

# Real-world Impact of Treated Hereditary Angioedema Attacks on Patients' Employment and Work Productivity

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## Background

- Hereditary angioedema (HAE) is a rare genetic disease associated with unpredictable, painful, and debilitating attacks of tissue swelling in various locations of the body that can be life-threatening depending on the location(s) affected
- Global HAE treatment guidelines recommend that people living with HAE should consider treating all attacks early upon recognition to reduce the severity and duration<sup>1-3</sup>
- Although reductions in frequency of HAE attacks have been demonstrated with non-androgen long-term prophylaxis (LTP), many patients continue to experience attacks requiring on-demand treatment<sup>2</sup>

## Objective

- We examined the impact of the patients' last treated HAE attack on their ability to work and do daily activities, and whether this was diminished among those receiving LTP

## Methods

- The US Hereditary Angioedema Association recruited participants with Type 1 or 2 HAE between April and June 2023
- Participants had to be at least 12 years old and had treated at least 1 HAE attack within the prior 3 months with an approved on-demand therapy, for inclusion in the survey
  - Participants completed a 20-minute, self-reported, online survey that inquired about their last treated HAE attack
  - Target sample size: 80 adults; 20 adolescents
- The Work Productivity and Activity Impairment Questionnaire: General Health assessed the impact of the last treated attack on participants' ability to work and do daily activities during the 7 days following attack onset

## References

1. Betschel S, Badiou J, Binkley K, et al. *Allergy, Asthma & Clinical Immunology*. 2019;15(1):72. doi:10.1186/s13223-019-0376-8

2. Busse PJ, Christiansen SC, Riedl MA, et al. *Allergy Clin Immunol Pract*. 2021;9(1):132-150.e3. doi:10.1016/j.jaip.2020.08.046

3. Maurer M, Magerl M, Betschel S, et al. *Allergy*. 2022;77(7):1961-1990. doi:10.1111/all.15214

## Results

Table 1. US Participant Demographics

	Total (n=94)	Employed (n=42)
Current Mean Age, Years (SD)	39.4 (17.4)	39 (12.5)
Mean Age at Diagnosis, Years (SD)	18 (12.6)	20.2 (13)
HAE Type		
Type 1	81%	86%
Type 2	19%	14%
Gender		
Female	72%	73%
Race / Ethnicity		
White	87%	83%
Hispanic or Latino	9%	10%
Black / African American	3%	2%
American Indian/Alaskan Native	2%	5%
Asian	3%	2%
Other	1%	--
Payer Coverage		
Private or commercial health insurance	69%	86%
Medicare	16%	5%
Medicaid	14%	2%
Other	8%	10%

- Total sample consisted of 80 adults and 14 adolescents
- 42 participants self-reported as employed at the time of their last treated attack, and they were all adults

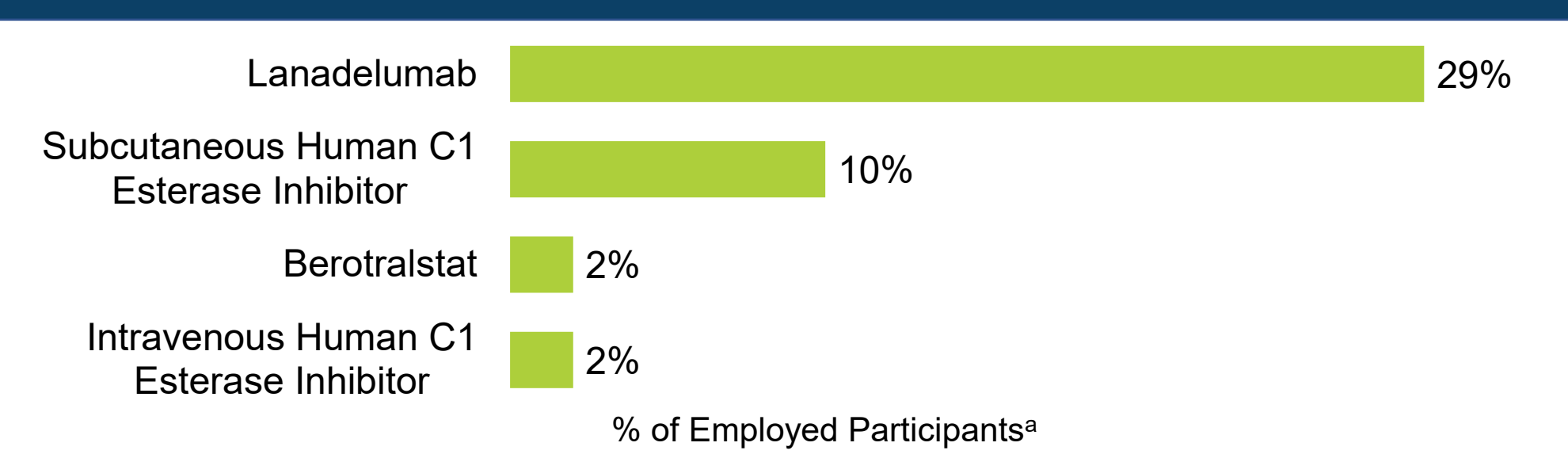
Figure 1. On-Demand Therapy Used for Last Treated Attack

