

Interstitial Lung Disease Severity and Clinical Management in the Real-World Setting

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Background

- Interstitial lung disease (ILD) is a group of conditions that causes scarring and inflammation in the lungs. It is characterized by symptoms including fatigue, reduced exercise tolerance, and shortness of breath, which can significantly impact quality of life.^{1,2}
- Pulmonary function tests are used to assess the progression of ILDs.²
- Forced vital capacity (FVC) is a standard pulmonary function measure for assessing ILDs.
- A reduction in FVC over time is considered an indicator of disease progression and is an independent predictor of mortality in patients with idiopathic pulmonary fibrosis, a type of ILD.²

Objective

- To characterize patients with ILD and their treatment management by severity in the real-world setting

Methods

- A retrospective analysis (January 2017-December 2025) using electronic health records from the US-based OMNY Health real-world data platform on patients (ICD-10-CM J84*) was performed.
- Patients were selected if they had a FVC percent predicted measurement on or after their first observed ILD diagnosis code.
- Patients were at indexed at their first FVC percent predicted on/after their first observed ILD diagnosis, which was used to determine severity.
- Severity was defined as the following:
 - Mild: $\geq 70\%$
 - Moderate: $\geq 60\%$ and $< 70\%$
 - Moderately severe: $\geq 50\%$ and $< 60\%$,
 - Severe: $\geq 35\%$ and $< 50\%$
 - Very severe: $< 35\%$
- Patients' comorbidities/medical history was tabulated on or prior to the index.
- Proportion of patients by severity was tabulated for common treatments at the same visit as the index FVC. Treatments were classified as follows:
 - Oral corticosteroids: prednisone, prednisolone, methylprednisolone, dexamethasone, hydrocortisone
 - Antifibrotic/cytotoxic drugs: pirfenidone, nintedanib, azathioprine, cyclophosphamide, mycophenolate mofetil
 - Biologics: abatacept, rituximab, tocilizumab
 - Pulmonary rehabilitation
 - Lung transplant

Results

- Among approximately 375,000 patients with an ILD diagnosis, 27,802 patients had a FVC percent predicted on or after their first observed ILD diagnosis and were included in this study.
- The severity breakdown of the cohort was as follows: mild: 60.8%, moderate: 16.1%, moderately severe: 11.7%, severe: 8.7%, very severe: 2.7%.
- Patient demographics and comorbidities/medical history are presented in **Table 1**:
 - A progressive shift towards younger age with increasing severity was observed, suggesting more severe disease persistence with younger age.
 - The gender distribution shifted towards more balance with increasing severity, indicating attenuation of female predominance with severity.
 - Higher proportions of patients from racial minority groups were observed with increasing severity, suggesting potential disparities in progression.
 - While slight variations in region were observed, the Midwest comprised over 50% of patients in each severity group.
 - Top comorbidities were gastro-esophageal reflux disease (GERD), anxiety/depression, coronary artery disease, obstructive sleep apnea, and diabetes.
 - Pulmonary hypertension was strongly associated with increasing severity, almost doubling in prevalence from mild to severe/very severe groups.
 - Several comorbidities decreased with increasing severity (anxiety/depression, GERD, emphysema).
- Treatment at index FVC by severity is presented **Figure 1**:
 - Oral corticosteroids were the most widely prescribed/administered treatments.
 - Both antifibrotic/cytotoxic drugs and oral corticosteroids increased monotonically with worsening severity.
 - Biologics, pulmonary rehabilitation, and lung transplants were utilized on less than 1% of the patient population at index FVC.

