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Inpatient Pediatric Allergy Referrals: A One-Year Review of Consultation Trends

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Abstract

Background: Allergic diseases are increasingly prevalent in children, leading to frequent pediatric inpatient consultations for allergy. However, detailed data on the clinical indications for such referrals in hospitalized children remain limited. This study aimed to analyze consultation patterns, diagnoses, and outcomes in pediatric allergy referrals over one year at a tertiary care center.

Methods: We retrospectively reviewed 992 allergy consultations conducted 795 pediatric inpatients at Ankara Bilkent City Hospital between April 2023 and April 2024. Patient demographics, clinical presentations, diagnostic evaluations, treatment approaches, and consultation outcomes were analyzed.

Results: A total of 992 allergy consultations were conducted for 795 pediatric inpatients, with 60.0% (n=477) being male. The most common age group was 0–2 years (28.3%). Respiratory tract symptoms were the leading reason for consultation (50.8%), with asthma or suspected asthma diagnosed in 57.3% of these patients. Among those with wheezing infant, the diagnosis was confirmed in 58.6%. Suspected drug allergy was the second most common indication (26.0%), primarily presenting as maculopapular rash (n=107) or urticaria (n=80), with 12 cases evaluated for severe cutaneous adverse reactions. Anaphylaxis was identified in 31 patients, mostly triggered by drugs (n=19), followed by foods (n=11). Less common indications included food allergy (7.8%), atopic dermatitis (3.1%), transfusion reactions (1.6%), and eosinophilia (1.4%).

Conclusion: Pediatric allergy consultations in this tertiary center predominantly address respiratory symptoms and drug hypersensitivity. Specialist evaluation facilitates accurate diagnosis, safe drug administration, and appropriate management, highlighting the crucial role of inpatient allergy services. These consultations also provide significant educational value for pediatric residents, underscoring the importance of integrated allergy involvement in inpatient pediatric care.

Keyword: Allergy Consultation, Inpatient, Asthma, Drug Allergy, Urticaria

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Yatarak Tedavi Gören Pediatrik Hastalarda Alerji Konsültasyonları: Bir Yıllık Değerlendirme

Öz

Giriş: Alerjik hastalıkların çocuklarda giderek artan sıklığı, çocuk hastalarda alerji kliniğine yapılan yatan hasta konsültasyonlarını yaygınlaştırmaktadır. Ancak hastanede yatan çocuklara yapılan bu konsültasyonların klinik nedenlerine ilişkin ayrıntılı veriler literatürde sınırlıdır. Bu çalışma, üçüncü basamak bir merkezde bir yıl boyunca yapılan çocuk alerji konsültasyonlarının nedenlerini, tanılarını ve sonuçlarını analiz etmeyi amaçlamaktadır.

Yöntemler: Nisan 2023 ile Nisan 2024 tarihleri arasında Ankara Bilkent Şehir Hastanesi'nde yatan 795 pediatrik hastaya yapılan toplam 992 alerji konsültasyonu retrospektif olarak incelendi. Hastaların demografik özellikleri, klinik başvuru nedenleri, tanısal değerlendirmeleri, tedavi yaklaşımları ve konsültasyon sonuçları analiz edildi.

Bulgular: Toplam 795 pediatrik hasta için 992 alerji konsültasyonu gerçekleştirildi; hastaların %60,0'ı (n=477) erkekti. En sık görülen yaş grubu %28,3 (n=225) ile 0–2 yaş aralığıydı. Konsültasyonların en yaygın nedeni %50,8 (n=405) ile solunum yolu semptomlarıydı; bu hastaların %57,3'üne astım veya astım ön tanısı konuldu. Hışıltılı çocuk olduğu düşünülen olguların %58,6'sında tanı doğrulandı. İkinci en sık konsültasyon nedeni %26,0 (n=208) ile ilaç alerjisiydi ve bu durum en çok makülopapüler döküntü (n=107) ve ürtiker (n=80) şeklinde seyretti; ayrıca 12 hasta ciddi kutanöz advers reaksiyonlar açısından değerlendirildi. Anafilaksi 31 hastada saptandı ve çoğunlukla ilaçlarla (n=19), daha az sıklıkla besinlerle (n=11) ilişkiliydi. Daha nadir nedenler arasında besin alerjisi (%7,8), atopik dermatit (%3,1), transfüzyon reaksiyonları (%1,6) ve eozinofili (%1,4) yer aldı.

