What is allergy immunotherapy?
By exposing your body to specific allergens a little at a time, your immune system builds a tolerance to them. This tolerance may decrease the amount or severity of allergic reactions to allergens you may encounter outside of the treatment. Allergy shots have traditionally been used for this purpose. Now there are 3 new sublingual (under the tongue) allergy immunotherapy tablets available:

- Grastek®
- Oralair®
- Ragwitek®

Tablets vs. Shots

Advantages of Tablets:
- No needles!
- Tablets can be taken at home
- Safer than allergy shots
- Less risk of anaphylaxis

Disadvantages of Tablets:
- Daily medication (missed doses can decrease response)
- Only specific grass types covered
- Cost of medication ($250-300/month)

Tablet side effects:
- Mouth and ear itching
- Throat irritation

Starting allergy immunotherapy tablets:
⇒ Discuss allergy treatments with your doctor to find best option for you
⇒ Confirm allergy to specific grass pollens via skin or blood test
⇒ Start taking tablets 3-4 months before allergy season begins
⇒ Take first dose in your doctor’s office (to make sure you don’t have a severe reaction)
⇒ Take daily at home through allergy season (exact length of time should be determined by you and your doctor)

Administration Directions:
- Leave tablet in blister pack until ready to take daily dose
- Place under tongue for at least 1 minute
- Allow tablet to dissolve before swallowing
- No food or drink for at least 5 minutes after taking

Depending on your age and which grasses you are allergic to, one medication may be recommended over another.

Grass(es) covered by each medication:
- Grastek®: Timothy grass
- Oralair®: Timothy, orchard, perennial rye, Kentucky blue, and sweet vernal grasses
- Ragwitek®: Ragweed

FDA-approved for the following ages:
- Grastek®: 5-65 year olds
- Oralair®: 10-65 year olds
- Ragwitek®: 18-65 year olds

Avoid allergy immunotherapy tablets if you have:
- Severe, unstable, or uncontrolled asthma
- History of severe allergic reaction or eosinophilic esophagitis
- Allergies to inactive ingredients (e.g., fish-derived gelatin, lactose, mannitol)

By Anna Howard, PharmD Candidate

References on Page 6
Hetlizo® (tasimelteon)
Treatment of Non-24 Sleep-Wake Cycle Disorder

Hetlizo® (tasimelteon) is the first FDA-approved medication indicated for the treatment of non-24 hour sleep-wake cycle disorder (non-24) in completely blind patients.1,4 Due to decreased light stimulation, individuals with non-24 are unable to maintain a normal circadian rhythm and eventually complain of numerous sleep-wake disturbances.1,5,6 As many as 75% of totally blind patients suffer from non-24.4 Although non-24 affects some individuals without blindness, tasimelteon has not been evaluated as a treatment option in this population.1,3,4

Patients taking tasimelteon 20 mg daily for 26-52 weeks had a minimum increase of 28 nighttime minutes and a minimum decrease of 27 naptime minutes, when compared to placebo.1 In a randomized, double-blind, placebo-controlled clinical trial, 84 patients diagnosed with non-24 received 20 mg tasimelteon daily for 6 months. One limitation of this study was the subjective assessment of sleep quality assessment which is subject to bias.1

Tasimelteon is available orally as 20 mg capsules.1,5,6 Patients should take tasimelteon one hour before bed at the same time every night to establish a regular circadian rhythm.1,3,5,6 Tasimelteon should be taken on an empty stomach for proper absorption.1,5,6

Patients may take weeks to months before tasimelteon’s effect is noticed. Most patients in clinical trials began to experience sleep improvements within 8 weeks of treatment initiation.3 After 6 months of treatment, sleep time was greatly improved for both night and day.1,5,6 Chronic treatment will be necessary in most patients to maintain normal circadian rhythm.5,6

