Supplemental data

Further details on categorization of time to diagnosis

Symptom onset

- time to diagnosis ≤1 year if
  - month-day-year was present and ≤365 days before diagnosis (n=37)
  - month and year were present and (a) year was the same as diagnosis year (n=51) or (b) year was the year prior to diagnosis year and month was the same or a later month than the diagnosis month (n=76). *Example: a patient diagnosed in June 2017 with symptom onset in June 2016 or after.*
  - year only was present and was the same as diagnosis year (n=10).
- time to diagnosis >1 year if
  - month-day-year was present and >365 days before diagnosis (n=9)
  - month and year were present and (a) year was ≥2 years prior to diagnosis year (n=38) or (b) year was the year prior to diagnosis year and month was an earlier month than diagnosis month (n=19). *Example: a patient diagnosed in June 2017 with symptom onset in May 2016 or earlier.*
  - only year was present and was ≥2 years prior to diagnosis year (n=107).

First imaging evidence of fibrosis

- time to diagnosis ≤1 year if
  - month-day-year was present and ≤365 days before diagnosis (n=186)
  - month and year were present and (a) year was the same as diagnosis year (n=115) or (b) year was the year prior to diagnosis year and month was the same or a later month than the diagnosis month (n=50). *Example: a patient diagnosed in June 2017 with first imaging evidence in June 2016 or after.*
  - year only was present and was the same as diagnosis year (n=5).
- time to diagnosis >1 year if
  - month-day-year was present and >365 days before diagnosis (n=35)
  - month and year were present and (a) year was ≥2 years prior to diagnosis year (n=25) or (b) year was the year prior to diagnosis year and month was an earlier month than diagnosis month (n=13). *Example: a patient diagnosed in June 2017 with first imaging evidence in May 2016 or earlier.*
  - only year was present and was ≥2 years prior to diagnosis year (n=25)

A patient was considered not to have a useable date for a given classification if only year was present, and was the year prior to diagnosis. A patient who did not have a useable date for either symptom onset or first imaging evidence of pulmonary fibrosis was excluded from the analysis (n=54).

Supplemental Table 1. Patient characteristics, comorbidities and medications at time of enrollment

	Overall analysis cohort	Subset of patients with known date for symptom onset	Subset of patients with known date for first imaging evidence of pulmonary fibrosis	Patients excluded from analysis cohort
N	498	347	454	56
Demographics				
Age, years	70 (65, 75)	70 (64, 75)	71 (64, 75)	69 (64, 76)
Male	376 (75.5%)	264 (76.1%)	339 (74.7%)	40 (71.4%)
White	463 (95.1%)	323 (94.7%)	420 (94.6%)	52 (96.3%)
Smoking history				
Non-smoker	167 (33.7%)	118 (34.2%)	150 (33.2%)	17 (30.4%)
Smoker	329 (66.3%)	227 (65.8%)	302 (66.8%)	39 (69.6%)
Current	12 (2.4%)	9 (2.6%)	12 (2.7%)	0
Past	317 (63.9%)	218 (63.2%)	290 (64.2%)	39 (69.6%)
Comorbidities				
Gastroesophageal reflux disease	265 (53.4%)	194 (56.1%)	239 (52.9%)	31 (55.4%)
Coronary artery disease	152 (30.7%)	97 (28.0%)	141 (31.3%)	22 (39.3%)
Obstructive sleep apnea	143 (28.9%)	102 (29.7%)	128 (28.4%)	21 (37.5%)
Diabetes	105 (21.1%)	77 (22.3%)	93 (20.5%)	14 (25.0%)
Hiatal hernia	81 (16.4%)	61 (17.7%)	73 (16.2%)	10 (18.2%)
Atrial fibrillation or flutter	47 (9.5%)	30 (8.7%)	42 (9.3%)	10 (17.9%)
Chronic heart failure	36 (7.3%)	19 (5.5%)	34 (7.6%)	5 (8.9%)
Pulmonary hypertension	35 (7.1%)	23 (6.7%)	30 (6.7%)	4 (7.1%)
Prior deep vein thrombosis or pulmonary embolism	23 (4.7%)	15 (4.4%)	22 (4.9%)	2 (3.6%)
Prior stroke or intracranial hemorrhage	17 (4.2%)	10 (3.6%)	16 (4.4%)	3 (5.7%)