Sonuç: Bu üçüncü basamak merkezde yapılan pediatrik alerji konsültasyonları ağırlıklı olarak solunum yolu semptomları ve ilaç aşırı duyarlılığına yöneliktir. Uzman değerlendirmesi, doğru tanı konulmasını, güvenli ilaç kullanımını ve uygun tedavi planlamasını sağlamaktadır. Bu durum, yatan hasta alerji hizmetlerinin önemini ortaya koymakta olup pediatri asistanları için de önemli bir eğitim fırsatı sunmaktadır. Bu bulgular, çocuk servislerinde alerji uzmanlarının entegre bir şekilde yer almasının gerekliliğini vurgulamaktadır.

Anahtar kelimeler: Alerji konsültasyon, Yatan Hasta, Astım, İlaç Alerjisi, Ürtiker

INTRODUCTION

Allergy has become an increasingly important discipline with the rising prevalence of allergic diseases in childhood and the advancement of treatment strategies. According to Centers for Disease Control and Prevention data from 2021, 27.2% of all children had at least one of three physician-diagnosed allergic conditions: seasonal allergies, eczema, or food allergies. The most prevalent condition was seasonal allergies (18.9%), followed by eczema (10.8%) and food allergies (5.8%)[1]. Among hospitalized pediatric patients, common reasons for Allergy and Immunology consultation include rashes, suspected drug or food allergies, anaphylaxis, atopic dermatitis, urticaria, angioedema, and evaluation for asthma[2].

Despite the frequent involvement of Allergy and Immunology specialists in inpatient pediatric care, the clinical indications prompting such referrals remain insufficiently described in the literature[3]. A clear understanding of the indications and clinical contexts for these referrals is fundamental to shaping an educational framework that reflects the realities of everyday pediatric practice. In this context, we conducted a retrospective review of inpatient pediatric Allergy consultations at Bilkent City Hospital, a quaternary care center. These consultations not only support timely diagnosis and appropriate management but also serve as a valuable educational resource for both allergy fellows and pediatric residents. The findings of this study aim to inform the design and refinement of educational frameworks within the specialty and promote better

integration of Allergy and Immunology into pediatric inpatient care.

METHOD

This study was conducted as a retrospective analysis of all consultations requested from the Pediatric Health and Diseases Departments to the Pediatric Allergy Clinic at Ankara Bilkent City Hospital between April 1, 2023, and April 1, 2024. Patients' medical records were reviewed retrospectively, and the reasons for consultation, clinical findings, and consultation outcomes were thoroughly analyzed. The study was approved by the Institutional Ethics Committee of Ankara Bilkent City Hospital (approval number: TABED1-24-550). Demographic characteristics of the cases (age, gender), presenting symptoms, and The recorded respiratory viral panel results for the patients were obtained through the application of PCR techniques. In addition, diagnostic tests performed (laboratory tests, skin prick tests, specific IgE, provocation tests, etc.) Additionally, treatment modalities applied to the patients (medical therapy, medical care recommendations) and post-treatment outcomes were documented.

Definitions of Clinical Conditions

Urticaria was defined as a transient eruption characterized by pruritic, raised lesions with pale centers and erythematous borders that typically resolved without residual marks within 24 hours. Angioedema was defined as localized, non-pitting edema involving the deep dermis and subcutaneous tissues, commonly affecting areas such as the face, lips, eyelids, or genital region. Maculopapular eruptions were defined as symmetric, erythematous lesions consisting of macules and papules, typically beginning on the trunk and spreading to peripheral areas, with a duration exceeding 24 hours[4]. Anaphylaxis was defined according to the criteria established by the World Allergy Organization (WAO) 2020 guidelines[5].

Severe cutaneous adverse drug reactions (SCARs), including Stevens–Johnson syndrome (SJS), toxic epidermal necrolysis (TEN), drug reaction with eosinophilia and systemic symptoms (DRESS), and acute generalized exanthematous pustulosis (AGEP), were diagnosed based on established clinical and diagnostic frameworks, including the report and consensus documents of the European Network for Drug Allergy (ENDA) and the European Academy of Allergy and Clinical Immunology (EAACI) pediatric task force[6].