**Adverse Events:**1,5,6
- Headache (17%)
- Increased serum alanine aminotransferase (ALT; 10%)
- Nightmare/abnormal dreams (10%)
- Upper respiratory tract infection (7%)
- Urinary tract infection (7%)

**Precautions:**1,5,6
- Impaired mental status: Activity should be limited after administration
- Elderly patients: Increased risk of side effects
- Smoking: Decreases tasimelteon exposure by 40%, resulting in reduced efficacy
- Hepatic or Renal Impairment
- Co-administration with strong CYP3A4 inducers: May decrease exposure to tasimelteon, resulting in decreased efficacy.
- Co-administration with strong CYP1A2 inhibitors: May increase exposure to tasimelteon, resulting in an increased risk of tasimelteon adverse effects.
- Pregnancy category: C
- Lactation: Has not been evaluated

**REFERENCES:**

2. FDA approves Hetlizo: first treat-

**By Andrew Clavelot, PharmD Candidate**
Two pneumococcal vaccines: who should get them and in what order?

The pneumococcal conjugate vaccine, 13-valent (PCV13) or Prevnar 13®, is typically thought of as the “child’s” pneumococcal vaccine, while the pneumococcal polysaccharide vaccine, 23-valent (PPSV23) or Pneumovax 23® is thought of as the “adult” pneumococcal vaccine. However, recent changes in vaccination recommendations have blurred this distinction. This article seeks to clarify which patients should receive what vaccine and when they should be administered.

BACKGROUND

Pneumococcal infections can cause serious infections, predominately pneumonia, bacteremia, and meningitis. In the United States, more deaths are caused by pneumococcal infections than all other vaccine-preventable infections combined. These infections are caused by Streptococcus pneumoniae, a gram-positive bacteria with 90 known serotypes. Of these, the 10 most common serotypes are responsible for the majority of pneumococcal infections.

In 2010, the Centers for Disease Control and Prevention reported that 71% of invasive pneumococcal disease cases were caused by the serotypes covered by PPSV23 and, of those, 50% would also have been covered by PCV13. Even in patients with a confirmed pneumococcal pneumonia, the appropriate pneumococcal vaccine should still be administered to reduce the risk of a future pneumococcal infection. See Table 1 on page 4 for a comparison of the two pneumococcal vaccines.

ADULTS

At age 65, all patients should receive another dose of PPSV23, even if the patient had two doses prior to age 65. If this is their first pneumococcal vaccine dose ever, then they will need a second dose of PPSV23 in five years. In adults with immunocompromising conditions* (see box below), PCV13 should be given in addition to PPSV23. See Table 3 on page 4 for a summary of pneumococcal vaccine recommendations for adults.

TIMING

- PCV13 given 1st: may administer PPSV23 after 8 weeks.
- PPSV23 given 1st: may administer PCV13 in 1 year and PPSV23 in 5 years.
- Exception in children 2-18 years old: may administer PCV13 vaccine 8 weeks after receiving a dose of PPSV23 if they have not previously received PCV13.

By Kaitlyn McDonald, PharmD Candidate

REFERENCES:


* Immunocompromising conditions — e.g., congenital or acquired immunodeficiency, HIV, chronic renal failure & patients on dialysis, nephrotic syndrome, leukemia, lymphoma, Hodgkin disease, multiple myeloma, generalized malignancy, iatrogenic immunosuppression such as corticosteroids or radiation therapy, or solid organ transplant.
### Table 1: Comparison of the two pneumococcal vaccines

