Selection of initiatives to improve the management of patients with hereditary angioedema by the hospital pharmacy using the nominal group technique

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ABSTRACT

Objective To identify and promote hospital pharmacy initiatives to improve the management of patients with hereditary angioedema (HAE) within the Spanish healthcare system.

Method A panel of experts comprising hospital pharmacists, an allergist and a nurse/member of the Spanish Hereditary Angioedema Association (Asociación Española de Angioedema Familiar) highlighted initiatives to improve care for patients with HAE after identifying, evaluating and prioritising them. Prioritisation was assessed based on the impact on patient care and the feasibility of their implementation on a scale of 1–5.

Results Seven key areas of activity for the role of hospital pharmacists in the management of patients with HAE were identified: evaluation and selection of medicines; hospital pharmacy dispensation and telepharmacy; pharmacotherapy follow-up and telemedicine; coordination with other healthcare teams involved in the care of patients with HAE; patient health education and training; research on HAE; and continuous education and training of hospital pharmacy service personnel. Ten initiatives with a mean impact score of 5 and a mean feasibility score of ≥4.1 were considered as high-priority initiatives. Half of the initiatives belong to the area concerning patient education and training (50%), followed by care coordination initiatives (30%) and continuous education and training (20%).

Conclusions Ten high-priority initiatives for the management of patients with HAE were identified by a panel of experts. The implementation of such initiatives by the hospital pharmacy service should enhance the management of patients with HAE in the Spanish healthcare system.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ As it is a rare disease, the literature relating to hereditary angioedema is sparse. Although there is some information regarding the management of the pathology and its patient journey, there is no information available regarding the role of hospital pharmacy in addressing hereditary angioedema.

WHAT THIS STUDY ADDS

⇒ This is the first study that addresses the critical points in which the hospital pharmacy participates in the care process of patients with hereditary angioedema. This study analyses the management of the disease, identifying the main challenges and initiatives for optimising the care process.

HOW MIGHT THIS STUDY AFFECT RESEARCH, PRACTICE OR POLICY

⇒ In this study, specific initiatives that could improve the management of patients with hereditary angioedema by the hospital pharmacy have been identified. By implementing these initiatives, the aim is to enhance the management of the pathology through a multidisciplinary point of view.

INTRODUCTION

Angioedema (AE) is caused by a vascular reaction in the subcutaneous or deep submucosal tissue, which releases vasoactive compounds and increases vascular permeability resulting in oedema (swelling) of the tissue. It can be triggered by mast cell mediators such as histamine or bradykinin, each requiring a distinct therapeutic approach.[1]

Depending on its classification, AE may or may not be associated with urticaria. AE without wheals (urticaria) is classified into hereditary AE (HAE) and acquired AE. The hereditary forms are further classified into those with C1 esterase inhibitor (C1-INH) deficiency and a mutation in the C1NH gene (HAE-C1-INH), and those without C1-INH deficiency (HAE-nC1-INH).[2]

HAE-C1-INH, the most common and well-known form, typically manifests as an autosomal dominant genetic disease associated either with a quantitative deficiency of C1-INH (type I) or with normal C1-INH levels but a functional or qualitative deficiency (type II).[2] It is a rare disease and its prevalence is unknown. According to a 2018 systematic review of epidemiological studies on HAE-C1-INH, the disease affects 1.1–1.6 people per 100 000 inhabitants.[3]

HAE is characterised by transient and unpredictable recurrent episodes of non-pitting, non-pruritic oedema without urticaria.[2 4–6] Acute episodes typically affect the abdomen, extremities and upper respiratory tract (URT) and resolve spontaneously within 2–5 days.[6] The frequency and severity of these episodes vary greatly among patients, even within the same family and at different stages of an individual's life.[5]

The diagnosis relies on clinical suspicion due to recurrent and transient episodes of cutaneous AE, abdominal pain, URT oedema and family history. Confirmation is obtained through laboratory tests.[7]

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Treatment is currently based on three therapeutic strategies: on-demand treatment of the acute attack, short-term prophylaxis and long-term prophylaxis.[5] Prophylaxis and on-demand treatment seek to alleviate symptoms and prevent oedema, especially if it affects the URT since it can lead to death resulting from asphyxia.[7] Patients often self-administer intravenous medications at home; however, in severe cases, they may have to visit the emergency room.