Drug Challenge and Desensitization Protocols

Graded drug challenges and desensitization procedures were performed in selected patients based on clinical indications. Graded drug challenge was used in cases where the likelihood of true hypersensitivity was low, or when previous reactions were mild and non-life-threatening[7]. This procedure involved the administration of incrementally increasing doses of the suspected drug under close medical supervision, in a controlled hospital setting, to confirm or exclude hypersensitivity. Drug desensitization was applied in patients with confirmed or strongly suspected drug allergy when no therapeutic alternative was available and the drug was essential[8]. All desensitization procedures were supervised by pediatric allergists in an inpatient allergy unit with continuous monitoring.

Food Allergy Evaluation

Food allergy was diagnosed based on a combination of clinical history and confirmatory testing, in accordance with international guidelines such as those of the European Academy of Allergy and Clinical Immunology (EAACI)[9].

RESULTS

A total of 992 allergy consultations were conducted in 795 individual pediatric

inpatients, indicating that some patients required more than one consultation during their hospital stay. Of these patients, 60.0% (n=477) were male. The most common age group was infants and toddlers aged 0–2 years, accounting for 28.3% (n=225) of patients, followed by children aged 5–12 years (26.3%, n=209), 2–5 years (23.6%, n=188), and those older than 12 years (21.8%, n=173). A consistent male predominance was observed across all age groups. Among the 795 pediatric inpatients evaluated for allergy consultations, respiratory tract symptoms were the most common clinical presentation, accounting for 50.8% (n=405) of cases. Detailed distributions of other clinical conditions are presented in Table 1.

Table I: Frequency of Clinical Manifestations in Pediatric Allergy Consultations

Clinical Condition	Number of Patients (n)	Percentage (%)
Asthma/Wheezing Infant	405	50.8
Drug Allergy	208	26
Food Allergy	62	7.8
Urticaria/Angıodema	27/4	3.3/ 0.5
Anaphylaxis	31	3.8
Others	58	7.3
Total	**795**	**100**

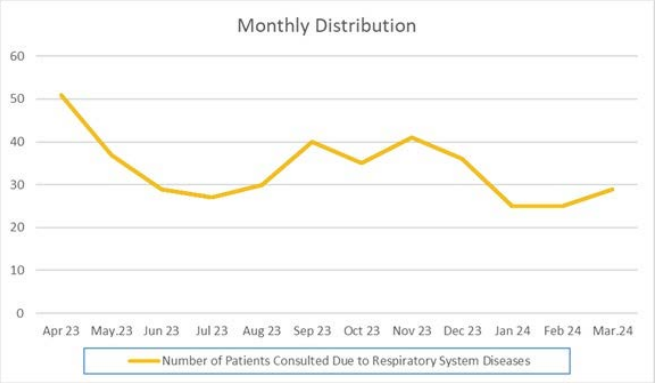

Figure 1. Monthly Distribution of Consultations for Respiratory Symptoms

In this study, the final diagnoses of a total of 405 pediatric patients who were consulted to the pediatric allergy department due to respiratory symptoms such as cough, wheezing, or stridor were analyzed. The monthly distribution of these consultations is presented in Figure 1. Among these patients, 57.3% (n=232) were either diagnosed with asthma or were were under evaluation for a possible asthma diagnosis. A total of 18.5% (n=75) were evaluated as having wheezing infant. The remaining 24.2% (n=98) were classified under the etiological category of cough associated with infectious causes or other identifiable factors (e.g., foreign body aspiration, congenital anomalies, tuberculosis, etc.).

Of the total cohort, 29.1% (n=118) had previously been diagnosed with asthma and/or wheezing and were categorized as “previously diagnosed” patients. In contrast, 46.7% (n=189) received their diagnosis for the first time during the consultation process and were classified as “newly diagnosed” patients.

Among infants with wheezing, the diagnosis was confirmed in 58.6%(n=75) of cases. The remaining 41.4% (n=53) did not meet the diagnostic criteria for wheezing infant upon detailed clinical assessment. In these patients, the most commonly encountered alternative explanations included single, non-recurrent episodes of viral bronchiolitis; cough and/or wheeze associated with infection-related lower respiratory tract conditions; and transient symptomatic episodes characterized by wheezing-like sounds not supported by objective clinical findings.

