

Impact of Delayed Treatment of Hereditary Angioedema Attacks on Quality of Life and Ability to Work

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Background

- WAO/EAACI 2021 updated guidelines recommend the early use of on-demand treatment following hereditary angioedema (HAE) attack recognition to reduce morbidity and prevent mortality¹⁻³
- Despite this recommendation for early treatment, recent research suggests that patients delay on-demand treatment of their HAE attacks⁴

Objective

- To examine the impact of the time to on-demand treatment on patients' quality of life (QoL) and ability to work

Methods

- Participants with Type 1 or 2 HAE who were at least 18 years old, and had treated at least one HAE attack within the prior three months with an approved on-demand therapy were recruited through the patient organization, HAE UK, between April and May 2023
 - Recruitment was stratified to include 50% of participants taking on-demand treatment only and 50% taking on-demand treatment + long-term prophylaxis (LTP)
- The survey was self-reported and took respondents approximately 20 minutes to complete
- Respondents provided consent for their data to be used anonymously or in aggregate
- The EuroQoL Five-Dimensions Five-Levels (EQ-5D-5L), a self-report survey, was used to assess physical and mental quality of life (QoL) "today" (i.e., current QoL) and at the time of the last treated attack
 - EQ-5D-5L Index Score = QoL composite of items across 5 domains: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression
- Additionally, physical QoL was assessed using a modified version of the Hereditary Angioedema Quality of Life Questionnaire (HAEA-QoLv2)
- The Work Productivity and Activity Impairment Questionnaire: General Health assessed the impact of the last treated attack on participants' ability to work and perform daily activities during the 7 days following the onset of the attack

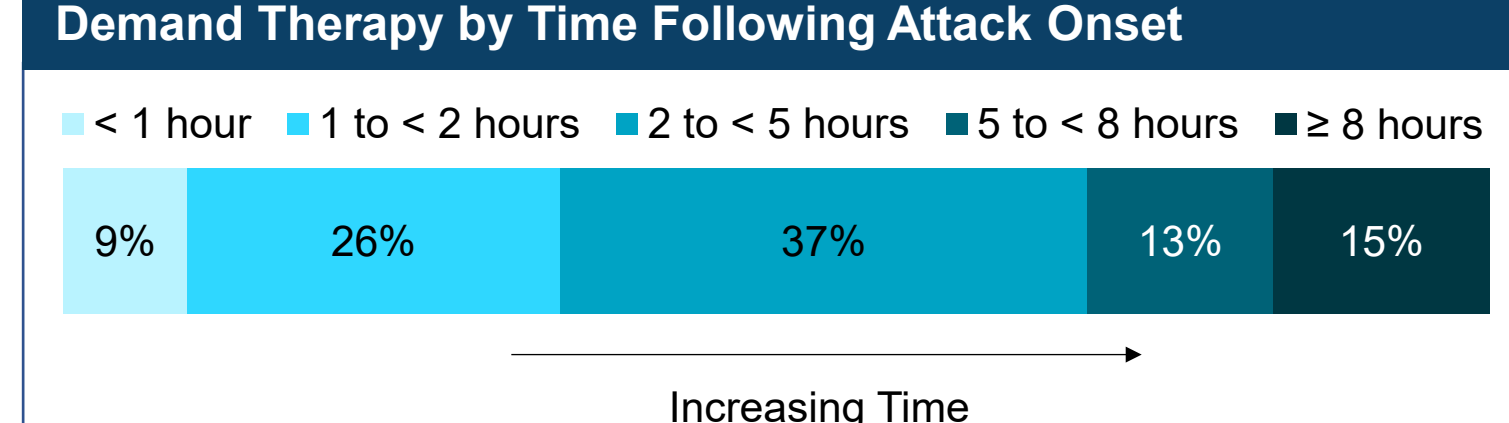
Results

Table 1. Patient Demographics and Clinical Characteristics

Characteristic	Total (N=46 Adults)
Current Age (Mean)	44 years
Age of Diagnosis (Mean)	17 years
Gender	
Male	28%
Female	70%
Prefer not to respond	2%
Race / Ethnicity	
White	91%
Black / Black British / Caribbean or African	-
Asian or Asian British	7%
Other	-
Prefer not to respond	2%
HAE Type	
Type I	100%
Type II	-
Time Since Last Treated Attack (Mean)	16 days
Long-term Prophylaxis at the Time of Last Treated Attack (%)	54%

