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Allergy-immunology practice parameters and strength of recommendation data: an evolutionary perspective

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ABSTRACT

Background: The practice parameters for allergy and immunology (A/I) are a valuable tool guiding practitioners' clinical practice. The A/I practice parameters have evolved over time in the context of evidence-based medicine milestones.

Objectives: To identify evolutionary trends in the character, scope, and evidence underlying recommendations in the A/I practice parameters.

Methods: Practice parameters that have guided A/I from 1995 through 2014 were analyzed. Statements and recommendations with strength of recommendation categories A and B were considered to have a basis in evidence from controlled trials.

Results: Forty-three publications and updates covering 25 unique topics were identified. There was great variability in the number of recommendations made and the proportion of statements with controlled trial evidence. The mean number of recommendations made per practice parameter has decreased significantly, from 95.8 to a mean of 38.3. There also is a trend toward an increased proportion of recommendations based on controlled trial evidence in practice parameters with fewer recommendations, with a mean of 30.7% in practice parameters with at least 100 recommendations based on controlled trial evidence compared with 48.3% in practice parameters with 30 to 100 recommendations and 51.0% in those with fewer than 30 recommendations.

Conclusion: The A/I practice parameters have evolved significantly over time. Encouragingly, greater controlled trial evidence is associated with updated practice parameters and a recent trend of more narrowly focused topics. These findings should only bolster and inspire confidence in the utility of the A/I practice parameters in assisting practitioners to navigate through the uncertainty that is intrinsic to medicine in making informed decisions with patients.

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Introduction

Evidence-based medicine (EBM) has provided practitioners with the tools to more effectively engage with the published medical literature, helping practitioners make better informed decisions and provide optimal care for patients. The Joint Task Force on Practice Parameters (JTF) is made up of members from the American College of Allergy, Asthma and Immunology, the American Academy of Allergy, Asthma and Immunology, and the Joint Council on Allergy, Asthma and Immunology. The JTF commissions and guides work groups to draft practice parameters that rationally guide the diagnosis and management of allergic and immunologic diseases. The JTF, sponsoring organizations, and interested members are given the opportunity to review and comment on these documents. These practice parameters for allergy and immunology (A/I) represent and serve as a trusted resource guiding clinical practice.

Recently, A/I practice parameters have been shown to have a relatively small proportion of statements and recommendations that were supported by higher levels of evidence from controlled trials compared with those of select primary care specialties. This was hypothesized to be due to the specialized nature of A/I and the JTF's goal to provide guidelines over a broader range of clinical situations.[1,2]

The character, scope, and evidence underlying recommendations in the A/I practice parameters have evolved over time in the context of landmark transformations of published guidelines. For example, the Agency for Healthcare Research and Quality (AHRQ) report proposed the use of a system for grading the strength of

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evidence and recommendations in 2002.[3] This subsequently drove the charge included in the Medicare Improvements for Patients and Providers Act of 2008 to the Institute of Medicine (IOM) to study standards for developing trustworthy guidelines. In 2011, the IOM released a set of rigorous standards for developing high-quality clinical practice guidelines.[4] The A/I practice parameters have been accordingly changed and adapted, influenced by these external factors and changes in the field. The present analysis sought to identify evolutionary trends that arose as the A/I practice parameters have navigated this dynamic landscape. The authors hypothesized that A/I practice parameters underwent changes in response to the need for clear guidance amid the recent deluge of published evidence from research and clinical trials.

Methods

A key finding seen in the 2014 analysis of Banks et al[1] was that A/I practice parameters have significantly more recommendations and summary statements compared with internal medicine, pediatrics, and otolaryngology. This concept was extended by hypothesizing that the size of a practice parameter represented by the number of summary statements affected the proportion of recommendations based on controlled trial evidence. Using the 2008 Medicare Improvements for Patients and Providers Act and the subsequent 2011 IOM commission report as milestones, the authors evaluated whether these had any demonstrable direct effect on A/I practice parameters as a measure of adaptation. The authors identified trends primarily in how the growing wealth of clinical evidence has affected A/I practice parameters and what features have evolved.

The authors analyzed all practice parameters and updates that have guided A/I from 1995 through 2014. This analysis was based on a review of the published practice parameters available at http://www.allergyparameters.org. Practice parameters that did not indicate strength of recommendation were excluded from this analysis of quality of underlying evidence.