A subset of 35 patients with a diagnosis of asthma and/or wheezing infants were referred for preoperative evaluation to receive asthma-related management recommendations prior to surgery. Of the 151 patients assessed for respiratory symptoms, viral respiratory panel testing was performed. The most frequently identified pathogens included rhinovirus, rhinovirus/enterovirus co-detection, respiratory syncytial virus (RSV), and bocavirus. No viral pathogen was identified in

42.6% of patients. The detailed distribution of detected viruses is presented in the accompanying Table 2.

Table II: Distribution of Respiratory Viral Pathogens Among Patients with Respiratory Symptoms

SYVP Result	Frequency (n)	Percentage (%)
Not Tested	156	—
Pathogen not identified	89	42.6
RSV	11	5.3
Rhinovirus	13	6.2
Bocavirus	8	3.8
Influenza	4	1.9
COVID-19	3	1.4
Coronavirus	1	0.5
Rhinovirus + Enterovirus	12	5.7
Parainfluenza	4	1.9
Adenovirus	4	1.9
Streptococcus pneumoniae	2	1.0
Patients tested with Respiratory Viral Panel (RVP)	**151**	

A total of 208 pediatric patients were evaluated in our department for suspected drug allergy. Of these, 107 with maculopapular rash, 80 presented with urticaria, 12 were consulted for suspected severe cutaneous adverse reactions (SCARs), and 9 patients were evaluated for desensitization procedures (Table 3).

Among the 80 patients with urticaria, drug hypersensitivity was excluded in 28 patients either based on clinical evaluation (n=2) or successful re-administration of the suspected drug without recurrence of symptoms (n=26). In the remaining 52 patients, drug allergy could not be definitively ruled out. The most commonly implicated drug groups were penicillin–beta-lactamase inhibitor combinations (n=16), cephalosporins (n=10), and glycopeptides (n=9). In 27 patients, urticaria was considered unrelated to drug exposure and attributed to post-infectious or idiopathic causes. Additionally, 4 patients presented with angioedema, each associated with a different suspected drug (aminopenicillin, cephalosporin, NSAID, and glycopeptide).

Of the 107 patients with maculopapular rash, 77 were safely re-challenged with the suspected drug using graded infusion or premedication strategies (Table 3).

Twelve patients were consulted for possible SCARs. Among them, 4 were diagnosed with Stevens-Johnson Syndrome (SJS), 5 with Drug Reaction with Eosinophilia and Systemic Symptoms (DRESS), and 2 with Acute Generalized Exanthematous Pustulosis (AGEP). One patient was ultimately diagnosed with incomplete Kawasaki disease rather than DRESS.

Nine patients underwent a total of 13 desensitization procedures due to the necessity of using a suspected allergenic drug when no alternative was available.

Table III: Classification of Patients Evaluated for Suspected Drug Allergy

Clinical Condition	Number of Patients (n)	Details
Total evaluated patients	208	
Urticaria	80	- Drug allergy excluded in 28 patients - Could not be ruled out in 52 patients
Maculopapular rash (MPR)	107	- 77 patients tolerated re-administration of the suspected drug
Severe cutaneous adverse reactions (SCARs)	12	- 4 SJS - 5 DRESS -2 AGEP -1 excluded
Desensitization procedures performed	9	

Anaphylaxis cases were evaluated based on their primary triggers. The majority were drug-induced, involving various antibiotics and chemotherapeutic agents. Food-related triggers were also significant, with cow's milk and hazelnut being the most common. Further details on the specific triggers are provided in the accompanying Table 4.

Table IV: Anaphylaxis Triggers Identified in Pediatric Allergy Consultations

Category	Trigger Agents	Number of Cases (n)
Drugs	Ampicillin-Sulbactam	3
	Ceftriaxone	3
	Vancomycin	2
	Teicoplanin	2
	Etoposide	2
	Tazobactam-Piperacillin	1
	Anti-thymocyte globulin	1
	Liposomal Amphotericin B	1
	L-asparaginase	1
	Intravenous immunoglobulin	1
	Macrolide antibiotic	1
	Cefazolin	1
	Total (drug-related)	**19**
Foods	Hazelnut	2
	Cow's milk	4
	Cashew	1
	Sesame	1
	Fish	1
	Peanut	1
	Honey	1
	Total (food-related)	**11**
Others	Idiopathic (no clear trigger identified)	1

When the remaining 58 pediatric inpatient allergy consultations were evaluated, the most common indication was atopic dermatitis in 3.1% (n=25) and transfusion reactions in 1.6% (n=13). Eosinophilia was the reason for consultation in 1.4% (n=11) of cases. Less common indications included seasonal allergic rhinitis (0.9%, n=7), scabies (0.1%, n=1), and elevated IgE levels (0.1%, n=1).

