SLIT Basics for the Allergist

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Disclosures: ALK
Basic Thoughts to Ponder

1. What is sublingual immunotherapy (SLIT)?
2. Is SLIT effective and are any products FDA-approved?
3. Are ANY and ALL SLIT doses effective?
4. Does SLIT have a role in your practice?
5. How are US Allergists utilizing SLIT?
6. How do we maximize efficacy?

Question 1

Which of the following allergens have FDA-approval?
A. Bermuda
B. Golden rod
C. Oak
D. Sweet vernal
Question 1

Which of the following allergens have FDA-approval?
A. Bermuda
B. Golden rod
C. Oak
D. Sweet vernal

Case Scenario Part I

It is fall 2018 and you are seeing a 26 yo male with a history of seasonal rhinoconjunctivitis coinciding with the northern grass pollen season. He has suboptimal control with the use of both nasal steroid and nasal antihistamine. He is the grounds keeper for the University of TN, Knoxville, athletic department. He will be taking a job next year with the Tennessee Titans football team in Nashville and knows between his schedule and the move that he cannot logistically start subcutaneous immunotherapy (SCIT). He is prick positive to all the northern grasses on your skin testing panel. What do you do?
Maximizing Thoughts to Ponder

1. What is sublingual immunotherapy (SLIT)?
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Sublingual Immunotherapy

SLIT is a sublingual (under the tongue) allergy immunotherapy tablet (or extract) used to treat symptoms of allergies to the pollens and environmental allergens in the tablet (or extract). It is an allergy immunotherapy and an immunomodulator, which means that it works differently than other medicines a patient may take when they experience bothersome allergy symptoms.
Maximizing Thoughts to Ponder

1. What is sublingual immunotherapy (SLIT)?
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6. How do we maximize efficacy?

### SLIT Efficacy

<table>
<thead>
<tr>
<th>Components</th>
<th>ORALAIR®</th>
<th>GRASTEK®</th>
<th>RAGWITEK®</th>
<th>ODACTRA®</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweet Vernal Orchard</td>
<td>Timothy</td>
<td>Short ragweed</td>
<td>D. farinae</td>
<td>D. pteronyssinus</td>
</tr>
<tr>
<td>Perennial Rye</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timothy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kentucky Blue</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age Indications</th>
<th>5-65 years</th>
<th>5-65 years</th>
<th>5-65 years</th>
<th>18-65 years</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Initiation</th>
<th>16 wks prior to grass season</th>
<th>12 wks prior to grass season</th>
<th>12 wks prior to ragweed season</th>
<th>Can be started anytime</th>
</tr>
</thead>
</table>

| FDA-approved                | 2014                          | 2014                          | 2014                          | 2017                   |
Maximizing Thoughts to Ponder

1. What is sublingual immunotherapy (SLIT)?
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Effective Doses

- Total combined daily symptom/medication score (TCS)
- Daily symptom score (DSS)
- Daily medication score (DMS)

Question 2

Which of the following ragweed doses have been shown to be effective in adjusted mean TCS, adjusted mean DSS and adjusted mean DMS?

A. 1.5 Amb a 1 units
B. 6 Amb a 1 units
C. 12 Amb a 1 units
Effective Doses

• Primary efficacy end point: total combined daily symptom/medication score (TCS) during peak ragweed season
• Three daily sublingual doses (1.5, 6 and 12 Amb a 1 units)
  • 1.5 Amb a 1-U reduced TCS by 9% (-0.76; \( P = 0.22 \))
  • 6 Amb a 1-U reduced TCS by 19% (-1.58; \( P = 0.01 \))
  • 12 Amb a 1-U reduced TCS by 24% (-1.58; \( P = 0.01 \))

Case Scenario Part II

Your patient moving to Nashville to work for the Titans football grounds team with seasonal symptoms coinciding with northern grass pollen season

The Nashville Times

The arrest of Nashville medical provider Dr. Rip M Off on charges that he took 2800 BAU Timothy grass samples, created a suspension, diluted it 10-fold and sold it as sublingual drops to his self-paying patients to increase profits has divided the community and left many community members in a state of "disbelief, outrage and fear".
Effective Doses

DOSE MATTERS!