HAE negatively impacts patients' quality of life due to concerns about transmission to offspring since it is a hereditary disease and healthcare professionals' lack of knowledge about the disease, leading to underdiagnosis and delayed diagnosis.[6 8] Other factors that negatively affect the quality of life of patients with HAE include the unpredictability and severity of attacks, risk of asphyxia, need to visit the emergency room, difficulty accessing certain treatments and treatment-related adverse effects.[6 9]

In this regard, increased knowledge about HAE and the development of new treatments in recent years have contributed to modifying the course of this disease, thereby improving patients' autonomy and quality of life.

The primary role of the hospital pharmacy is to improve health outcomes by providing individualised pharmacotherapy, taking into account the medicine and patient characteristics, thereby optimising its effectiveness, efficiency and safety of use while providing all the necessary information and promoting continuity of care.[10]

The objective of this study was to identify and promote hospital pharmacy initiatives to improve the management of patients with HAE, thereby contributing to optimal health outcomes in an evolving healthcare environment in the context of a poorly understood disease and implementation of new therapeutic options. A consensus exercise was selected over other alternative approaches because it integrates the perspectives of various experts and real-world experiences through a comprehensive and unified strategy. The consensus exercise aimed to establish mutually agreed-upon priorities and actions applicable nationwide, specifically targeting healthcare professionals involved in HAE management.

METHODS

Initially, three experts (two hospital pharmacists and an allergist) with extensive experience in managing HAE were invited to form the project's coordinating committee. This committee pinpointed the main stages along the patient journey of patients with HAE in which hospital pharmacists specialising in hospital pharmacy (HP) participate (figure 1). In addition, the committee identified key aspects of the HP's role and specific patient needs at each phase of the care process.

Subsequently, under the guidance of the coordinating committee, 11 healthcare professionals were identified based on their expertise in the management of HAE. These professionals (10 HPs and one nurse who is also an HAE patient and a member of the Spanish Hereditary Angioedema Association (Asociación Española de Angioedema Familiar)) were then invited to join the project. Together with the coordinating committee, they formed the expert panel. This panel was established to identify initiatives designed to improve the care provided to these patients (see online supplemental table 1S). Every member of the expert panel received an information dossier about the objectives, methodology and their potential responsibilities during the development of the project. Participation, which was non-confidential and voluntary, was confirmed by each expert through the signature of a collaboration agreement, indicating their consent to participate. All professionals were financially compensated based on the hours dedicated to the project.