On-Demand Therapy <sup>a</sup>	On-demand Treatment Only (n=24) <sup>a</sup>	On-demand Treatment + LTP (n=18) <sup>a</sup>
Icatibant	71%	72%
Recombinant C1 Esterase Inhibitor	19%	17%
Plasma Derived C1 Esterase Inhibitor	7%	11%
Ecallantide	2%	0%

<sup>a</sup>% of Employed Participants

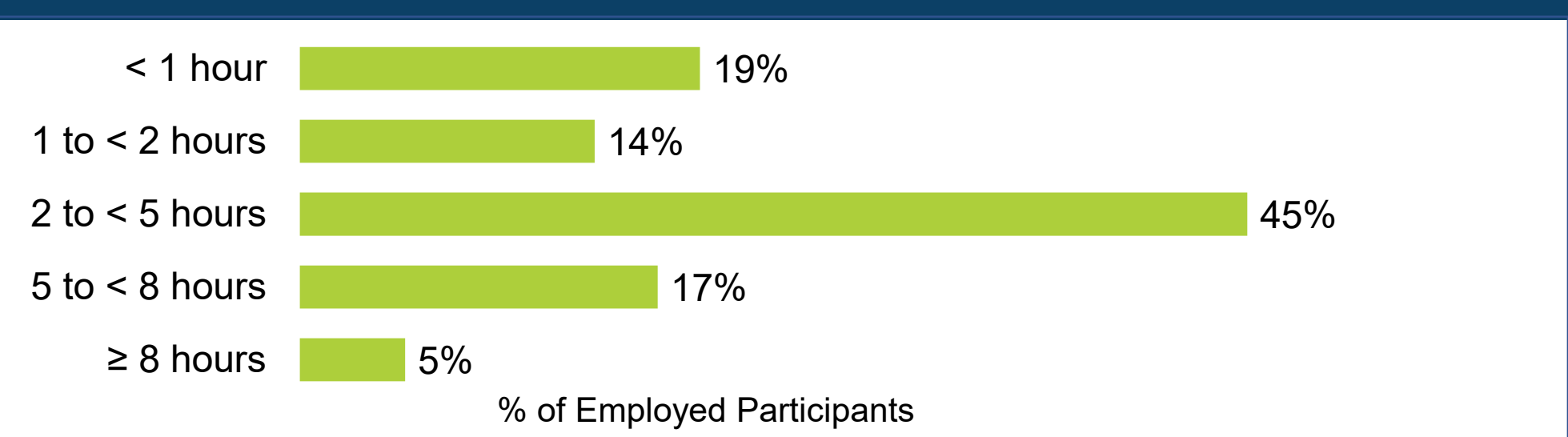
- 24 (57%) managed HAE attacks with on-demand treatment only
- 18 (43%) were receiving long-term prophylaxis (LTP) + on-demand treatment
- Mean time since last treated attack was 22 days (median = 14 days); 88% of patients had their attack in the past 1 month

Figure 2. Long-Term Prophylaxis at Time of Last Treated Attack



<sup>a</sup>24 participants (57%) were not receiving LTP at the time of their last attack.

Figure 3. Time to Treatment



- 19% of employed participants treated their HAE attack in <1 hour

Figure 4. Patient-reported Attack Severity at the Time of Treatment<sup>a</sup>

Attack Severity <sup>b</sup>	On-demand Treatment Only (n=24) <sup>b</sup>	On-demand Treatment + LTP (n=18) <sup>b</sup>
Mild	29%	25%
Moderate	62%	71%
Severe	10%	4%
Very Severe	0%	0%

<sup>a</sup>Survey question: How severe was the attack when you decided to treat it?

<sup>b</sup>% of Employed Participants.

- Thirty participants (72%) rated their attack severity as moderate to severe (75% On-demand; 67% LTP)

Figure 5. Initial Anatomical Site of Last Treated Attack

Initial Site of Attack <sup>a</sup>	On-demand Treatment Only (n=24) <sup>a</sup>	On-demand Treatment + LTP (n=18) <sup>a</sup>
Abdominal/Stomach	64%	67%
Peripheral	14%	17%
Face	7%	13%
Throat	7%	8%
Genitals	5%	0%
Trunk	2%	1%