Maximizing Thoughts to Ponder

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2. Is SLIT effective and are any products FDA-approved?
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Maximizing Thoughts to Ponder

1. What is sublingual immunotherapy (SLIT)?
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SLIT Use in the US

Respondents

US Respondents

Sivam A and Tankersley MS, ACAAI 2018 Oral Presentation
Maximizing Thoughts to Ponder

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Maximizing Efficacy

1. Allergists must prescribe SLIT
2. Patients must be adherent with SLIT
3. Create practice systems to maximize #1 and #2
   a. Exam room notebook with IT checklist and education materials
   b. Consider delegating the IT checklist and education to nursing staff
   c. Use a follow-up visit to educate, initiate and prescribe
   d. Start with in office samples to avoid home administration with first dose
   e. Utilize ACAAI and AAAAI resources
Maximizing Efficacy

• ACAAI Resources
  • Should I Treat My Allergies with Immunotherapy? (patient survey)\(^1\)
  • SLIT Overview and FAQs\(^2\)


Maximizing Efficacy

• American Academy of Allergy, Asthma and Immunology (AAAAI) Practice Management/Practice Tools/Sublingual Immunotherapy Forms\(^1\)
  • There are eight forms in English
  • Three of the eight forms are also in Spanish
    • Patient consent form
    • Pre-dose checklist
    • Background information for patients

Case Scenario Part III

Your patient moving to Nashville to work for the Titans football grounds team with seasonal symptoms coinciding with northern grass pollen season

1. What is your best treatment option?
   a) Stick with his suboptimal therapy or maybe add diphenhydramine so he can sleep away his misery
   b) SLIT with house dust mite
   c) SLIT with ragweed
   d) SLIT with a northern grass product
Questions or Comments?

Mike Tankersley
mtanker6@uthsc.edu
SCIT CHANGES IN PANDEMIC: THE NEW NORMAL

J. WESLEY SUBLETT, MD, MPH

Symposium on Emerging Concepts in Environmental Immunotherapy

110 Years of Allergen Immunotherapy

Commemorating 110 Years of Allergen Immunotherapy


Noon & Freeman
Key COVID-19 Time Points

- December 12, 2019 - A cluster of patients in Wuhan, China
- December 31, 2019 - WHO China Office informed
- January 17, 2020 - CDC deploys a team to Washington state to assist with contact tracing efforts in response to the first reported case of 2019-nCOV in the U.S.
- March 13, 2020 - U.S. declares a nationwide emergency.
Effect of Anxiety on Adherence to SCIT during COVID-19