Conclusions

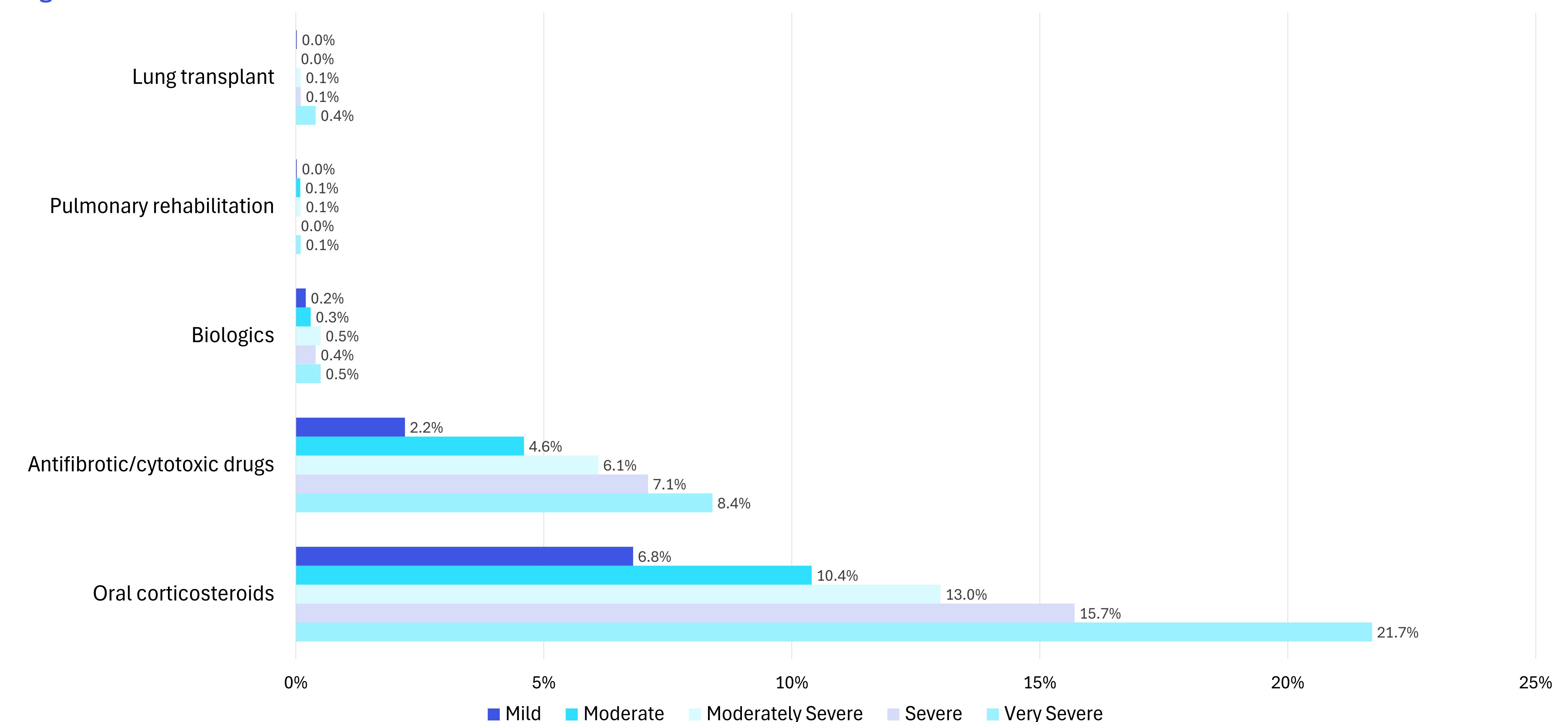
- Most ILD patients were classified as mild/moderate, but increasing severity was associated with younger age, a more balanced sex distribution, and higher representation of racial minority groups.
- Pulmonary hypertension was a key marker of ILD severity.
- Treatment intensity increased with disease severity; however, use of advanced or supportive interventions remained minimal at index FVC ($<1\%$).
- Further analyses examining results longitudinally would help inform how differing severity influences treatment management for patients with ILD.