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Pneumococcal Conjugate Vaccine 13-valent (PCV13)</th>
<th>Pneumococcal Polysaccharide Vaccine 23-valent (PPSV23)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand name</td>
<td>Prevnar 13®</td>
<td>Pneumovax 23®</td>
</tr>
<tr>
<td>Strains with activity against*</td>
<td>1, 3, 4, 5, 6A, 6B, 7F, 9V, 14, 18C, 19A, 19F, 23F</td>
<td>1, 2, 3, 4, 5, 6B, 7F, 8, 9N, 9V, 10A, 11A, 12F, 14, 15B, 17F, 18C, 19A, 19F, 20, 22F, 23F, 33F</td>
</tr>
<tr>
<td>Serotype coverage</td>
<td>80% of invasive pneumococcal disease among children &lt;6 years old</td>
<td>90% of blood isolates in adults</td>
</tr>
<tr>
<td>Adjuvant</td>
<td>Aluminum 0.125 mg per 0.5 mL as aluminum phosphate</td>
<td>None</td>
</tr>
<tr>
<td>Preservative</td>
<td>None</td>
<td>Phenol 0.25%</td>
</tr>
</tbody>
</table>

* Serotypes specific to each vaccine are bolded to emphasize their differences.

### Table 2: Pneumococcal vaccine recommendations in children

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>PCV13</th>
<th>PPSV23</th>
</tr>
</thead>
<tbody>
<tr>
<td>All children &lt;2 years old</td>
<td>♦ Four dose series</td>
<td>NOT RECOMMENDED</td>
</tr>
<tr>
<td>Children at high-risk (6-18 years old)</td>
<td>♦ One dose</td>
<td>♦ One dose if cochlear implant, CSF leak, chronic heart disease, chronic lung disease, or diabetes mellitus ♦ Two doses (five years apart) if asplenic, sickle cell anemia, or immunocompromising condition*</td>
</tr>
</tbody>
</table>

* See examples of Immunocompromising Conditions on page 3

### Table 3: Pneumococcal vaccine recommendations for adults 19 years and older

<table>
<thead>
<tr>
<th>Risk Group</th>
<th>Medical Condition</th>
<th>PCV13 Recommended</th>
<th>PPSV23 Recommended</th>
<th>PPSV23 Revaccination Recommended (5 years after first dose)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunocompromised</td>
<td>Cigarette Use</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Alcoholism, liver disease, cirrhosis</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diabetes mellitus</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chronic heart disease (congestive heart failure, hypertension, etc.)</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Chronic lung disease (COPD, asthma, etc.)</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cochlear implant</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>CSF leak</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Immunocompetent</td>
<td>Sickle cell disease</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Asplenia</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Immunocompromising conditions*</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

* See examples of Immunocompromising Conditions on page 3
Poison ivy and poison oak are poisonous plants found throughout North America. Oil from any part of these plants (leaves, stems, berries, roots) can cause an allergic reaction of a red rash and blisters. The rash is not contagious, but oil from the plant can be spread through touch or clothing of an exposed person or pet.

**Symptoms**
- Red rash
- Itching, swelling, pain
- Blisters, bumps, streaks, patches

Symptoms can begin within 1-2 days after coming into contact with the plant, and last about 2 weeks.

**Contact your doctor if:**
- You have a rash caused by a poisonous plant
- Itching/rash worsens, even with treatment.

**Prevention Tips**
- Oil from poison ivy/oak spreads by touch, clothes, and pets, so follow these tips to lower exposure risk.
  - “Leaves of 3, let them be”*
  - “Berries of white, run in fright”*
  - Avoid contact with poison ivy/oak
  - Wear gloves, long sleeves, and pants
  - Apply skin barrier cream (Armor® or Ivy Block®) before contact with plant
  - If exposed, take cool shower with mild hypo-allergenic soap to prevent spread to others
  - Do not put back on same clothes; wash clothes in HOT water
  - Bathe pets after hikes/walks if exposure to a poisonous plant is suspected
  - Pets are not affected by poison ivy/oak, but oil from the plant can spread from their fur to people

**Treatment Options**
There is no cure for the rash, but topical over-the-counter (OTC) or prescription (Rx) medication can help relieve symptoms.
- Wash with mild hypo-allergenic soap, then put on clean clothes.
- Colloidal oatmeal bath treatment in cool water or cool/wet compresses can soothe irritation.
- Topical or oral corticosteroids can decrease inflammation (OTC or Rx).
- Use zinc oxide, calamine lotion, or astringents on oozing blisters/rash for relief of itching/redness.
- Antibiotics are used for rashes and blisters that become infected.

