ILA DATA CTLS Cohort: Mortality
Supported by Genentech

<table>
<thead>
<tr>
<th></th>
<th>HR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>No ILA</td>
<td>Reference Group</td>
<td>-</td>
</tr>
<tr>
<td>Indeterminate ILA</td>
<td>1.83 (1.03, 3.26)</td>
<td>0.04</td>
</tr>
<tr>
<td>ILA</td>
<td>3.71 (1.99, 6.94)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* Multivariable analysis adjusted for age, sex, BMI, pack years, current smoker

Putman et al. 2019
### ILA DATA CTLS Cohort: Clinical Opportunity

<table>
<thead>
<tr>
<th>N=41 (2.6% of CTLS scans)</th>
<th>N (%)</th>
<th>Years to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Followed by Pulmonary Pre</td>
<td>7 (17.1%)</td>
<td>-</td>
</tr>
<tr>
<td>Followed by Pulmonary Post</td>
<td>29 (85.3%)</td>
<td>2.37 ± 2.87</td>
</tr>
<tr>
<td>N=34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ILD diagnosis</td>
<td>10 (24.4%)</td>
<td>4.47 ± 2.72</td>
</tr>
<tr>
<td>ILA DATA Non-Screening Cohort: Clinical Opportunity 2/9/2022-5/6/2022</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 7: CT Chest N 5451</th>
<th>N (%)</th>
<th>Extrapolation to 1 year</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ILA</strong></td>
<td>99 (1.82%)</td>
<td>429</td>
</tr>
<tr>
<td>New to Pulmonary</td>
<td>46 (0.84%)</td>
<td>199</td>
</tr>
<tr>
<td><strong>Carry ILD Diagnosis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ILD</td>
<td>155 (2.84%)</td>
<td>672</td>
</tr>
<tr>
<td>Currently on Antifibrotic treatment</td>
<td>22 (0.40%)</td>
<td>95</td>
</tr>
<tr>
<td><strong>Treatment opportunity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Met antifibrotic Treatment Criteria</td>
<td>17 (0.31%)</td>
<td>74</td>
</tr>
<tr>
<td>Potential antifibrotic candidates</td>
<td>68 (1.25%)</td>
<td>295</td>
</tr>
</tbody>
</table>

*Excluded age>85, Active metastatic cancer, dementia or other major comorbidities.

#Did not exclude age>85
Screening ILD Increases Referral
UC Davis Study

- Outpatient CT reports screened using NLP
- Flagged patients reviewed by ILD specialist
- Patients with incident ILD had pulmonology referral recommended to PCPs

W. Leon, J. V. Pugashetti, J. Oldham. ATS 2022
UC Davis Model:

- Primary Care
- Navigator
- Radiology AI/NLP
- Specialists
- Patients
Your Recent CT scan of the CHEST demonstrated:

**Interstitial Lung Abnormalities (ILA)**

ILA can be an early marker of: Early Interstitial lung disease, they may also not have any significance or health impact.

1. Interstitial lung disease causes include hazardous exposures, autoimmune disease and many are unknown.

2. Early in the disease course patient are often without symptoms or have a dry cough. Symptoms such as shortness of breath often do not appear until significant damage has occurred.

3. Early Treatments can slow the progression of these changes and help preserve lung function.

**An evaluation by a lung specialist is recommended:** Our pulmonary team will perform an evaluation into the potential cause, perform breathing tests, measure oxygen levels with exercise and provide management recommendations as there are treatments that can slow the progression of interstitial lung disease.

**Lahey Lung Health Clinic**

Your primary care physician Dr. was notified of these findings and ordered a referral to the Lahey lung health clinic. Please call (781) 744-1823 to schedule your appointment.

