# Wheeze & Sneeze

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# An Evidence-Based Take-home on Cost-Effective Medicine

## *Allergy Shots Save Health Care Dollars*

Health economists are increasingly looking at the economic benefit of the various treatment options for common disease states. The cost effectiveness of disease management by allergists for asthma severe enough to require emergency department or hospital care and of immunotherapy for asthma with allergic triggers have long been documented (1, 2). The 2008 decision of the Oregon Medicaid program to limit costs, not by tightening patient eligibility but by prioritizing specific treatments for diagnosis by their health impact and cost-effectiveness, prompted a similar review of allergen immunotherapy for allergic rhinitis (AR).

Florida equipped its Medicaid database with HIPAA-compliant unique enrollee identifiers so that specific patients' outcomes can be evaluated over time. This made possible comparisons of medication use, ambulatory and inpatient health care costs for patients with newly diagnosed allergic rhinitis who received subcutaneous allergen immunotherapy (SIT) with those of patients with similar newly diagnosed allergic rhinitis but who did not receive allergen immunotherapy. Reviewing the database for the period from July 1997 through June 2008 investigators identified 61,598 adults and 181,682 children with newly diagnosed AR (in the system for at least 1 year prior to diagnosis and no previous listing of AR as a diagnosis), and with health care continuously covered by the same program and documented in the same database for the period of data collection.

Almost three thousand children met the criteria of newly diagnosed AR, no immunotherapy (for other conditions such as asthma if present) in the 12 months prior to the initial diagnosis of AR, at least

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## INSIDE

TABLE 1

## Results: Mean, per-Patient, 18-Month Savings for Patients with Newly Diagnosed AR Who Received versus Did Not Receive SIT*

Negative Values Denote Savings Conferred by SIT versus Non-SIT

| Type of Health Services 1997-2008 | Age Group | Time from SIT Initiation | | | |
|---|---|---|---|---|---|
| | | 3 months | 6 months | 12 months | 18 months |
| Pharmacy | Children | -$148 P<.0001 | -$271 P<.0001 | -$531 P<.0001 | -$1,166 P<.0001 |
| | Adults | -$151 P<.0001 | -$246 P<.0001 | -$454 P<.0001 | -$685 P<.0001 |
| Outpatient (Including SIT) | Children | -$589 P<.0001 | -$1,136 P<.0001 | -$2,182 P<.0001 | -$3,256 P<.0001 |
| | Adults | -$248 P<.0001 | -$477 P<.0001 | -$943 P<.0001 | -$1,433 P<.0001 |
| Outpatient (Excluding SIT) | Children | -$804 P<.0001 | -$1,469 P<.0001 | -$2,709 P<.0001 | -$3,902 P<.0001 |
| | Adults | -$341 P<.0001 | -$626 P<.0001 | -$1,173 P<.0001 | -$1,715 P<.0001 |
| Inpatient | Children | +$1,505 NS | -$1,497 NS | -$3,417 P=.04 | -$5,463 NS |
| | Adults | -$4,207 NS | -$2,340 NS | -$2,687 P=.02 | -$4,444 P=.003 |
| TOTAL | Children | -$1,008 P<.0001 | -$1,968 P<.0001 | -$3,835 P<.0001 | -$5,921 P<.0001 |
| | Adults | -$1,257 P<.0001 | -$2,382 P<.0001 | -$4,687 P<.0001 | -$7,286 P<.0001 |

*Matched on age at AR diagnosis; gender; race/ethnicity; and the presence of asthma, conjunctivitis, or dermatitis.

- For children, there were 3,305 SIT patients matched to 13,151 non-SIT patients. For adults, there were 1,306 SIT patients matched to 5,137 non-SIT patients.
- NS=not significant.

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BioMedEcon Health Economics and Outcomes Research

AR = Allergic Rhinitis
SIT = Subcutaneous Immunotherapy

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two immunotherapy doses on dates after the first date of a claim with the diagnosis of AR, and at least 18 months of continuing health care coverage by the same system following the first dose of immunotherapy (3). They were compared with 11,010 controls matched for age at 1st AR diagnosis, sex, race/ethnicity, presence or absence of asthma, allergic conjunctivitis and atopic dermatitis, who differed only in that they did not receive immunotherapy. 1,306 adults were similarly compared with 5,137 matched controls (4). Costs of pharmacy, outpatient care analyzed both including and excluding the costs of allergen immunotherapy and inpatient costs for all diagnoses were compared for intervals of 3, 6, 12 and 18 months following initiation of immunotherapy.

Outcomes in Table 1 (above) include an additional 320 treated children and 2141 controls as the 2010 publication included data through June 2007 and the table includes data through June 2008. Pediatric and

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adult AR patients receiving subcutaneous allergen immunotherapy achieved numerically and statistically significant savings in cost of pharmacy services, cost of outpatient care both including or excluding the cost of immunotherapy and total cost of health care at every time point studied. Adults also achieved significantly lower costs of inpatient care at 12 and 18 months as did children at 12 months. (There were insufficient numbers of hospitalizations for cost differences to achieve statistical significance for adults at 3 and 6 months and for children at 3, 6 and 18 months.)

