

Cardiovascular Burden and Medication Use Among Patients with Idiopathic Pulmonary Fibrosis

Karina Raimundo, MS,¹ Michael S. Broder, MD, MSHS,² Eunice Chang, PhD,² Sheila R. Reddy, PhD, RPh,² Elya Papoyan, MPH,² John Stauffer, MD¹

¹Genentech, Inc., South San Francisco, CA; ²Partnership for Health Analytic Research, LLC, Beverly Hills, CA

BACKGROUND & PURPOSE

- Idiopathic pulmonary fibrosis (IPF) is a chronic, progressive, interstitial pneumonia of unknown cause that occurs predominantly in older adults.¹
 - Median survival from diagnosis is approximately 3-5 years.²
- IPF is associated with increased healthcare resource utilization, including hospitalization, in addition to increased cardiovascular and other comorbidity,^{3,4} that may require concomitant use of related medications.
- The objective of this analysis was to describe the type and prevalence of specific cardiovascular risk factors/comorbidities and related medication use in patients with IPF.

METHODS

Study Design

- Descriptive cross-sectional analysis using a large US commercial insurance claims database to identify 3 yearly cohorts of patients with IPF between 2009 and 2011.

IPF Patient Selection

- Patients were identified separately by each identification (ID) year, 2009, 2010, and 2011.
- Inclusion criteria:
 - Having ≥ 1 inpatient claim or ≥ 2 outpatient claims with IPF (ICD-9-CM code 516.3) as one of the listed diagnoses during the ID year AND
 - Continuously enrolled during the ID year.
- Exclusion criteria:
 - Having evidence of another type of interstitial lung disease (ILD; based on claim with ICD-9-CM code for other ILD) after the last IPF claim⁵ in the ID year.

Study Measures

- Study measures reported in the ID year:
 - Patient characteristics: age, sex, geographic region, and health plan type.
 - Usual physician specialty.
 - Cardiovascular risk factors and comorbidities, which included: myocardial infarction (MI), cerebrovascular disease (CVD), congestive heart failure (CHF), diabetes with chronic complications, ischemic heart disease (IHD, includes MI and angina), peripheral vascular disease (PVD), and pulmonary hypertension.
 - Cardiovascular-related medication use (over-the-counter medications such as aspirin were not captured). Medication classes included: antidiabetic agents, antihyperlipidemics, antithrombotic agents, beta blockers, calcium channel blockers, cardiac arrhythmia agents, diuretics, nitrates, pulmonary hypertension agents, renin-angiotensin inhibitors, and smoking cessation drugs.

