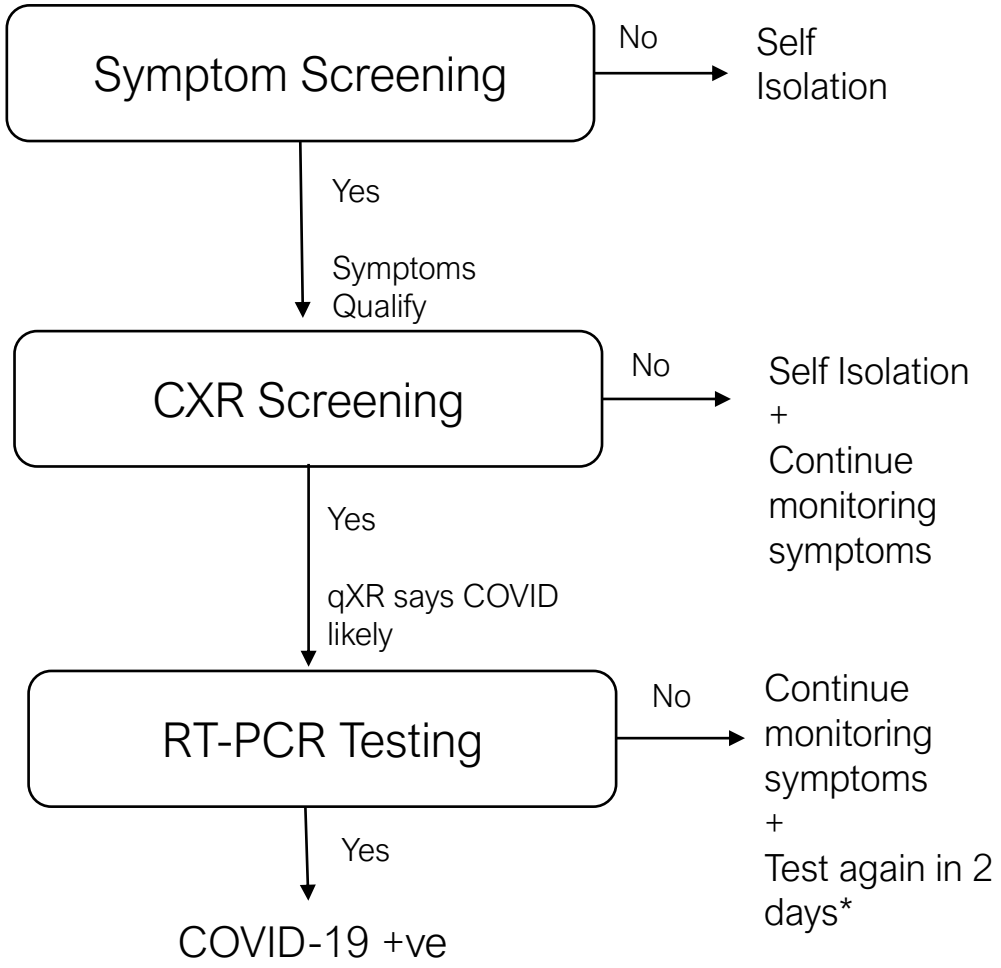
qXR for COVID19



Italian and British hospitals are beginning to employ CXR as a first-line triage tool due to long reverse transcription polymerase chain reaction (RT-PCR) turnaround times

OPTIMIZED TESTING PROTOCOL

Location : Chain of hospitals in South Asia

VALUE

- Reach remote areas lacking testing infrastructure through screening vans and remote X-ray centers
- Reach higher population with same number of kits

https://pubs.rsna.org/doi/10.1148/radiol.2020201160

*A recent study which examined CXRs of 64 patients found that in 9% of cases, initial RT-PCR was negative whereas CXRs showed abnormalities. All these cases subsequently tested positive for RT-PCR within 48 hours