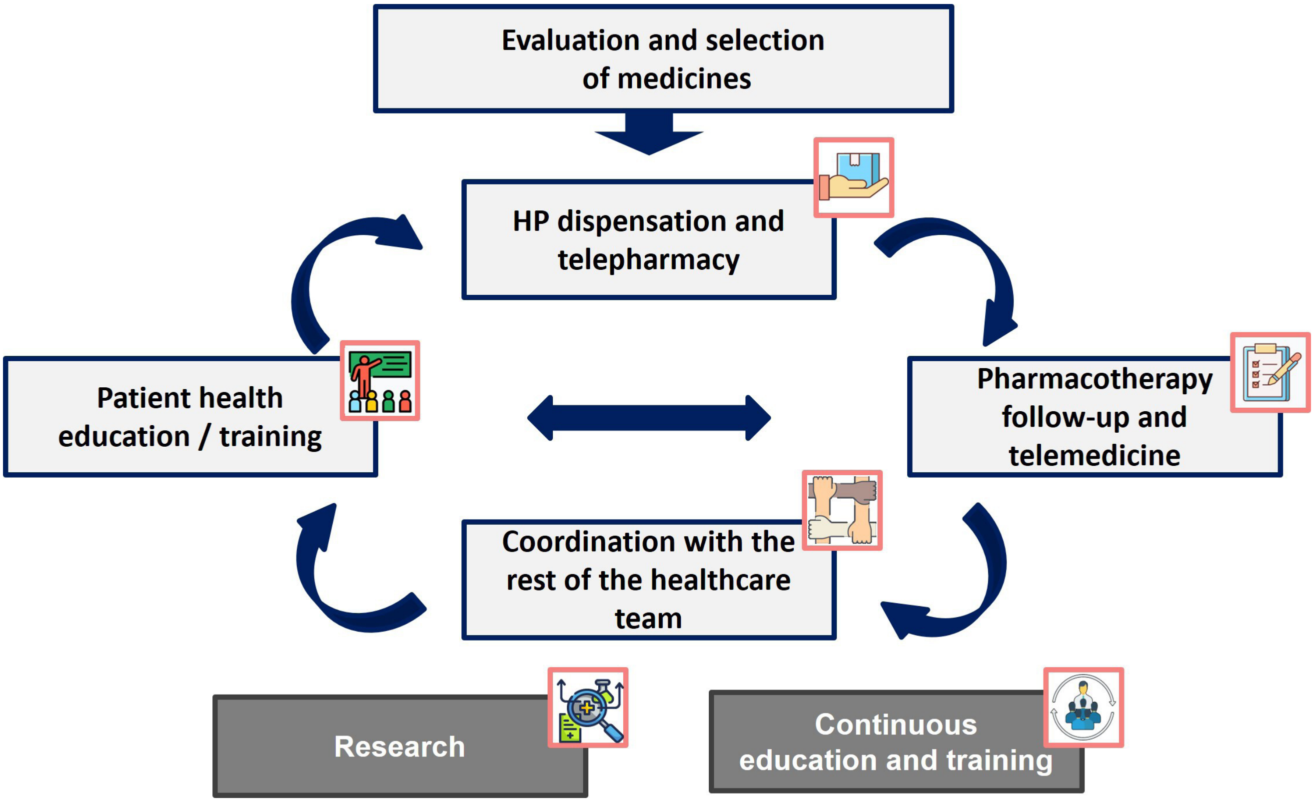

Figure 1 Main stages in the management of patients with hereditary angioedema in which the hospital pharmacists (HPs) participate.

To identify initiatives designed to improve the care provided to patients with HAE, the nominal group technique[11] following the ACCORD guideline[12] was used throughout two workshops as a structured method for brainstorming and decision-making within the group. Ascendo Sanidad & Farma, a consulting firm specialising in the healthcare and pharmaceutical sectors with expertise in consensus methodologies such as the nominal group technique, provided support in the coordination and dynamisation of the study phases.

The first workshop, held in person in May 2021, focused on discussing the key aspects and challenges of the role of HPs and the specific needs of patients with HAE. The contributions of HPs in managing these patients and their coordination with the rest of the healthcare team were emphasised. In this workshop, the consulting team presented, based on the information provided by the coordinating committee, the HAE patient journey and the key stages involving HPs. The expert panel refined each of the identified elements based on their experience and clinical practice. Subsequently, the experts identified the main challenges and specific needs of patients with HAE to address during the second session.

The second workshop, held in person in October 2021, aimed at identifying and prioritising initiatives to respond to the identified challenges and other key aspects compiled by the consulting team during the first workshop. This session was conducted following the nominal group technique methodology. Initially, all the challenges were reviewed and, subsequently, each panel member proposed initiatives which were discussed and improved collectively. After reviewing all the initiatives, only those approved and validated by more than 75% of the panellists were chosen. Finally, the validated initiatives were prioritised based on their impact and feasibility. Impact referred to the potential of the initiative to improve patient care by the HPs. Participants scored this feature from 1 (initiatives with the lowest impact) to 5 (initiatives with the highest impact). Feasibility was determined as the mean score of two factors: 'resources feasibility', including the financial or space requirements to develop and implement each initiative (scores from 1 to 5, with higher scores indicating high levels of feasibility) and 'decision-making feasibility', including the complexity or difficulty involved in the decision-making process for implementing the initiative (scores from 1 to 5, with higher scores indicating high levels of feasibility).

Each participant submitted their scores anonymously through a virtual form developed with Microsoft Forms, enabling a streamlined and efficient method for gathering individual assessments on the impact and feasibility of each initiative.