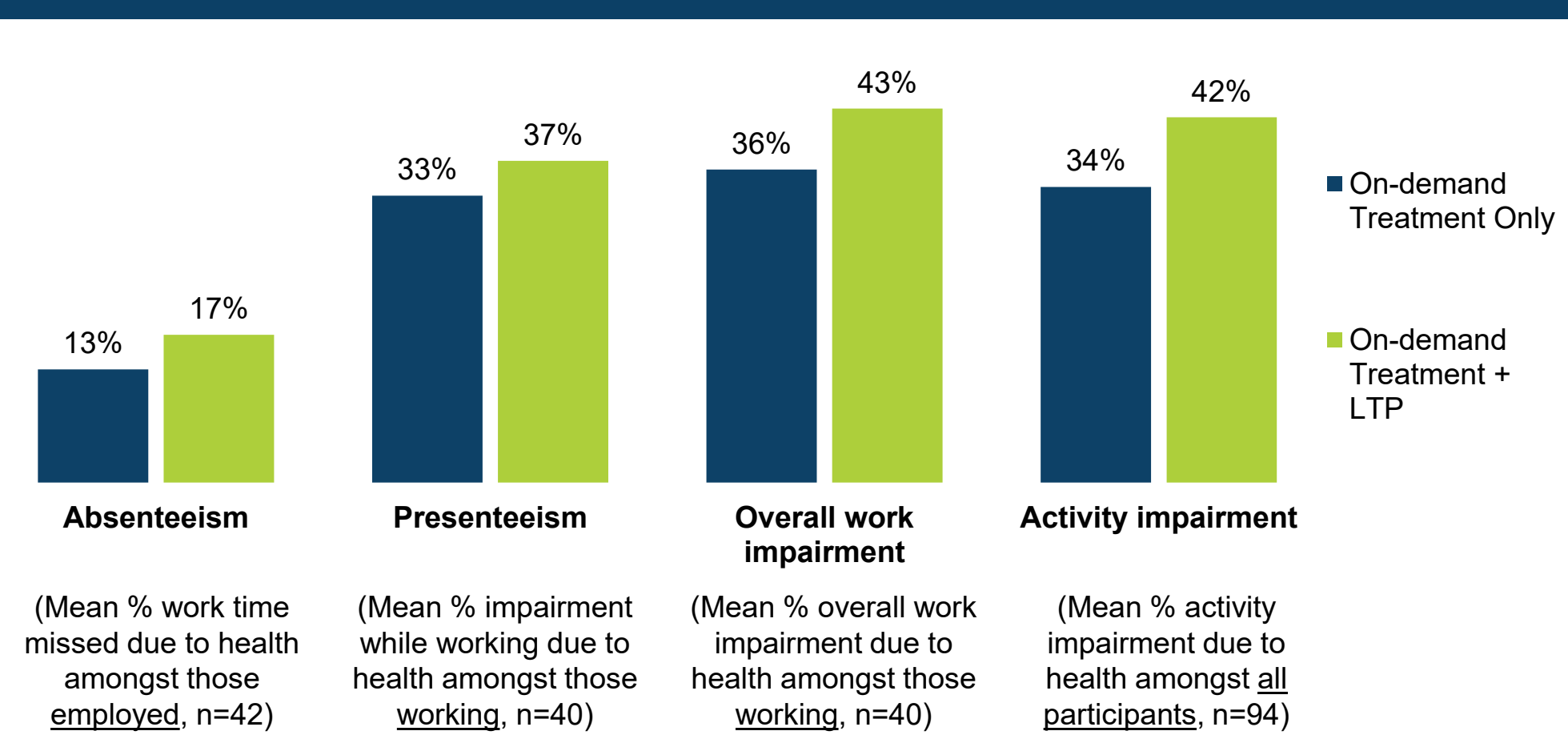
<sup>a</sup>% of Employed Participants

Figure 6. Impact of Last Treated Attack on Ability to do Job

	Total (n=42)	On-demand Treatment Only (n=24)	On-demand Treatment + LTP (n=18)
Top 2	24%	25%	22%
Completely – I could not do my job at all	14%	17%	11%
5	10%	8%	11%
4	24%	21%	28%
3	33%	38%	28%
2	19%	17%	22%
Not at all – I could do my job as usual			
Bottom 2	52%	54%	50%
Mean (SD)	2.7 (1.3)	2.7 (1.3)	2.6 (1.3)
Median (IQR)	2 (2,3)	2 (2,3.5)	2.5 (2,3)

- Twenty (48%) participants were moderately to completely unable to do their job due to their last attack (46% On-demand; 50% LTP)

Figure 7. WPAI Results: Impact of Last HAE Attack on Ability to Work



- Average absenteeism was 15% (13% on-demand; 17% LTP)
- In the 40 participants that worked ≥1hr in the 7 days following the attack:
  - Mean impairment (presenteeism) at work was 35% (33% on-demand; 37% LTP)
  - Mean overall work impairment was 39% (36% on-demand; 43% LTP)
- In the full sample, overall activity level mean impairment was 38% (34% on-demand; 42% LTP)
- There is a trend towards more significant impact with LTP users, which may be due to lack of expectation for attacks with LTP use

## Conclusions

- Treatment was frequently delayed and often attacks were moderate or severe at the time of treatment
- Despite treatment, HAE attacks were associated with activity impairment and impact on work lives of employed participants resulting in substantial:
  - Impairments in their ability to work
  - Absenteeism
  - Reduced productivity
  - Presenteeism
- The impact was substantial for both patients taking on-demand treatment only and those taking on-demand plus LTP
- Compliance with HAE treatment guidelines may reduce the negative impact of attacks on the work lives of employed participants

## Presented

Eastern Allergy Conference 2024. May 30 – June 2, in Palm Beach, FL

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