



2016

Sublingual Immunotherapy: Is it a Viable Option to Subcutaneous Immunotherapy when Treating Allergic Rhinitis?

David Ryan Kesterson
University of North Dakota

Follow this and additional works at: <https://commons.und.edu/pas-grad-posters>



Part of the [Allergy and Immunology Commons](#)

[How does access to this work benefit you? Let us know!](#)

Recommended Citation

Kesterson, David Ryan, "Sublingual Immunotherapy: Is it a Viable Option to Subcutaneous Immunotherapy when Treating Allergic Rhinitis?" (2016). *Physician Assistant Scholarly Project Posters*. 78.
<https://commons.und.edu/pas-grad-posters/78>

This Poster is brought to you for free and open access by the Department of Physician Studies at UND Scholarly Commons. It has been accepted for inclusion in Physician Assistant Scholarly Project Posters by an authorized administrator of UND Scholarly Commons. For more information, please contact und.common@library.und.edu.

Sublingual Immunotherapy: Is it a Viable Option to Subcutaneous Immunotherapy when Treating Allergic Rhinitis?

Author: David Ryan Kesterson

Department of Physician Assistant Studies, University of North Dakota School of Medicine & Health Sciences

Grand Forks, ND 58202-9037



Abstract

- **Background:** Allergic rhinitis (AR) is a very common debilitating disease that can be detrimental to one’s lifestyle, work, and home life. Immunotherapy is the only treatment option that has disease modifying capabilities with a proper therapeutic regimen. Subcutaneous immunotherapy (SCIT) was developed over 100 years ago and has been the gold standard in immunotherapy for many years in the United States. During these years many adverse reactions have been reported with SCIT along with non-adherence to total treatment. The introduction of sublingual immunotherapy (SLIT) over 20 years ago gave providers a promising alternative to SCIT.
- **Method:** A review of literature was performed to gain information on studies comparing SLIT to SCIT for treating allergic rhinitis. This review includes head to head clinical outcomes from systematic reviews and meta-analyses. Efficacy, cost, adherence, and adverse reactions was analyzed between SLIT and SCIT to determine if SLIT is a practical treatment option.
- **Results:** The results indicate that treatment with SLIT is comparable to SCIT. SLIT significantly reduces the symptoms of AR with -0.49 SMD and SCIT with -0.73 SMD. Both SCIT and SLIT are generally safe medications when administered properly. SCIT demonstrates a higher risk of systemic reactions with anaphylaxis occurring 0.72% versus 0.33% in placebo. Comparative data shows that SLIT is an effective alternative to SCIT and has equivalent to better adherence to treatment.
- **Application:** It is important for providers to understand the detrimental effects of AR and treat the disease process aggressively. AR may be commonly misdiagnosed, so understanding the disease process and how it can mimic others will promote better treatment outcomes and patient satisfaction. Ideally, SLIT will be seen as a viable option compared to SCIT for treating allergic rhinitis in patients where symptomatic treatment options do not suffice.

Introduction

- AR is a debilitating disease that affects millions of people throughout the world. It accounts for numerous office visits thus increasing the cost of health care for those who suffer. Many treatments are available to manage the symptoms, but only one kind of drug has shown success in modifying the disease. Symptomatic medications are not curative in nature, so they contribute to added cost over a lifetime. SCIT and SLIT are used to modify the disease process by desensitizing the body’s response to allergens. The purpose of this study is to determine whether SLIT is as effective as SCIT in treating AR.

Statement of the Problem

- Insurance deductibles are constantly on the rise and a debilitating disease like AR will make out of pocket expenses increase for those who suffer. SCIT has been the mainstay for treating severe AR, but it can be problematic for patients to continuously go to the physician’s office to receive shots when they can take SLIT at the convenience of their home. Another factor with traditional immunotherapy is safety. More statistical information is needed to compare SCIT and SLIT for safety and efficacy so clinicians can decide which treatment is best for their patient.

