

The background of the slide is a composite of several microscopic images of allergens. On the left, there are large, spherical pollen grains with a textured, yellowish-brown surface and a distinct ring of pores. In the center and right, there are smaller, more complex structures, possibly mold spores or other allergenic particles, with various shapes and colors including green, purple, and white. The overall background is dark, making the colorful allergens stand out.

Allergic rhinoconjunctivitis

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- NPRANG June 2023

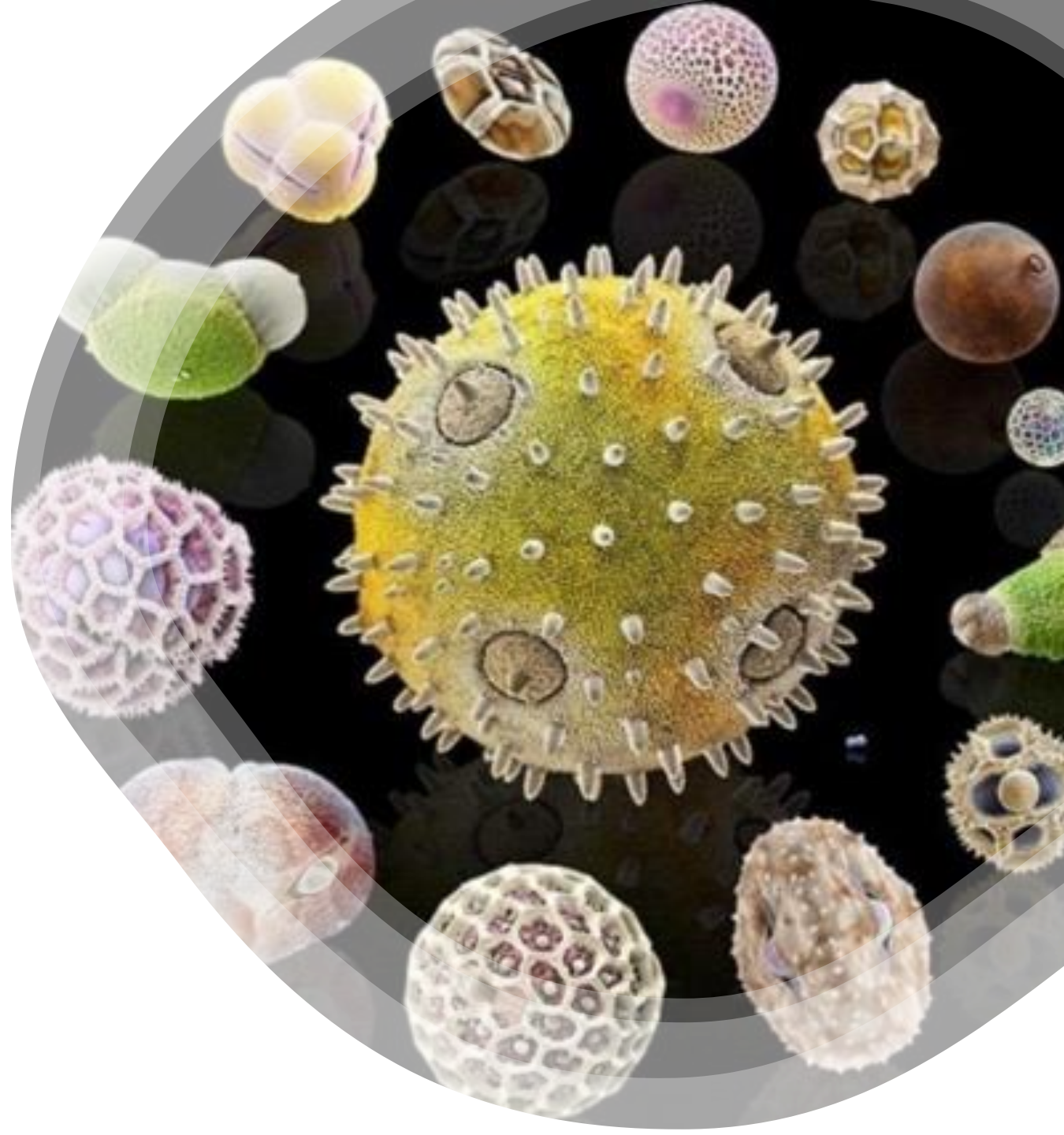


Aim of Presentation

- Overview of the disease
- Common airborne allergens
- Approaches to allergen avoidance
- Medical management of rhinitis and rhino-conjunctivitis
- Immunotherapy