Limitations

This study has several inherent limitations. As a retrospective analysis of nearly 1,000 pediatric patients, the completeness and level of detail available in the medical records varied. While all relevant information was systematically reviewed, some clinical or procedural details could not be fully captured for every patient due to differences in documentation practices and the high volume of cases.

DISCUSSION

In our study, which included 795 pediatric inpatients who received a total of 992 allergy consultations, respiratory tract symptoms were the most common reason for referral, observed in 50.9% (n=405) of patients. In addition, a total of 208 patients were evaluated for suspected drug-related reactions, including urticaria (n=80, 10.1%), maculopapular rash (n=107, 13.5%), severe cutaneous adverse reactions (SCARs) (n=12, 1.5%), and desensitization procedures (n=9, 1.1%). Moreover, in the study by R.W. England et al., asthma was one of the leading reasons for consultation in the pediatric population, particularly in children aged 0–18 years, comprising 21% (270/1,284) of all inpatient referrals. Adverse drug reactions were also frequently observed, accounting for 36% (460/1,284) of total consultations, with penicillin being the most commonly implicated agent, followed by sulfonamides, cephalosporins, and vancomycin[10]. Similarly, a variation is seen when comparing our results to those of Özmen et al., where chronic cough (22.3%), asthma (17.6%), and wheezing infants (11.3%) were among the leading causes of referral (2). While the categories differ slightly, all three studies confirm the predominance of respiratory complaints in pediatric allergy consultations. In the study by Otto F. et al.[11], allergy consultations across all age groups were evaluated, and adverse drug reactions, urticaria/angioedema, immunodeficiencies,

and anaphylaxis were reported as the most common reasons for referral in the 0–18 age group. In contrast, consultations for asthma were relatively infrequent. By contrast, in our study, however, asthma and drug allergies were the most common reasons for referral. These discrepancies may reflect institutional differences in referral practices, regional variations in disease prevalence, or broader definitions of respiratory presentations in our pediatric population.

In addition, urticaria and maculopapular rash were prominent reasons for consultation. Notably, 80 out of 107 patients presenting with urticaria and all 107 patients with maculopapular rash were evaluated specifically for suspected drug allergy. In contrast, RW England et al. reported drug reactions as the most frequent indication overall (36%)[10], predominantly among adult and geriatric patients, while Özmen et al. reported drug allergy referrals at a much lower rate (5.6%)[2].

Additionally, anaphylaxis represented a small but meaningful proportion of referrals in both our study and the England et al. study 3.8% and 6%, respectively[10]. Angioedema was rare in our pediatric cohort (0.5%) compared to 7% in the England study and 10% when combined with urticaria/angiodema in Özmen's study[2].

In our study,31 patients were evaluated for anaphylaxis, 19 of whom were drug-related and 11 food-related. Wurst et al. reported 41 suspected anaphylaxis cases among 388 patients (3), while Dietrich et al. identified 40 anaphylaxis cases among 1,412 patients[12]. However, neither study provided specific details on the underlying triggers.

In the study by Wurst et al,[3] among 55 patients evaluated for suspected drug allergy, 32 were found to have hypersensitivity to antimicrobial agents. Similarly, in our study, among the 80 patients assessed with urticaria, antimicrobial agents were also the most frequently implicated drug group. Regarding severe cutaneous adverse reactions, Wurst et al. reported DRESS or Stevens-Johnson Syndrome (SJS) in 6 patients, whereas in our cohort. Among 12 patients who were referred with a preliminary diagnosis of severe cutaneous adverse drug reactions, 5 were diagnosed with DRESS and 4 with Stevens-Johnson syndrome (SJS). In the study conducted by James M. Quinn, M.D.[13], beta-lactam antibiotics were identified as the most common causative agents in drug allergies. Similarly, in our study, beta-lactam antibiotics were the most frequently implicated agents in both anaphylaxis and urticaria cases.

