Impact of Delay in Diagnosis of Primary Pulmonary Arterial Hypertension (PAH) on Healthcare Resource Utilization (HCRU) and Costs of Care in Patients

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Background

Primary PAH is a progressive disorder characterized by high blood pressure in pulmonary arteries. In the US, primary PAH has an estimated prevalence of 15-30 per 1 million population. The disease is difficult to diagnose due to non-specific symptoms and is often confused with asthma or congestive heart failure. Several studies have shown an average delay in diagnosis of more than 2 years.

Objectives

To assess the impact of diagnosis delay on disease-specific healthcare resource utilization (HCRU) and costs of care in patients with primary PAH.

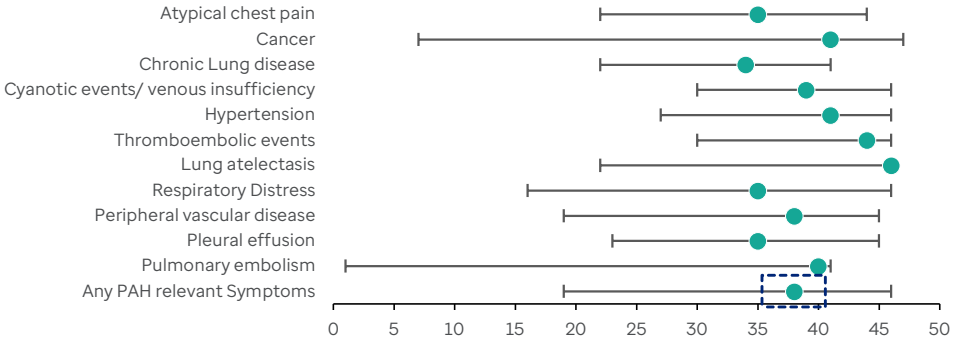
Methodology

- This retrospective study used Optum® de-identified Market Clarity Data, which includes linked claims and electronic health records (EHR) data.
- Patient qualifying criteria:
  - Adult patients with a diagnosis of primary PAH (ICD-10 I27.0) during January 01, 2020, to December 31, 2022 – the date of the first such claim or EHR was considered the index date.
  - Patients with no diagnosis of primary PAH in a baseline period of 4 years from the index date (i.e., only incident cases were included).
  - Patients with continuous claims coverage and clinical activity during the 4-year baseline period and 1-year follow-up period from the index date.
- Time to diagnosis (TTD): All the signs and symptoms that patients presented with in the baseline period were categorized into two groups:
  - PAH-relevant symptoms that ideally must prompt detailed investigations and hence lead to suspicion and eventual diagnosis of PAH – for example, atypical chest pain, history of malignancy, chronic lung diseases, peripheral vascular diseases, etc.
  - Ill-defined symptoms that are vague or likely unrelated and hence unlikely to lead to suspicion of PAH - examples include muscular pain, fracture, GI issues, etc.
  - The time from the first documentation of a PAH-relevant symptom in the baseline period to the index date was defined as TTD or diagnosis delay.
- HCRU: Primary PAH-specific average healthcare visits, % patients requiring in-patient care and ICU care in the 12 months from the index date.
- Costs of care: Primary PAH-specific 12-month costs of care from the index date.

Results

- A total of 271 patients were included in the study. Demographics: Mean age ~69 years (SD 13.7), ~25% (N=63) patients <60 years; 67% (n=181) patients were females; 65% (n=176) patients belonged to managed Medicare category, 21% (n=57) to Commercial, 67% (n=182) patients were Caucasians, 22% (n=59) were African Americans.
- TTD/Diagnosis delay: Median ~38 months (25th percentile: 19; 75th percentile: 46).

Figure 1. Median Time to Diagnosis/ Diagnosis delay in Primary PAH patients



- Sub-group analysis: Patients were classified into 3 groups based on TTD to compare their disease-specific HCRU and costs-of-care. The average healthcare visits were ~8 in all 3 groups. A higher percentage of patients in the ≥3 years TTD cohort required in-patient and ICU care ($p<0.05$). The costs of care were also significantly higher in the ≥3 years TTD group.

Figure 2. Disease-specific HCRU in Primary PAH patients

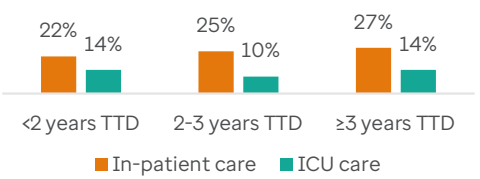
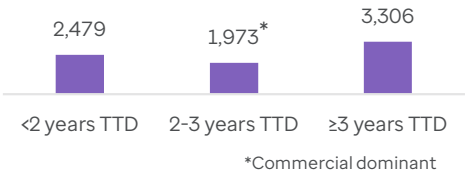


Figure 3. Disease-specific Costs of care in Primary PAH patients (in $)



Conclusions

There is a significant delay in the diagnosis of primary PAH in patients, resulting in these patients having high HCRU and costs. Further analysis by propensity score matching of patients in the 3 sub-groups can be done to validate the impact of delay in diagnosis on HCRU and costs.

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