Rhino-conjunctivitis

- Chronic, mostly eosinophilic, inflammation of the nasal mucosa and conjunctiva
- Affects up to 25% of population
- Symptoms include itching, sneezing, watery nasal discharge, and nasal congestion
- Associated ocular symptoms (watery, red and/or itchy eyes)
- Seasonal and/or perennial
- Intermittent or persistent
- Mild, moderate or severe according to the impact on the quality of life





Rhinitis Statistics

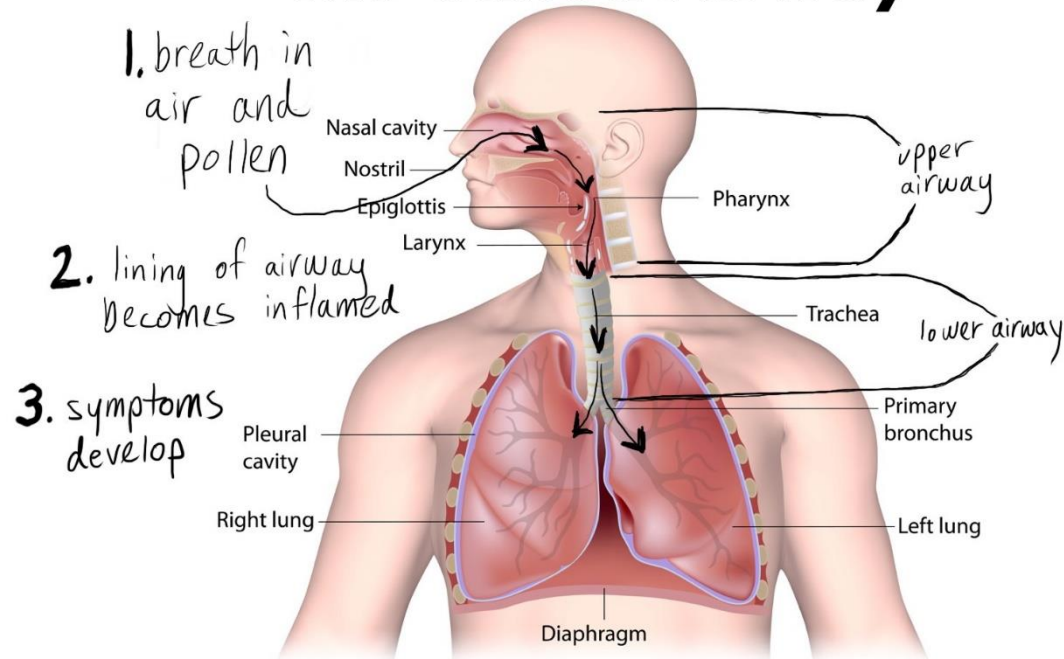
- Allergic rhinitis affects between 10% and 30% of all adults and as many as 40% of children
- Up to 57% of adult patients and up to 88% of children with AR have sleep problems leading to daytime fatigue and somnolence, and decreased cognitive functioning (Pawankar R, et al, 2013)

- Associated with considerable loss of productivity and quality of life
- Leads to impaired performance, sleep disturbance, learning ability, drop in grades
- Exacerbates asthma and is a major factor in asthma development (Scadding, 2015)
- Rhinitis is present in up to 95% of patients with asthma (Small 2018)
- Can occur in children as young as 1.4 years of age (Ludman, 2016)
- History, examination and testing cornerstone of diagnosis
- OTC medicines often first line