*Rhymes in this handout are meant to be helpful reminders, but keep in mind that not all 3-leaved plants are poisonous and not all poisonous plants are 3-leaved.

**POISON OAK** can vary in characteristics depending on its location. Ground level shrubs are found in southeastern United States; whereas tall, clustered vines are found on the west coast.

**Identifiable traits:**
- 3 leaves (sometimes fuzzy) with round toothed edges
- Leaves may also change colors, similar to poison ivy
- May have yellowish/greenish/white berries and/or flowers

**POISON IVY** is commonly found throughout central and northeastern United States and Canada. This poisonous plant can grow as a shrub or vine lining trees, hiking trails, walls, and embankments.

**Identifiable traits:**
- 3 smooth/glossy leaves with toothed edges and hairy underside
- Usually green but leaves can change colors with the seasons
- May have yellowish/greenish/white berries and/or flowers

http://poisonivy.aesir.com/view/pictures.html

References on Page 6

By Ondrea Cowser, PharmD Candidate
Grass Allergy Immunotherapy References (from page 1)


Poison Ivy References (from page 5)


Truvada® Used for PrEP (from page 7)

Truvada® is a combination product containing 300 mg tenofovir and 200 mg emtricitabine.

**Dosing:**
- One tablet once daily with refill authorization of no more than 90 days.

**Adverse Effects:**
- Common: abnormal dreams, depression, diarrhea, dizziness, fatigue, headache, insomnia, nausea, rash
- Severe: pancreatitis, relapsing Hepatitis B infection, hepatotoxicity, rhabdomyolysis, renal impairment, renal failure

**Counseling Points:**
- Side effects like headache, nausea, and flatulence may be worse in the first month after starting Truvada® but should become more tolerable.
- Signs and symptoms of acute renal injury and acute HIV infection should be discussed, so patients know to seek medical care if those symptoms arise.
- Patients will require routine HIV screenings and renal function tests while on Truvada® for PrEP.

**REFERENCE:**

PrEP References (from page 7)

**REFERENCES:**


Pre-Exposure Prophylaxis (PrEP) for HIV Prevention

Pre-exposure prophylaxis for prevention of human immunodeficiency virus (HIV) infection is the use of daily oral antiretroviral medications to reduce the risk of contracting HIV. The Centers for Disease Control and Prevention (CDC) released the Clinical Practice Guidelines for PrEP in May 2014. These guidelines include information about candidates for PrEP, how to treat them, and how to follow-up after PrEP treatment has begun. A Supplemental Provider Guide is also available, which includes sample patient forms and checklists, among other tools, to assist in PrEP administration.

Patients Who May Receive PrEP:
- Men or women who have partners who are infected with HIV
- Homosexual or bisexual males who are sexually active and at risk of contracting HIV through unsafe sexual practices or having intercourse with high-risk partners
- Heterosexual men or women who are sexually active and at risk of contracting HIV through unsafe sexual practices or having intercourse with high-risk partners
- Illicit drug users who are at risk of contracting HIV from sharing equipment

Prior to Prescribing PrEP
Before beginning PrEP therapy, patients should be assessed for their risk of contracting HIV to ensure they are a candidate for PrEP. Medication adherence is paramount to ensure efficacy for PrEP and to prevent the emergence of resistant HIV strains. Providers will need to confirm that patients are willing to take their medications as prescribed. Since PrEP is not 100% effective, patients will need to be informed that other prevention methods still need to be implemented such as safe injection practices and barrier contraception methods. All patients are also required to be tested for HIV and have a confirmed negative result prior to starting PrEP.