Statistical Analysis

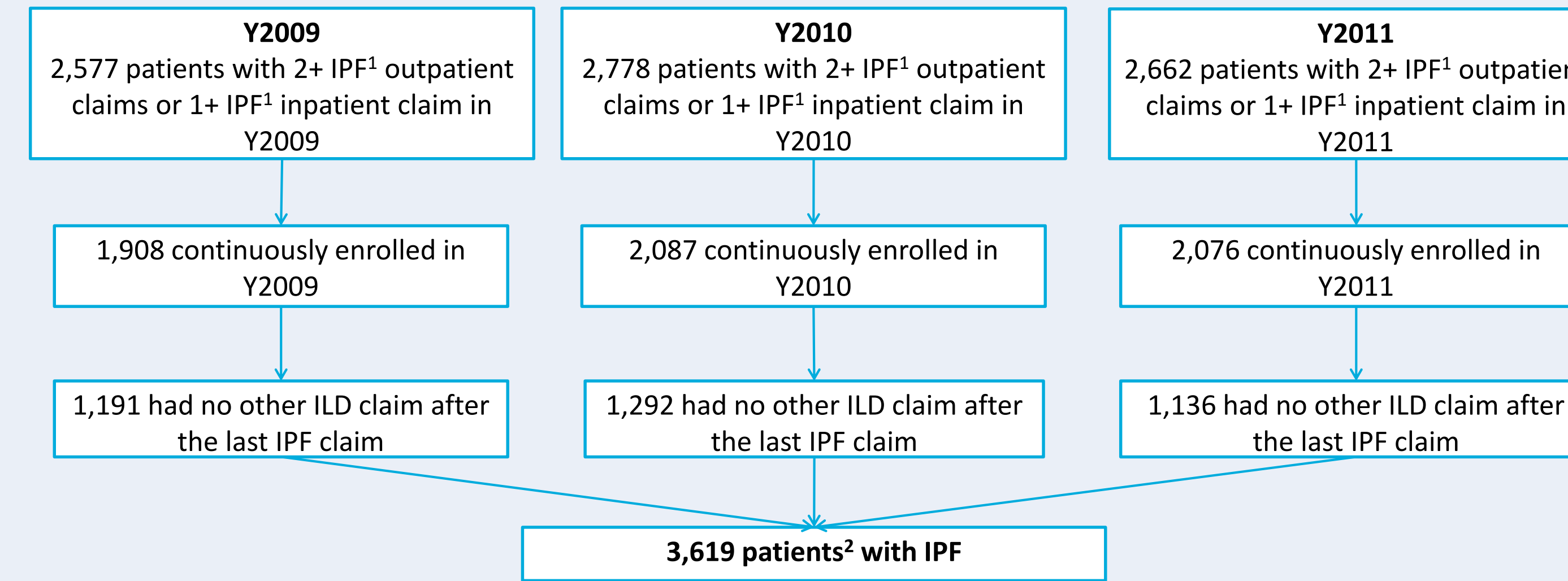
- Descriptive results for the combined and individual ID years were generated.

RESULTS

Basic Demographic and Physician Characteristics (Figure 1, Table 1)

- We identified 3,619 patients with IPF from 2009 to 2011. By ID year: 1,191 patients in 2009, 1,292 in 2010 and 1,136 in 2011.
 - Mean (SD) age was 70.4 (11.0) years, and 50.5% were women.
 - All geographic regions were represented.
 - 62.6% had Medicare coverage.
- About half of patients (49.5%) received usual IPF care from a pulmonologist.

Figure 1: Patient Identification



¹ Claims with IPF as one of the listed diagnoses.

² N=3,006 unique patients.

Table 1: Patient Characteristics

| | Index Year | | | All N=3,619 |
|---|-----------------|-----------------|-----------------|----------------|
| | 2009 N=1,191 | 2010 N=1,292 | 2011 N=1,136 | |
| Age, year, mean (SD) | 69.8 (11.1) | 70.0 (11.4) | 71.3 (10.6) | 70.4 (11.0) |
| Female, no. (%) | 600 (50.4) | 671 (51.9) | 558 (49.1) | 1,829 (50.5) |
| Region, no. (%) | | | | |
| Midwest | 297 (24.9) | 309 (23.9) | 279 (24.6) | 885 (24.5) |
| Northeast | 152 (12.8) | 160 (12.4) | 171 (15.1) | 483 (13.3) |
| South | 473 (39.7) | 545 (42.2) | 481 (42.3) | 1,499 (41.4) |
| West | 269 (22.6) | 278 (21.5) | 205 (18.0) | 752 (20.8) |
| Plan type, no. (%) | | | | |
| Commercial | 538 (45.2) | 446 (34.5) | 370 (32.6) | 1,354 (37.4) |
| Medicare | 653 (54.8) | 846 (65.5) | 766 (67.4) | 2,265 (62.6) |
| Usual physician specialty for IPF care, no. (%) | | | | |
| Pulmonology | 586 (49.2) | 652 (50.5) | 553 (48.7) | 1,791 (49.5) |
| Primary care | 213 (17.9) | 217 (16.8) | 187 (16.5) | 617 (17.0) |
| Other ^a | 61 (5.1) | 52 (4.0) | 43 (3.8) | 156 (4.3) |
| Unknown | 331 (27.8) | 371 (28.7) | 353 (31.1) | 1,055 (29.2) |

^a All other specialties were < 2%.

