Utilization and Adherence Rates to Pulmonary Arterial Hypertension Medications

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Background

- Due to high costs of drug therapy and extensive utilization of ancillary medical services, patients with pulmonary arterial hypertension (PAH) can be very costly to treat.
- In a recent study, it was observed that average annual pharmacy costs were $3,512.00 per patient per year, although this number varied between $2,213.00 and $3,398.00.
- The treatment of PAH is goal-oriented. New medications are added onto existing treatments if the patient fails to reach treatment goals.
- Most studies have demonstrated that combination therapy with multiple medications may provide benefit over monotherapy.
- Lack of adherence to PAH medications may also contribute to suboptimal response to therapy and may be associated with increased emergency room visits, hospitalizations, and increased overall medical expenses. It is also possible that suboptimal adherence may lead to quicker use of combination medication therapy.
- A recent study has suggested that 90% of patients with PAH reported suboptimal adherence.

Objective

- To determine cost and utilization trends, including adherence rates and associated hospitalizations in patients using PAH medications.

Methods

- Medical and pharmacy claims data from four regional and national health plans between January 1, 2010 and December 31, 2015 were evaluated.
- Analysis included only commercial members who were continuously enrolled for at least two years with a diagnosis of PAH and had at least two pharmacy claims for PAH medication.
- PAH patients were classified as being compliant if they had a date of service spanned less than 150 days during one calendar year, were flagged as not being compliant.
- Adherence to PAH medications dispensed under the pharmacy benefit was measured by proportion of days covered (PDC).
- A linear regression analysis was performed to understand the relationship between adherence and hospitalization. A dichotomous cut point was created to compare the number of hospitalizations between patients who are adherent to therapy (PDC<90%) and not adherent (PDC=90%).

Results

- Adherence was consistently low for the majority of medications dispensed under the pharmacy benefit with an overall PDC of 66.4%.
- While adherence data is limited, one study suggested that more than 50% of patients with PAH reported suboptimal adherence.
- The most frequently used medications in order were sildenafil (58%), tadalafil (40%), bosentan (29%), and ambrisentan (28%).

- Many studies have demonstrated that combination medication therapy may provide benefit over monotherapy.
- A recent study found PDC to be inversely related to hospitalization (p=0.02); patients who were more adherent to treatment were less likely to experience hospitalizations.
- Linear regression found PDC to be inversely related to hospitalization (p=0.0097).
- Due to high costs of drug therapy and extensive utilization of ancillary medical services, patients with PAH can be very costly to treat.
- Due to the complexity of treatment for PAH, which often requires patients to utilize multiple medication therapies with differing routes of administration, dosing schedules, and safety profiles, it is recommended that health care providers keep this in mind when considering treatment options for their patients.

Discussion

- There was significant diversity among the 441 patients in regards to the medication regimen used including 90 unique combination regimens utilized. Of these combination regimens, 62 regimens included agents with differing routes of administration.
- The most frequently used medications in order were sildenafil (26%), tadalafil (21%), bosentan (9%), and ambrisentan (9%) and the most commonly used dual therapy combinations in order were bosentan+sildenafil (19%), tadalafil+sildenafil (17%), and tadalafil+ambrisentan (14%).
- Low adherence to PAH medications dispensed under the pharmacy benefit was measured by proportion of days covered (PDC).
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- A linear regression analysis was performed to understand the relationship between adherence and hospitalization. A dichotomous cut point was created to compare the number of hospitalizations between patients who are adherent to therapy (PDC<90%) and not adherent (PDC=90%).
- Low adherence rates are likely contributing to higher medical costs and adverse patient experiences associated with hospitalizations.
- Limitations to this study include:
- Due to the nature of this cadis, the five years of data from multiple health plans data was analyzed to project adherence to hospitalization (n<0.02), patients who were more adherent to treatment were less likely to experience hospitalizations.
- Annualized total health care cost per patient per year was $96,219.00 with $58,138 and $42,664 coming from the medical and pharmacy benefits, respectively.

Conclusion

- PAH is a complicated condition to manage from both a provider and payer perspective with significant health care utilization and spend across the medical and pharmacy benefits.
- Adherence was consistently low for the majority of medications dispensed under the pharmacy benefit with an overall PDC of 66.4%.
- Adherence to PAH medication therapy decreases the rate of hospitalization. Further study is warranted to understand the impact of adherence on additional clinical outcomes. Patients not meeting adherence goals, for example, may be more likely to need additional combination medication therapy in the future.
- Due to the complexity of treatment for PAH, which often requires patients to utilize multiple medication therapies with differing routes of administration, dosing schedules, and safety profiles, it is recommended that health care providers keep this in mind when considering treatment options for their patients.

Disclosures

- This research was conducted by Magellan Rx Management, Newport, RI, without external funding.