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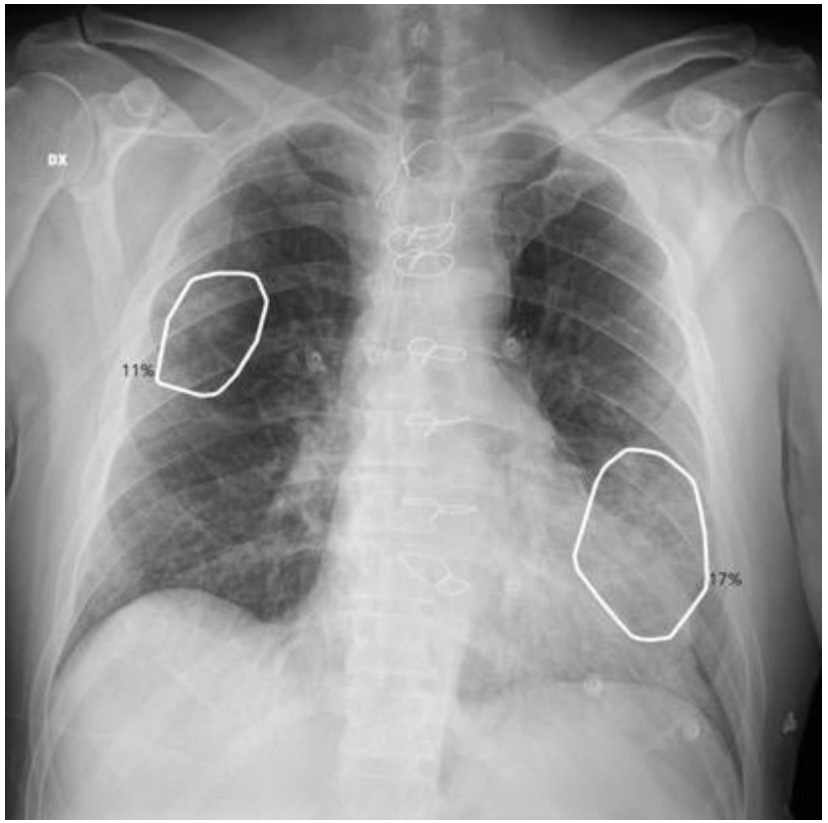
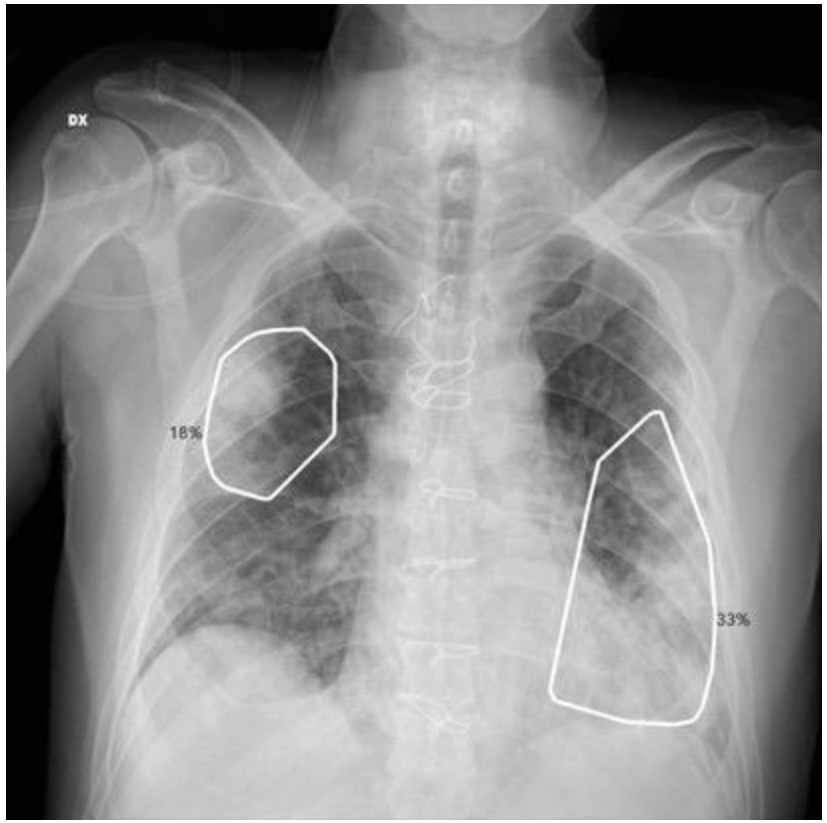
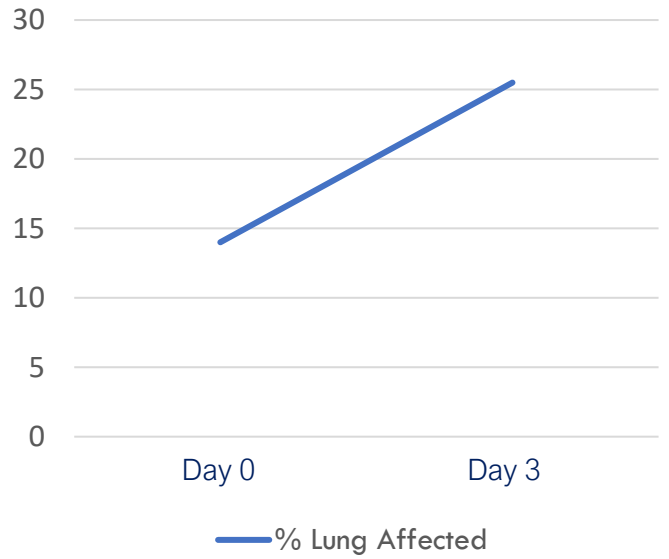
COVID-19 PROGRESSION MONITORING

