Online Data Supplement

Outcomes of Older Patients with Pulmonary Fibrosis and Non-Small Cell Lung Cancer

Stacey-Ann Whittaker Brown, MD, MPH, Maria Padilla, MD, Grace Mhango, MPH, Emanuela Taioli, MD, PhD, Charles Powell, MD, Juan Wisnivesky, MD, DrPH

Supplemental Table E1. List of Standard Exclusionary Interstitial Lung Disease Diagnoses

ICD-9-CM Code	Description
135	Sarcoidosis
237·7	Neurofibromatosis
272·7	Lipidoses
277·3	Amyloidosis
277·8	Other specified disorders of metabolism – includes eosinophilic granuloma
446·21	Goodpasture's syndrome
446·4	Wegener's granulomatosis
495	Extrinsic allergic alveolitis
500	Coal workers' pneumoconiosis
501	Asbestosis
502	Pneumoconiosis due to other silica or silicates
503	Pneumoconiosis due to other inorganic dust
504	Pneumoconiosis due to inhalation of other dust
505	Pneumoconiosis, unspecified
506·4	Chronic respiratory conditions due to fumes or vapors
508·1	Chronic and other pulmonary manifestations due to radiation
508·8	Respiratory conditions due to other specified external agents
515	Postinflammatory pulmonary fibrosis*
516·0	Pulmonary alveolar proteinosis
516·1	Idiopathic pulmonary hemosiderosis
516·2	Pulmonary alveolar microlithiasis
516·8	Other specified alveolar and parietoalveolar pneumonopathies
516·9	Unspecified alveolar and parietoalveolar pneumonopathies
517·0	Lung involvement in conditions classified elsewhere
517·2	Lung involvement in systemic sclerosis
517·8	Lung involvement in other diseases classified elsewhere
518·3	Pulmonary eosinophilia
555	Regional enteritis
710·0	Systemic lupus erythematosus
710·1	Systemic sclerosis
710·2	Sjögren's disease
710·3	Dermatomyositis

ICD-9-CM Code	Description
710·4	Polymyositis
714.0	Rheumatoid Arthritis**
714·81	Rheumatoid lung
720	Ankylosing spondylitis
759·5	Tuberous sclerosis

*Post-inflammatory pulmonary fibrosis was not excluded

**Rheumatoid arthritis was added to the list of exclusionary criteria

Supplemental Table E2. Treatment Strategies of Lung Cancer in Patients with and without Idiopathic Pulmonary Fibrosis

Characteristics	Without IPF* (n=53,598)	IPF* (n=855)	p value
Stage Appropriate Therapy, N (%)	26,358 (49)	406 (48)	0.33
Stage I	8713 (65)	165 (62)	0.26
Stage II	2721 (54)	45 (52)	0.73
Stage III	4979 (46)	81 (41)	0.08
Stage IV	9945 (40)	115 (38)	0.38
Surgical Resection, N (%)			
Stage I	8713 (65)	165 (62)	0.26
Stage II	2721 (54)	45 (52)	0.73
Stage IIIA	1675 (24)	22 (16)	0.02
All Stage III	1769 (20)	24 (14)	0.03
Surgical Resection Type, N (%)			
Sublobar Resection	2481 (18)	73 (29)	
Stage I	1161 (19)	48 (29)	
Lobectomy	10321 (74)	167 (66)	
Stage I	6674 (76)	109 (66)	
Other	1155 (8)	14 (5)	<0.01
Chemotherapy, N (%)			
Stage III	5695 (53)	100 (50)	0.34
Stage IV	9945 (40)	115 (38)	0.38
Radiation Therapy, N (%)			
Stage I	2418 (18)	61 (23)	0.05
Stage II	1424 (28)	30 (35)	0.19
Stage III	5124 (48)	101 (51)	0.50
Stage IV	9790 (40)	93 (31)	<0.01

*IPF- Idiopathic pulmonary fibrosis

Supplemental Table E3. Cause of Death for Lung Cancer Patients with and without Pulmonary Fibrosis

Cause of Death	No IPF* (n=36,419)	IPF* (n=632)	p value
Lung Cancer	29,968 (82)	501 (79)	0.09
Cardiovascular Disease	1,802 (5)	33 (5)	
Respiratory Failure	879 (2)	25 (4)	
Other	3,770 (9)	73 (6)	

*IPF-pulmonary fibrosis

Supplemental Table E4. Sensitivity Analysis using a Modified Pulmonary Fibrosis Coding Strategy: Table of Baseline Characteristics

Characteristics	No IPF* (n=54,299)	With IPF* (n=154)	p value
Age, median (IQR)	74 (69-80)	76 (71-80)	0.04
Male Gender, N (%)	28,533 (53)	88 (57)	0.25
Comorbidity Score, N (%)			
0	26,398 (49)	44 (29)	<0.01
1-2	20,010 (37)	69 (45)	
>2	7,891 (15)	41 (27)	
Indicators of Poor Functional Status, N (%)			
Nursing Home or Home Health Services	7,581 (14)	27 (18)	0.20
Supplemental Oxygen	4,052 (8)	33 (21)	<0.01
Cancer Stage, N (%)			
I-II	18,631 (34)	64 (41)	0.04
III	10,828 (20)	35 (23)	
IV	24,840 (46)	55 (36)	
Tumor Size, in mm, median IQR	35 (23-54)	30 (20-45)	0.02
Histology, N (%)			
Adenocarcinoma	29,895 (55)	64 (42)	0.02
Squamous Cell Carcinoma	18,866 (35)	74 (48)	
Other Histology	5,560 (10)	16 (10)	
Location, N (%)			
Upper Lobe	28,012 (52)	59 (38)	0.02
Lower Lobe	15,282 (28)	64 (42)	
Other Site	11,005 (20)	31 (20)	

*IPF- pulmonary fibrosis

Supplemental Table E5. Stage-Appropriate Therapy and Mortality in those with Idiopathic Pulmonary Fibrosis as defined by the Modified Algorithm.

	Entire Cohort		Received Stage- Appropriate Therapy		Did not Receive Stage-Appropriate Therapy	
	No IPF*	IPF	No IPF	IPF	No IPF	IPF
No. of subjects	54,299	154	26,692	72	27,607	82
Probability of Stage-Appropriate Therapy						
Unadjusted OR** (95% CI)	1 (Ref)	0.91 (0.66-1.25)	-	-	-	-
Adjusted OR† (95% CI)	1 (Ref)	0.86 (0.61-1.20)	-	-	-	-
Overall Survival						
Unadjusted HR** (95% CI)	1 (Ref)	1.28 (1.08-1.52)	1 (Ref)	1.36 (1.05-1.77)	1 (Ref)	1.20 (0.96- 1.50)
Adjusted HR‡ (95% CI)	1 (Ref)	1.28 (1.08-1.51)	1 (Ref)	1.64 (1.26-2.13)	1 (Ref)	1.13 (0.91-1.42)
Lung Cancer-Specific Survival						
Unadjusted HR (95% CI)	1 (Ref)	1.22 (0.99-1.51)	1 (Ref)	1.26 (0.88-1.79)	1 (Ref)	1.14 (0.88-1.49)
Adjusted HR (95% CI)	1 (Ref)	1.18 (0.96-1.46)	1 (Ref)	1.61 (1.13-2.29)	1 (Ref)	1.07 (0.82-1.40)

* IPF- Idiopathic pulmonary fibrosis
**OR- Odds ratio
† adjusting for age, gender, marital status, ethnicity, income, charlson comorbidity, tumor size, histology, site and TNM stage, functional status and pulmonary disability and stage-appropriate therapy
‡HR- Hazard Ratio