Pulmonary Nontuberculous Mycobacteria Infections: Increasing Incidence in Medicare Patients at a US Health Plan

Kelli Abraham, PharmD, Woorie Holt, MD, MMM; Robert Dufour, PhD; Kevin J. Mcbermert, BS1; Amanda Tarr, PhD

1Humana, Inc., Louisville, KY, USA; Comprehensive Health Insights, Inc., Linton, KY, USA; Insmed Incorporated, Bridgewater, NJ, USA.

ABSTRACT

Objective: Nontuberculous mycobacteria (NTM) lung infections are difficult to diagnose since symptoms, such as coughing and fatigue, are common of other respiratory comorbidities. These overlapping symptoms may mask the infection, delaying diagnosis. NTM lung infections are growing among patients over 65 and can exacerbate the deterioration of lung function, compounding respiratory problems for patients with serious comorbidities. NTM lung infections are challenging to diagnose and treat, which can lead to prolonged treatment with multiple antibiotics. The annual occurrence of new NTM lung infection diagnoses (incidence), length of time in plan, and continued enrollment of these in a large US Health plan Medicare population were examined.

Methods: Using Medicare medical and pharmacy claims between January 1, 2008, and December 31, 2013, patients (n = 1613) were identified by identifying at least 2 separate medical claims for NTM lung infection (ICD-9-CM 031.0), first diagnosed as the index date. Included patients had ≥5 days of medical coverage. Annual incidence of diagnosis was defined as the number of unique members with NTM lung infection divided by the total number of members during that year and was computed per 100,000 members. Length of time members remained in the plan post-index was examined, and an analysis was conducted to determine continued enrollment in the plan of the population.

Results: Annual incidence rate of diagnosis was 14.8 per 100,000 members. NTM lung infection incidence of diagnosis increased from 11.9 in 2008 to 16.2 in 2013 (P < 0.001), a 36.1% increase. The greatest increase was in the age group of 65-74 years (56.3%). Once diagnosed with NTM lung infection, members remained in the plan on average 24.1 months post-index.

Conclusions: Incidence rates for diagnosis of NTM lung infection are increasing within the Medicare population. The majority of members continue to remain with their plan for an extended period of time post-diagnosis, indicating continued resource utilization. Based on these findings, we propose that healthcare plans consider mechanisms to identify this population and monitor their resource utilization.

INTRODUCTION

• Pulmonary nontuberculous mycobacterial (PNTM) infections are difficult to diagnose, since their symptoms, such as coughing and fatigue, are common of other respiratory comorbidities. These overlapping symptoms may mask the infection, delay diagnosis.1-3 NTM lung infections are growing among patients over 65 years old and can exacerbate the deterioration of lung function, compounding respiratory problems for patients with serious comorbid conditions.4 NTM lung infections are challenging to diagnose and treat, which can lead to prolonged treatment with multiple antibiotics.4-5

OBJECTIVE

• To examine the annual occurrence of new PNTM infections diagnoses (incidence) and the continued enrollment in the plan of those diagnosed in a large US health plan (Medicare) population

METHODS

Study Design

• Medical and pharmacy claims between January 1, 2008, and December 31, 2013, were used to identify Medicare members with PNTM infections.

• Medicare members with PNTM infection were defined by:

• Identifying ≥2 separate medical claims for PNTM infection (ICD-9-CM 031.0), with each claim for first diagnosis serving as the index date; and

• ≥5 days of medical coverage

NOTE: We decided to exclude 2007 as it is the start anchor year for our database and subject to point prevalence. The results we report for 2008 are all incident cases. 2008 members were not counted if they had submitted claims in PNTM in prior years.

Outcome Measures

• Annual incidence of PNTM infection was calculated for the calendar years 2008 through 2013. Incidence was defined as:

• The number of unique members with PNTM infection (as defined by ≥2 claims) divided by the total number of members during that year.

• Continued enrollment in the plan of patients with PNTM infection

RESULTS

Annual Incidence and Continued Enrollment in the Plan

• The average annual incidence was 14.8 per 100,000 members.

• A 36.1% increase was seen in the incidence of PNTM infections between 2008 and 2013 (Table 1), a significant increase (P < 0.001) in the 6-year period.

• The greatest increase in incidence (56.3%) from 2008 to 2013 was found for those members 65-74 years of age (Figure 1).

• The majority of members (70%) were still continuously enrolled after 3 years (Figure 2).

Table 1. Annual Incidence by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>Incidence Rate (per 100,000 members)</th>
<th>Number of members with a PNTM infection diagnosis</th>
<th>Continued enrollment in the plan, %</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>11.9</td>
<td>163</td>
<td>61</td>
</tr>
<tr>
<td>2009</td>
<td>15.3</td>
<td>234</td>
<td>70</td>
</tr>
<tr>
<td>2010</td>
<td>13.4</td>
<td>227</td>
<td>65</td>
</tr>
<tr>
<td>2011</td>
<td>15.5</td>
<td>263</td>
<td>63</td>
</tr>
<tr>
<td>2012</td>
<td>16.7</td>
<td>329</td>
<td>62</td>
</tr>
<tr>
<td>2013</td>
<td>16.2</td>
<td>387</td>
<td>61</td>
</tr>
</tbody>
</table>

Table 2. Number of members and total population

<table>
<thead>
<tr>
<th>Year</th>
<th>Total population</th>
<th>Members with a PNTM infection diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>1,809,357</td>
<td>163</td>
</tr>
<tr>
<td>2009</td>
<td>1,820,901</td>
<td>234</td>
</tr>
<tr>
<td>2010</td>
<td>1,785,932</td>
<td>227</td>
</tr>
<tr>
<td>2011</td>
<td>1,784,891</td>
<td>263</td>
</tr>
<tr>
<td>2012</td>
<td>1,839,727</td>
<td>329</td>
</tr>
<tr>
<td>2013</td>
<td>1,972,915</td>
<td>387</td>
</tr>
</tbody>
</table>

Figure 1. Annual incidence for members 65-74 years of age.

Figure 2. Continued enrollment in the plan of members with PNTM infection diagnosis.

CONCLUSIONS

• The incidence of PNTM infection in the Medicare population rose in 2008 and 2013.

• These incidence rates appear to be increasing, with the fastest growth in the 65-74 years of age member cohort.

• Following diagnosis with PNTM infections, over 50% of members were still in the plan after 6 years.

• Based on these findings, we propose that healthcare plans consider mechanisms to identify this population and monitor their resource utilization.

REFERENCES


5. Comprehensive Health Insights (CHI), 2015, Data on File.

ACKNOWLEDGMENTS

The authors acknowledge Connective Healthcare (Newtown, PA) for providing editorial, layout, and design support. Insmed Incorporated (Bridgewater, NJ) provided funding to Connective Healthcare for these services. The research presented was funded by Insmed Incorporated.

DISCLOSURES

Funding for the project was provided by Insmed Incorporated. Kevin J. Mcbermert is an employee of Insmed Incorporated. Kelli Abraham and Woorie Holt are employees of Humana Inc. and served as consultants for the project. Amanda Tarr and Robert Dufour also served as consultants on the project and are employees of Comprehensive Health Insights, Inc.

Poster presented at the 2015 Inter society Conference on Antimicrobial Agents and Chemotherapy (ICAAC), September 17-21, San Diego, California.