After the scoring process, the average scores were calculated and the results were then presented to the panel of experts for further evaluation and potential refinement.

In the final phase, aiming to construct an actionable and timely implementable roadmap, the experts identified five initiatives as priorities. This selection was based on the criteria that these initiatives were not only deemed to have a significant potential impact on patient care but were also considered feasible for development in the short to medium term. The prioritisation of these initiatives underscores a pragmatic approach towards enhancing patient care for HAE, focusing on interventions that can be realistically executed within an achievable timeframe, thereby ensuring that the proposed improvements are both impactful and practical.

RESULTS

The coordinating committee initially identified the areas of activity where HPs play a vital role in the management of patients with HAE. These areas encompass the evaluation and selection of medicines, hospital pharmacy dispensation and telepharmacy, pharmacotherapy follow-up and telemedicine, coordination with the rest of the healthcare teams participating in patient care (primarily allergology, immunology, emergency medicine and nursing), patient health education and training, research on HAE, and continuous education and training of hospital pharmacy service personnel (figure 1).

For each identified area of activity the work group discussed the key initiatives and specific functions of the HP in delivering optimal care to patients with HAE to achieve the best health outcomes. These discussions served as a foundational framework for identifying the initiatives to be promoted and implemented to enhance patient care. A total of 28 initiatives were identified and grouped into seven key areas (see online supplemental table 2S):

1. Evaluation and selection of medicines
2. Hospital pharmacy dispensing and telepharmacy
3. Pharmacotherapy follow-up and telemedicine
4. Coordination with the rest of the healthcare team
5. Patient health education and training
6. Research
7. Continuous education and training

Of the 28 proposed initiatives, 10 stood out as having high average values of impact and feasibility (5 for impact and ≥4.1 for feasibility) (figure 2 and table 1).

Among the top 10 high-priority initiatives, those related to patient education and training accounted for 50%, followed by care coordination (30%) and continuous education and training (20%). No high-priority initiatives were identified in other categories.

From the proposed initiatives, based on their expertise, the panel of experts selected five initiatives that can be realistically executed within a short to medium term timeframe. These initiatives were as follows: (1) Preparation of guidelines with recommendations for coordinating the multidisciplinary team responsible for managing patients with HAE, defining and establishing channels of communication to ensure harmonisation in the decision-making process and prevent duplication of information for the patient; (2) Developing protocols for periodic health monitoring and evaluation of patients with HAE, including assessments of their health status and outcomes following administration of long-term prophylaxis; (3) Incorporating the patient's perspective in the evaluation and decision-making processes related to HAE treatments using patient-reported outcomes (PROs) and patient-reported experience measures (PREMs); (4) Participating in multidisciplinary meetings to evaluate and select medicines for HAE; and (5) Promoting the use of telepharmacy tools for patient health education and training as a complement to in-person appointments.

DISCUSSION

Of all the initiatives identified, the rationale behind the selection of the five chosen initiatives for development in the short to medium term is detailed below.

1. *Preparation of guidelines with recommendations for coordinating the multidisciplinary team responsible for managing patients with HAE, defining and establishing channels of*

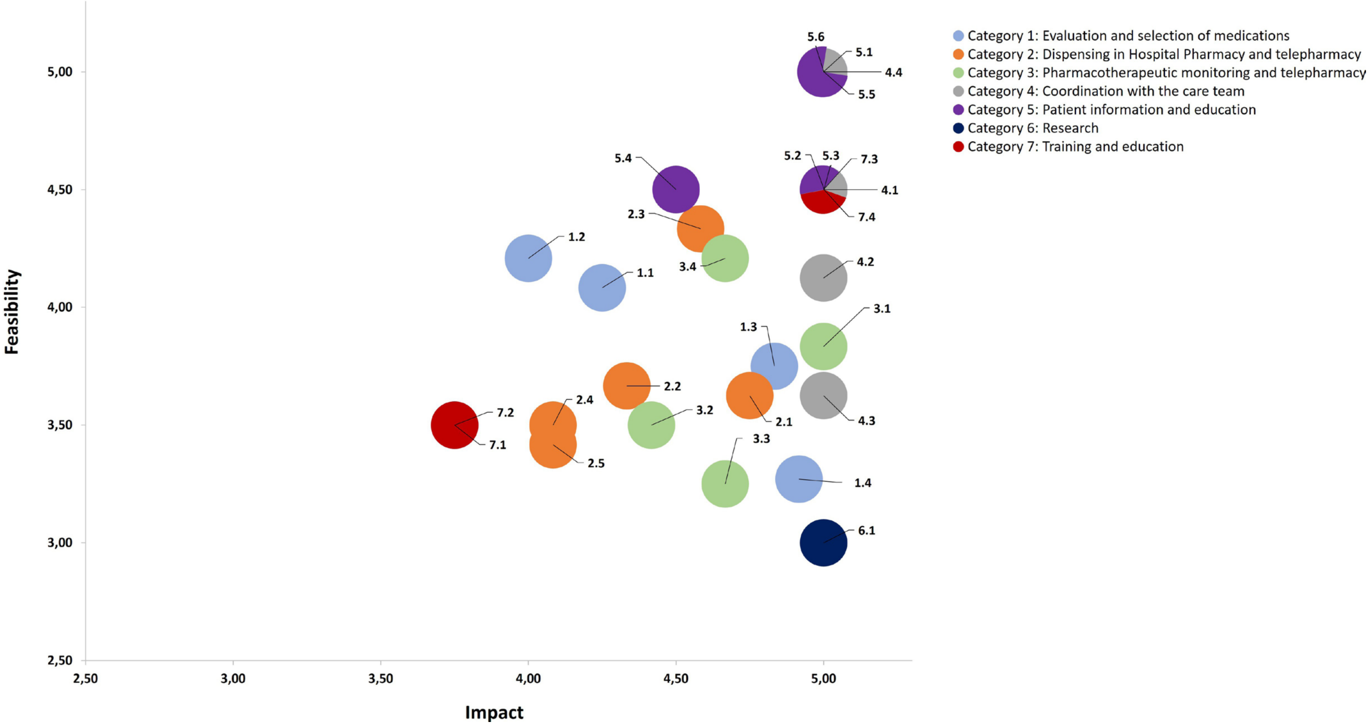

Figure 2 Matrix for prioritising initiatives based on their impact and feasibility.

communication to ensure harmonisation in the decision-making process and prevent duplication of information for the patient.

The development of guidelines to improve care coordination has proven successful in the management of various diseases.[13] [14] In the case of HAE, these types of guidelines facilitate knowledge transfer from centres with a larger number of patients, thereby promoting and formalising intra- and inter-centre communication and coordination and establishing communication channels between HPs, allergists and the rest of the healthcare team. Such recommendations could improve patient care, especially for rare diseases such as HAE, by standardising the information received from all healthcare professionals involved and their pharmacotherapy follow-up. For healthcare professionals, this would improve communication between them, increase their knowledge of the disease, and increase HP visibility and understanding of their role in multidisciplinary care. At the healthcare system level, the benefits include resource optimisation, increased efficiency, improved health outcomes, enhanced patient satisfaction, and bolstering the public institutions' reputation.

2. *Developing protocols for periodic health monitoring and evaluation of patients with HAE, including assessments of their health status and outcomes following administration of long-term prophylaxis.*

Due to the complex nature of HAE and its treatment regimens, maintaining comprehensive records including the frequency of attacks or responses to treatment is of paramount importance. This approach is aligned with what is stipulated in the International WAO/EAACI Guideline for

Table 1 High-priority initiatives according to their impact and feasibility values