Table 1

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Continued SCIT: adherent (n = 39)</th>
<th>Continued SCIT: nonadherent (n = 23)</th>
<th>Discontinued SCIT (n = 16)</th>
<th>P value&lt;sup&gt;4&lt;/sup&gt; (adherent vs nonadherent)</th>
<th>P value&lt;sup&gt;5&lt;/sup&gt; (continued vs discontinued)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient sex, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>24 (61.5)</td>
<td>14 (60.8)</td>
<td>11 (68.7)</td>
<td>.85</td>
<td>.58</td>
</tr>
<tr>
<td>Male</td>
<td>15 (38.5)</td>
<td>9 (39.2)</td>
<td>5 (31.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient age (y)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>14.4 ± 3.6</td>
<td>15.3 ± 3.38</td>
<td>14.9 ± 3.32</td>
<td>.25</td>
<td>.90</td>
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<tr>
<td>Parental age (y)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>42.5 ± 5.8</td>
<td>43.35 ± 6.95</td>
<td>NA</td>
<td>.63</td>
<td></td>
</tr>
<tr>
<td>Phase of SCIT, n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Build-up phase</td>
<td>16 (41)</td>
<td>0 (0)</td>
<td>10 (62.5)</td>
<td>&lt;.001</td>
<td>.006</td>
</tr>
<tr>
<td>Maintenance phase</td>
<td>23 (59)</td>
<td>23 (100)</td>
<td>6 (37.5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Patient state anxiety score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>33.24 ± 7.08</td>
<td>35.5 ± 8.38</td>
<td>NA</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td>Patient trait anxiety score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>34.39 ± 7.38</td>
<td>39.5 ± 8.5</td>
<td>NA</td>
<td>.02</td>
<td></td>
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<tr>
<td>Parental state anxiety score</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mean ± SD</td>
<td>36.89 ± 9.86</td>
<td>39.11 ± 8.10</td>
<td>NA</td>
<td>.40</td>
<td></td>
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<tr>
<td>Parental trait anxiety score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean ± SD</td>
<td>40.37 ± 7.87</td>
<td>42.84 ± 7.47</td>
<td>NA</td>
<td>.26</td>
<td></td>
</tr>
</tbody>
</table>

Abbreviations: NA, not applicable; SCIT, subcutaneous immunotherapy.

*P values in the 5th column refer to the comparisons between adherent and nonadherent patients using the chi square and student t-test.

†P values in the last column refer to the comparisons between continued and discontinued patients using the chi square and student t-test.

Ann Allergy Asthma Immunol 126 (2021) 595-597.

Cost-effectiveness of Home IT during COVID-19

Table II. Cost-effectiveness of pandemic home AIT from a societal perspective

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Cost ($)</th>
<th>Effectiveness (QALY)</th>
<th>CE</th>
<th>ICER ($/QALY)</th>
<th>NMB ($)</th>
<th>AIT Early Discontinuation&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic AIT</td>
<td>$16,394</td>
<td>22.1061</td>
<td>$742</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home AIT</td>
<td>$16,464</td>
<td>22.1077</td>
<td>$745</td>
<td>$44,554</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discontinue AIT</td>
<td>$18,332</td>
<td>21.9077</td>
<td>$837</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Microsimulation<sup>*</sup>:

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Cost ($)</th>
<th>Effectiveness (QALY)</th>
<th>CE</th>
<th>ICER ($/QALY)</th>
<th>NMB ($)</th>
<th>AIT Early Discontinuation&lt;sup&gt;1&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clinic AIT</td>
<td>$16,380 ± 4,909</td>
<td>22.0913 ± 3.8201</td>
<td>$741</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Home AIT</td>
<td>$15,934 ± 4,915</td>
<td>22.1503 ± 3.8101</td>
<td>$719</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discontinue AIT</td>
<td>$18,354 ± 3,165</td>
<td>21.9335 ± 3.7821</td>
<td>$837</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CE: Cost-effectiveness; NMB: net monetary benefit.

*The microsimulation (n = 10,000) discontinued AIT in patients with more than 2 systemic reactions, and patients receiving home AIT had a 25% reduction in patient-preference AIT discontinuation rates.

†Values presented as mean ± SD.

J Allergy Clin Immunol Pract 2020;8:2310-21
AIT during COVID-19
A Private Practice Experience

OVERVIEW

- Facility Practices
- Healthcare Worker Safety
- Safe Patient Care Delivery
- Communications

Healthcare is local!
Each office and location will face unique challenges and limitations.