Unlike many previous studies, including Özmen et al.,[2] which primarily focused on symptom-based diagnostic outcomes, our approach emphasized diagnostic confirmation and re-evaluation of preliminary diagnoses. In our cohort, 405 pediatric patients presenting with respiratory symptoms such as cough, wheezing, or stridor were evaluated. Among these, 57.3% were ultimately diagnosed with or followed for asthma, and 18.5% were classified as having wheezing infant syndrome. Notably, 46.7% of patients received their diagnosis for the first time during consultation, underscoring the importance of specialist assessment in identifying previously unrecognized cases. Additionally, only 58.6% of those initially referred with a preliminary diagnosis of wheezing infant met the diagnostic criteria upon detailed evaluation, with the remainder found to have alternative explanations such as transient viral infections or non-specific respiratory symptoms. These findings highlight the critical role of pediatric allergy consultations not only in establishing new diagnoses but also in refining or revising initial assessments, particularly in conditions with overlapping clinical features.

Our hospital is a tertiary referral center, and over the course of one year, our clinic responded to nearly 1,000 consultations. This

study differs from other consultation studies by highlighting the necessity of allergy consultations in clinical practice, demonstrating their benefits not only for patient care but also for the education of pediatric residents. Drug reactions constitute a significant proportion of these consultations, emphasizing that many patients can safely receive medications under allergy guidance. In addition to recommendations for asthma management, allergy consultations also facilitate the exclusion of non-asthmatic causes of cough, further underscoring the indispensable role of our department in providing comprehensive pediatric allergy services.

CONCLUSION

This study highlights the key role of pediatric allergy consultations in a tertiary center, with respiratory symptoms and drug allergies as the most common reasons for referral. Our findings emphasize the importance of specialist evaluation for accurate diagnosis and management. Moreover, allergy consultations contribute meaningfully to safe medication practices and the clinical education of pediatric residents.

Ethics Committee Approval: The study was approved by the Institutional Ethics Committee of Ankara Bilkent City Hospital (approval number: TABED1-24-550)

Conflict of Interest: The authors declared no conflicts of interest.

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REFERENCES

1. Zablotsky B, Black LI, Akinbami LJ. Diagnosed allergic conditions in children aged 0–17 years: United States, 2021. Natl Health Stat Report. 2023;(459):1-8.

2. Özmen S, Mısırlıoğlu ED, Giniş T, et al. Consultations in pediatric allergy. Turk J Pediatr Dis. 2011;5(4):202-7.

3. Wurst M, Brameli A, Krantz M, et al. Evolving patterns in inpatient pediatric consultations to allergy/immunology at an academic medical center. Int J Med Stud. 2024;12(3):278-83..

4. Zuberbier T, Aberer W, Asero R, et al. The EAACI/GA^{2}LEN/EDF/WAO guideline for the definition, classification, diagnosis and management of urticaria. Allergy. 2018;73(7):1393-414.

5. Cardona V, Ansotegui IJ, Ebisawa M, et al. World Allergy Organization anaphylaxis guidance 2020. World Allergy Organ J. 2020;13(10):100472.

6. Brockow K, Ardern-Jones MR, Mockenhaupt M, et al. EAACI position paper on how to classify cutaneous manifestations of drug hypersensitivity. Allergy. 2019;74(1):14-27.

7. Broyles AD, Banerji A, Castells M. Practical guidance for the evaluation and management of drug hypersensitivity: general concepts. J Allergy Clin Immunol Pract. 2020;8(9 Suppl):3-15.

8. Castells M. Rapid desensitization for hypersensitivity reactions to medications. Immunol Allergy Clin North Am. 2009;29(3):585-606.

9. Muraro A, Halken S, Arshad S, et al. EAACI food allergy and anaphylaxis guidelines. Allergy. 2014;69(5):590-601.

10. England RW, Ho TC, Napoli DC, Quinn JM. Inpatient consultation of allergy/immunology in a tertiary care setting. Ann Allergy Asthma Immunol. 2003;90(4):393-7.

11. Otto HF, England RW, Quinn JM, editors. Inpatient allergy/immunology consultations in a tertiary care setting. Allergy Asthma Proc. 2010;31(2):165-71.

12. Dietrich JJ, Quinn JM, England RW, editors. Reasons for outpatient consultation in allergy/immunology. Allergy Asthma Proc. 2009;30(4):397-401.

13. Quinn JM. Pediatric inpatient consultation of allergy/immunology. Pediatr Asthma Allergy Immunol. 2000;14(4):293-9.