

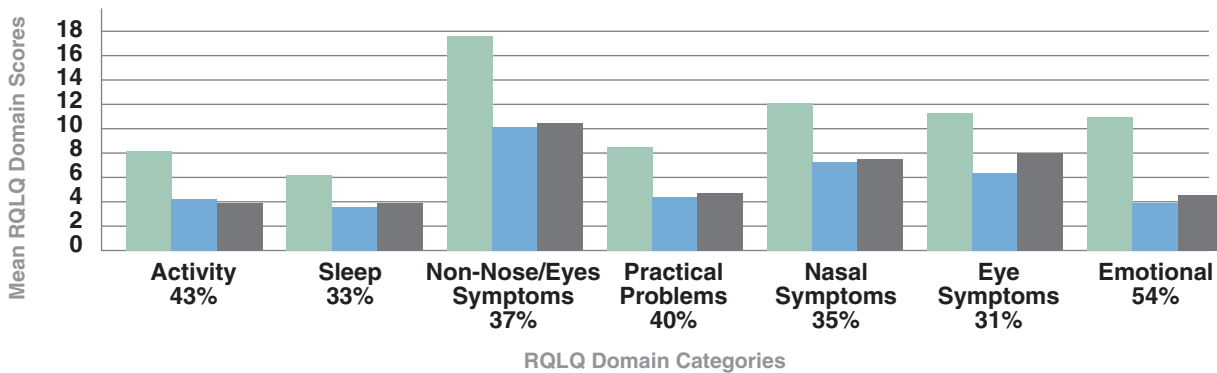
# Peer Reviewed Published Studies



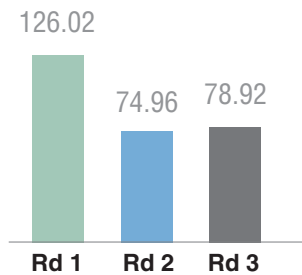
## Quality of Life Assessment 2007-2010

The purpose of this study was to evaluate quality of life outcomes in patients treated with sublingual immunotherapy. Fifty one patients diagnosed with allergic rhinitis demonstrated by positive skin tests completed the Rhinitis Quality of Life Questionnaire at their first appointment prior to sublingual immunotherapy treatment and two subsequent appointments, with the average length of treatment during the study being 11.19 months. Significant improvement ( $p < 0.05$ ) on six of seven categories of the RQLQ questionnaire was noted. Total RQLQ scores also showed significant improvement. This study supports SLIT as a modality effective in controlling allergic symptoms.

### Total RQLQ Scores Pre-sublingual Immunotherapy and at Subsequent Visits



### Total RQLQ



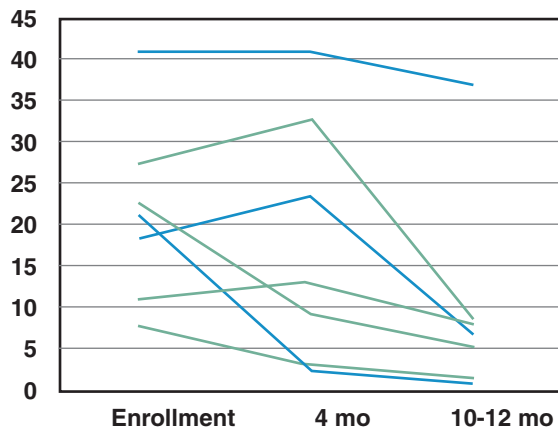
\*Survey respondents averaged 1.9 chronic conditions in addition to their allergic rhinitis diagnosis. Chronic conditions included urticaria, food allergies, IBS, asthma, atopic dermatitis, sinusitis, conjunctivitis, chronic fatigue syndrome, thyroiditis, headaches/migraines, contact dermatitis, otitis media, and MCS.

\* Participants on average were being treated for 15 environmental allergens.

## 2009 Study on Allergen-Specific Sublingual Immunotherapy in the Treatment of Migraines

One study performed at Allergy Associates of La Crosse revealed that sublingual immunotherapy can help alleviate migraines associated with allergies. Of seven patients who completed the study, their quality of life results as well as their migraine self-assessments improved over a year of being on sublingual immunotherapy for allergic rhinitis. The MIDAS tool was used, an assessment score used to evaluate migraine severity by evaluating days of impaired function at work, school, or other/leisure activities. MIDAS scores which originally varied from 8-41 (mean = 21.1) improved for all seven patients and their range fell to 0-37 (mean = 9.5). For six subjects the MIDAS range declined to 0-9.