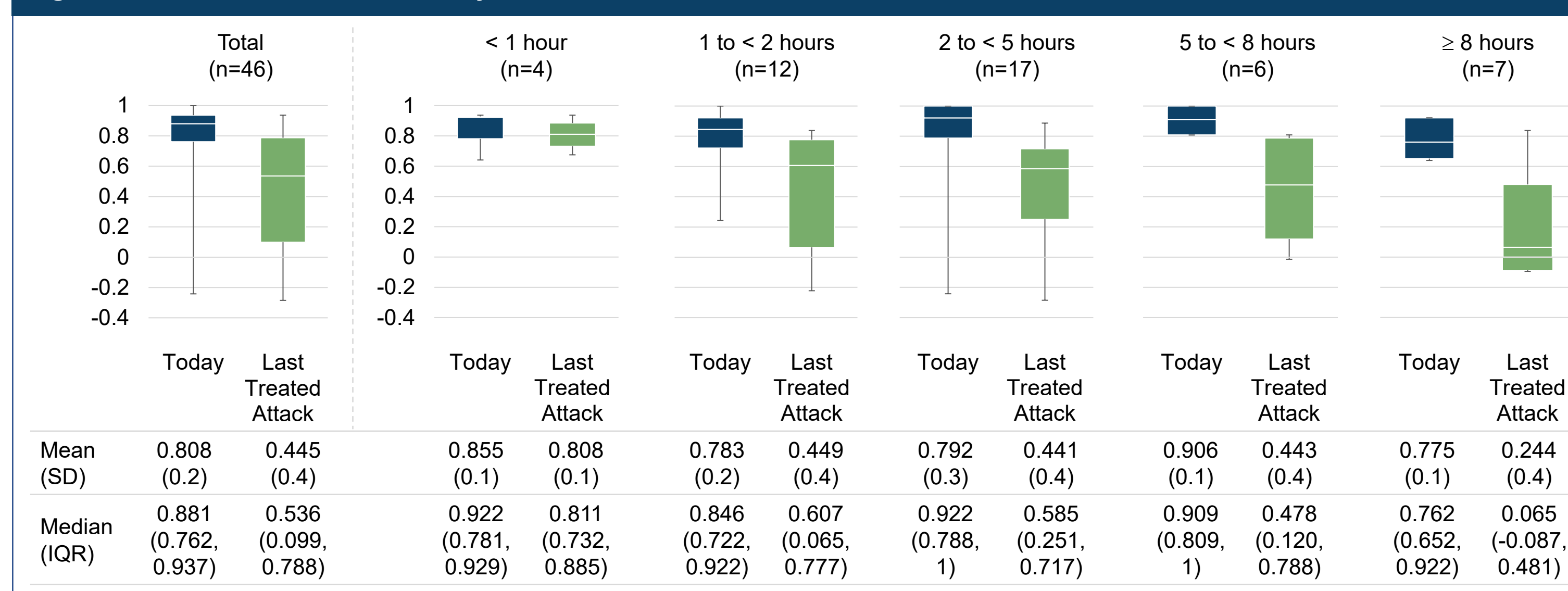
- Respondents included 46 adults with HAE (100% Type I), 54% of whom were receiving long-term prophylaxis at the time of their last treated attack

Figure 3. Proportion of Respondents Treating Attacks with On-Demand Therapy by Time Following Attack Onset



- The median (interquartile range) reported time to treatment from attack onset to on-demand treatment was 2 (1-5) hours, with only 9% treating in < 1 hour

