

Fig. 1 GA²LEN/HAEi Angioedema Centers of Reference and Excellence (ACARE) Audit Report



Audit Date: _____

Head of the Center: *name and email* _____

Audited Center: _____

Auditor: *name and email* _____

Deputy: *name and email* _____



Infrastructure / Set up					
	Requirement	Explanation	Deliverable(s)	Yes /No	Cat.
1.	Hospital setting or affiliation	Center needs to be in a hospital or affiliated with a hospital with inpatient facilities to allow for extended diagnostic work up and management of exacerbation	Evidence of hospital setting or affiliation with hospital	<input type="checkbox"/> <input type="checkbox"/> _____	B
2.	Outpatient clinic with clinic hours for angioedema patients headed by expert	Center needs to have designated and expert leadership (experienced specialist physician) and to offer a minimum number of consultation hours per week for angioedema patients	Lead by experienced physician (board certified specialist) ≥4h / week of dedicated angioedema clinic (physician contact time)	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	A
3.	Care for children and adult patients	Centers need to be able to provide care for angioedema patients of any age, either by center staff or affiliated specialists	Evidence that angioedema patients of any age are provided with state of the art care	<input type="checkbox"/> <input type="checkbox"/> _____	B
4.	Team of dedicated staff, with specific angioedema training	Center staff needs to comprise more than one physician and at least one nurse. All center staff needs to be specifically and regularly trained in angioedema	≥2 physicians and ≥1 nurse Record of ≥1 angioedema training per staff member per year, e.g. GA ² LEN school on angioedema, angioedema CME activity, etc.	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	A

5.	Multidisciplinary approach	Center needs to be able to interact with other specialties for the management of comorbidities, the treatment of patients with differential diagnoses, and to perform extended diagnostics	Evidence of interaction with other specialists	<input type="checkbox"/> <input type="checkbox"/> _____	B
6.	Accessibility and visibility	Angioedema patients need to be able to find the center via information on the web; center needs to have referral network(s) of physicians; center needs to work with patient association(s), where applicable	Center clinic hours are posted on website Evidence of local referral network Evidence that patient organization recommends the center	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	B
7.	Communication skills	Center staff needs to be able to communicate adequately with angioedema patients in national language and in English	Proof of adequate communication skills by interview with center staff	<input type="checkbox"/> <input type="checkbox"/> _____	B
8.	Quality management	Center needs to have Quality Management (QM) system in place, need to have written protocols and standard operating procedures (SOPs)	Evidence of presence of QM system Proof of presence and use of SOPs/ protocols	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	B
9.	Structured documentation, recording and archiving of patient data	Center needs to have in place and use a databank to record patient data. Databank needs to allow retrieval of information needed to address scientific questions	Patient databank ≥50 angioedema patients in databank/year	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	A
10.	Critical incidence reporting and error management ⁸	Center needs to have and make use of an incidence report book documenting all critical incidents. Centers must analyze all reported incidents and take and document appropriate action	Evidence of presence and use of incidence report book and follow up and documentation of error reports by appropriate action	<input type="checkbox"/> <input type="checkbox"/> _____	B
11.	Assessment of patient satisfaction and unmet needs	Center needs to regularly assess how satisfied their patients are with the work of the center and take appropriate action based on the outcome	Proof that ≥40 patients were asked about their satisfaction in last 12 months (preferably by questionnaire)	<input type="checkbox"/> <input type="checkbox"/> _____	B
12.	In team communication	Center needs to have regular meetings of staff to discuss projects and concepts. Decisions should be protocolled and followed by action where applicable.	Evidence of regular team meetings, at least once per month, on center logistics, projects and concepts	<input type="checkbox"/> <input type="checkbox"/> _____	B
13.	Active recruitment of research funding and support for educational activities and advocacy on angioedema	Center needs to actively recruit extramural funding to support research, educational activities and/or advocacy on angioedema	Documentation of efforts to recruit funding (grant applications, donation program)	<input type="checkbox"/> <input type="checkbox"/> _____	B

14.	Support of the ACARE network	Training and activities in auditing and certifying GA ² LEN/HAEi ACAREs and interaction with other ACAREs	Letter of intent to serve as a GA ² LEN/HAEi ACARE auditor and to contribute to ACARE network activities, projects, and meetings	<input type="checkbox"/> <input type="checkbox"/> _____	A
15.	“Never give up” attitude	Staff needs to exhibit high motivation to help angioedema patients and show understanding that they may be the last resort of patients. Staff needs to convey to patients, that they are in good care and that the center will help them, however hard this may be.	Evidence of “never give up”-attitude by staff interview	<input type="checkbox"/> <input type="checkbox"/> _____	B