COVID-19 Trends Across States for Practice

Kentucky  Indiana  Ohio

Tennessee  Arkansas

https://coronavirus.jhu.edu/map.html
Date accessed: 9/26/2021
### AIT during COVID-19

#### Facility Practices

- **Social Distancing Practices**
  - Place chairs 6 feet apart in waiting room
  - Use barriers when possible
  - Ensure Social Distancing in non-clinical areas

- **Employee COVID Screening**
  - Universal masking
  - Contact Tracing

### Employee COVID-19 Tracking

- **Started March 1st, 2020**
- **215 Failed Employee Screens**
  - 89 positive with confirmed PCR testing
  - 2 employees had contact with patient’s who were COVID +

*(Internal FAA data)*
AIT during COVID-19
Healthcare Worker Safety

- Ensure proper use of personal protection equipment (PPE)
- Contactless Check-in Procedure
  - Patients wait outside or in the car until screened and waiting room/clinic room is available
- COVID-19 Screening Questionnaire
- Establish a post-exposure protocol

Screening Failures

- Started March 1st, 2020
- 259 Failed Patient Screens
- 105 Captured by Shot room/1.3 million injections

If Screen Failed, COVID PCR testing was recommended
- 68 positive with confirmed PCR testing

(Internal FAA data)
AIT during COVID-19
Safe Patient Care Delivery

- Universal masking
- Appropriate social distancing or isolating in clinic room while monitoring post-injection
- Epinephrine Auto-injector prescription

Alternative Schedules- Cluster/Rush AIT

- Standard
  - per-injection incidence of 0.01%.
- Cluster
  - per-injection incidence of 0.06%.
- Rush
  - per-injection incidence of 0.33%.
AIT during COVID-19
Communications

- Train staff with universal message
- Develop and maintain a communication plan for your staff and patients
  - Door Signs
  - Communication Scripts

THANK YOU
Adverse Reactions to SCIT
Symposium on Emerging Concepts in Environmental Immunotherapy

ACAAI Annual Scientific Meeting

November 6, 2021

David I. Bernstein, MD, FACAAI
Professor Emeritus
University of Cincinnati College of Medicine

Disclosures

Advisory Panel – ALK America, GlaxoSmithKline, Regeneron

Speaker honoraria - ALK America, GSK

Grant support – Aimmune, ALK, Amgen, AstraZeneca, Allergy Therapeutics, Avillion, Biocryst, Boehringer Ingelheim, Cipla, Genentech, GlaxoSmithKline, Gossamer, Leo, Lupin, Menlo, Merck, Mylan, Novartis, Novum, Pearl, Regeneron, Shire, and TEVA

Consulting - Gerson-Lehman, Guidepoint Global, Alpha Insights, HAL, Medacorp, International Isocyanate Institute, Proctor and Gamble.
46 Year History of Fatal Anaphylaxis following Subcutaneous Immunotherapy Injections (AAAAI/ACAAI)

92 confirmed fatalities

Lockey et al. JACI 1987 & Reid et al. JACI 1993 & Bernstein et al. JACI 2004
Bernstein et al. AAACI 2010
Epstein et al. (N American Surveillance) AAACI 2011, 2013, 2016, 2017

Number of Deaths related to SCIT

Factors contributing to SCIT Fatal Systemic Reactions

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Prevalence 1985-2001 (n=34)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncontrolled asthma</td>
<td>62%</td>
</tr>
<tr>
<td>Prior systemic reaction</td>
<td>53%</td>
</tr>
<tr>
<td>Pollen season</td>
<td>47%</td>
</tr>
<tr>
<td>Suboptimal treatment of anaphylaxis (epinephrine)</td>
<td>43%</td>
</tr>
<tr>
<td>Dosing error</td>
<td>35%</td>
</tr>
<tr>
<td>&lt; 30’ observation</td>
<td>12%</td>
</tr>
<tr>
<td>Unsupervised setting (home)</td>
<td>9%</td>
</tr>
<tr>
<td>Delayed reaction? (onset after 30’ observation)</td>
<td>9%</td>
</tr>
<tr>
<td>None</td>
<td>17%</td>
</tr>
<tr>
<td>Beta blocker / ACEI</td>
<td>2% / 2%</td>
</tr>
</tbody>
</table>

ACEI, angiotensin-converting enzyme inhibitor.
**AAAAI/ACAAI North American Surveillance Study (2008-2021)**

