Understanding the Real-world Clinical Effectiveness of Pegcetacoplan for the Treatment of Paroxysmal Nocturnal Hemoglobinuria (PNH)

Jesse Fishman[1]; Carly Rich[2]; Koo Wilson[2]; Jennifer Mellor-Bowman[3]; Lucy Earl[3]; Yasmin Taylor[3]; Alice Simons[3]; Joe Conyers[3]

[1]Apellis Pharmaceuticals, Inc., Waltham, MA, USA; [2]Swedish Orphan Biovitrum AB, Stockholm, Sweden; [3]Adelphi Real World, Bollington, UK

CONCLUSIONS

- ✓These findings demonstrate the real-world effectiveness of PEG, through improvement across multiple clinical endpoints from PEG initiation to the time of survey completion.
- ✓Noticeable increases in hemoglobin (3.4 g/dL) from PEG initiation to the time of survey completion were reported.
- ✓Congruence between physician- and patient-reported satisfaction with PEG was reported. Both reported favorable satisfaction with PEG, highlighting the potential for PEG to improve outcomes for current patients with PNH.
- ✓Further research is required to understand the long-term effectiveness of PEG in the real world.

INTRODUCTION

- PNH is a rare, chronic, and potentially fatal disease. It is caused by uncontrolled complement activation[1] resulting in hemolysis, which clinically manifests as anemia, fatigue, and in severe cases, thrombosis[2]
- Patients with PNH have negatively impacted daily living and quality of life (QoL)[3] as a result of their symptoms
- Current treatments (e.g., C3/C5 inhibitors) inhibit complement activation to manage complement-driven hemolysis and its associated symptoms
- Symptoms associated with low hemoglobin (<12 g/dL) including fatigue[4] and LDH values above the upper limit of normal[5] have been reported to persist in patients receiving C5 inhibitor treatment
- This highlights a need for a treatment that can prevent breakthrough symptoms and improve the QoL of patients with PNH

OBJECTIVE

In this analysis, we assessed the clinical effectiveness of pegcetacoplan (PEG) for real-world patients with PNH in the United States.

METHODS

- Data were drawn from the Adelphi PNH Disease Specific Programme™ (DSP), a real-world, cross-sectional survey in the United States ran from January–November 2022. The DSP methodology has been previously published[6] and was conducted according to the relevant regulations
- Hematologists and oncologists were asked to complete questionnaires for their consulting patients with PNH. Physicians reported data on patient demographics, clinical markers, treatment satisfaction, disease control, and health-related QoL (HR-QoL)

METHODS *(continued)*

- The same patients were invited to provide self-reported data regarding treatment satisfaction and HR-QoL measures including the FACIT-Fatigue[7] and EQ-5D-5L.[8] Matched data were reported from the physician and the patient where available
- Patients were eligible for inclusion if currently prescribed PEG for ≥6 months. Descriptive statistics were reported

RESULTS

- 5 hematologists recorded data for 22 patients with PNH treated with PEG. 59.1% were male, with a median age of 35.0 years, and two-thirds remained in full-/part-time employment at the time of survey completion. Median time since diagnosis was 2.4 years. (**Table 1**)
- Patients had been receiving PEG for a median of 10.3 months and 90.9% of patients had switched from a previous C5 inhibitor treatment
- All patients received a dose of 1080 mg every 3–4 days, which is in line with the label indication. (**Table 1**)

Table 1. Demographics for physician-reported patient data

	All patients (N=22)
Age (years), median (range)	35.0 (20.0-67.0)
Sex (male), n (%)	13 (59.1)
BMI, median (range)	24.9 (22.1-27.8)
Employed (full or part time), n (%)	14 (63.6)
Comorbidities, median (range)	0.5 (0.0-4.0)
Time since diagnosis (years), median (range)	2.4 (0.8-10.7)
Switched from C5 inhibitors* (%)	20 (90.9)
Time receiving PEG (months), median (range)	10.3 (6.2-14.9)
Dose (mg), median (range)	1080.0 (1080.0-1080.0)
	(n=20)
Frequency of PEG administration (days), mean (SD)	3.0 (0.2)
PEG administered every 3 days, n (%)	20 (100)

Median was displayed where data was not normally distributed, BMI: Body Mass Index
*Includes eculizumab (ECU) and ravulizumab (RAVU).
All (16) ECU patients were receiving the recommended dose. 2 RAVU patients were receiving a dose of 2700 mg and 2 were receiving 2400 mg, which is below the recommended maintenance dose.