Research Questions

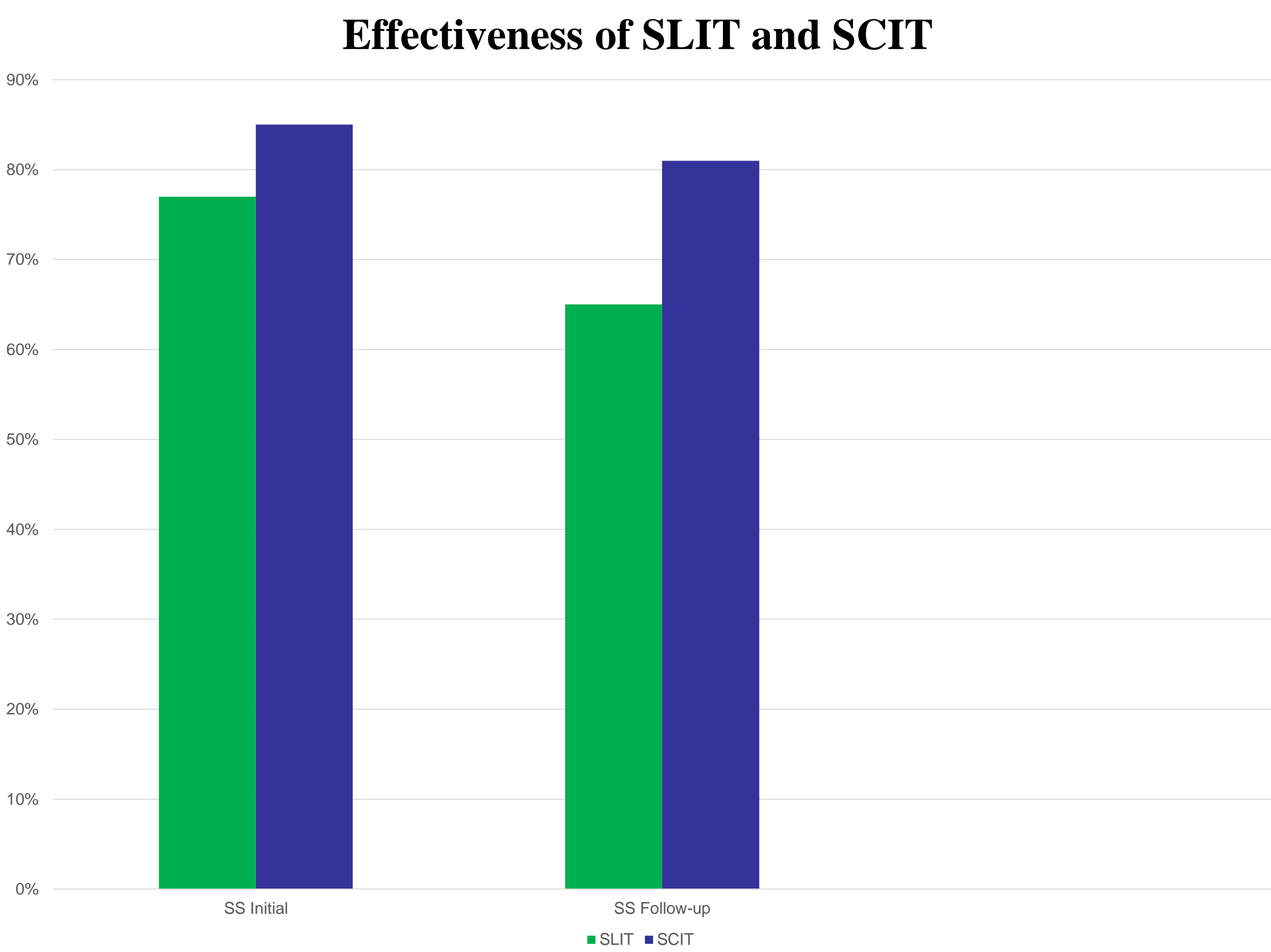
- In patients with allergic rhinitis, is sublingual immunotherapy effective for reducing allergic rhinitis when compared to subcutaneous immunotherapy?
- SLIT versus SCIT in safety, adherence, and cost effectiveness.

Literature Review

- Current literature was studied to evaluate all information containing sublingual immunotherapy and subcutaneous immunotherapy when treating allergic rhinitis in the form of RCTs, Cochrane meta-analyses, non-Cochrane meta-analyses, systematic literature reviews, and large pharmacy refill database studies.
- **Pathophysiology**
 - AR is a chronic disease where allergens trigger an allergic response
 - Exposure to certain extrinsic proteins can lead to specific IgE to the protein in a Type I allergic reaction.
 - Specific immunotherapy desensitizes the body’s response.
- **Efficacy between SLIT and SCIT**
 - In one SCIT meta-analysis, 51 RCTs were examined totaling 2,871 patients. It was found that there was a clinically significant reduction in symptomatic score with -0.73 SMD and medication score with -0.57 SMD (Aboshady et al. 2014)
 - In one SLIT meta-analysis, 49 RCTs were examined totaling 4,589 patients. It showed a clinically significant reduction in symptomatic score with -0.49 SMD (P<0.001) and medication score with -0.32 SMD (P<0.001) (Aboshady et al. 2014).
- **Safety between SLIT and SCIT**
 - Aboshady et al. 2014, found in a SCIT meta-analysis that 8% and 7% of patients in the treated groups experienced grades II and III systemic reactions with anaphylaxis (grade IV) occurring in 3 cases (0.72%)
 - In one SLIT meta-analysis, it was shown that it generally produces minor local reactions of the gastrointestinal system. Calderón et al. 2013, conducted a study that calculated the amount of doses given for SLIT to be at one billion worldwide from 2000 to 2010 and only found eleven case reports for anaphylaxis with no deaths.
- **Adherence between SLIT and SCIT** (Bender 2015)
 - Three large pharmacy refill databases showed
 - 53% of SCIT patients being non-adherent after year one and 84% being non-adherent by the third year of treatment.
 - 56.3% of SLIT patients were non-adherent after year one and 86.6% were non-adherent by the third year.
- **Cost effectiveness between SLIT and SCIT** (Dranitsaris et al. 2014)
 - Monthly drug cost in double-blind placebo controlled RCTs
 - Oralair \$1,003 1st year, 2nd and 3rd \$1,983.84.
 - Grazax \$2,171 1st year, 2nd and 3rd \$4,327.
 - SCIT year-round \$3,474 1st year, 2nd and 3rd \$2,852.
 - SCIT seasonal \$1,951 1st year, 2nd and 3rd \$3,867.

