

We did not see a similar statistically significant effect with either rhinitis or asthma.

In summary, this small study of highly discordant sibling pairs, albeit of limited sample size, has demonstrated that variations in the 2 important SNPs of CD14, rs2569190 and rs2569193, are associated with the presence of peanut allergy (rs2569190), increased levels of total IgE (rs2569193), and the frequency of eczema (rs2569193) in peanut allergic individuals. To our knowledge, this is the first report that the C allele of rs2569190 may be an important risk factor for the development of peanut allergy and the first report that the C allele of rs2569193 is associated with higher total IgE and the presence of eczema in peanut allergic individuals.

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PRESCRIPTION PATTERNS OF LONG-ACTING β -AGONIST MONOTHERAPY FOR PATIENTS WITH ASTHMA

For several years, the long-acting β -agonist (LABA) medication class has been under intense scrutiny over safety concerns when used as monotherapy in patients with asthma.^{1–4} On December 11, 2008, the Food and Drug Administration (FDA) Pulmonary-Allergy Drugs Advisory Committee, Drug Safety and Risk Management Advisory Committee, and the Pediatric Advisory Committee concluded that the potential risks of salmeterol or formoterol as monotherapy for asthma outweigh benefits and that physicians should not prescribe LABAs as stand-alone treatment in asthma patients.^{2,5} Despite the consistent messages from the FDA and the 2007 national asthma treatment guidelines to avoid LABA monotherapy in asthma patients, surveys of physicians suggest these warnings have been inconsistently adopted in practice.^{6,7}

The primary objective of this national, retrospective, claims-based study was to assess the prevalence of LABA monotherapy in asthma patients receiving single-agent LABAs and identify factors associated with LABA monotherapy use, such as age, sex, and prescriber specialties in a large pharmacy benefit population.

This study used a deidentified database containing pharmacy claims for more than 60 million patients (Medco Health Solutions Inc, Franklin Lakes, New Jersey). The study sample consisted of asthma patients who were younger than 65 years and received at least 1 claim for a single-agent LABA during the 6-month period of April 1, 2009, through September 30, 2009. Patients with any claims for tiotropium during the study or a diagnosis of chronic obstructive pulmonary disease anytime during the study (for patients 50–64 years of age) were excluded.

Patient-level summary data were generated, and statistical analysis was performed using statistical analysis software (SAS statistical software, version 9.1; SAS Institute Inc, Cary, North Carolina). A multivariate logistic regression analysis was performed to identify relationships between LABA monotherapy use and other patient characteristics and medication use factors. The 2-sided *P* value for all statistical analyses was set at .05.

Of the 6,983 patients who met the eligibility criteria during the 6-month target period, 1,782 (25.5%) were identified as using LABA monotherapy. The mean age of the patients was 39 years and most were female (58%). There was wide variation in patient use of LABA monotherapy by age group and physician specialty. In the multivariate analysis (Table 1), female patients, patients younger than 12 years (compared with those 50–64 years old), patients who received their most recent LABA prescription from a mail pharmacy, and patients whose LABA was prescribed by an allergist or a pulmonologist (com-

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Table 1. Multivariable Analysis of Factors Associated With LABA Monotherapy^a

Covariates	Odds Ratio (95% Confidence Interval)
Age, y (control group is patients 50–64 years old)	
<12	0.71 (0.51–1.00)
12–17	1.84 (1.39–2.43)
18–49	1.69 (1.41–2.03)
Female	0.84 (0.75–0.94)
SABA MDIs dispensed during study period	0.93 (0.92–0.95)
No. of OS claims during study period	0.85 (0.81–0.89)
Physician specialty (control group is FMPs, PCPs, and pediatricians)	
Allergy	0.33 (0.27–0.40)
Pulmonary	0.48 (0.40–0.58)
Other	0.93 (0.80–1.09)
Origin of most recent LABA claim at retail pharmacy (control group is mail pharmacy)	2.14 (1.83–2.49)

Abbreviations: FMPs, family medicine physicians; LABA, long-acting β -agonist; MDI, metered-dose inhaler; OS, oral corticosteroid; PCPs, primary care physicians; SABA, short-acting β -agonist.

^a Additional variables also adjusted for but not shown in table include SABA nebulas dispensed during study period, geographic region (metro, nonmetro, unknown), and poverty level (low, moderate, high).

pared with family medicine physicians, primary care physicians, or pediatricians as a group) were least likely to use LABA monotherapy.

Our study results indicate that a substantial portion of patients using LABAs for asthma may be using these medications inappropriately despite the promulgation of national asthma treatment guidelines and FDA black box warnings. It is possible that some patients may discontinue or reduce their use of inhaled corticosteroids without consultation with their physician.⁸ In our study, allergists were the least likely group of physicians to have patients using LABA as monotherapy for treating asthma. The variation of patient use of LABA monotherapy across physicians with different medical specialties is consistent with the results of previous studies. A questionnaire from the American College of Chest Physicians found that 11.4% of primary care physicians and 2.1% of specialists preferred LABA monotherapy as their first-line therapy for mild persistent asthma.⁶ These findings suggest the need for greater educational efforts for general practitioners and their patients, as well as better coordinated efforts to identify patients using LABA monotherapy and alert physicians so they are aware of those patients at risk.