Figure 4. EQ-5D-5L Index Values Today and Last Treated Attack



- During the attack, the mean EQ-5D-5L index score was 0.81 for respondents who treated their attack in < 1 hour, and between 0.44 (1 to < 2 hours) and 0.24 (≥ 8 hours) for those who treated ≥ 1 hour
 - Index scores range from -0.59 (lowest possible health state) to 1 (best possible health state)

Figure 1. On-Demand Therapy Used for Last Treated Attack (N=46)

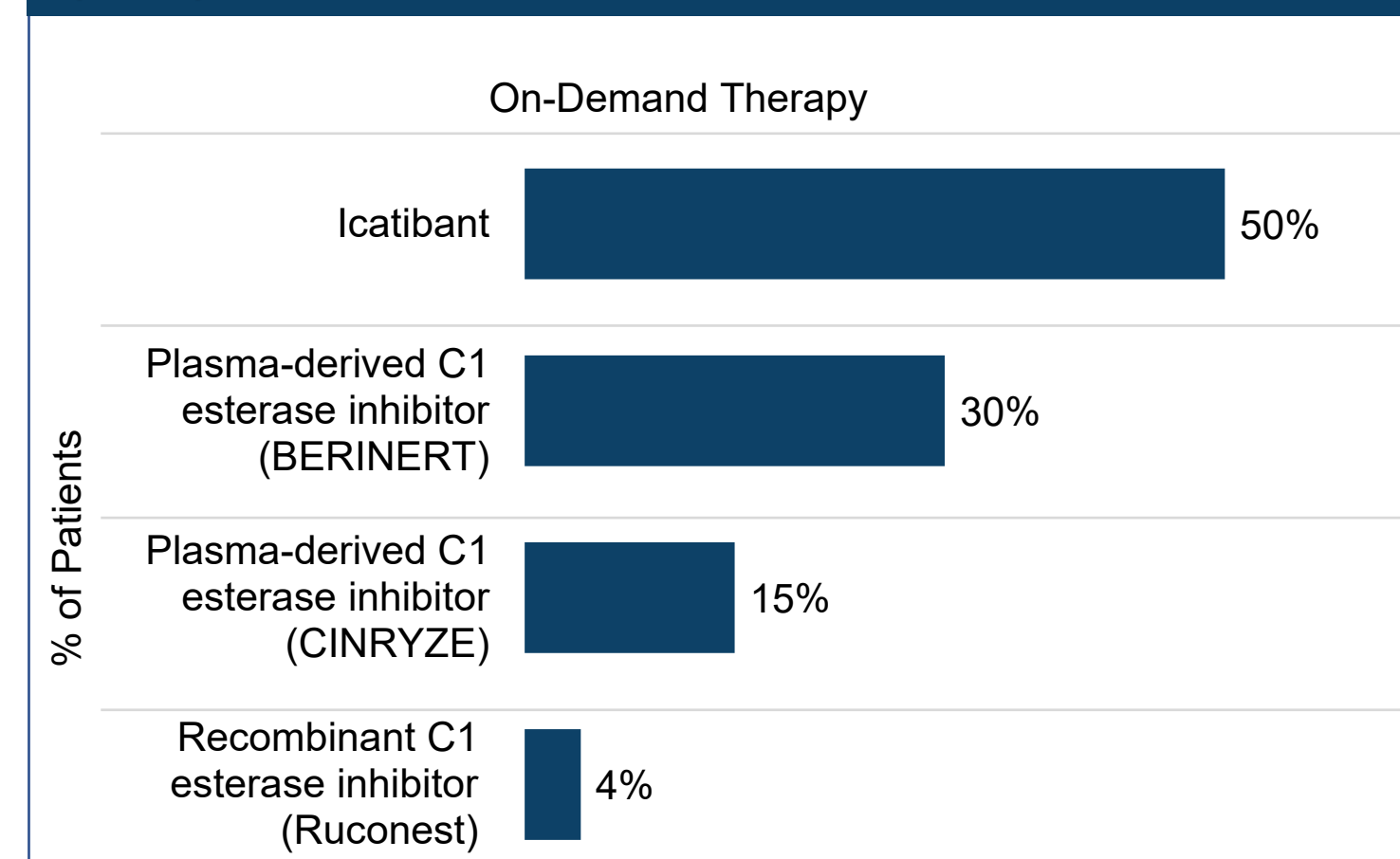
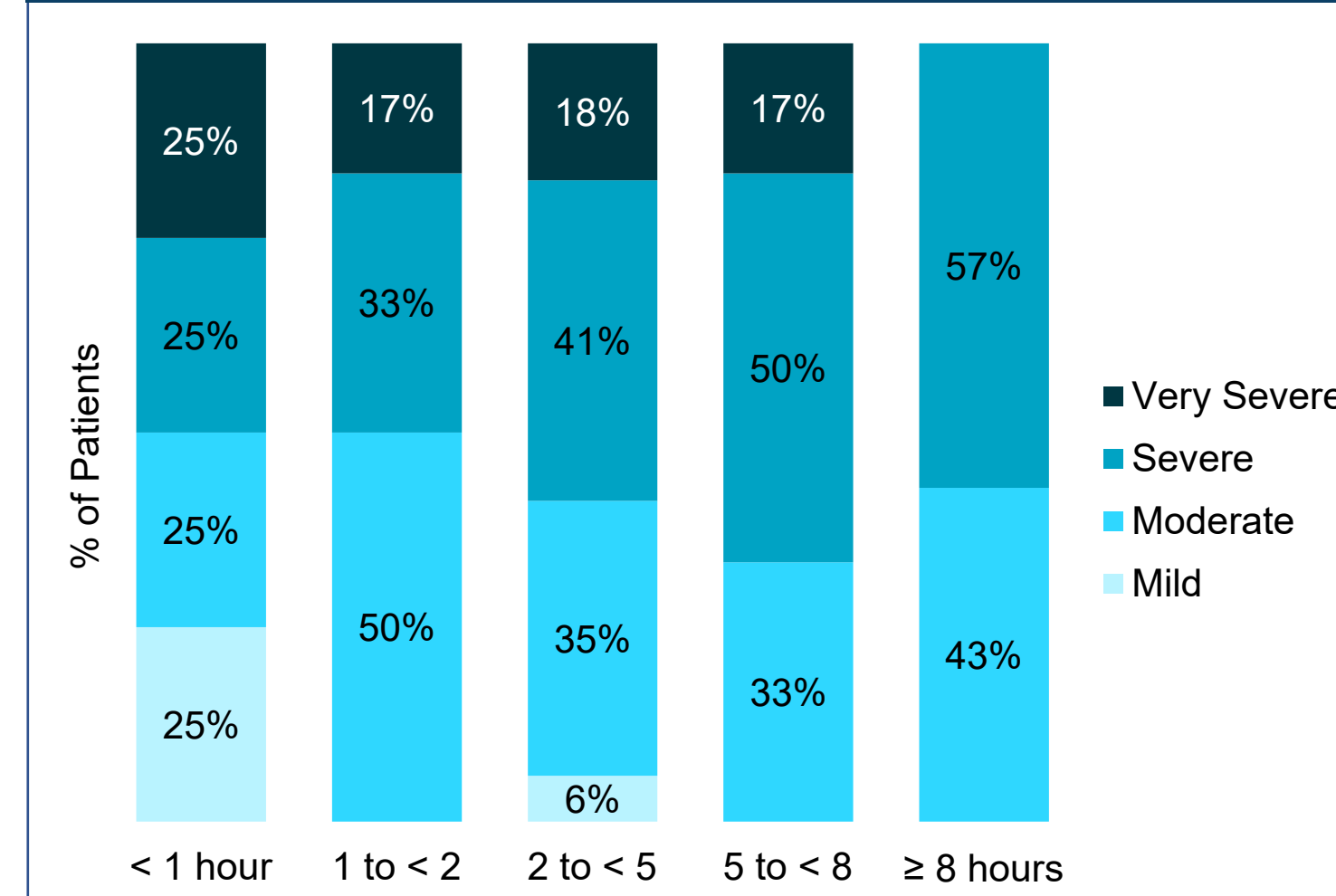
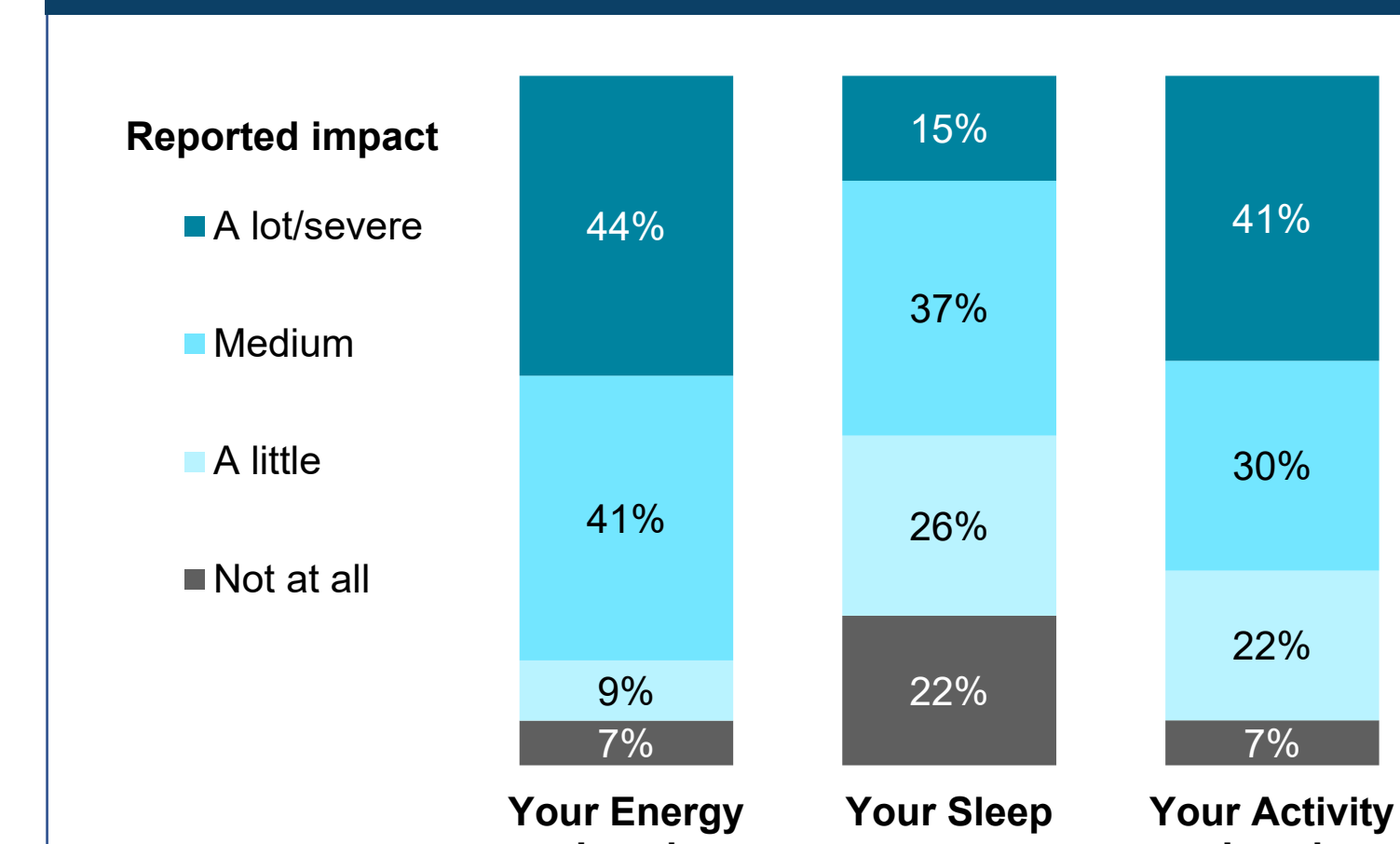


