Quality standards for allergen immunotherapy clinics in Spain. Consensus document

Short title: Quality standars, allergen immunotherapy

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SUMMARY

Background: The allergen immunotherapy clinics (AITC) in Spain are very different in terms of structure, organisation, resources and portfolio of services. Therefore, it is essential to unify treatment criteria and define quality standards for the most complex AITCs.

Objective: To establish a series of recommendations that will make it possible to guarantee quality and safety in the administration of immunotherapy and to define the quality standards for the most complex AITCs.

Methods: This project began with an online survey of 65 allergy departments or units all over Spain conducted in 2013. Next, a two-phase consensus process was carried out. In the first, ten experts defined and agreed on the standards using the RAND/UCLA Appropriateness method; in the second, the agreements were validated by means of a Delphi consultation in two rounds to 84 experts.

Results: Consensus was reached on minimum safety and quality criteria in the administration of allergen immunotherapy (AIT), and two levels of highly complex AITCs were defined: accredited AITCs (AITCA) and AITCs accredited with excellence (AITCAE). Consensus was also reached on quality standards and accreditation criteria for both levels.

Conclusions: This project is pioneering in terms of its purpose - the definition of quality standards for AITCs - and for the use of structured participation techniques - a combination of the RAND/UCLA and Delphi methods. The results, together with some minimum standards for quality and safety in administering AIT, is a set of quality criteria for AITC accreditation supported by a broad panel of SEAIC experts.

Key words: Allergens, Delphi Study, Immunotherapy, Health Care Quality Assurance.

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RESUMEN

Antecedentes: Las unidades de inmunoterapia (UIT) en España son muy diferentes en cuanto a estructura, organización, recursos y cartera de servicios. Por ello, resulta esencial homogeneizar criterios de actuación y definir estándares de calidad para las UIT de mayor complejidad.

Objetivo: Establecer recomendaciones que permitan garantizar la calidad y seguridad en la administración de la inmunoterapia y definir estándares de calidad para las UIT de mayor complejidad.

Métodos: Proyecto iniciado (año 2013) con una encuesta *on-line* a 65 servicios o unidades de alergología de toda España. Posteriormente, se desarrolló un proceso de consenso en dos fases. En la primera, diez expertos definieron y consensuaron los estándares mediante el método RAND/UCLA; en la segunda, los acuerdos se validaron mediante una consulta Delphi a dos rondas con 84 expertos.

Resultados: se consensuaron criterios mínimos de seguridad y calidad en la administración de inmunoterapia con alérgenos (ITA) y se definieron dos niveles de UIT de mayor complejidad: las UIT acreditadas (UITA) y las UIT acreditadas con excelencia (UITAE), consensuándose también los estándares de calidad y criterios de acreditación para ambos niveles.

Conclusiones: Proyecto pionero en su objetivo – definición de estándares de calidad de UIT– y en el empleo de técnicas de participación estructuradas – combinación de los métodos RAND/UCLA y Delphi–. El resultado es la definición de unos mínimos de calidad y seguridad para administrar ITA, y un conjunto de criterios de calidad para la acreditación de las UIT que cuenta con el respaldo de un amplio panel de expertos de la SEAIC.

Palabras clave: Alérgenos, Delphi, Rand/Ucla, Inmunoterapia, Calidad Asistencial.

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INTRODUCTION

Allergen immunotherapy (AIT) is a treatment aimed at modifying the clinical-immunological response of individuals suffering from IgE-mediated allergies. It is based on the controlled administration of pharmacological products in which the active ingredient is the allergen responsible for the disease. Thus, in order to ensure its safety and obtain maximum therapeutic efficacy, it is essential to monitor these patients in allergen immunotherapy clinics (AITC) that guarantee certain quality standards [1-4].

AITCs are clinical facilities staffed by professionals with expertise in the administration of allergen extracts, and they are located within healthcare centers that have sufficient resources and associated with an allergy specialist [3, 5]. There are numerous and very different AITCs in Spain, and their structure reflects the capacities of their organisers and the resources of each healthcare environment. Likewise, the possibilities for the portfolio of AITC services are variable, as some administer AIT for patient treatment purposes, others have research facilities, others offer training, etc. Accordingly, and yet without normative value for authorising the opening and/or operation of the AITCs, it is essential to define a series of standards in order to guarantee the quality and safety of the patients treated in these units. With this intention, allergy specialists from the Spanish Society of Allergology and Clinical Immunology (SEAIC) and its AIT Committee agreed to conduct a formal consensus process.