This analysis has limitations inherent to any study performed using administrative databases. The use of LABA monotherapy was based on the filling of prescriptions, which might not always accurately reflect the actual intake of medication. In addition, it was not possible to know whether patients were classified as LABA monotherapy users because they did not fill their controller prescription or because their physician did not prescribe them.

In summary, our study found a significant prevalence of LABA monotherapy use in patients who received single-agent LABA therapy for asthma. Although factors associated with a greater likelihood for LABA monotherapy were identified, LABA monotherapy was prevalent across all age groups and physician specialties, highlighting the need to improve the communication and knowledge of the appropriate use of these medications in patients, physicians, and other health care professionals.

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SYSTEMIC CONTACT ALLERGY TO PENICILLIN AFTER PRICK AND INTRADERMAL TESTS

Systemic contact dermatitis (SCD) is a type of contact hypersensitivity reaction induced by ingestion or other systemic exposure to a contact allergen in an already sensitized person. Usually the initial sensitizing exposure has happened by topical application, but reexposure by the oral, intravenous, or inhalation routes can cause SCD. It appears that both humoral and cellular immune responses are involved in this situation.¹ Baboon syndrome may be seen as a particular form of SCD, with a distribution pattern confined to the intertriginous areas and with nickel, mercury, and drugs acting as inducers.² The designation *baboon syndrome*, which emerged from the characteristic, bright red, well-demarcated eruption predominantly located on the buttocks and genital area (reminiscent of the red bottom of the baboon), has recently been replaced by the term *symmetrical drug-related intertriginous and flexural exanthema* (SDRIFE), which refers to the distinctive clinical pattern of this drug eruption. Several diagnostic criteria have been proposed: (1) exposure to a systemically administered drug either at the first or repeated dose (excluding contact allergens); (2) sharply demarcated erythema of the gluteal or perianal area and/or V-shaped erythema of the inguinal or perigenital area; (3) involvement of at least 1 other intertriginous or flexural localization; (4) symmetry of affected areas; and (5) absence of systemic symptoms and signs.³

Late positivity of a prick test result to amoxicillin supports the role of this agent as the culprit drug in some cases of SDRIFE and suggests the involvement of type IV hypersensitivity reaction.⁴

We report a case of a 32-year-old man with no previous history of atopy who appeared with pruriginous erythema involving the bilateral aspects of the axillae, groin, and popliteal fossa that had a spontaneous clinical resolution in the following 2 weeks. Within the previous 24 hours, he had been administered intramuscular penicillin G benzathine, 2,400,000 U, and oral ibuprofen, 600 mg. Ten months previously, he had taken ciprofloxacin for acute prostatitis.

The allergy workup was performed and results were as follows. The serum level of total IgE was normal and specific IgE test results for penicillin were negative. The results of prick and intradermal tests performed with an aqueous solution of a commercial benzylpenicilloyl-polylysine (5×10^{-5} mM/L; Diater, Madrid, Spain), a minor determinant mixture (2×10^{-5} mM/L; Diater), penicillin G (10,000 IU/mL; Atral Cipan, Lisbon, Portugal), amoxicillin-clavulanic (20 mg/mL; Labesfal, Lisbon, Portugal), and ampicillin (20 mg/mL; Atral Cipan) were negative at 20 minutes.

Eight hours after the skin tests had been performed, the patient was admitted to the inpatient unit of the dermatology department. In the first 2 hours, a pruriginous erythema appeared on the penicillin, amoxicillin, and ampicillin inoculation sites and disseminated to the posterior cervical area, groin, axillae, forearms, popliteal fossa, and penis glans (Figure 1). A cutaneous



Figure 1. A pruriginous erythema on the penicillin, amoxicillin, and ampicillin inoculation sites that disseminated to the posterior cervical area, groin, axillae, forearms, popliteal fossa, and penis glans.

biopsy specimen of the lesions showed a superficial perivascular infiltration with lymphocytes, histiocytes, eosinophils, and epidermal spongiosis.

Patch tests with a standard series adopted by the Portuguese Study Group of Contact Dermatitis and allergens from Chemotechnique, complemented with penicillins and ibuprofen, were performed. Readings following the patch test reactions according to the International Contact Dermatitis Research Group were performed at 48 and 96 hours: standard series results were negative, 10% potassium penicillin G, 10% amoxicillin, and 10% ampicillin test results were positive at both readings, and 10% cephadrine and 10% ibuprofen test results were negative.⁵

To evaluate cross-reactivity between penicillins and cephalosporins, the patient underwent prick and intradermal tests to cefuroxime (2 mg/mL; Labesfal) and ceftriaxone (2 mg/mL; Labesfal). No immediate or delayed reactions were observed.

In accordance with current guidelines, we performed oral and intravenous drug provocation tests, respectively, with cefuroxime and ceftriaxone. Increasing doses were administered with an interval of 30 minutes between doses, a total cumulative dose of 500 mg being reached for each drug (oral cefuroxime protocol: 50 mg, 150 mg, 250 mg; intravenous ceftriaxone protocol: 10 mg, 40 mg, 100 mg, 150 mg, 200 mg). Both drug provocation test results were negative.

Penicillins are low-cost and highly efficient antibiotics but are the most frequent cause of allergic drug reactions, both immediate and nonimmediate.⁶ Such reactions must be diagnosed and cross-reactivity

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