Initiative	Impact	Mean feasibility
4.4 Establish and share a working protocol on short-term prophylaxis, defining situations in which it should be carried out and the medication to be administered	5	5
5.1 Have a reference pharmacist for the pathology and promote initiatives that reinforce the visibility of the hospital pharmacist to patients	5	5
5.5 Conduct informative/training sessions with patients and other healthcare professionals on the management of HAE and medication	5	5
5.6 Provide information/training (oral/written) to patients on safety issues, enabling them to acquire skills to detect adverse effects, tolerance and safety, as well as training them to ensure adherence	5	5
4.1 Preparation of guidelines with recommendations for coordinating the multidisciplinary team responsible for managing patients with HAE, defining and establishing channels of communication to ensure harmonisation in the decision-making process and prevent duplication of information for the patient	5	4,5
5.2 Promote initiatives in collaboration with Patient Associations to make known the role of the hospital pharmacist in managing HAE patients	5	4,5
5.3 Promoting the use of telepharmacy tools for patient health education and training as a complement to in-person appointments	5	4,5
7.3 From the Spanish Society of Hospital Pharmacy, promote training programmes among hospital pharmacists in the management of HAE patients	5	4,5
7.4 Promote training programmes among healthcare professionals in patient training and communication techniques.	5	4,5
4.2 Have a designated pharmacist knowledgeable about the pathology and promote visibility initiatives for the pharmacist's role within the hospital as part of the multidisciplinary team responsible for managing HAE patients	5	4,1

HAE, hereditary angioedema.

the Management of Hereditary Angioedema which indicates that regular follow-up visits, tailored to the individual patient's needs and disease severity, are recommended to ensure optimal management and adjustment of treatment plans as necessary.[15] According to the experts' opinion, this initiative would facilitate the decision-making process, optimise treatment strategies and increase patient safety and quality of life.

3. *Incorporating the patient's perspective in the evaluation and decision-making processes related to HAE treatments using patient-reported outcomes (PROs) and patient-reported experience measures (PREMs).*
   Incorporating the patient's perspective using PROs and PREMs is increasingly gaining importance within the healthcare system.[16] In a disease such as HAE, integrating the patient's participation, vision and experiences is essential to improve the quality of care.[17–19] With this approach, HPs can tailor treatments more effectively, leading to improved patient care; patients benefit from a more engaged role in their healthcare, potentially increasing treatment adherence and satisfaction and hospitals see improvements in service delivery and patient satisfaction, essential for healthcare performance metrics.
4. *Participating in multidisciplinary meetings to evaluate and select medicines for HAE.*
   The development of new treatments in recent years for managing patients with HAE necessitates the organisation of multidisciplinary meetings or the joint evaluation of medicines. As observed on previous occasions, the participation of HPs in multidisciplinary teams reduces the risk of hospital visits and improves patients' quality of life.[20 21] It is considered that including the perspective of all the healthcare professionals involved in the management of the disease would provide a more global and comprehensive view of the patient's needs and preferences, as well as a greater degree of involvement and awareness on the part of the healthcare professionals involved.
5. *Promoting the use of telepharmacy tools for patient health education and training as a complement to in-person appointments.*
   The COVID-19 pandemic has highlighted the importance of enabling patients to manage their care from home. Patients with HAE, especially those receiving long-term prophylaxis, must collect their medications periodically to reduce the number of hospital visits, which can offer great advantages. Telepharmacy, through its diverse applications (pharmacotherapy follow-up, training and education, care coordination, and informed dispensation and delivery of medicines), can improve adherence to therapeutic objectives, provide training and rigorous and accurate education, improve continuity of care and provide greater flexibility in the dispensing of medicine. Maintaining a balance between telematic and face-to-face care is essential using the former as a complementary tool to enhance face-to-face care, not as a replacement for it.[22]

CONCLUSION

This study has contributed to the identification and prioritisation of a series of actions that could improve the management of patients with HAE, which could potentially be implemented in the Spanish healthcare system. Therefore, HPs could advocate for specific actions that could have a tangible impact on patients' lives.

This study stands out for its eminently practical approach, drawing on the expertise of specialists in the management of HAE with the goal of generating actionable initiatives aimed at improving the management of the condition, particularly in the short to medium term. This approach ensures that the strategies and solutions proposed are grounded in real-world experience and are feasibly implementable within the envisioned timeframe, offering immediate benefits to both patients and healthcare providers involved in HAE care.

However, the study faces limitations due to the rare nature of HAE, which has inherently restricted the size of the expert sample selected for the panel. This limitation may affect the transferability of the findings and recommendations, as the pool of available experts with deep experience in HAE is naturally small. Consequently, while the insights and initiatives proposed are derived from a concentrated source of expertise, the narrow sample size could potentially limit the scope of perspectives and innovative approaches considered during the study.

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