Impact of Pharmacist Managed Pulmonary Arterial Hypertension Program on Tyvaso® Adherence

Kazumi Patel, MS[1], Joaquim Fernandes, MS[1], Dingwei Dai, PhD, MD[1], Ashley Czonstkowsky, PharmD[2], Lucille Accetta, RPh, MPH, MBA[2], Jennifer McMahon, PharmD[2], Gregg Carmen, RPh[2]

[1] CVS Healthspire™ Life Sciences Solutions, CVS Health®, Wellesley, MA, USA

[2] Therapy Operations, CVS Specialty® Pharmacy, CVS Health®, Wellesley, MA, USA

HSD60

BACKGROUND

- Pulmonary arterial hypertension (PAH) is a progressive and life-threatening condition that requires long-term treatment with complex medication regimens.
- Integrated specialty pharmacy models have been associated with improved management of various diseases, including PAH (1). The incorporation of pharmacists into specialty care teams has been shown to enhance medication adherence, provide comprehensive drug education, and offer ongoing monitoring thereby reducing overall healthcare costs (2-3).
- Despite these findings, there is limited real-world evidence evaluating the reach, diversity, and effectiveness of these programs to improve medication adherence compared to patients receiving standard pharmacy services.

OBJECTIVE

1) To assess the patient characteristics, diversity, and national reach of a Pharmacist-Led PAH program for treprostinil (Tyvaso).
2) Evaluate the impact of the PAH specialty pharmacy program study on medication adherence compared to non-participants, providing insights into the value of specialized pharmacy care in managing complex conditions.

METHODS

- This retrospective cohort study included patients with PAH filling treprostinil from 1/1/2021 and 3/31/2024. The study group comprised patients enrolled in a large national pharmacy PAH program while the control group included non-enrolled patients identified in claims data from a large national payor during the same period.
- Characteristics assessed included age, sex, geographic region, rural-urban residency, and Social Vulnerability Index (SVI) quartile. Engagement metrics included duration and completed assessments. Adherence was measured using the proportion of days covered (PDC).
- **Index date:** The date of the first treprostinil claim.
  Follow-up-period: Adherence for a 12-month assessment period after the index date.
  Adherence: Adherence was measured using proportion of days covered (PDC) measure, the number of days of coverage with a drug divided by the number of days in the follow-up period.
- Descriptive statistics were provided for patient and clinical characteristics. Continuous variables will be summarized with n (non-missing counts), mean, standard deviation (SD), median, interquartile ranges (IQR), minimum (min) and maximum (max). For categorical variables, counts and percentages will be summarized.
- Appropriate 2-sample tests were conducted to assess significant differences between the study and control groups for PAH program: a t-test for normally distributed continuous variables, the Wilcoxon rank-sum test for non-normal continuous variables. *P*-values were two-sided, with $p<0.05$ considered statistically significant.

RESULTS

- The study group included 2,555 patients while the control group had 332 patients. To assess program engagement, 61% of patients completed at least five assessments and 45% continued in the program for over 200 days (**Figure 2**).

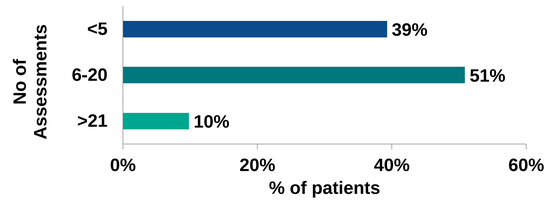

Figure 1. Proportions of patients by no of assessments

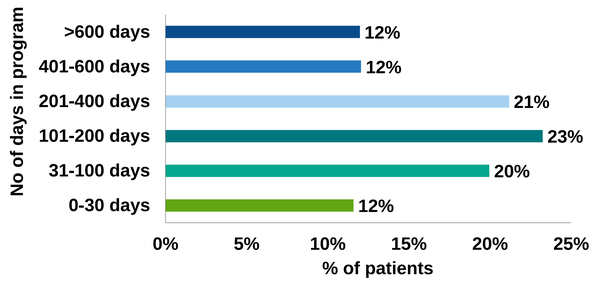

Figure 2. Proportions of patients by days in program

- Both groups had similar sex distribution (59% female in study vs. 61% in control, $p=0.4410$) (**Figure 3**). The study group was younger compared to control group (65 vs. 71 years average age, respectively; $p<0.0001$) (**Figure 4**).

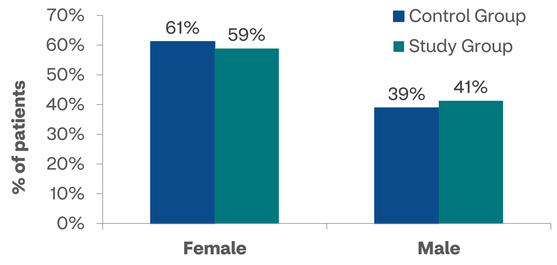

Figure 3. Proportions of patients by sex

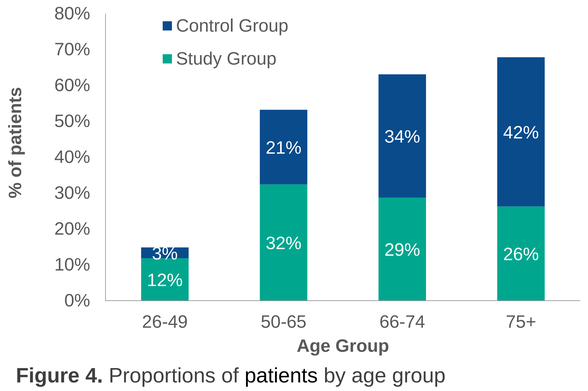

Figure 4. Proportions of patients by age group

- The study group had higher social vulnerability risk, with 15% in the top SVI quartile versus 12% in the control group, respectively, and a higher average SVI score (0.47 vs. 0.45, respectively; $p=0.031$) (Figure 5). Both groups were similar in terms of mean income ($p>0.05$) (**Table 1**).

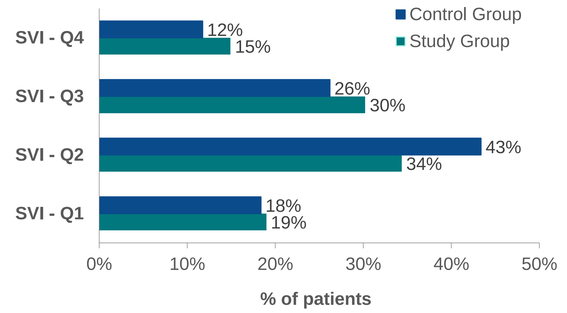

Figure 5. Proportions of patients by SVI Quartiles

	Study Group	Control Group	*P*-Value
Mean Income (SD)	58,818 (± 22,112)	59,409 (± 24,027)	0.722
Median income (IQR)	53,146 (43,230-70,208)	52,762 (42,408-70,292)	0.821

Table 1. Mean and median income

- Regional distribution differed significantly ($p<0.0001$), with the study group having higher representation from South (36% vs. 32%) and West (21% vs. 7%), while control group had more from Northeast (34% vs. 19%) (**Figure 6**). Both groups are similar in terms of location and have higher proportion (44%) of patients from rural areas ($p=0.1374$).

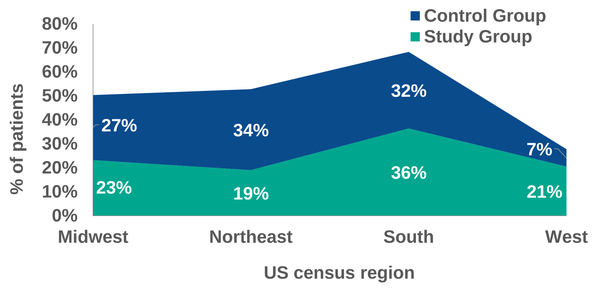

Figure 6. Proportions of patients by region

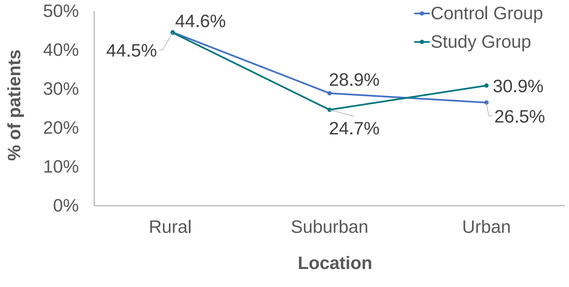

Figure 7. Proportions of patients by location

- Adherence to treprostinil was higher in the patients enrolled in the PAH program with mean PDC of 0.87 vs. 0.78 in control group, $p<0.001$ (Figure 8).

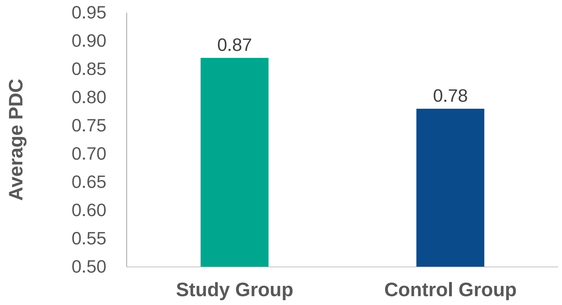

Figure 8. Average proportion of days covered by groups

CONCLUSIONS

- The program demonstrated broad geographic and sociodemographic reach, engaging patients from both rural and urban communities and included higher representation of individuals from socially vulnerable populations. This result highlights the program's ~~its~~ potential to enhance care access for underserved groups.
- High patient engagement was observed by sustained participation and repeated assessments, indicating the potential of the program to positively influence care and health outcomes across diverse populations.
- Enrollment in the PAH program was associated with improved treprostinil adherence. These preliminary results highlight the potential of targeted pharmacy programs to enhance medication adherence and improve patient outcomes in PAH.
- The large, national representative sample of patients with PAH offers opportunities for patient recruitment in clinical trials as well as in health economics and outcomes research.

REFERENCES

1. Shah NB, Mitchell RE, Proctor ST, Choi L, DeClercq J, Jolly JA, Hemnes AR, Zuckerman AD. High rates of medication adherence in patients with pulmonary arterial hypertension: An integrated specialty pharmacy approach. PLoS One. 2019 Jun 6;14(6):e0217798.
2. Hayhoe B, Cespedes JA, Foley K, Majeed A, Ruzangi J, Greenfield G. Impact of integrating pharmacists into primary care teams on health systems indicators: a systematic review. Br J Gen Pract. 2019 Sep 26;69(687):e665-e674.
3. Dalton K, Byrne S. Role of the pharmacist in reducing healthcare costs: current insights. Integr Pharm Res Pract. 2017 Jan 25;6:37-46.

CVS Healthspire™