Figure 2. Self-reported Peak Attack Severity by Time to Treatment



- Most patients considered their attacks moderately severe (59%) or severe/very severe (28%)
- Severity increased as the delay in treating the attack increased

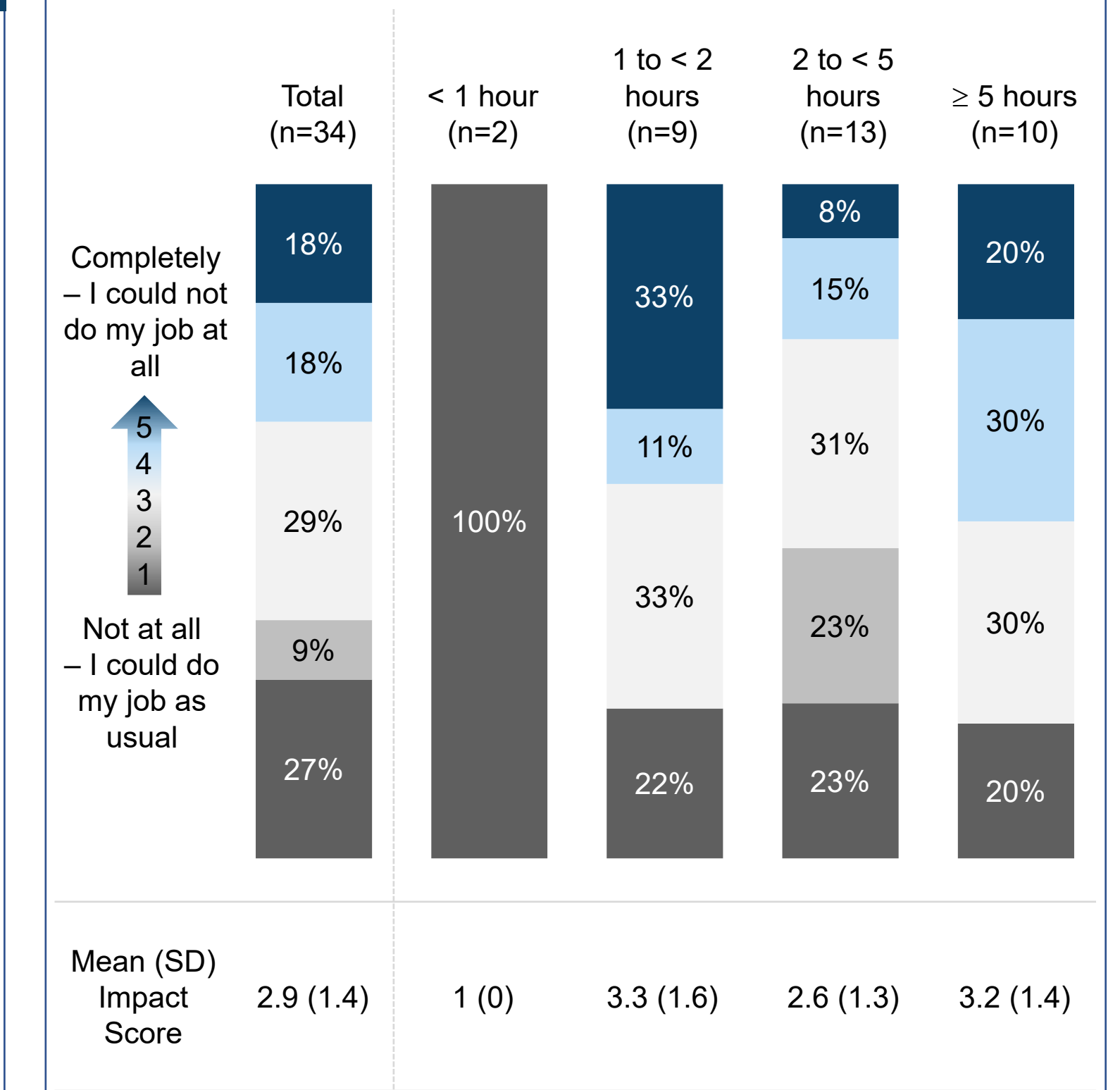
Figure 5. Impact on Last Treated Attack on Physical Outcomes (HAEA-QoLv2)