Medications Used in PrEP
Currently the only medication FDA-approved for PrEP is Truvada®, the combination of tenofovir and emtricitabine. However, tenofovir by itself may be an alternative medication for some patient populations but should not be used in homosexual or bisexual male patients. Other antiretrovirals should not be used in combination or in addition to Truvada® or tenofovir for PrEP. Additional information on Truvada® is available on page 6.

Only preliminary pharmacokinetic data are available for tenofovir regarding the time to reach steady state in tissues susceptible to HIV infection. The time to maximum concentrations is 7 days for rectal tissue, 20 days for vaginal tissue, and 20 days for serum.

Monitoring
Patients require follow-up visits at least every three months once they have started PrEP, so refill authorization should not exceed 90 days. Every three months, patients will need HIV testing, pregnancy testing, and refill authorization for another 90-day supply of medication. At each visit, providers should also review tolerability of side effects with patients and ensure medication adherence. Renal function test (creatinine clearance) are needed every six months, as well as tests for sexually transmitted infections (STIs) in patients at risk of contracting STIs. Patients and providers should discuss the need for continued PrEP therapy every year.

Discontinuing PrEP
Patients discontinue PrEP for various reasons, such as change in risk for contracting HIV, poor adherence despite intervention, personal choice, or HIV infection. If a patient discontinues therapy, then their health record should include HIV status, reason for discontinuation, and medication adherence during PrEP therapy. If a patient wants to restart PrEP therapy, they will need to follow the same therapy initiation steps as a patient who has never received PrEP.

By Jessi Cahoon, PharmD Candidate

U.S. HIV Prevalence
About 1.14 million people are infected with HIV in the United States and 50,000 people are newly infected each year.

Importance of PrEP
Estimates indicate that up to 515,000 people in the United States are eligible for PrEP under the CDC guidelines. When patients are adherent to their PrEP medications, the risk of contracting HIV decreases by about 90%.

PrEP Therapy
- Reduce the risk of contracting HIV infection
- Reduce patients’ risk of HIV contraction by offering prevention services and barrier contraception methods
- Use PrEP treatment medications properly and only in patients who are eligible under CDC recommendations
- Ensure safe use and adherence of PrEP medications by thoroughly counseling patients

References on Page 6
PATIENT INFORMATION:  
Hoarding: What You Need To Know

What is hoarding?
Hoarding is when getting rid of or throwing away items is difficult. The items may or may not be useless.

Signs of hoarding
Hoarding is typically due to a person holding onto an item they think they must hold on to. Forcing the person to get rid of the item makes them angry.

Another sign is buying items in large amounts and taking many free items that are not useful.

Are you at risk of hoarding?
Hoarding problems may run in families about half of the time.

Also, many people say a specific event caused their hoarding problem, but that has not been proven in most cases.

How is hoarding diagnosed?
Hoarding is usually not the reason for a doctor visit, and it is not easily noticed all the time.

Doctors will ask the person questions about their hoarding behavior. Family members and friends may also help identify the problem.

Common items hoarded
Items people commonly hoard include:
- animals
- newspapers
- old clothing
- bags
- books

How will hoarding affect you?
Hoarding may affect daily activities such as not being able to get to certain areas and cause social separation.

Cluttering of items can be a severe fire danger and increase chances of falls or other related injuries.

Hoarding can also make unsafe living conditions from not being clean or insect/rodent problems.

How do you treat hoarding?
There is no set guide available to treat hoarding.

The best way to deal with hoarding is through behavior counseling. This includes:
- setting goals
- learning ways to deal with hoarding such as sorting and throwing away items
- changing feelings that make the person want to keep items

The next option to deal with hoarding is with medications.

How to help someone who suffers from hoarding
Once someone has been hoarding or diagnosed with hoarding disorder, families and friends should not try to interrupt the hoarding without professional help.

Someone trying to disrupt the hoarding behavior can distress the hoarder and make them angry.

By Levi Shypkowski, PharmD Candidate

REFERENCES: