HEREDITARY ANGIOEDEMA (HAE)

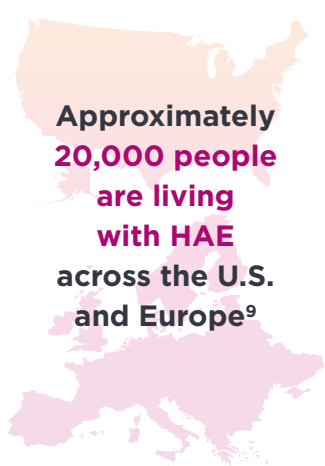
What is HAE?

HAE is a **rare and potentially life-threatening genetic condition that involves recurrent attacks of severe swelling** (angioedema) in various parts of the body, including the hands, feet, genitals, stomach, face and/or throat. When this swelling occurs, it is called an attack.[1–6]

HAE can impact multiple family members, and because the disease is often hereditary, **children have a 50% chance of inheriting HAE** if one of their parents has the condition.[7]

25%

However, as many as **25% of HAE cases** result from a **spontaneous genetic mutation,** or change, without a family history of HAE.[8]



Approximately 20,000 people are living with HAE across the U.S. and Europe[9]

More than **50% of people** living with HAE will experience **at least one laryngeal attack** in their lifetime, which means they experience swelling of the throat and/or tongue, and as a result can experience loss of consciousness or death.[8]

Even if not life-threatening, attacks can cause **severe pain and significantly disrupt daily life.** Abdominal attacks, for example, occur in up to 90% of people with HAE, and can lead to severe abdominal pain as well as vomiting and diarrhea.[8]

What is the disease burden?

While there are treatments available for people with HAE—both to prevent attacks (prophylactic) and to treat attacks (acute)—**people living with HAE still experience significant symptom burden day to day and may continue to experience attacks,** despite preventative treatment.[10]

HAE can make it difficult to carry out daily tasks, go to work or school, leave the house, walk or travel. This can negatively impact mental and emotional health, as well as the ability to maintain a job and relationships with friends, family and romantic partners.[10]

Because attacks are unpredictable, **simple activities are significantly more challenging,** and people living with HAE may experience anxiety daily as they feel they need to always be prepared for the possibility of an attack. Many avoid activities all together that may trigger an attack.[10]

According to the US Hereditary Angioedema Association Scientific Registry, in a review of nearly 500 patient records from 2009 to 2021:[10]

87% visited the **emergency room**

67% were **hospitalized**

16% were **intubated** and **admitted to the ICU**

What causes HAE?

HAE is caused by a genetic change that results in either reduced production or poor functioning of a protein in the blood called C1-Inhibtor.

When the body doesn't have enough C1-Inhibitor, or if the C1-Inhibitor does not function correctly, it can lead to overactivity of prekallikrein (PKK). PKK is a key factor in an inflammatory pathway that results in an excess of a protein called bradykinin, which ultimately leads to HAE attacks.[9,10–13]

What triggers an attack?

Every experience is different, and **some attacks appear to be spontaneous or unrelated to any specific cause.**

While there are no consistent triggers for HAE attacks, common examples include:[6]

- Anxiety
- Stress
- Common illnesses, such as colds/flu/other viral infections
- Minor trauma, such as a fall
- Surgery or dental procedures
- Change in temperature

How is HAE diagnosed?

Symptoms of HAE usually appear early in life, most often by puberty, and may increase in severity with age.[6–10]

A diagnosis is typically confirmed through a blood test.[6–10]

Because HAE is so rare, in some cases **it can take up to a decade to obtain an accurate diagnosis** after symptoms are first experienced. On average, it takes five years to diagnosis.[12]

How can people manage their HAE?

Current treatment options are primarily divided into two categories:

Prophylactic therapies to help reduce the frequency and severity of attacks when taken regularly

Typically, prophylactics require frequent administration, sometimes as often as daily or bi-weekly

Acute therapies used on-demand as an HAE attack is occurring to reduce swelling and minimize the impact of an attack

Despite advances in HAE treatment, **currently available options leave many people and families still seeking alternate treatment options that offer more convenience and improved quality of life.** Researchers are currently studying investigational medicines with the goal of gaining better disease control and reducing treatment burden.

Learn more about HAE by visiting the U.S. Hereditary Angioedema Association (HAEA) website at **www.haea.org**

REFERENCES

1 Manning ME. Dermatol Ther (Heidelb). 2021; 11:1829-1838.
2 Valerieva A, et al. Balkan Med J. 2021;8:89-103.
3 Santacroce R, et al. J Clin Med. 2021;10:2023.
4 Pines JM, et al. J Emerg Med. 2021;60:35-43.X
5 Maurer M, et al. World Allergy Organ J. 2022;15:100627.
6 What is Hereditary Angioedema (HAE). HAEA. (n.d.-b). https://www.haea.org/pages/p/what_is_hae
7 Farkas H. Pediatric hereditary angioedema due to C1-inhibitor deficiency. Allergy Asthma Clin Immunol. 2010;6(1):18. doi: 10.1186/1710-1492-6-18.
8 Bernstein J. Am J Manag Care. 2018;24:s292-s298.
9 Busse, P.J. and Christiansen, S.C., 2020 NEJM
10 Christiansen SC, Wilmot J, Castaldo AJ, Zuraw BL. The US Hereditary Angioedema Association Scientific Registry: hereditary angioedema demographics, disease severity, and comorbidities. Ann Allergy Asthma Immunol. 2023 Dec;131(6):766-774.e8. doi: 10.1016/j.anai.2023.08.012. Epub 2023 Aug 23. PMID: 37619776.
11 Busse 2020 J Allergy Clin Immunol Pract
12 Banerji, A. et al., 2020 Ann Allergy Asthma Immunol
13 Banerji, A. et. al. 2015 Allergy & Asthma