	Overall analysis cohort	Subset of patients with known date for symptom onset	Subset of patients with known date for first imaging evidence of pulmonary fibrosis	Patients excluded from analysis cohort
N	498	347	454	56
Chronic kidney disease	15 (3.0%)	11 (3.2%)	12 (2.7%)	2 (3.6%)
Barrett's esophagus	14 (2.8%)	10 (2.9%)	11 (2.4%)	3 (5.5%)
Cirrhosis or chronic liver disease	11 (2.2%)	8 (2.3%)	8 (1.8%)	4 (7.1%)
Lung cancer	1 (0.2%)	0	1 (0.2%)	0
Family history				
Family history of ILD (grandparents, parents, siblings)	79 (16.5%)	54 (16.1%)	69 (15.8%)	11 (21.6%)
Supplemental oxygen				
With activity	156 (31.8%)	121 (35.5%)	133 (29.7%)	19 (33.9%)
At rest	101 (20.5%)	82 (24.0%)	85 (19.0%)	11 (19.6%)
Medications				
Statin	264 (58.9%)	173 (54.6%)	244 (60.1%)	26 (51.0%)
Proton pump inhibitor	248 (55.4%)	186 (58.7%)	222 (54.7%)	27 (52.9%)
ACE-inhibitor or ARB	130 (29.0%)	84 (26.5%)	119 (29.3%)	16 (31.4%)
Pirfenidone	136 (27.3%)	103 (29.7%)	121 (26.7%)	12 (21.4%)
Anticoagulant	107 (23.9%)	69 (21.8%)	96 (23.7%)	9 (17.6%)
Nintedanib	107 (21.5%)	74 (21.3%)	100 (22.0%)	19 (33.9%)
Oral steroid	55 (12.3%)	46 (14.5%)	46 (11.3%)	8 (15.7%)
H2 blocker	52 (11.6%)	40 (12.6%)	49 (12.1%)	3 (5.9%)
Pulmonary vasodilator	13 (2.9%)	9 (2.9%)	13 (3.2%)	3 (6.0%)
N-acetylcysteine	8 (1.8%)	7 (2.2%)	8 (2.0%)	1 (2.0%)
Immunosuppressive or cytotoxic	8 (1.8%)	7 (2.2%)	7 (1.7%)	0
Disease severity				

	Overall analysis cohort	Subset of patients with known date for symptom onset	Subset of patients with known date for first imaging evidence of pulmonary fibrosis	Patients excluded from analysis cohort
N	498	347	454	56
FEV_1 % predicted	76.9 (64.2, 89.1)	75.3 (63.2, 88.6)	77.8 (64.7, 89.8)	71.6 (64.8, 84.4)
FVC % predicted	70.6 (58.9, 80.8)	68.8 (57.2, 79.8)	71.1 (59.8, 81.5)	67.5 (60.2, 71.9)
DLCO % predicted	42.1 (33.0, 51.6)	41.2 (32.1, 50.2)	42.3 (33.0, 51.9)	43.4 (38.1, 49.3)
Total lung capacity, L	4.1 (3.4, 4.8)	3.9 (3.3, 4.7)	4.1 (3.4, 4.8)	4.4 (3.6, 5.1)
CPI	52.7 (44.7, 59.7)	53.8 (45.5, 60.5)	52.5 (44.4, 59.3)	52.1 (46.0, 57.5)
GAP score	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)
GAP stage				
I	131 (31.2%)	88 (29.3%)	125 (33.0%)	13 (28.3%)
II	221 (52.6%)	156 (52.0%)	197 (52.0%)	26 (56.5%)
III	68 (16.2%)	56 (18.7%)	57 (15.0%)	7 (15.2%)
Clinical care				
Distance to enrolling center, miles	29.7 (11.7,86.9)	33.4 (13.8, 105)	27.6 (11.6, 83.7)	26.9 (13.9, 65.9)
Any hospitalization in prior 12 months	158 (32.8%)	116 (34.3%)	133 (30.4%)	18 (33.3%)
Prior respiratory hospitalization	93 (19.3%)	69 (20.4%)	76 (17.4%)	10 (18.5%)
Insurance				
Private insurance	321 (66.2%)	230 (68.2%)	291 (66.0%)	31 (56.4%)
Medicare	322 (66.5%)	218 (64.9%)	295 (66.7%)	35 (64.8%)
Military health care	20 (4.2%)	13 (4.0%)	17 (4.0%)	2 (3.8%)
Medicaid	11 (2.3%)	10 (3.1%)	10 (2.3%)	1 (1.9%)
State-specific plan (not Medicaid)	9 (1.9%)	7 (2.1%)	8 (1.9%)	1 (1.9%)
Other	21 (4.2%)	16 (4.6%)	19 (4.2%)	3 (5.7%)
None	6 (3.0%)	4 (2.6%)	6 (3.3%)	1 (20.0%)

	Overall analysis cohort	Subset of patients with known date for symptom onset	Subset of patients with known date for first imaging evidence of pulmonary fibrosis	Patients excluded from analysis cohort
N	498	347	454	56
Patient location				
Rural area[1]	109 (21.9%)	79 (22.8%)	98 (21.6%)	8 (14.3%)

[1]Rural area = ZIP code is not in a Metropolitan Statistical Area (MSA). Data are median (Q1, Q3) or n (%). ACE, angiotensin converting enzyme; ARB, angiotensin II receptor blockers; CPI, composite physiologic index; GAP, gender, age, lung physiology; GERD, gastroesophageal reflux disease; H2, histamine 2; ILD, interstitial lung disease.