Time to Initial Treatment	% respondents reporting medium or a lot/severe impact		
	< 1 hour (n=4)	1 to < 2 hours (n=12)	2 to < 5 hours (n=17)
< 1 hour (n=4)	50%	0%	0%
1 to < 2 hours (n=12)	92%	58%	75%
2 to < 5 hours (n=17)	88%	65%	82%
≥ 5 hours (n=13)	85%	46%	77%

- No respondents who treated their attack in < 1 hour reported a severe impact of their energy, sleep, or activity level (based on HAEA-QoL) compared to 48%, 17%, and 45% of participants, respectively, who treated in ≥ 1 hour

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



- Among working participants (n=30), delay in treating their last attack was associated with greater difficulty performing their job

Table 2. WPAI Results: Impact of Last Treated HAE Attack on Ability to Work

	Total	< 1 hour	1 to < 2 hours	2 to < 5 hours	5 to < 8 hours	≥ 8 hours
Absenteeism (Mean % work time missed due to health amongst those employed, n=33)	16%	0%	34%	9%	40%	19%
Presenteeism (Mean % impairment while working due to health amongst those working, n=30)	44%	10%	56%	37%	34%	59%
Overall Work Impairment (Mean % overall work impairment due to health amongst those working, n=30)	44%	10%	56%	37%	34%	59%
Activity Impairment (Mean % activity impairment due to health amongst all, n=46)	48%	7.5%	51%	47%	48%	67%

- Among working participants (n=30), the average overall work impairment was 10% for those who treated in < 1 hour, and between 34% (5- < 8 hours) and 59% (≥ 8 hours) for all other participants
- Average absenteeism, presenteeism, work and activity impairment were the lowest for respondents who treated their attack in under 1 hour

Conclusions

- The majority of participants waited beyond an hour to treat their attacks, which often progressed to moderate or severe by the time of treatment
- QoL, work productivity, and physical outcomes were worse for those who delayed on-demand treatment
- Compliance with HAE treatment guidelines to consider treating all attacks earlier (and prior to progression) may reduce the negative impact of attacks on QoL and work productivity

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To view this poster after the presentation, visit KalVista Virtual Medical Booth.



References

- Betschel S, Badiou J, Binkley K, et al. The International/Canadian Hereditary Angioedema Guideline. *Allergy, Asthma & Clinical Immunology*. 2019;11(25):15(1):72. doi:10.1186/s13223-019-0376-8
- Busse PJ, Christiansen SC, Riedl MA, et al. US HAEA Medical Advisory Board 2020 Guidelines for the Management of Hereditary Angioedema. *The Journal of Allergy and Clinical Immunology In Practice*. Jan 2021;9(1):132-150.e3. doi:10.1016/j.jaip.2020.08.046
- Maurer M, Magerl M, Betschel S, et al. The international WAO/EAACI guideline for the management of hereditary angioedema-The 2021 revision and update. *Allergy*. Jul 2022;77(7):1961-1990. doi:10.1111/all.15214
- Radjoicic, Cristine et al. Patient Perspectives On Early Use Of On-demand Treatment For Hereditary Angioedema (HAE) Attacks to Reduce Severity. *JOURNAL OF ALLERGY AND CLINICAL IMMUNOLOGY* (Vol. 151, pp. AB143-AB143).

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