Since 2003, the A/I practice parameters have used the classification scheme of Shekelle et al[5] to categorize level of evidence and assign strength of recommendations. The assigned rating of strength of recommendation is based directly on the category of the underlying evidence. The grading system described by Banks et al[1]'s for analysis of level of evidence underlying recommendations in A/I practice parameters was used for comparison with internal medicine, pediatrics, and otolaryngology. Statements and recommendations with assigned strength of recommendation categories A and B were considered to have some basis on evidence from controlled trials. The number of recommendations and the strength of recommendation were counted by 2 investigators independently. Discrepancies were reconciled because some summary statements had more than 1 recommendation. If a summary statement had more than 1 recommendation with an assigned strength, then each recommendation was counted separately.

Results

Using these criteria, 43 publications and updates covering 25 unique topics since 1995 were identified. Unique topics were defined as practice parameters that did not have any subsequent updates on the same subject matter. The practice parameters included numbered summary statements and strength of recommendations beginning in 2003. The authors of 31 of the 43 published practice parameters assigned strength of recommendations to their summary statements.

Overall, there was great variability in the number of recommendations made and the proportion of statements with recommendations supported by controlled trial (category A and B) evidence. The number of recommendations ranged from 7 (2011 practice parameter for influenza vaccine to patients with egg allergy) to 250 (2008 practice parameter for allergy diagnostic testing). The proportion of those recommendations based on controlled trial evidence ranged from 1.3% (primary immunodeficiency, 2005) to 100% (attaining asthma control, 2005; Table 1).

The mean proportion of statements based on controlled trial evidence was 38.5%. Thirteen of 31 (41.9%) practice parameters were below the mean. There was no difference in proportion of practice parameters that were above or below the mean using the 2008 congressional mandate as a cutoff point. Five of 12 (41.7%) practice parameters published through 2008 were below the mean. This remained stable compared with practice parameters that were published after 2008 in which 8 of 19 (42.1%) were below the mean.

Evaluation of whether the 2008 and 2011 EBM milestones reports drove changes showed that the mean number of recommendations made per practice parameter decreased significantly, from 95.8 recommendations from 2003 to 2008, to 71.7 recommendations from 2009 to 2011, to a mean of 38.3 recommendations per practice parameter since 2012. Although the mean number of recommendations decreased, the overall proportion of recommendations based on controlled trial evidence remained relatively stable. The proportion of recommendations based on controlled trial evidence up to 2008 was 40.7%. From 2009 to 2011, it decreased to 33.3% and then increased to 38.6% for practice parameters published since 2012 (Figure 1). Original practice parameters on unique topics without any subsequent revisions

Table 1
Allergy and immunology practice parameter recommendations and evidence basis

Practice parameter	Year	Recommendations, n[a]	CT-based recommendations, %[b]
Allergy diagnostic testing	2008	250	60
Allergen immunotherapy	2003	65	48
	2007	84	43
	2010	103	41
Anaphylaxis	2005	73	37
	2010	100	30
Anaphylaxis in ED	2014	19	32
Asthma			
Attaining asthma control	2005	11	100
Exercise-induced bronchoconstriction	2010	53	62
Yellow zone	2014	8	88
Dermatitis			
Atopic dermatitis	2004	55	36
	2013	51	51
Contact dermatitis	2006	75	76
Drug hypersensitivity and drug allergy	2010	199	18
Environmental			
Furry animals	2012	64	36
Rodents	2012	29	21
Cockroaches	2013	19	36
Dust mite	2013	14	59
Food allergy	2006	109	41
	2014	64	36
Hereditary angioedema	2013	43	33
Immunodeficiency	2005	224	1
Rhinosinusitis	2014	47	47
Sinusitis	2005	82	55
Rhinitis	2008	110	36
Stinging insect hypersensitivity	2004	11	27
	2011	27	48
Urticaria	2014	113	22
Adverse reactions to vaccines	2009	13	77
	2012	23	78
Influenza vaccine and egg allergy	2011	7	43

Abbreviations: CT, controlled trial; ED, emergency department.
[a]Mean number of recommendations (69.2%).
[b]Mean number of recommendations based on controlled trials (38.5%).