AI-powered solutions for TB & COVID-19
10,000+ lives impacted **daily** across 28 countries
AI interpretation of Chest X-rays for screening, triaging and progression monitoring of TB & COVID-19
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
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

<table>
<thead>
<tr>
<th>Abnormal</th>
<th>YES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lungs</td>
<td></td>
</tr>
<tr>
<td>Opacity</td>
<td>YES</td>
</tr>
<tr>
<td>Location: LU, LH, RU, RM</td>
<td></td>
</tr>
<tr>
<td>Atelectasis</td>
<td>YES</td>
</tr>
<tr>
<td>Location: LM, HU</td>
<td></td>
</tr>
<tr>
<td>Consolidation</td>
<td>NO</td>
</tr>
<tr>
<td>Calcification</td>
<td>YES</td>
</tr>
<tr>
<td>Location: LM, HU</td>
<td></td>
</tr>
<tr>
<td>Cavity</td>
<td>YES</td>
</tr>
<tr>
<td>Location: LU, HU</td>
<td></td>
</tr>
<tr>
<td>Fibrosis</td>
<td>YES</td>
</tr>
<tr>
<td>Location: LU, HU</td>
<td></td>
</tr>
<tr>
<td>Nodule</td>
<td>YES</td>
</tr>
<tr>
<td>Location: LU, LH, RU, RM</td>
<td></td>
</tr>
<tr>
<td>Pleura Blunted Costophrenic Angle</td>
<td>NO</td>
</tr>
<tr>
<td>Pleural Effusion</td>
<td>NO</td>
</tr>
<tr>
<td>Mediastinum</td>
<td></td>
</tr>
<tr>
<td>Hilum Enlargement</td>
<td>NO</td>
</tr>
<tr>
<td>Heart Cardiomegaly</td>
<td>NO</td>
</tr>
<tr>
<td>Tuberculosis</td>
<td>YES</td>
</tr>
</tbody>
</table>

**Opacity** is observed in bilateral upper and mid zones

**Projection area** of the left lung affected: 9.3%

**Projection area** of the right lung affected: 17.2%

Atelectasis is observed in left mid zone and right upper zone

Inhomogeneous 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
Findings: (Patient: 85667)

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
- [x] 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.
Deep learning in chest radiography: Detection of findings and presence of change


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. Titahtong, Santat Sudrungrot, Sylvain N. Laah, Lal Mani Achikari, E. Jane Carter, Lekha Puri, Andrew J. Codlin & Jacob Creswell

"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."

- 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.
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

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%
• 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

• 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%

• 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
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
Notification rates in Baran district

32.9% increase in notifications with qXR
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.
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.
• 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.
TB Innovations & Health Systems Strengthening, Philippines, funded by USAID

ONE STOP HUB

1. Preparation and Target Identification
2. Mobilization
3. QURE.AI Data Management
4. Treatment
5. Sputum Collection & Diagnosis
6. CXR and QURE.AI SCREENING

15.4% Yield CXR AI Positives
10 Minute Walk Through From the HUB
qTRACK app demo
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
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

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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

https://pubs.rsna.org/doi/10.1148/radiol.2020201160
COVID-19 PROGRESSION MONITORING

Lung Health Conditions Worsening Over Time

[Images of X-rays showing lung conditions on Day 0 and Day 3, with a line graph showing the percentage of lung affected over time.]
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

India
23rd March, 2020

Italy
3rd April, 2020

35 sites
400-500 scans / day

Deployments to date
qSCOUT for remote triaging and monitoring of at-risk contacts
qSCOUT video
Coming soon!
We look forward to joining hands with you in the efforts to fight TB & COVID-19!

Thank You