Lung Health Conditions Worsening Over Time







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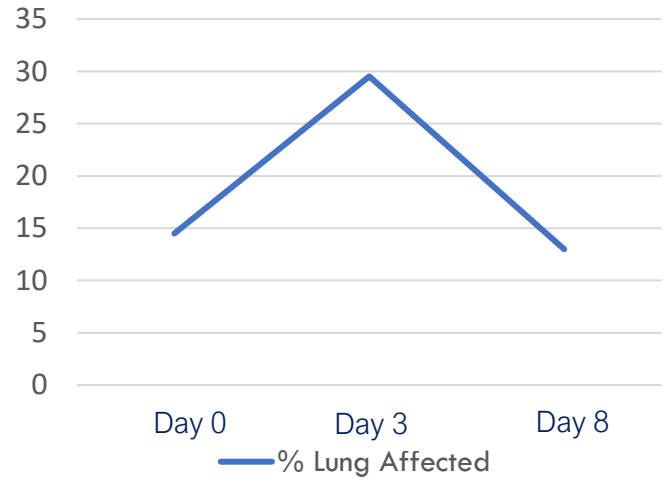
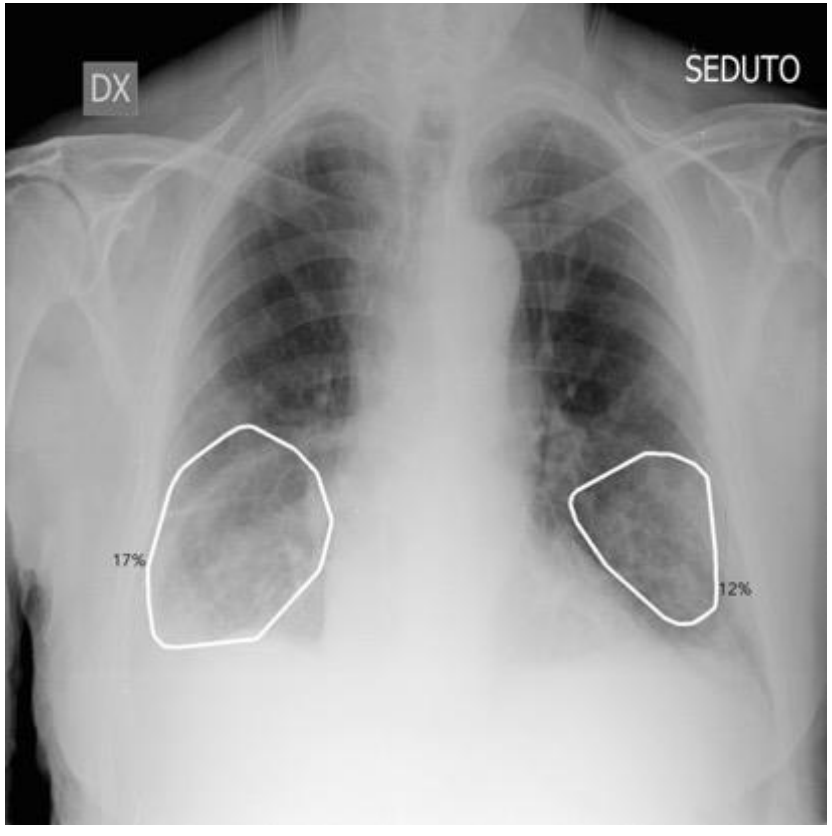
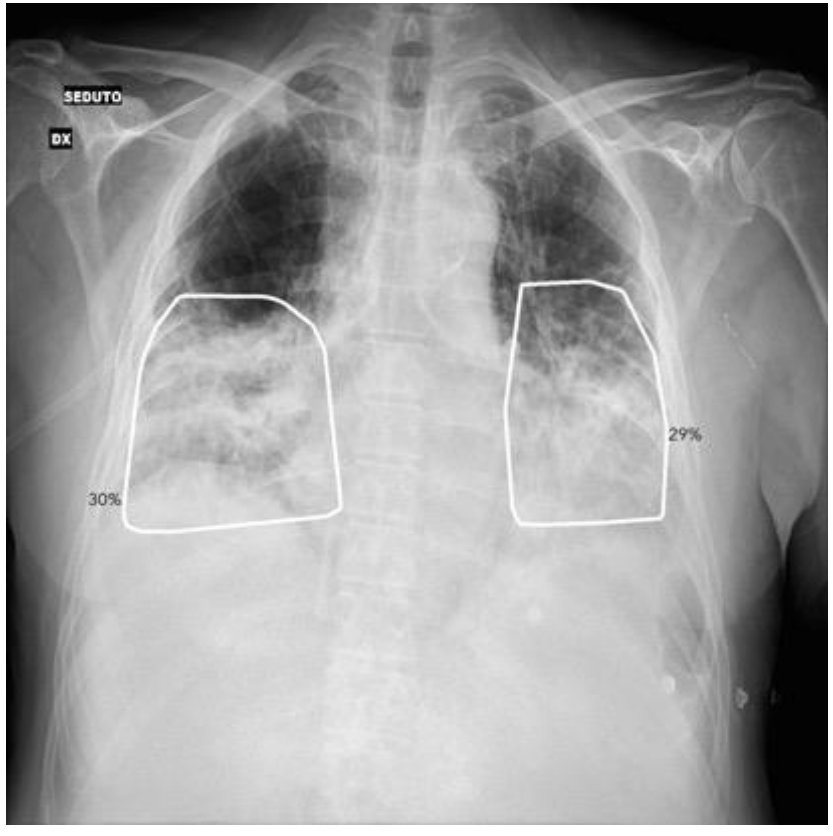
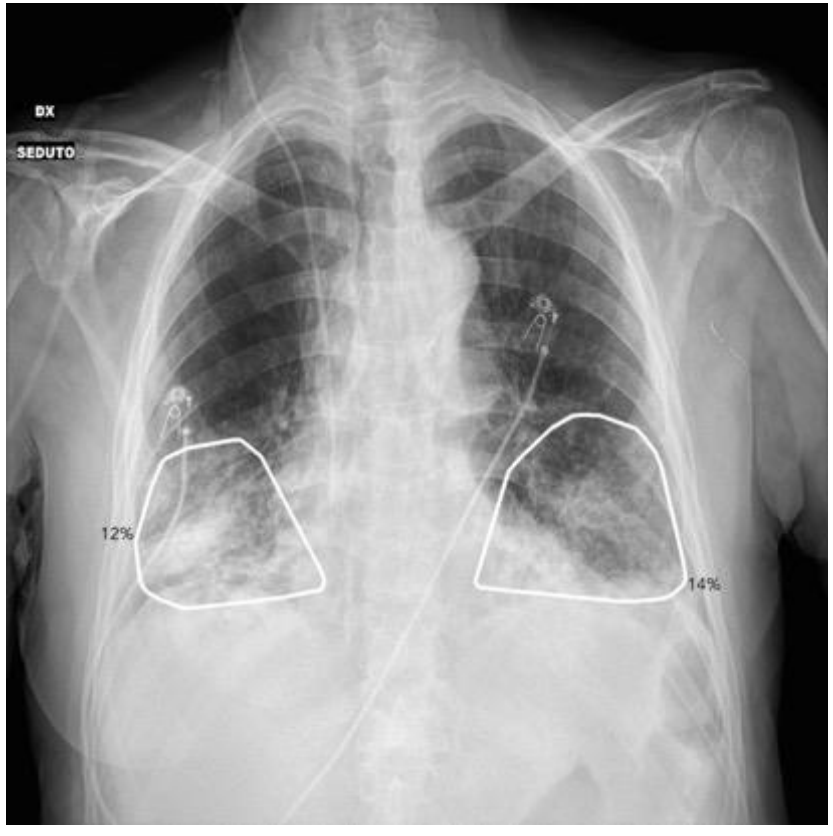
COVID-19 PROGRESSION MONITORING