### Migraine Disability Assessment Score (MIDAS)



MIDAS score change during treatment of allergic rhinitis

# Patient Survey Results



The following data is compiled from five research studies conducted at Allergy Associates of La Crosse since 2003. The questionnaires were developed in coordination with the University of Wisconsin-La Crosse. Demographic information for each year is listed below the findings. The pediatric asthma study below was conducted with a graduate school researcher and presented at the 2005 American College of Allergy, Asthma and Immunology annual meeting. The review included 241 children ranging in age from one to six that were treated at Allergy Associates of La Crosse with sublingual immunotherapy drops for at least two years.

Key Questions	2003	2004	2005	Medicare '06	2013
<b>Chronic Condition* prior to coming to AAOL</b> Hypothesis: sublingual immunotherapy allows the treatment of patients that are significantly compromised by their allergies	<b>51%</b>	<b>63%</b>	<b>73%</b>	<b>85%</b>	<b>N/A</b>
<b>Number of Dr visits now vs. prior to AAOL</b> Hypothesis: actively treated sublingual immunotherapy patients will require less healthcare utilizations	<b>48% less</b> 1.19 v 3.69	<b>68% less</b> 1.61 v 5.01	<b>60% less</b> 2.2 v 5.5	<b>58% less</b> 1.9 v 4.5	<b>82% less</b> .65 v 3.56
<b>ER visits now vs. prior to AAOL</b> Hypothesis: actively treated sublingual immunotherapy patients will require less healthcare utilizations	<b>80% less</b> .15 v .76	<b>81% less</b> 11 v 57	<b>86% less</b> .1 v .7	<b>58% less</b> .6 v 1.4	<b>95% less</b> .02 v .41
<b>Hospitalizations now vs. prior to AAOL</b> Hypothesis: actively treated sublingual immunotherapy patients will require less healthcare utilizations	<b>46% less</b> .07 v .13	<b>73% less</b> 3 v 11	<b>100% less</b> 0 v .2	<b>75% less</b> .2 v .8	<b>85% less</b> .02 v .13
<b>Medicine now vs. prior to AAOL</b> Hypothesis: actively treated sublingual immunotherapy patients will require less healthcare utilizations	<b>up to 50% less</b> 2.19 v 2.59	<b>50% less</b> 1.62 v 3.23	<b>40% less</b> 1.5 v 2.5	<b>13% less</b> 2.7 v 3.1	<b>47% less</b> 5.46 v 10.21
<b>School/work missed now vs. prior to AAOL</b> Hypothesis: actively treated sublingual immunotherapy patients will require less healthcare utilizations	<b>60% less</b> 2.80 v 7.23	<b>73% less</b> .89 v 3.29	<b>76% less</b> .5 v 2.1	<b>61% less</b> 1.2 v 3.1	<b>67% less</b> 1 v 3
<b>Quality of Life improved vs. prior to AAOL**</b> Hypothesis: Does treatment via the La Crosse Method result in an improvement in the patients ability to participate in life	<b>4.11</b>	<b>4.47</b>	<b>4.5</b>	<b>4.2</b>	<b>4.11</b>
(5 = very positively 4=quite positively 3 = some 2 = very little 1 = not at all)					
<b>Demographic Questions</b>					
Number of respondents	250	75	112	212	299
Average Age	46	47.5	38	71	36-55
Tested for allergies before coming to AAOL	48%	54%	60%	47%	N/A
Treated with other Immunotherapy before AAOL	38%	16%	25%	25%	N/A

\* The 2013 study was conducted in association with the University of Wisconsin-La Crosse. Some questions were not asked and are denoted by N/A.

\*\* Chronic Conditions that are caused by allergies: asthma, sinusitis, eczema, urticaria, etc.

\*\*\* Respondents were asked to rate the impact of AAOL on their Quality of Life (QoL) on a scale of 1-5, 5 being the best. No respondents reported AAOL as negatively impacting their QoL.

## 2005 Pediatric Study Impact of Allergy Drops on children developing asthma

Hypothesis: Sublingual Immunotherapy has a significant impact on the development of asthma in children with allergic conditions

Allergic condition	Number of Children*	Allergic condition	Number of Children
Allergic Rhinitis	201	Dust Mite	209
Atopic Dermatitis	70	Egg White	209
Wheeze	63	Wheat	205
Inhalant Antigen	235	Alternaria (Mold)	48
Animal Dander	120	Cases of Asthma post treatment at AAOL**	10

\* Most children exhibited more than one condition\*\*\*This study was a retrospective chart review of 241 children who were diagnosed with at least one condition that is known to progress to asthma. About half of these 241 children could be expected to develop asthma. All patients received at least two years of treatment at Allergy Associates of La Crosse. 10 children (4.1%) developed asthma.