**Project AIMS:**
1. Estimate annual incidence of fatal reactions from SCIT and skin testing in North America
2. Define relative incidence of systemic allergic reactions of varying severity for SCIT and SLIT
3. Identify clinical practice patterns that may impact risk of fatal and non-fatal reactions

Bernstein AAACI 2010

^ SLIT safety survey initiated in 2013

**AAAAI/ACAAI Surveillance Study Participation—2008-2020**

Patients of AAAAI/ACAAI members prescribing SCIT

<table>
<thead>
<tr>
<th>Year</th>
<th>Responses</th>
<th>Practitioners</th>
<th>No. Patients</th>
<th>Response rate*</th>
<th>Injection visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>(2008-2009)</td>
<td>806</td>
<td>1922</td>
<td></td>
<td>49%</td>
<td>8.3 million</td>
</tr>
<tr>
<td>(2009-2010)</td>
<td>630</td>
<td>1453</td>
<td></td>
<td>37%</td>
<td>5.6 million</td>
</tr>
<tr>
<td>(2010-2011)</td>
<td>513</td>
<td>1072</td>
<td></td>
<td>27%</td>
<td>5.1 million</td>
</tr>
<tr>
<td>(2011-2012)</td>
<td>402</td>
<td>1073</td>
<td></td>
<td>27%</td>
<td>4.3 million</td>
</tr>
<tr>
<td>(2012-2013)</td>
<td>617</td>
<td>1754</td>
<td></td>
<td>51%</td>
<td>5.6 million</td>
</tr>
<tr>
<td>(2013-2014)</td>
<td>565</td>
<td>1349</td>
<td>1,383,029</td>
<td>39%</td>
<td>8.2 million</td>
</tr>
<tr>
<td>(2014-2015)</td>
<td>494</td>
<td>1046</td>
<td>1,360,828</td>
<td>30%</td>
<td>9.5 million</td>
</tr>
<tr>
<td>(2015-2016)</td>
<td>363</td>
<td>1017</td>
<td>535,585</td>
<td>30%</td>
<td>7.8 million</td>
</tr>
<tr>
<td>(2016-2017)</td>
<td>351</td>
<td>945</td>
<td>351,445</td>
<td>25%</td>
<td>7.2 million</td>
</tr>
<tr>
<td>(2017-2018)</td>
<td>250</td>
<td>658</td>
<td>247,701</td>
<td>19%</td>
<td>2.9 million</td>
</tr>
<tr>
<td>(2018-2019)</td>
<td>120</td>
<td>501</td>
<td>107,055</td>
<td>19%</td>
<td>2.1 million</td>
</tr>
<tr>
<td>(2019-2020)</td>
<td>205</td>
<td>481</td>
<td>192,326</td>
<td>?</td>
<td>3.5 million</td>
</tr>
</tbody>
</table>

*Number of practitioners responding/ Number who received survey

*Total=70,000,000 injection visits*
What have we learned about risk of SRs to SCIT?

1. Severe and uncontrolled asthma.
2. A prior systemic reaction to SCIT injection.
3. Accelerated build-up protocols.
4. Administration during peak allergy seasons.
5. Lack of enforced 30-minute observation period following injections.

Risk of Asthma in Patients on SCIT
AAA/AACAI North American Surveillance Study of AIT 2016-2018

- Using the EPR/ATS severe asthma definition, 50% of Grade 3 or 4 SRs occurred in patients with severe asthma (2017-2018)

- Significantly lower rates of Grade 3 SRs in practices not prescribing SCIT in patients with uncontrolled asthma (p=0.02)

*Epstein et al. Annals of Allergy Asthma and Immunology (2021 Annals of Allergy)*
Identified factors with 6 recent fatal reactions
AAAAI/AACAI Surveys 2009-17