Disclosure: Imbio has an exclusive licensing agreement for the Lahey AIR reports.
Qualitative emphysema and risk of COPD hospitalization in a multicenter CT lung cancer screening cohort study

Lee Gazourian \textsuperscript{a,\textdagger}, William B. Thedinger \textsuperscript{b}, Shawn M. Regis \textsuperscript{c}, Elizabeth J. Pagura \textsuperscript{a}, Lori Lyn Price \textsuperscript{d,e}, Melissa Gallow \textsuperscript{f}, Cristina F. Stefanescu \textsuperscript{g}, Carla Lamb \textsuperscript{h}, Kimberly M. Rieger-Christ \textsuperscript{h}, Harpreet Singh \textsuperscript{i}, Marcel Casasola \textsuperscript{i}, Alexander R. Walker \textsuperscript{i}, Arashdeep Rupal \textsuperscript{i}, Avigail S. Patel \textsuperscript{a}, Carolyn E. Come \textsuperscript{a}, Ava M. Sanayeli \textsuperscript{b}, William P. Long \textsuperscript{b}, Giulia S. Rizzo \textsuperscript{j}, Andrea B. McKee \textsuperscript{c}, George R. Washko \textsuperscript{k,l}, Raul San Jose Estepar \textsuperscript{k,m}, Christoph Wald \textsuperscript{n}, Brady J. McKee \textsuperscript{n}, Carey C. Thomson \textsuperscript{l,o,p,q}, Timothy N. Liesching \textsuperscript{s,t}
Table 5
Rates of active smoking, PFT/COPD screening in the 5 years prior to baseline exam and pneumococcal 23 (PPSV 23) vaccination rates in patients with qualitative emphysema on their baseline CTLS exam in patients with in network primary care physicians.

<table>
<thead>
<tr>
<th></th>
<th>LHMC</th>
<th>MAH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 3226</td>
<td>N = 915</td>
</tr>
<tr>
<td>Emphysema (Yes)</td>
<td>1839 (57.0%)</td>
<td>475 (51.9%)</td>
</tr>
<tr>
<td>Active Smoking</td>
<td>1045 (56.8%)</td>
<td>261 (54.9%)</td>
</tr>
<tr>
<td>PFTs (No)</td>
<td>1238 (67.3%)</td>
<td>371 (78.1%)</td>
</tr>
<tr>
<td>PPSV 23 (No)</td>
<td>713 (38.8%)</td>
<td>254 (53.5%)</td>
</tr>
</tbody>
</table>
Emphysema: ROI Opportunity

Quantitative CT Assessment in the CT Lung Cancer Screening (CTLS) Population: A potential tool for screening candidates for bronchoscopic lung volume reduction (BLVR)

Carla Lamb MD, Shawn Regis PhD, William Thedinger BA, Effie Adjei MD, Julia Rabazin, Susan Jin Kim BS, Elizabeth Pazura BA, Kim Rieger-Chrest PhD, Christoph Wald MD PhD, Brady McKee MD, Andrea McKee MD, Tim Lieschina MD, Lee Gazoulian MD

BACKGROUND:
15 million Americans are estimated to be eligible for CT lung cancer screening (CTLS). CTLS may help identify patients who could clinically benefit from BLVR or lung volume reduction surgery (LVRS).

METHODS:
A retrospective, single center study assessed all baseline CTLS exams from January 1, 2012-September 30, 2017. All analysis was performed utilizing a lung analysis software on Intellispace Portal 9.0 (CT COPD Philips Healthcare Cleveland OH). Readers blinded to outcomes data performed the analysis and reviewed multiplanar images and corrected any errors in interobserver segmentation. Attenuation of each voxel within segmented lungs was calculated automatically. Emphysema destruction was calculated as the sum of voxels with attenuation below -950 Houndsfield units (HU)

PRESENTED AT
CHEST 2021
ANNUAL MEETING | OCTOBER 17-20

Approximately 4% of the CT lung screening population may benefit from further evaluation for candidacy for bronchoscopic lung volume reduction with systematic use of quantitative emphysema CT assessment.

Results:
A total of 4673 patients were included in the study. Quantitative global and lobar emphysema scores were obtained on 4495 patients (96.2%). A majority of patients 2845 (60.9%) had less than 1% emphysema destruction. 1207 of the patients (25.8%) had between 1.5% emphysema destruction with 235 patients (5%) between 5-10% destruction and 208 patients (4.5%) with greater than 10% emphysema destruction. In our cohort, 124 patients (96%) demonstrated a global % LAA of >950 HU > 10% and had heterogeneous disease defined as delta of 15% LAA between ipsilateral lobes. There were 182 patients (3.9%) who had at least one lobe with at least 20% lung destruction (%LAA > 950 HU > 20%).