Discussion

- These findings suggest that treatment with SLIT is an effective alternative to SCIT for reducing symptoms associated with AR and decreasing the immunologic response.
- When comparing safety of the two therapies, SLIT had less serious adverse events when compared to SCIT. Some minor adverse reactions and few systemic reactions were noted with SLIT, but SCIT carries a higher risk for anaphylaxis during treatments with fatalities being rare.
- Adherence to treatment was found to have conflicting evidence. In many RCTs SLIT showed superiority over SCIT for adherence, but information from large pharmacy refill databases showed that more patients on SCIT were continuing treatment after three years when compared to SLIT.
- SLIT and SCIT showed to have significant cost reduction over placebo and studies have shown that SLIT is slightly favorable over SCIT.



Applicability to Clinical Practice

- AR is commonly misdiagnosed or overlooked.
- Current clinical practice is through the use of symptomatic drug therapy which can be useful in those with less severe AR.
- Obstacles to immunotherapy: out-of-pocket costs, use of OTC drugs, and adherence to long term therapy.
- Education about the therapy options and potential for cost savings long term.
- As a provider, know when to refer and not to refer to an allergist.
 - Know what your patient wants long term
 - Know if long term therapy is feasible from a financial stand point.
- For those with severe AR perform RAST (IgE antibodies) or skin prick test (antigen introduced) to determine triggers and need for immunotherapy.

References

Aboshady, O. A., & Elghanam, K. M. (2014). Sublingual immunotherapy in allergic rhinitis: Efficacy, safety, adherence and guidelines. *Clinical and Experimental Otorhinolaryngology*, 7(4), 241-249. doi:10.3342/ceo.2014.7.4.241 [doi]

Bender, B. G. (2015). Motivating patient adherence to allergic rhinitis treatments. *Current Allergy and Asthma Reports*, 15(3), 10-014-0507-8. doi:10.1007/s11882-014-0507-8 [doi]

Calderon, M. A., Frankland, A. W., & Demoly, P. (2013). Allergen immunotherapy and allergic rhinitis: False beliefs. *BMC Medicine*, 11, 255-7015-11-255. doi:10.1186/1741-7015-11-255 [doi]

Dranitsaris, G., & Ellis, A. K. (2014). Sublingual or subcutaneous immunotherapy for seasonal allergic rhinitis: An indirect analysis of efficacy, safety and cost. *Journal of Evaluation in Clinical Practice*, 20(3), 225-238. doi:10.1111/jep.12112 [doi]

McCance, K. L., Huether, S. E., Brashers, V. L., & Rote, N. S. (Eds.). (2014). *Pathophysiology: The biologic basis for disease in adults and children* (7th ed.). St. Louis, MO: Elsevier Mosby.

Nelson, H. S. (2014). Subcutaneous immunotherapy versus sublingual immunotherapy: Which is more effective? *The Journal of Allergy and Clinical Immunology in Practice*, 2(2), 144-9; quiz 150-1. doi:10.1016/j.jaip.2013.11.018 [doi]

Solelhac, G., & Charpin, D. (2014). Management of allergic rhinitis. *F1000prime Reports*, 6, 94-94. eCollection 2014. doi:10.12703/P6-94 [doi]

Acknowledgements

A genuine thank you is extended to my faculty advisor Terri Wold who served as my mentor for this project. I truly appreciate your strong vision, tremendous guidance, and limitless revisions. Compiling this information in a presentable manner would not have been possible without your knowledge and advice.