Supplemental table 2a. Patient characteristics at time of symptom onset by time from symptom onset to diagnosis

		Time from symptom onset to diagnosis		
	All	**≤ 1 year**	**> 1 year**	**P**
N	347	174	173	
Patient characteristic				
Age, years	68 (62-72)	69 (63-73)	67 (59-72)	0.018
Male	264 (76.1%)	135 (77.6%)	129 (74.6%)	0.510
Family history of ILD	54 (16.1%)	28 (16.6%)	26 (15.7%)	0.822
Smoking history				
Non-smoker	118 (34.2%)	58 (33.5%)	60 (34.9%)	0.790
Smoker	227 (65.8%)	115 (66.5%)	112 (65.1%)	
Current	22 (6.4%)	9 (5.2%)	13 (7.6%)	0.300
Past	169 (49.0%)	89 (51.4%)	80 (46.5%)	
Undetermined	36 (10.4%)	17 (9.8%)	19 (11.0%)	

Supplemental Table 2b. Comorbidities and disease severity at time of enrollment by time from symptom onset to diagnosis

Comorbidities	**Time from symptom onset to diagnosis**	
	≤1 year	**>1 year**
Gastroesophageal reflux disease	93 (53.4%)	101 (58.7%)
Obstructive sleep apnea	47 (27.2%)	55 (32.2%)
Coronary artery disease	43 (24.7%)	54 (31.4%)
Diabetes	40 (23.0%)	37 (21.5%)
Hiatal hernia	27 (15.5%)	34 (19.9%)
Atrial fibrillation or flutter	12 (6.9%)	18 (10.5%)
Pulmonary hypertension	11 (6.3%)	12 (7.1%)
Chronic heart failure	10 (5.8%)	9 (5.2%)
Prior deep vein thrombosis or pulmonary embolism	5 (2.9%)	10 (5.9%)
Chronic kidney disease	8 (4.6%)	3 (1.8%)
Prior stroke or intracranial hemorrhage	6 (4.3%)	4 (2.9%)
Barrett's esophagus	6 (3.4%)	4 (2.3%)
Cirrhosis or chronic liver disease	5 (2.9%)	3 (1.7%)
Lung cancer	0	0
Supplemental oxygen		
With activity	54 (31.8%)	67 (39.2%)
Flow rate, L/min	3.0 (2.0, 4.0)	3.0 (2.0, 4.0)
At rest	38 (22.4%)	44 (25.6%)
Flow rate, L/min	2.0 (2.0, 2.5)	2.0 (2.0, 4.0)
Medications		
Proton pump inhibitor	93 (58.5%)	93 (58.9%)
Statin	87 (54.7%)	86 (54.4%)
Bronchodilator	48 (30.2%)	58 (36.9%)
ACE-inhibitor or ARB	47 (29.6%)	37 (23.4%)
Pirfenidone	50 (28.7%)	53 (30.6%)
Nintedanib	42 (24.1%)	32 (18.5%)

Anticoagulant	29 (18.2%)	40 (25.5%)
Oral steroid	18 (11.3%)	28 (17.7%)
H2 blocker	16 (10.1%)	24 (15.2%)
Immunosupressive or cytotoxic	4 (2.5%)	3 (1.9%)
Pulmonary vasodilator	5 (3.2%)	4 (2.5%)
N-acetylcysteine	1 (0.6%)	6 (3.9%)
Disease severity		
FEV_1 % predicted	73.9 (62.7, 89.0)	77.3 (63.2, 88.5)
FVC % predicted	67.4 (57.0, 79.8)	69.4 (57.2, 79.9)
DL_{CO} % predicted	41.8 (32.6, 50.8)	40.5 (31.8, 49.8)
Total lung capacity, L	4.0 (3.4, 4.9)	3.8 (3.2, 4.7)
CPI	53.5 (45.3, 60.6)	54.5 (46.0, 60.5)
GAP stage	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)
I		
II	43 (29.5%)	45 (29.2%)
III	73 (50.0%)	83 (53.9%)

Data are median (Q1, Q3) or n (%). ACE, angiotensin converting enzyme; ARB, angiotensin II receptor blockers; CPI, composite physiologic index; DLco, diffusing capacity of the lung for carbon monoxide; FEV_1, forced expiratory volume during 1 second; FVC, forced vital capacity; GAP, gender, age, lung physiology; GERD, gastroesophageal reflux disease; H2, histamine 2; ILD, interstitial lung disease.

Supplemental table 3a. Patient characteristics at time of first imaging evidence by time from first imaging evidence of pulmonary fibrosis to diagnosis

	Time from first imaging evidence to diagnosis		
	≤ 1 year	**> 1 year**	**P**
N	356	98	
Patient characteristic			
Age, years	67 (62, 73)	69 (63, 72)	0.288
Male	261 (73.3%)	78 (79.6%)	0.206
Family history of ILD	58 (17.0%)	11 (11.7%)	0.216
Smoking history			
Non-smoker	80 (35.2%)	21 (28.4%)	0.278
Smoker	147 (64.8%)	53 (71.6%)	
Current	16 (7.0%)	5 (6.8%)	0.906
Past	111 (48.9%)	37 (50.0%)	
Undetermined	20 (8.8%)	11 (14.9%)	

Data are median (Q1, Q3) or n (%).

Supplemental Table 3b. Comorbidities and disease severity at time of enrollment by time from first imaging evidence of pulmonary fibrosis to diagnosis

	First imaging evidence of pulmonary fibrosis to diagnosis	
	≤ 1 year	**> 1 year**
N	356	98
Comorbidities		
Gastroesophageal reflux disease	185 (52.0%)	54 (56.3%)
Coronary artery disease	109 (30.7%)	32 (33.3%)
Obstructive sleep apnea	103 (29.1%)	25 (26.0%)
Diabetes	64 (18.0%)	29 (29.9%)
Hiatal hernia	51 (14.4%)	22 (22.9%)
Atrial fibrillation or flutter	27 (7.6%)	15 (15.8%)
Chronic heart failure	26 (7.4%)	8 (8.3%)
Pulmonary hypertension	22 (6.2%)	8 (8.3%)
Prior deep vein thrombosis or pulmonary embolism	15 (4.2%)	7 (7.4%)
Prior stroke or intracranial hemorrhage	11 (3.8%)	5 (6.6%)
Chronic kidney disease	8 (2.3%)	4 (4.2%)
Barrett's esophagus	6 (1.7%)	5 (5.2%)
Cirrhosis or chronic liver disease	7 (2.0%)	1 (1.0%)
Lung cancer	0	1 (1.0%)
Supplemental oxygen		
With activity	104 (29.5%)	29 (30.2%)
Flow rate, L/min	3.0 (2.0-4.0)	3.0 (2.0-4.0)
At rest	65 (18.4%)	20 (21.1%)
Flow rate, L/min	2.0 (2.0-3.0)	3.0 (2.0-4.0)
Medications		
Statin	186 (59.0%)	58 (63.7%)
Proton pump inhibitor	167 (53.0%)	55 (60.4%)
Bronchodilator	102 (32.5%)	35 (38.9%)

	First imaging evidence of pulmonary fibrosis to diagnosis	
	≤ 1 year	**> 1 year**
N	356	98
ACE-inhibitor or ARB	91 (28.9%)	28 (30.8%)
Pirfenidone	90 (25.3%)	31 (31.6%)
Nintedanib	84 (23.6%)	16 (16.3%)
Anticoagulant	64 (20.3%)	32 (35.6%)
H2 blocker	37 (11.7%)	12 (13.2%)
Oral steroid	34 (10.8%)	12 (13.2%)
Immunosupressive or cytotoxic	2 (0.6%)	5 (5.6%)
Pulmonary vasodilator	7 (2.2%)	6 (6.6%)
N-acetylcysteine	6 (1.9%)	2 (2.2%)
Disease severity		
$FEV_{1,}$ % predicted	76.8 (63.8, 89.1)	81.7 (68.2, 92.3)
FVC, % predicted	70.7 (59.3, 80.8)	72.4 (60.1, 84.1)
DL_{CO}, % predicted	43.7 (33.5, 52.7)	40.5 (32.1, 47.5)
Total lung capacity, L	4.0 (3.4, 4.8)	4.3 (3.4, 4.9)
CPI	52.3 (43.6, 59.3)	54.3 (46.2, 59.5)
GAP score	4.0 (3.0, 5.0)	4.0 (3.0, 5.0)
GAP stage		
I	105 (34.7%)	20 (26.3%)
II	154 (50.8%)	43 (56.6%)
III	44 (14.5%)	13 (17.1%)

Data are median (Q1, Q3) or n (%). ACE, angiotensin converting enzyme; ARB, angiotensin II receptor blockers; CPI, composite physiologic index; DLco, diffusing capacity of the lung for carbon monoxide; FEV_1, forced expiratory volume during 1 second; FVC, forced vital capacity; GAP, gender, age, lung physiology; GERD, gastroesophageal reflux disease; H2, histamine 2; ILD, interstitial lung disease.