Objective

To describe patterns of pulmonologist visits and testing, both proxies for respiratory symptoms, experienced by Medicare patients prior to receiving a claim-based diagnosis of IPF.

Methods

Study Design and Data Source

Retrospective cohort study of Medicare enrollees diagnosed with IPF in 2012. Medicare Research Identifiable Files (RFI – 100% sample) were analyzed for this study.

Patient Population

- Diagnosis of IPF was determined based on the presence of ICD-9-CM codes for IPF (and absence of other interstitial lung disease) in the claims and the occurrence of chest computed tomography (CT, including high-resolution chest CT [HRCT]), per ATS guidelines.
- Include criteria listed in Figure 1.

Study Measures

- Patient demographics, time to event, and cumulative proportions of IPF patients receiving first respiratory test and first pulmonologist visit within 5 baseline years preceding IPF diagnosis.
- Tests included chest x-ray, pulmonary function testing (PFT), arterial blood gas, six-minute walk test, cardiac output, CT: computerized tomography; IPF: idiopathic pulmonary fibrosis; Dx: diagnosis.
- Distribution of CT scans per patient to show temporal patterns, such as repeated occurrence of tests before diagnosis and time frame of those tests.

Results

Demographics

- We identified 7,306 Medicare patients newly diagnosed with IPF in 2012 (Figure 1).
- Mean (SD) age was 80.8 (6.2) years; 48.7% were female; and 94.4% were White (94.4%) followed by Black, Hispanic, Asian, and other/unknown patients (Table 1).
- The majority of patients were White (94.4%) followed by Black, Hispanic, Asian, and other/unknown patients (Table 1).
- Frequency of Testing and Visits prior to IPF Diagnosis

- All patients had at least 1 test of interest in the 5 years leading up to and including the date of diagnosis (Figure 2).
- Chest X-rays were the most common test (99.2%), followed by pulmonary function testing (75.0%), oxygen saturation (50.8%), ANA (40.4%), six-minute walk tests (17.3%), and lung biopsy (10.6%) (Figure 2).
- The majority of patients (N=5,154; 70.7%) saw a pulmonologist in an outpatient setting at least once within 5 years prior to diagnosis (Figure 2).
- Of these 5,154 patients, 56.9% (N=3,203) had their initial IPF visit more than a year prior to their first IPF diagnosis, and 34.7% (N=781) had the first visit more than 3 years prior to diagnosing with IPF (Figure D).

Results

- Chest X-ray was the most common test (99.2%), followed by pulmonary function testing (75.0%), oxygen saturation (50.8%), ANA (40.4%), six-minute walk tests (17.3%), and lung biopsy (10.6%).
- Determination of CT scans per patient to show temporal patterns, such as repeated occurrence of tests before diagnosis and time frame of those tests.

Discussion of Chest CT Prior to IPF Diagnosis, by Patient (N=7,306)

- By definition, all patients received a CT scan prior to a claim-based diagnosis of IPF, as a CT scan (+/− lung biopsy) is essential to establishing an IPF diagnosis in clinical practice.
- Repeated CT scans (i.e., from year to year or following yearly gaps) were common over the years prior to the diagnosis (Figure 2).
- The use of all respiratory-related tests increased immediately prior to diagnosis (Figure 4).

Conclusions and Clinical Implications

- Chest images, PFTs, and visits with pulmonologists—both proxies for respiratory symptoms—were commonly performed in the years before the first diagnostic code for IPF appears in a patient’s medical record.
- Median length of time from chest CT scan to diagnosis was 1.5 years, with nearly 90% of patients receiving their first scan more than three years before diagnosis.
- By three years before diagnosis, more than 10% of patients had seen a pulmonologist.
- Findings suggest there are opportunities for earlier confirmation of the diagnosis of IPF, especially with chest CT scans, permitting earlier intervention and offering the potential for improved patient outcomes. All CT scans prior to diagnosis over these many years represent a potential missed opportunity to establish the diagnosis earlier.
- We are currently conducting an analysis with data covering the period following the introduction of anti-fibrotics. These data were not available at the time of the current study.

Limitations

- Due to changes in classification and diagnosis codes, some interstitial lung diseases may be inaccurately classified; however, prior studies have used the proposed codes and algorithms to identify IPF cases based on claims data.
- This study was limited to fee-for-service Medicare enrollees, and thus may not be generalizable to other types of insurance and age groups. However, patients 70 and older represent the largest proportion of IPF cases.
- There is no specific procedure code for HRCT of the chest.

References


Appendix A

- Study Design and Data Source
- Patient Population
- Study Measures
- Results
- Discussion
- Conclusions and Clinical Implications
- Limitations
- References