The objectives of this work were: (a) to define minimum criteria and requirements to serve government agencies, clinic operators (public or private) and physicians and nursing staff who work in the allergy field and are involved in the administration of AIT, in order to guarantee safe conditions, quality and

patient rights in the AITCs; (b) to define minimum recommendations that allow action criteria to be established and guarantee safety in the administration of the treatment, and to define a series of quality standards for high-complexity AITCs. The final objective will be to establish the action criteria at the treatment level, so that they can be accredited by the SEAIC in the future; and (c) to establish general recommendations for AITCs relating to the organisation, management, physical structure and resources of the same.

METHODS

This study was carried out based on the data supplied by allergy departments or units all over Spain, through an online survey conducted on 153 allergy departments and/or units by the SEAIC Immunotherapy Committee in 2013. The purpose was to obtain a map of the situation of the AITCs in the country at that time. Following the analysis of the same and in light of the results obtained, a two-phase consensus process was designed:

Phase 1. This consisted of a consensus process using the RAND/UCLA method, the results of which are based on available scientific evidence and expert opinion. Ten physicians specialising in allergies (including specific expert profiles related to quality, management, and care management) participated, led by a group of four coordinators.

A two-phase bibliographic search was conducted: an initial search for possible pre-existing criteria and sources mainly concerned with care quality and management, and a second and more specific one based on a non-exhaustive systematic review of the literature. This second review was conducted in Medline, in Spanish and English, and was limited to publications of the last five years, which was extended to ten if no relevant results were found. Likewise,

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clinical practice guidelines, reviews, consensuses, care protocols and recommendations were prioritised.

Based on the selected publications, a quality standards proposal was developed, which was evaluated on an individual basis in an online validation round by all the experts. Four response options were defined for each proposal, with 1 being “strongly disagree” and 4 being “strongly agree”. For the analysis, the results of 1 and 2 were grouped together as “disagree” and 3 and 4 as “agree”. The criteria for accepting or rejecting a standard were established based on the combined “agree” options (3 and 4) and defined as follows: unanimity (100% agreement), consensus (≥85% agreement), variance (agreement between 66% and 84%) and rejection (agreement <66%). The standards that were classified as variance or rejection were sent back to the experts for a second round of individual assessment. Lastly, a group validation session was held to discuss the proposals that had not achieved consensus in either of the two rounds.

Phase 2. For the purpose of extending the agreements to a larger group of experts, a consultation based on the Delphi method was conducted in two rounds. To do so, a group was formed, comprising five advisors who had collaborated in the preparation and validation of the surveys, participated in the methodological decisions and advised on the analysis and interpretation of the results. The panelists were selected based on their experience in the subject matter of the consultation. For the selection process, if another expert from the same centre had previously agreed to participate in the consultation, this was considered to be a potential exclusion criterion.

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The survey used a Likert scale of five response options, where 1 was “strongly disagree” and 5 was “strongly agree”. For the analysis, the results of 1 and 2 were grouped together as “disagree” and 4 and 5 as “agree”. The criteria for accepting or rejecting a standard were established based on the combined “agree” options (3 and 4) and were defined as follows: consensus (≥90% agreement), majority (agreement between 66% and 89%) and discrepancy (agreement <66%).

Phases 1 and 2 were conducted between December 2014 and January 2017, with methodological support from the GOC *Networking* consultancy team.

RESULTS

Survey prior to consensus

Out of the 153 departments/units to which the survey was sent, a total of 65 (42.5%) responded. The data obtained provided a preliminary census and a map of the situations of the AITCs in terms of human resources, allergen extracts and guidelines followed, records used, teaching and research activity, type of patients treated, and inter-communication with primary care, among other data of interest. Nonetheless, ascertaining the great structural and functional variability of the AITCs surveyed, justified the consensus process, the results of which are shown below.

Bibliographic search of the consensus process in phase 1

From the non-exhaustive and systematic bibliographic search, a total of 1,164 publications were obtained, of which 42 were prioritised based on criteria of topicality, theme, relevance, and quality of the scientific publication. Another 62 publications were added to these 42, based on a targeted search on themes related to care quality and management.

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Experts participating in phase 2

In phase 2 (two-round consultation), 237 experts were invited, of which 93 (39.2%) agreed to participate and responded in the first round, and 84 (90.3% of the first round) responded in the second round.

Consensus process (phases 1 and 2)

The criteria and indicators shown below are those proposed by the group of experts in the RAND/UCLA process (phase 2) and with a percentage agreement of ≥ 90% by the panel of experts that participated in the Delphi consultation (phase 2).

Minimum safety and quality criteria

The administration of medication (particularly allergen extracts) carries with it the risk of triggering adverse, mainly allergic reactions that, can be life-threatening for the patient if the necessary care is not provided. Accordingly, AITCs should be equipped and organised to guarantee patient safety in order to prevent risks and properly treat adverse reactions. For this reason, it is essential that all AITCs administering AIT apply the following minimum safety and quality criteria (Table 1).

Quality criteria for accreditation of AITCs

The main purpose of the accreditation system for AITCs is to have a set of standards that define the minimum criteria required for units of similar complexity in order to guarantee optimal quality of care, promote research in immunotherapy and establish a continuous improvement model in all AITCs. Thus, the criteria shown below have been prepared with a view to potentially accrediting AITCs with a seal of excellence. Nonetheless, any AITC that wishes to attain accreditation must meet the mandatory minimum safety/quality criteria

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for the administration of AIT; and if it opts for accreditation with the seal of excellence, it must also satisfy the criteria of the accredited AITCs (AITCA). These criteria are classified as human resources, specific physical spaces, specific technical resources, portfolio of services, standard operating procedures (SOP), care activity and training. The criteria that an AITCA must meet are outlined for each block (Table 1).

Lastly, the requirements that AITCs accredited with excellence (AITCAE) must meet are defined. These must satisfy all of the previous specifications (the minimum and those required of an AITCA) and those indicated in Table 1, which are grouped by type.

DISCUSSION

The definition of a set of quality standards and its corresponding accreditation system as regards types of centres and treatment resources is nothing new. There are at least two significant forerunners in Spain: the Top 20 programme promoted by IASIST [6] and the accreditation based on ISO 9001 standards obtained by the Centro de Atención Primaria de la Vila Olímpica (Barcelona) in 2002. Likewise, internationally, the model promoted by the Joint Commission in the United States since the early 1980s and based on a series of specific and differentiated indicators for each care centre is noteworthy [7].

The review of the scientific literature conducted during the first phase of this consensus process enabled the identification of various clinical practise guidelines, both in Europe and in Spain, which proposed norms and standards for assuring quality and safety for certain diseases or potential complications of some services provided by AITCs [8-11]. Nonetheless, none of the references

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found presented a global accreditation model for AITCs to administer the various types of AIT. Although the systematic bibliographic review was not exhaustive and only one database was examined, it can be asserted that it is a pioneering initiative based on the available scientific evidence and the opinion of a wide group of experts to establish the most important criteria for patient safety and service quality in the AITC as regards human resources, physical spaces and technical resources, portfolio of services, SOP, relationship of AITCs with PC, continuous education, teaching and research.

In order to gradually increase quality and safety in the clinical practise of AITCs in Spain, the next step in this ambitious project is for the SEAIC to proceed to effectively accredit Spanish AITCs until it completes, in the next 3-4 years, the full PDCA (PLAN, DO, CHECK, ACT) cycle of continuous improvement of quality of care; to do so, it is essential to define an accreditation standard with the corresponding certification process, expressed in the form of a document that the SEAIC will publish as soon as it has been drafted.

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Table 1. Minimum, advanced and specialised safety and quality criteria to be met by allergen immunotherapy clinics in the administration of allergen immunotherapy.

Minimum Criteria (MC)		Advanced Criteria (AC)		Specialised Criteria (SC)	
Basic safety and quality criteria for any AITC.		Criteria that a AAITC must meet in addition to the MCs.		Criteria that an AITCAE must meet in addition to the MCs and ACs.	
Human resources					
MC.1	1 **allergist** or **nurse** with access to the allergist.	AC.1	1 allergist with non-exclusive dedication to the AITC.	SC.1	At least **2 allergists** with non-exclusive dedication.
MC.2	Allergist or nurse **readily available (nearby and reachable) post-administration** to answer questions for approximately **10-20 minutes per patient and administered dose**.	AC.2	Nurse trained in the administration of extracts.		
MC.3	Nurse readily available (nearby and reachable) to answer questions in the event that the allergist is unavailable.				
Physical spaces required					
MC.4	Specific medical office, or a specific nursing area, such as a **consultation area for examination and assessment** of patients (these spaces could also be shared for performing other activities).	AC.3	Nursing **area** for **preparation of the AIT dose**, with a storage area for consumables and refrigerators for medication.	SC.2	**Extended observation area** in the administration area or close to it, with capacity for observation of more than four hours.
MC.5	Area that enables **observation** of the patient **post-treatment** for at least **30 minutes**.	AC.4	**Area for administration** of AIT, with the possibility of treating several patients simultaneously.	SC.3	**Urgent care area** with all the materials needed for treatment of adverse reactions, a direct telephone line to the ICU, proximity to the ICU or to emergency care by the ICU, and a resuscitation area to begin CPR procedures.
MC.6	**Waiting area** (meaning chairs for patients and children or dependants).	AC.5	**Urgent care area** with all the materials needed for treatment of adverse reactions and a direct telephone line to the ICU.		
Specific technical resources					

MC.7	A treatment table, desk for the doctor, cabinet for storage of supplies, and refrigerator if extracts are stored.	AC.6	Computerised **clinical database** of patients that is accessible to all members of the unit.	SC.4	Availability of the following material for diagnosis and treatment of adverse reactions: • Complete resuscitation trolley (with defibrillator and all supplies and drugs needed for responding to cardio-respiratory arrest). • Vital signs monitor.
MC.8	**Parenteral medication**: adrenaline, antihistamines, steroids, bronchodilators and devices for their administration.			SC.5	Possibility of **using data** from the medical record of patients via a computer accessible to all members of the unit.
MC.9	**Oral medication**: antihistamines, steroids.				
MC.10	**Inhaled medication**: fast-acting bronchodilators.				
MC.11	Oxygen and devices for administering it, bag valve mask, etc.				
MC.12	Nebulisers and inhalation chambers.				
MC.13	1-ml syringes with subcutaneous (SC) needles, syringes for intramuscular (IM) injection, perfusion systems, fluids (crystalloids-NaCl 0.9%), cotton/gauze, antiseptics (chlorhexidine or alcohol), timers, tourniquets.				
MC.14	**Instruments for monitoring vital signs** (cardiac frequency, blood pressure, pulse oximetry) peak flow, spirometer, stethoscope and cuff.				
MC.15	Telephone as a communication channel and for alerting the emergency room.				
Portfolio of services					
		AC.7	Capacity to perform **subcutaneous AIT**.	SC.6	Possibility of using **experimental extracts** (under research, not on the market).
		AC.8	Capacity to initiate treatment with any **sublingual AIT** product.	SC.7	Possibility of administering **any AIT to high-risk patients** (mastocytosis, prior systemic reactions, etc.).
		AC.9	Provide **explanation and education** to the patient regarding sublingual AIT (including the possibility of reactions at home).		

		AC.10	Capacity to administer the **first dose** of any product that is **non-experimental or that has a technical datasheet**.		
		AC.11	Capacity to administer **AIT for aeroallergens**.		
		AC.12	Capacity to perform **AIT** with **hymenoptera venom**.		
		AC.13	Capacity to administer **any extract or commercial aeroallergen**, already tested, regardless of the associated risk.		
		AC.14	Capacity to administer **native and modified depot extracts**.		
		AC.15	Capacity to use **aqueous extracts**.		
		AC.16	Capacity to administer **conventional and cluster build-up schedules and maintenance regimes** in patients with prior incidents.		
SOP					
MC.16	An administration protocol for AIT.	AC.17	**Systematically provide oral and written information** on AIT (indications and contraindications, costs, objectives, risks and expected benefits) to all patients.	SC.8	Completion of the **individualised instructions document** at least **90%** of the time.
MC.17	An action protocol for cases of adverse reactions.	AC.18	Existence of an **individualised instructions document** that contains all AIT-related information to be accessible when administering each dose.	SC.9	Existence of a **checklist** for AIT administration according to the level of patients that may be treated **(high risk)** with specific variables.
MC.18	Tolerability monitoring.	AC.19	Completion of the individualised instructions document at least **80%** of the time.	SC.10	Completion of the **checklist** in at least **90%** of cases.
MC.19	Coordination with PC if patients are referred from the AITC to PC.	AC.20	Existence of a **specific AIT administration checklist** that includes specific variables to be checked before administering each dose.	SC.11	Possibility of **accessing data** via a system for recording the administered doses.
MC.20	A patient record with the clinical report and a record of administration with incidents.	AC.21	Application of the **checklist** in at least **60%** of cases.	SC.12	Monitoring of **tolerance and efficacy** using an **objective parameter**.
		AC.22	**Monitoring of tolerability and efficacy.**	SC.13	Application of measures to control extract storage (thermometer) to guarantee conservation at the correct temperature.
		AC.23	Supply of information to patients regarding storage of extracts when this will be performed by the patient.	SC.14	Existence of a **safety plan** that includes monitoring.

		AC.24	Existence of a **safety plan** that guarantees patient safety and specifies how to respond to immediate and delayed reactions, with staff training and the resources necessary for such response.	SC.15	Existence of a patient **satisfaction questionnaire**.
		AC.25	Existence of a **register of immediate and delayed incidents**[a] that is filled in for **100%** of incidents.		
		AC.26	Existence of a **safety plan** that includes adrenaline and fluids.		
		AC.27	Existence of a **record of the administration** of immediate medication.		
		AC.28	Application in the unit of a pre-existing **anaphylaxis protocol**.		
		AC.29	Adaptation of the **SOPs to children** if the unit treats minors.		
Care Activity					
MC.21	A communication channel (possibly via reports) that enables **coordination between PC and specialised care** if patients are referred to PC.	AC.30	Existence of a **written document agreed upon with PC** for AIT administration.	SC.16	Care of **high-risk patients** (mastocytosis, prior systemic reactions, etc.).
MC.22	Recording and notification of **adverse reactions** (at least in the case of severe ones) to pharmacovigilance authorities.	AC.31	Collection and classification of all **adverse reactions** according to current guidelines.	SC.17	Specific schedule for the AITC that has spaces for emergency consultations to attend to patients without an appointment.
		AC.32	Existence of a **communication line** during care service hours or continuously (according to capacity) for incident[a] resolution.	SC.18	Existence of a **detailed document or record with all data related to AIT**, which includes information about the extract, dose, tolerability, start date, pre- and post-dosing, PEF measurement, etc.
		AC.33	Recording of incidents[a] in the medical record following AIT administration completed in **60-80%** of cases.	SC.19	Response to AIT-related incidents[a] within **48-72 hours**.
				SC.20	Recording of incidents[a] performed in over **80%** of cases.
Training and research					
		AC.34	Completion of a **basic CPR course** every two years and an advanced course every five years by the **medical staff** of the AITC.	SC.21	Accredited continuing medical education to all medical staff of the AITC.

		AC.35	Completion of a **basic CPR course** every 2 years by the **nursing staff** of the AITC.	SC.22	Membership in a **specific AIT network** or participation in a specific AIT project in the last five years.
		AC.36	Organisation of **sessions on clinical-problem cases** in the AITC.		
Other					
				SC.23	Internal auditing systems to evaluate the recording of adverse reactions.
				SC.24	Implementation of the PDCA cycle of continuous improvement.
				SC.25	Members linked to scientific societies.

PC: Primary care; AC: Advanced criteria; SC: Specialised criteria; MC: Minimum criteria; AIT: Allergen immunotherapy; PDCA: Plan, do, check, act; SOP: standard operating procedures; CPR: Cardiopulmonary resuscitation; ICU: Intensive care unit; AITC Immunotherapy unit; AITCA: Accredited allergen immunotherapy clinics; AITCAE: Allergen Immunotherapy unit accredited with excellence.

[a] *Incidents: various adverse reaction incidents, such as: extract unrefrigerated, delayed doses, etc.*