CLINICAL IMPLICATIONS:
- Utilizing a systematic quantitative emphysema CT assessment in patients undergoing CT lung screening may identify potential candidates for further evaluation for BLVR or LVRS.
BLVR screening

CASE STUDY
POPULATION HEALTH SCREENING

SITUATION
Emphysema and COPD are underdiagnosed in up to 60% of patients, and many are not found until later stages of the disease. For those presenting with advanced disease, having the latest options like Bronchoscopic Lung Volume Reduction (BLVR) to help them improve their breathing is extremely important. As a nationally ranked Pulmonology and Lung Surgery center, the Pulmonary clinic at the University of Chicago treats complex, chronic and rare lung diseases, and their clinicians are always looking for innovative approaches to patient care. Dr. Kyle Hogarth, Professor of Medicine in the Section of Pulmonology and Critical Care Medicine, saw the potential of Imbio's Population Screening Program as a way to identify patients seen anywhere in the hospital system that should have been referred to Pulmonology based on their imaging. Along with Dr. Ajay Wagh, Interventional Pulmonologist, the clinic is utilizing Imbio's artificial intelligence technology to identify and treat more patients who have COPD, including those with severe emphysema.

IMBIO IMPACT

- Imbio's unique platform helps us identify emphysema patients that could benefit from BLVR. It has been invaluable in helping us keep our colleagues informed on additional treatment options that can help COPD patients in our community resulting in appropriate referrals and better care.”
  - Dr. Ajay Wagh

150-Day Review

- 67 new potential BLVR patients added to the clinic
- After cross-referencing prior-existing conditions
- 8 patients treated or confirmed eligible for treatment
- With a resulting qualification trend of
- 40 additional patients under further evaluation

SOLUTION
Imbio helps find the hidden patients in your health system. Imbio's suite of imaging AI algorithms automatically analyze a facility's daily chest CTs and specialists, like Dr. Hogarth and Dr. Wagh, are alerted to high risk patients who were not being routed to their clinic. Imbio AI also provides clinicians with visualization of the patient condition on their CT scan, and quantitative reports that can enhance the way the patient is diagnosed, treated, and managed. By analyzing and identifying patients across the UC institution and alerting the proper specialist, patients who may have been overlooked can receive preventative treatment, or advanced care, such as the BLVR procedure. Imbio provides a way to detect an issue that patients and providers may not have known existed, improving care. It also helps busy clinicians grow their practice and retain patients in their health system without disrupting their daily work.

Helping Patients  Growing Pulmonology Practice  Increasing Revenue

info@imbio.com  |  +1.612.520.7360  |  www.imbio.com

MMF v.2.3
U Chicago Model:

- Primary Care
- Radiology AI/NLP
- Navigator
- Specialists
- Patients

[Diagram showing the flow and connections among the mentioned categories.]

[Logo: Beth Israel Lahey Health]
AI integration: Imbio
Patient Engagement

AIR™ Lung Report
CT Scan Performed on 10/10/2022

Your recent CT Exam demonstrated: Marked Emphysema

Patients with your degree of Emphysema are at increased risk for:
- Lung Cancer
- Hospitalization
- Mortality

Evaluation by our COPD team is recommended: They will perform an evaluation, review your current COPD treatment regimen. You may qualify for advanced therapies such as bronchoscopic or surgical lung volume reduction, pulmonary rehabilitation and others. Our team can also provide information on clinical trials that you may also qualify for with a goal of improving your quality of life.

Lahey Lung Health Clinic

Your primary care physician Dr. was notified of these findings and ordered a referral to the Lahey Lung Health clinic. Please call (781) 744-1823 to schedule your appointment.

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Lahey Lung Health Model:  
Supported by Three Lakes Foundation
Lung Health Program Mission.

Early Identification → Early Referral → Early Diagnosis → Early Treatment