The Patterns of Healthcare Utilization and Prevalence of Pulmonary Arterial Hypertension Patients on Prostacyclin Therapy in the United States

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INTRODUCTION

Prostanoids/prostacyclins (PGI2s) are regarded as the gold standard treatment for patients with severe forms of pulmonary arterial hypertension (PAH). The first PGI2 was approved more than 20 years ago, and numerous options are available that target this pathway. However, despite the many options, earlier PAH registry data suggest PGI2 therapy is underutilized, particularly in later stages of the disease.[1,2] In real-world registries that enrolled PAH patients prior to 2010, including REVEAL and PAH-QuERI, PGI2 use was relatively low.[1,2] In the REVEAL registry, 44% of patients were not receiving parenteral PGI2 at the time of a PAH-related death, while 6% were not receiving any PAH-specific therapy.[1] In the PAH-QuERI registry, at 1 year follow-up, 67% of functional class (FC) III patients and 45% of patients in FC IV were not receiving a PGI2 or PGI2 analog.[2]

OBJECTIVE

The purpose of this study was to describe PGI2 use, patterns of utilization, and prevalence of PAH patients treated with parenteral and non-parenteral PGI2 in the United States (US) after 2010.

METHODS

A retrospective observational cohort study was conducted using the Truven® commercial and Medicare databases that contain both medical and pharmacy claims data. The databases included approximately 15 million persons annually from health plans throughout the US during the study period from January 1, 2010–October 31, 2014. For prevalence-based selection, a total of five cohorts for patients with evidence of PAH were constituted, one for each calendar-year (CY) of interest during the study period (eg, CY2010 cohort, CY2011 cohort, etc). The cohorts were not mutually exclusive, and patients with evidence of PAH in multiple CYs were included.

All PGI2 patients were required to have ≥3 months of continuous enrollment prior to the index date (the date of the first-noted claim for a PGI2 during the study period) and evidence of PAH, defined as ***any*** of the following:

- ≥1 claim(s) with a diagnosis of pulmonary hypertension (PH) within the 3-month period prior to the index date; ***OR***
- ≥1 prescription(s) for a PAH-specific medication within the 3-month period prior to the index date; ***OR***
- ≥1 claim(s) with a diagnosis of PH within the 4-week period following the index date

For PAH patients to be included in the CY cohort they had to have been on a PGI2 at some portion of that year. The CYs were not mutually exclusive. Prevalence of PAH specific medication was calculated using all adult PAH patients as the denominator. All other analysis focused only on PGI2 patients.

RESULTS

SUMMARY OF FINDINGS:

- During the observation period, a total of 12,306 PAH patients were identified, of which 2670 (21.7%) were treated with PGI2s (**Table**).
- Approximately 900 to 1100 PGI2-treated PAH patients (20.2% to 21.7%) were represented in each CY.
- In 2010, nearly even numbers of patients initiated parenteral PGI2 and non-parenteral (inhaled) PGI2 (data not shown).
- There was a shift over time in the type of PGI2 being used, with a downward trend in patients newly initiated on parenteral PGI2 (intravenous, subcutaneous) starting in 2011 and an increase in non-parenteral (inhaled) PGI2 use (**Figure**).
- From 2011–2014 there were 34%–54% more non-parenteral PGI2 initiators than parenteral PGI2 initiators per year. (data not shown)

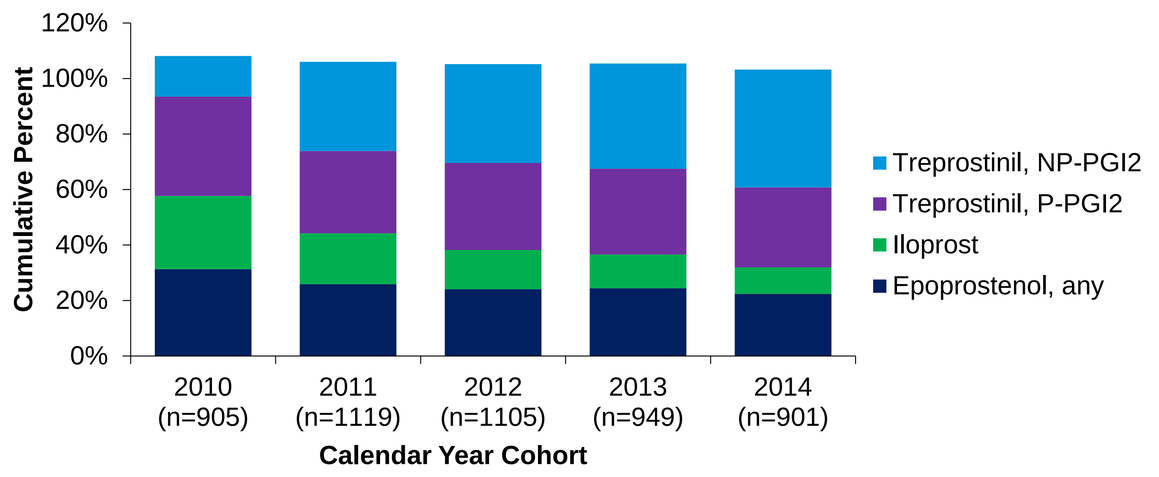
Prevalence of PAH-Specific Medications*

	2010	2011	2012	2013	2014	2010–2014
Patients aged ≥18 years with evidence of PAH, n	4298	5166	5299	4698	4310	12,306
PAH patients using PGI2, n (%)	905 (21.1)	1119 (21.7)	1105 (20.9)	949 (20.2)	901 (20.9)	2670 (21.7)
PAH patients using an ERA, n (%)	2019 (47.0)	2318 (44.9)	2300 (43.4)	1931 (41.1)	1820 (42.2)	5113 (41.5)
PAH patients using a PDE-5i, n (%)	2826 (65.8)	3531 (68.4)	3793 (71.6)	3496 (74.4)	3105 (72.0)	9078 (73.8)

*As CY cohorts were not mutually exclusive, patients could contribute to >1 CY.

CY: calendar year; ERA: endothelin receptor antagonist; PAH: pulmonary arterial hypertension; PDE-5i: phosphodiesterase type 5 inhibitor; PGI2: prostanoid/prostacyclin.

Details of PGI2 Use, 2010–2014



Note: the total of treprostinil + iloprost + epoprostenol exceeds 100% in each CY as these treatments were not mutually exclusive.

CY: calendar year; NP-PGI2: non-parenteral prostanoid/prostacyclin; P-PGI2: parenteral prostanoid/prostacyclin.

LIMITATIONS

- ICD9-CM codes are for PH, not specific to PAH.
- The study is observational and descriptive in nature. No causal inferences can be drawn.
- The results are based on the Truven database and may not be representative for all PAH patients in the US.

CONCLUSION

Prostacyclin use in the US, over the recent five year period (2010-2014), has remained consistent at approximately 21% of the PAH population. However, the pattern of utilization has changed, with use of parenteral PGI2 decreasing and non-parenteral PGI2 increasing through the study interval. The results from this recent retrospective data review support the earlier findings from the REVEAL and PAH-QuERI registries. Over the last decade, utilization of PGI2 appeared to remain unchanged and may represent underutilization of this treatment modality.

REFERENCES

1. Farber HW, et al. Treatment of patients with pulmonary arterial hypertension at the time of death or deterioration to functional class IV: insights from the REVEAL Registry. *J Heart Lung Transplant.* 2013;32:1114-1122.
2. McLaughlin VV, et al. Contemporary trends in the diagnosis and management of pulmonary arterial hypertension: an initiative to close the care gap. *Chest.* 2013;143:324-332.

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