Table 2: Cardiovascular Risk Factors & Comorbidities

| | Index Year | | | All N=3,619 |
|---|-----------------|-----------------|-----------------|----------------|
| | 2009 N=1,191 | 2010 N=1,292 | 2011 N=1,136 | |
| Ischemic heart disease ^a , no. (%) | 426 (35.8) | 443 (34.3) | 423 (37.2) | 1,292 (35.7) |
| Myocardial Infarction, no. (%) | 89 (7.5) | 92 (7.1) | 84 (7.4) | 265 (7.3) |
| Congestive heart failure, no. (%) | 303 (25.4) | 349 (27.0) | 319 (28.1) | 971 (26.8) |
| Cerebrovascular disease, no. (%) | 195 (16.4) | 203 (15.7) | 170 (15.0) | 568 (15.7) |
| Peripheral vascular disease, no. (%) | 132 (11.1) | 141 (10.9) | 125 (11.0) | 398 (11.0) |
| Diabetes with chronic complications, no. (%) | 117 (9.8) | 125 (9.7) | 99 (8.7) | 341 (9.4) |
| Pulmonary hypertension, no. (%) | 101 (8.5) | 131 (10.1) | 79 (7.0) | 311 (8.6) |

^aIHD includes MI and Angina

Table 3: CV-Related Medication Use

| | Index Year | | | All N=3,619 |
|---------------------------------|-----------------|-----------------|-----------------|----------------|
| | 2009 N=1,191 | 2010 N=1,292 | 2011 N=1,136 | |
| CV-Related Medications, no. (%) | 866 (72.7) | 971 (75.2) | 863 (76.0) | 2,700 (74.6) |
| Antihyperlipidemics | 530 (44.5) | 597 (46.2) | 567 (49.9) | 1,694 (46.8) |
| Diuretics | 435 (36.5) | 500 (38.7) | 424 (37.3) | 1,359 (37.6) |
| Renin-angiotensin inhibitors | 409 (34.3) | 485 (37.5) | 389 (34.2) | 1,283 (35.5) |
| Beta blockers | 370 (31.1) | 428 (33.1) | 397 (34.9) | 1,195 (33.0) |
| Calcium channel blockers | 276 (23.2) | 309 (23.9) | 293 (25.8) | 878 (24.3) |
| Antithrombotic agents | 278 (23.3) | 294 (22.8) | 268 (23.6) | 840 (23.2) |
| Antidiabetic agents | 254 (21.3) | 295 (22.8) | 232 (20.4) | 781 (21.6) |
| Nitrates | 102 (8.6) | 125 (9.7) | 111 (9.8) | 338 (9.3) |
| Smoking cessation drugs | 55 (4.6) | 59 (4.6) | 40 (3.5) | 154 (4.3) |
| Cardiac arrhythmia agents | 49 (4.1) | 35 (2.7) | 41 (3.6) | 125 (3.5) |
| Pulmonary hypertension agents | 34 (2.9) | 46 (3.6) | 30 (2.6) | 110 (3.0) |

CONCLUSION & CLINICAL IMPLICATIONS

- Cardiovascular risk factors/comorbidities were common among patients with IPF, with IHD being the most prevalent condition, followed by congestive heart failure, cerebrovascular disease and peripheral vascular disease.
- Use of cardiovascular-related medication was evident for three-quarters of patients (74.6%), the most common being anti-hyperlipidemics, diuretics, renin-angiotensin inhibitors, beta blockers, calcium channel blockers, anti-thrombotic agents, anti-diabetic agents.
- These considerations should be taken into account in the overall management of patients with IPF.

REFERENCES

- Ley B. J Clin Epidemiol. 2013;5:483-92.
- Ley B. Am J Respir Crit Care Med. 2011;183(4):431-40.
- Wu N et al. J Med Econ. 2015;2:1-9.
- Collard HR et al. J Med Econ. 2012;15(5):829-35
- Raghu G. Am J Respir Crit Care Med. 2006;174(7):810-816.



bitly.com/broder2