- 15 patients provided self-reported data. Of these patients, 53.3% were male with a median age of 35.0. They had been receiving PEG for a slightly longer time than the overall patient group (12.4 vs. 10.3 months). (**Table 2**)

Table 2. Demographics for patients with self-reported data at time of survey

	All patients (n=15)
Age (years), median (range)	35.0 (20.0-48.0)
Sex (male), n (%)	8 (53.3)
Employed (full or part time), n (%)	8 (53.3)
Time since diagnosis (years), median (range)	3.2 (0.9-10.7)
Time receiving PEG (months), median (range)	12.4 (6.6-14.9)
EQ-5D Utility score, mean (SD)	0.94 (0.1)
FACIT-Fatigue score, mean (SD)	40.8 (7.7)
	(n=14)
EQ-5D VAS score, mean (SD)	87.4 (7.0)

RESULTS *(continued)*

- From PEG initiation to the point of the survey, physicians reported a 3.4-g/dL improvement in hemoglobin on average (8.2 g/dL vs. 11.6 g/dL) (**Figure 2a**)
- Improvements in lactate dehydrogenase (LDH) were also reported from PEG initiation to the time of survey completion (27.3% vs. 68.2% reporting LDH <1.5x upper limit of normal [ULN], respectively) (**Figure 2b**)
- The proportion of patients experiencing no fatigue also increased from PEG initiation to the time of survey completion (0.0% vs. 59.1%, respectively) (**Figure 2c**)
- Mean FACIT score was 40.8 for PEG patients indicating slightly worse fatigue in comparison with the US general population who scored, 43.5.[1] (**Table 2**)

Figure 2a. Physician-reported clinical improvements in hemoglobin

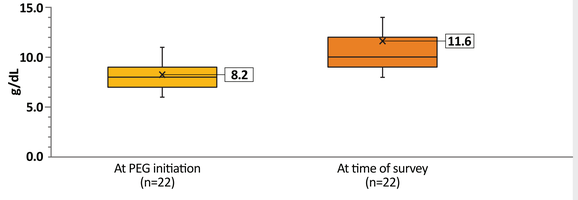


Figure 2b. Physician-reported clinical improvements

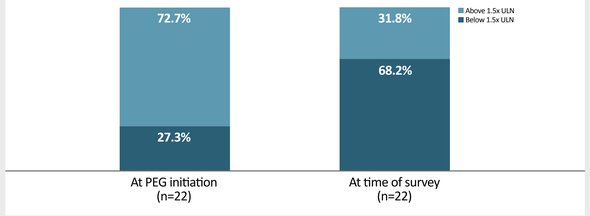


Figure 2c. Physician-reported clinical improvements in fatigue

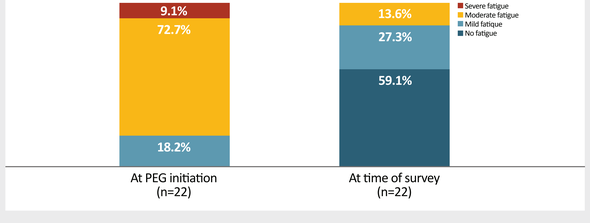
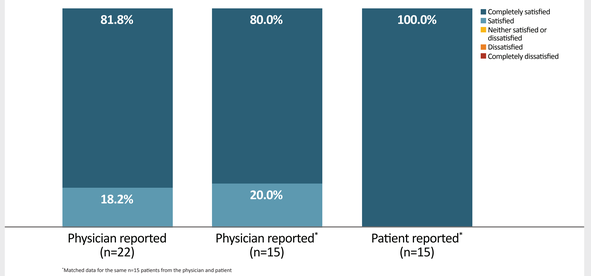
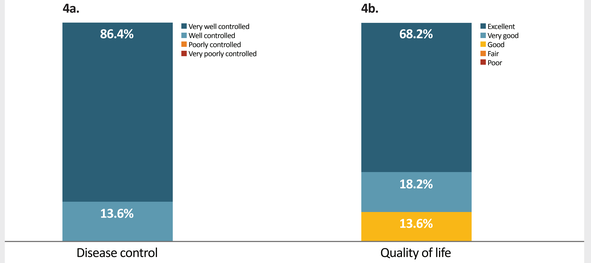


Figure 3. PEG satisfaction at the time of survey



*Matched data for the same n=15 patients from the physician and patient

Figure 4. Physician-reported control of PNH (a) and QoL (b) at time of survey



- For all 22 patients, their physician reported them to be 'completely satisfied/ satisfied' with PEG treatment at the time of survey completion. (**Figure 3**)
- For patients with matched physician-reported data, all patients and 80% of physicians reported to be 'completely satisfied' with PEG. (**Figure 3**)
- All patients were considered by their physicians to have 'well/very well controlled' disease at time of survey completion (**Figure 4a**).
- Physicians reported 86.4% of patients had 'excellent/very good' overall QoL (**Figure 4b**). The mean EQ-5D-5L Utility score[2] was 0.94, which is comparable with the US population norm of 0.83.[9] (**Table 2**)

References: 1. Montan I. General population norms for the Functional Assessment of Chronic Illness Therapy (FACIT)-Fatigue Scale. *Value Health.* 2018;21(11):1313–1321. **2.** US (English) ©2009 EuroQol Group EQ-5D™ is a trade-mark of the EuroQol Group. **3.** Brodsky RA. Paroxysmal nocturnal hemoglobinuria. *Blood.* 2014;124(18):2804–2811. **4.** Schrezenmeier H, et al. Baseline clinical characteristics and disease burden in patients with paroxysmal nocturnal hemoglobinuria (PNH). *Ann Hematol.* 2020;99(7):1505–1514. **5.** Blank PR, et al. Economic burden of symptomatic iron deficiency - a survey among Swiss women. *BMC Womens Health.* 2019;19(1):39. **6.** Dingli D, et al. The burden of illness in patients with paroxysmal nocturnal hemoglobinuria receiving treatment with the C5-inhibitors eculizumab or ravulizumab: results from a US patient survey. *Ann Hematol.* 2022;101(2):251–263. **7.** Yeh M, et al. Changes in hemoglobin measures observed in paroxysmal nocturnal hemoglobinuria patients treated with both C5-inhibitors ravulizumab and eculizumab: Real-world evidence from a US-based EMR network. Poster presentation 2194 presented at American Society of Hematology 2021. **8.** Anderson P, et al. Real-world physician and patient behavior across countries: Disease-Specific Programmes -a means to understand. *Curr Med Res Opin.* 2008;24:3063–3072. **9.** Janssen B, Szende A. Population Norms for the EQ-5D. 2013 Sep 26. In: Szende A, Janssen B, Cabases J, editors. Self-Reported Population Health: An International Perspective based on EQ-5D. Dordrecht (NL): Springer; 2014. Chapter 3. PMID: 29787189

Acknowledgements: Swedish Orphan Biovitrum AB and Apellis Pharmaceuticals, Inc., provided funding for this study.
Disclosures: JMB, LE, YT, AS, JC are employees of Adelphi Real World. **CR** and **KW** are employees of Swedish Orphan Biovitrum AB. **JF** is an employee of Apellis and holds stock or stock options.
Originally presented at ISPOR 2023 | May 7–10, 2023 | Boston, USA