Management					
	Requirement	Explanation	Deliverable(s)	Yes /No	Cat.
16.	Knowledge of and adherence to the WAO/EAACI hereditary angioedema guideline ¹ and the EAACI/GA ² LEN /EDF/WAO guideline for urticaria ²	All center staff members need to know the current versions of these international guidelines and their corresponding national guidelines, if available. Center approach to angioedema needs to be based on guideline recommendations.	WAO/EAACI guideline for hereditary angioedema and EAACI/GA ² LEN/EDF/WAO guideline for urticarial are present (paper / electronic version ^{1,2}) Center staff can answer questions on guideline recommendations Center physicians can show, by use of a patient file, that management decision are based on guideline recommendations	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	A
17.	Knowledge and use of current nomenclature and classification of angioedema	Center staff needs to know and use the current angioedema classification and nomenclature	Evidence that staff uses current angioedema nomenclature and classification ^{1,2} , e.g. by interview and/or patient file review	<input type="checkbox"/> <input type="checkbox"/> _____	A
18.	Knowledge and use of guided history taking/anamnesis	Structured history taking by center physicians is essential and a checklist can facilitate this	Checklist for history taking needs to be present and used as evidenced by interview or angioedema patient file review	<input type="checkbox"/> <input type="checkbox"/> _____	A
19.	Knowledge and use of differential diagnostic algorithm	Center physicians need to be aware of the differential diagnoses of angioedema and know how not to miss them.	Differential diagnostic algorithm ³ needs to be present and used as evidenced by interview or angioedema patient file review	<input type="checkbox"/> <input type="checkbox"/> _____	A

20.	Standardized assessments and monitoring of disease activity, impact and control of disease	The use of instruments for assessing disease activity, impact and control allows for standardized measurements and monitoring of patients can help to optimize angioedema management.	AAS ⁴ , AE-QoL ^{5,6} , AECT ⁷ or other validated tools for the assessment of angioedema disease activity, impact and control need to be present and used At least one of them needs to be used in 80% of recurrent angioedema patients	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	A
21.	Identification of comorbidities and underlying causes	Center needs to have access to and use measures to identify comorbidities and causes of chronic recurrent angioedema, for example C1 inhibitor testing and genetic testing	Evidence that diagnostic measures for angioedema comorbidities and underlying causes are used, e.g. C4 and C1 inhibitor tests, genetic testing	<input type="checkbox"/> <input type="checkbox"/> _____	A
22.	Family screening and pedigree charting	In patients with hereditary angioedema, all immediate family members need to be screened. A pedigree (a family tree) needs to be prepared and used to identify and document affected family members.	Standardized documentation of family screening and pedigree charting Instrument / techniques are available and used as evidenced by patient file reviews	<input type="checkbox"/> <input type="checkbox"/> _____ <input type="checkbox"/> <input type="checkbox"/> _____	A
23.	Knowledge and use of therapeutic algorithm	Center physicians need to know and apply therapeutic guideline algorithms.	Evidence that center has SOPs, expertise, and resources needed for the use of on demand treatment and prevention of angioedema (mast cell-mediated and bradykinin-mediated, including HAE) and that staff uses current therapeutic algorithms, e.g. by interview and/or patient file review	<input type="checkbox"/> <input type="checkbox"/> _____	A
24.	Counseling	Counseling of patients and their families, for example on triggers of exacerbation, on emergency medication/measures, daily life issues can help to optimize angioedema management	Evidence that angioedema patients receive counseling, e.g. by interview and/or patient file review	<input type="checkbox"/> <input type="checkbox"/> _____	A

Research					
	Requirement	Explanation	Deliverable(s)	Yes /No	Cat.
25.	Scientific orientation	Center staff needs to be up-to-date with the literature on angioedema, especially on pathogenesis, for example by participation in journal club, attending annual meetings of scientific societies, membership in scientific societies	Evidence of knowledge of the current angioedema literature, e.g. by interview	<input type="checkbox"/> <input type="checkbox"/> _____	A
26.	Scientific activity	Angioedema research activities in basic science, clinical science, translational science, epidemiology, and/or public health	Evidence of scientific activities and projects on angioedema	<input type="checkbox"/> <input type="checkbox"/> _____	A
27.	Scientific productivity	Center needs to show that its research activities result in publications and other scientific output	0.5 peer-reviewed publication on angioedema per year per center physician	<input type="checkbox"/> <input type="checkbox"/> _____	A
28.	Clinical trials	Center needs to participation in clinical trials, pharmaceutical and/or investigator-initiated; diagnostic and/or therapeutic trials on angioedema	0.5 trials in angioedema per year per center physician	<input type="checkbox"/> <input type="checkbox"/> _____	A
29.	Participation in registry	Registries can help to better understand angioedema. Center needs to participate in international, national, and/or regional registry activities, e.g. CURE ⁹	Evidence that center enters data on angioedema patients in a registry	<input type="checkbox"/> <input type="checkbox"/> _____	A

Education					
	Requirement	Explanation	Deliverable(s)	Yes /No	Cat.
30.	Educational activities	Center needs to contribute to the education of physicians who see patients with angioedema, e.g. dermatologists, allergists, ER-physicians, pediatricians, general practitioners and family physicians, and of medical students, residents, patients, and the general public	Evidence of 1 educational activity on angioedema per year for physicians and 1 per year for patients	<input type="checkbox"/> <input type="checkbox"/> _____	A

Advocacy					
	Requirement	Explanation	Deliverable(s)	Yes /No	Cat.
31.	Increase awareness of angioedema	Center needs to increase awareness and knowledge of angioedema, for example by contributing to HAE day ¹⁰ , UrticariaDay ¹¹ , support of the ACARE Network.	Evidence of 1 advocacy /awareness activity on angioedema per year	<input type="checkbox"/> <input type="checkbox"/> _____	A
32.	Interaction with and support of patient organization(s) including HAEi and its partner organizations	Patient organizations can help to improve the management of angioedema and angioedema patients	Evidence of interaction with angioedema patient organization	<input type="checkbox"/> <input type="checkbox"/> _____	A

- Audit result:** All requirements fulfilled, no areas with a need for further improvement, center should be certified
 All requirements fulfilled, some areas require further improvement, center should be certified
 Areas with a need for further improvement:

- Most requirements fulfilled, center should be certified after
- providing documentation that the following requirements are fulfilled

 - re-audit in _____ months

Comments:

Categories (Cat.): Requirements of the category A are specific for ACAREs, whereas requirements of the category B are part of the GA²LEN Centers of Reference and Excellence (CORE) Quality Management and Certification program. Category B requirements do, therefore, not need to be audited, if the angioedema center’s institution is a member of an audited and certified GA²LEN CORE, for example the UCARE network.

References: 1 = Maurer, M., Magerl, M., et al., The international WAO/EAACI guideline for the management of hereditary angioedema – the 2017 revision and update. Allergy 2018: 73; 1575-1596 and WAO Journal 2018: 11; 5. 2 = Zuberbier T et al. The EAACI/GA²LEN/EDF/WAO guideline for the definition, classification, diagnosis and management of urticaria. The 2017 revision and update. Allergy 2018: 73; 1393-1414; 3 = Maurer, M., Magerl, M., Metz, M., Siebenhaar, F., Weller, K., and Krause, K.: Practical algorithm for diagnosing patients with recurrent wheals or angioedema. Allergy 2013a: 68; 816-819; 4 = Weller, K., Groffik, A., Magerl, M., Tohme, N., Martus, P., Krause, K., Metz, M., Staubach, P., and Maurer, M.: Development, validation and initial results of the angioedema activity score (AAS). Allergy 2013: 68; 1185-1192, available at www.moxie-gmbh.de; 5 = Weller, K., Groffik, A., Magerl, M., Tohme, N., Martus, P., Krause, K., Metz, M., Staubach, P., and Maurer, M.: Development and construct validation of the angioedema Quality of Life Questionnaire (AE-QoL). Allergy 2012: 67; 1289-1298, available at www.moxie-gmbh.de; 6 = Weller, K., Magerl, M., Peveling-Oberhag, A., Martus, P., Staubach, P., and Maurer, M.: The angioedema quality of life questionnaire (AE-QoL) – assessment of sensitivity to change and minimal clinically important difference. Allergy 2016: 71; 1203-1209; 7 = Weller, K., Donoso, T., Magerl, M., Aygören-Pürsün, E., Staubach, P., Martinez-Saguer, I., Hawro, T., Altrichter, S., Krause, K., Siebenhaar, F., Metz, M., Zuberbier, T., Freier, D., and Maurer, M.: Development of the angioedema control test (AECT) – a patient reported outcome measure that assesses disease control in patients with recurrent angioedema. Allergy 2019: in press, available at www.moxie-gmbh.de; 8 = Critical incidents are mistakes, for example in the diagnostic workup, the treatment, or the management of patients; 9 = www.urticaria-registry.com; 10 = www.haeday.org; 11 = www.urticariaday.org.

Abbreviations: AAS = Angioedema activity score; AE-QoL = Angioedema quality of live questionnaire; AECT = Angioedema control test; CAT = categories; CINDU = Chronic inducible angioedema; CME = Continued medical education; CURE = Chronic angioedema registry; ER = Emergency room; GA²LEN = Global Allergy and asthma European Network; QM = Quality management, SOP = standard operating procedure; UCARE = Urticaria Center of Reference and Excellence.