• Case #1
  Asthma (FEV1 69%)  Obesity  Pollen season  ACE inh

• Case #2
  unknown

• Case #3
  Asthma, Advair 500  Maint. dose post cluster  Bronchospasm FR

• Case #4
  Severe asthma, ED hospital admissions  Obesity

• Case #5
  Provider did not recognize anaphylaxis

• Case #6*
  Asthma (FEV1 > 80%)

  left clinic after < 20 min. delay
  1.5 hour delay in EPI
  bronchospasm - FR

*13 year old male
Epstein et al. JACI – 2019

Year 2 (2009-2010): Percent of Reactions Preceded by a Prior Systemic Reaction?
(0.6% of all patients reported in the survey had SRs)

% of SRs with prior reported SRs

<table>
<thead>
<tr>
<th></th>
<th>All SRs</th>
<th>Grade 1 SRs</th>
<th>Grade 2 SRs</th>
<th>Grade 3 SRs</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of SRs</td>
<td>25.7</td>
<td>24</td>
<td>29</td>
<td>34</td>
</tr>
</tbody>
</table>

The dose of allergen immunotherapy extract should be appropriately reduced after a systemic reaction if immunotherapy is continued. Evidence Level D
Bernstein et al. Allergy Asthma Proc 2020
Cluster buildup is associated with Systemic Reactions

- 31% (140/453 respondents) use cluster build-up strategies (Year 5)

- Increased risk of Grade 1, 2 and 3 SRs reported in practices uses cluster build-up strategies (Annals 2013, JACI –IP 2014, Epstein et al.)

- Sub-study: a lower target dose at end of cluster prior to transitioning to maintenance doses was associated with lower risk of severe SRs (p=0.07) (JACI –IP 2014, Epstein et al.)

Comparison of systemic reaction in rush, cluster, & standard build aeroallergen immunotherapy

Annual incidence per shot during 5-year period (2010 – 2014)

Rush IT protocols used for stinging Hymenoptera Venom IT. Less systemic reactions seen for VIT
Does adjusting doses during peak pollen seasons impact SR rates in build-up or maintenance vials (Year 4, n=235)?

Epstein et al, JACI IP 2014

Practices never reducing doses during peak pollen seasons in build-up or maintenance vials were significantly more likely to report Grade 3 or 4 SRs

Strategy used to enforce post-Injection monitoring impacts SR rates

Epstein et al. Annals of Allergy 2021
How to Improve SCIT Tolerability by preventing SRs in all treated patients

1. Do not recommend SCIT in severe or uncontrolled asthmatics.
2. Modify doses or discontinue SCIT after Grade 3 or 4 SRs.
3. Adapt clinic protocols to prevent dosing errors.
4. Administer SCIT injections only in clinics with adequate facilities, personnel to manage anaphylaxis.
5. Adhere to 30-minute observation period and check out with staff.
6. Consider modifying doses in highly sensitized patients during peak aeroallergen periods.
7. Consider reducing target doses for accelerated cluster buildup.
8. Targeted prescription and training on use of self-injectable epinephrine?

Epinephrine auto-injectors are rarely used (2014-2017)

- Patients with Delayed Grade 3 or 4 SRs who used EPI auto-injectors:
  - 2014-2015: 14 out of 54 patients (26%)
  - 2015-2016: 7 out of 90 patients (8%)
  - 2016-2017: 10 out of 30 patients (30%)

- Prescription of epinephrine auto-injectors did not prevent delayed Grade 3 or 4 SRs (p=0.12)

Epstein JACI IP, 2019
These patients should be considered for EPI autoinjectors:

- Prior systemic reactions to AIT (immediate/delayed).
- Patients with history of severe asthma
- Practices with high frequency of delayed onset SRs.
- Patients receiving injections at outside clinics.
- Patients on cluster build-up.

Risk of Infections from SCIT (2014-2020)

- No confirmed local or systemic infectious events requiring antibiotics were reported.
- No infections in 59.1 million injection visits and 3.9 million patients.

Epstein, AAACI 2017; Epstein, JACI IP 2019, Annals 2021
References


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