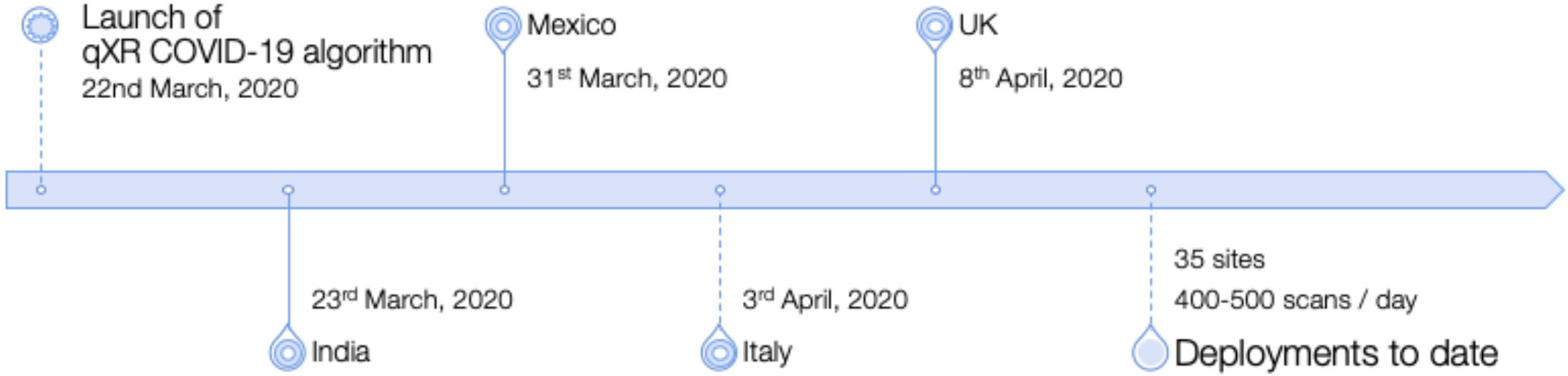
Lung Health Conditions Improving After Worsening










Launch of
qXR COVID-19 algorithm
22nd March, 2020
Mexico
31st March, 2020
UK
8th April, 2020
23rd March, 2020
India
3rd April, 2020
Italy
35 sites
400-500 scans / day
Deployments to date

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qSCOUT for remote triaging and monitoring of at-risk contacts

qSCOUT video

Coming soon!


powered by
qure.ai
Lung Health
Corporation
INFINITY
AI-powered Mobile X-ray Van
Lung Health
Corporation


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We look forward to joining hands with you in the efforts to fight TB & COVID-19!
Thank You