## Allergy Shots Save $$ Early in Treatment

The typical course of immunotherapy is to build up the dose over 6-9 months and then continue at a maintenance dose known to be safe and effective for most patients for a minimum of 3 years. While individual patients sometimes claim that they're better from the date of their first shot, these are the first studies to document consistent and significant cost-savings as early as 3 months into the build-up phase of immunotherapy.

## Non-cost Health Outcome Benefits

For a Medicaid population with no cost barriers to health care and with a known tendency to over utilize emergency facilities, one can conclude that decreased health resource use by patients on immunotherapy reflects perception by those patients that they were enjoying better health than the controls. In other studies of AR (6-10) symptom relief persisted (i.e. the disease was modified) for 3-6 years after immunotherapy was stopped. (The time and schedules needed to achieve persistant disease modification are different for the depot allergen preparations licensed in Europe and the immediate release formulations available in the US.) Children with AR treated with immunotherapy are less likely to develop sensitization to new inhalant aeroallergens (10-12) and also less likely to develop asthma (13-15). The group that performed the Florida database analyses is applying for funds to look for associations between immunotherapy for AR and a reduced rate of new diagnosis of asthma in the population covered by that database. The studies referenced in this paragraph did not involve Medicaid populations, so one should not conclude that the only evidence favoring allergen immunotherapy is limited to Medicaid recipients.

## Allergy Shots are Underutilized for the Savings and Outcomes they Produce

In the above data review only 2.5% of 181,682 children with newly diagnosed AR received two or more doses of immunotherapy. Among adults, 4.6% of 61,598 patients with newly diagnosed AR had at least one dose but 23% of those never returned for a second dose. AR patients in this population, and most likely also in general, could expect better health outcomes at lower health care costs if more of them had appropriately targeted allergen immunotherapy.

## What is "Appropriately Targeted" Immunotherapy?

Immunotherapy is "appropriately targeted" when it delivers doses of allergens proven safe and effective for most similar patients, to which the patient is confirmed to be exposed, for which exposure is confirmed to be associated with signs and symptoms of disease states those allergens are known to aggravate, and for which allergen avoidance is not a practical option.

You may have heard about sublingual immunotherapy, which is slightly less effective and has a slightly lower reaction rate than injection immunotherapy but doesn't require injections. It requires massively higher doses of allergen which means much higher costs for treatment materials. It's effective for strong pollen allergens such as grass and ragweed but unlikely to be effective for weaker allergens like molds, because you can't physically give high enough doses. Molds are as important or more important than pollens for most inhalant allergy patients in our humid, temperate rural climate with lots of vegetation that mold recycles back into soil when it dies.

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## *"Appropriately Targeted" Immunotherapy?*

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Optimizing the targeting of immunotherapy in a climate like ours, where so many allergens are relevant to so many people, is an art as well as a science. With 25 years experience in this discipline, Dr. Coifman is exceptionally qualified and uniquely skilled in targeting immunotherapy for patients.

Dr. Coifman is a two-term past chair of the Allergen Standardization Committee of the American Academy of Allergy Asthma & Immunology and a nine-time annual meeting CME speaker/program organizer on topics relating to immunotherapy.

The list of references cited in this article is posted on our website, www.aasj.com, and available by email request to aasj@aasj.com.

We encourage you to remember this combination of reduced costs and improved outcomes when planning the management of your own patients with allergic rhinitis &/or asthma.

## *Update on Allergy Shots for Poison Ivy*

Our colleagues at Rowan have produced a poison ivy vaccine 50-times stronger than our original vaccine. Our original vaccine was only effective for very highly allergic patients. In an area like ours many people have natural exposure to very high levels of poison ivy in either work or recreation. Some who are only moderately sensitive have enough exposure to give them major reactions even though they aren't sensitive enough to respond to our original vaccine. We expect these patients to respond as well to our new vaccine as the most sensitive patients did to our original vaccine. We do not expect any side effects other than an occasional mild, transient flare of a recently healed poison ivy rash.

**Visit our offices or our web site at www.AASJ.com for current information and management strategies for Allergic Diseases and Asthma.**

## *Our Galloway Office has Moved*

**We are still in Galloway on Tuesdays, but now at 408 Chris Guapp Drive, Suite 200. Our phone number remains 609.652.1009 and call-forwards to us in Millville when the Galloway office is closed.**

## *Anaphylaxis Community Expert Education Spring 2012*

This year Dr. Coifman was again chosen to present the Allergy & Asthma Network's Anaphylaxis Community Expert program in our area. In early 2012 we will again be giving anaphylaxis management training to school nurses in Cumberland/Salem and Atlantic/Cape May counties and in March or April we will give programs for interested patients and care-givers at the SJ-RMC Fitness Connection and the Atlanticare Life Center.

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