Table 1. Patient Demographic Characteristics and Comorbidities/Medical History

Characteristic	Mild N = 16,913	Moderate N = 4,469	Moderately Severe N = 3,258	Severe N = 2,421	Very Severe N = 741
Demographics					
Gender, n (%)					
Female	9,289 (54.9%)	2,355 (52.7%)	1,661 (51%)	1,214 (50.1%)	370 (49.9%)
Male	7,623 (45.1%)	2,114 (47.3%)	1,595 (49%)	1,207 (49.9%)	371 (50.1%)
Age (years)					
n	16,913	4,469	3,258	2,421	741
Mean (SD)	69 (12.7)	68.8 (12.2)	67.5 (12.7)	65.5 (13.4)	64.4 (14.4)
Median (Q1,Q3)	71 (62,78)	70 (62,78)	69 (61,77)	67 (58,75)	67 (55,75)
Min, Max	5, 90	6, 90	4, 90	5, 90	5, 89
Race, n (%)					
White	14,110 (85.3%)	3,500 (80.5%)	2,512 (79.1%)	1,777 (76.5%)	549 (76.7%)
Non-White	2,434 (14.7%)	849 (19.5%)	664 (20.9%)	547 (23.5%)	167 (23.3%)
Region, n (%)					
South	4,881 (29.2%)	1,456 (32.9%)	1,110 (34.5%)	776 (32.4%)	239 (32.4%)
West	567 (3.4%)	161 (3.6%)	93 (2.9%)	79 (3.3%)	15 (2%)
Midwest	9,795 (58.5%)	2,390 (54.1%)	1,727 (53.7%)	1,314 (54.9%)	428 (58%)
Northeast	1,489 (8.9%)	413 (9.3%)	284 (8.8%)	226 (9.4%)	56 (7.6%)
Comorbidities/Medical History					
Anxiety or depression	4,727 (27.9%)	1,104 (24.7%)	775 (23.8%)	547 (22.6%)	184 (24.8%)
Coronary artery disease	3,947 (23.3%)	1,023 (22.9%)	701 (21.5%)	473 (19.5%)	149 (20.1%)
Diabetes	3,469 (20.5%)	1,166 (26.1%)	854 (26.2%)	580 (24%)	179 (24.2%)
Emphysema	2,706 (16%)	643 (14.4%)	421 (12.9%)	286 (11.8%)	82 (11.1%)
Gastro-esophageal reflux disease	5,704 (33.7%)	1,359 (30.4%)	899 (27.6%)	615 (25.4%)	229 (30.9%)
Lung cancer	402 (2.4%)	96 (2.1%)	70 (2.1%)	34 (1.4%)	10 (1.3%)
Obstructive sleep apnea	3,846 (22.7%)	1,067 (23.9%)	744 (22.8%)	525 (21.7%)	156 (21.1%)
Pulmonary embolism	592 (3.5%)	169 (3.8%)	150 (4.6%)	85 (3.5%)	31 (4.2%)
Pulmonary hypertension	1,849 (10.9%)	647 (14.5%)	558 (17.1%)	479 (19.8%)	140 (18.9%)

Percentages based on non-missing values; n = numerator; SD = standard deviation.

Figure 1. Treatments at Index FVC



Abbreviations: FVC = forced vital capacity; ILD = interstitial lung disease; ICD-10 = International Classification of Diseases, 10th Revision; n = numerator; SD = standard deviation.

References: 1. Cleveland Clinic. (2022). Interstitial lung disease: Symptoms, causes, tests and treatment. Cleveland Clinic. <https://my.clevelandclinic.org/health/diseases/17809-interstitial-lung-disease>; 2. Amin, R., Vaishali, K., Maitya, G. A., Mahapatra, A. K., Acharya, V., Dale, M. T., & Allison, J. A. (2025). Relationships between disease severity and measures of health status in people with interstitial lung disease in India: An observational study. *Scientific Reports*, 15(1), Article 16985. <https://doi.org/10.1038/s41598-025-01877-4>

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