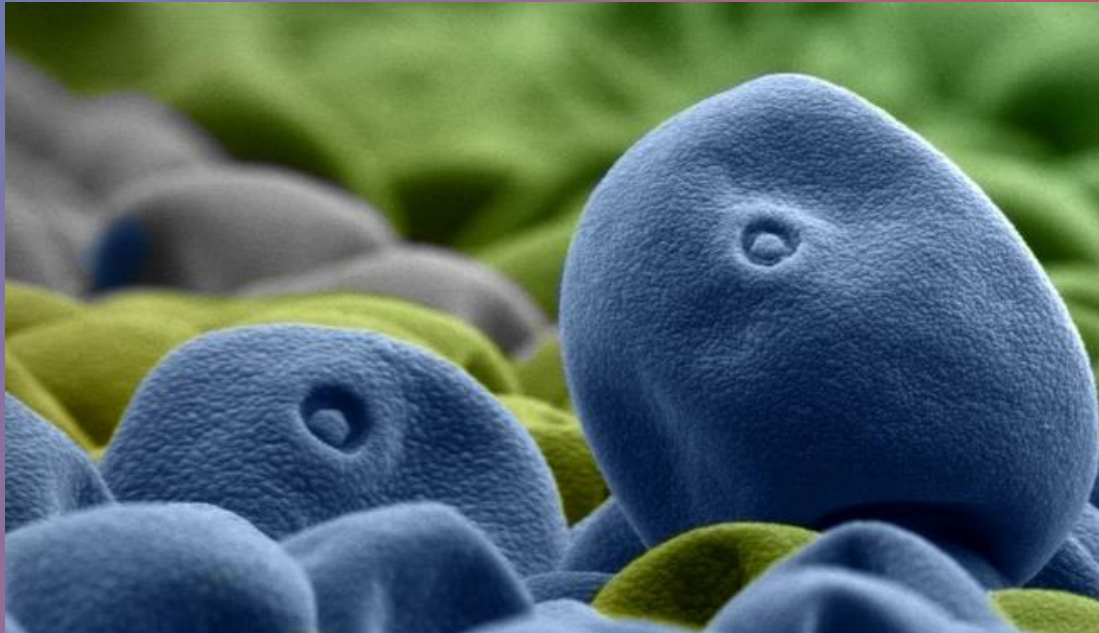


One airway One disease

The United Airway



Upper and lower airway symptoms and disease are both presentation of a single inflammatory process within the respiratory tract



Common triggers

- House Dust Mite
- Grass
- Tree
- Weeds
- Mould and fungal spores
- Animal dander
- Occupational e.g. flour
- Latex
- Nonspecific triggers such as smoke, dust, viral infections, strong odours, and cold air

Rhinitis/rhinoconjunctivitis

Allergic rhinoconjunctivitis

- Symptoms (nasal itch/sneeze, watery discharge) on allergen exposure
- Conjunctivitis often associated with rhinitis symptoms
- Positive skin prick test or serum-specific IgE to allergens that are relevant according to the history

Infectious rhinitis

- Usually secondary to a viral infection
- Conjunctivitis may be associated with rhinitis symptoms

Nonallergic, non infectious rhinitis

- Structural
- Neurogenic
- Hormonal
- Drug induced
- Irritant
- Other

Different forms of rhinitis may co-exist and may alter the clinical presentation and prevent optimal treatment response

AIT is only indicated for allergic rhinitis /rhinoconjunctivitis, not for other forms of rhinitis

Diagnosis

- SPT
- Specific IgE via hospital lab
- ISAC
- Home allergy tests (ALEX) 294 allergens
- Component testing confirms cross reaction between pollen and food



Guidelines



BSACI updated 2017

Allergic Rhinitis and its Impact on Asthma updated (ARIA 2020)

SEL Integrated Guideline



ARIA aims to educate and implement evidence-based management of allergic rhinitis in conjunction with asthma worldwide



Most patients with rhinitis and asthma consult their GP or Pharmacist first

South East London (SEL) Integrated Guideline for the Management of Allergic Rhinitis (AR)

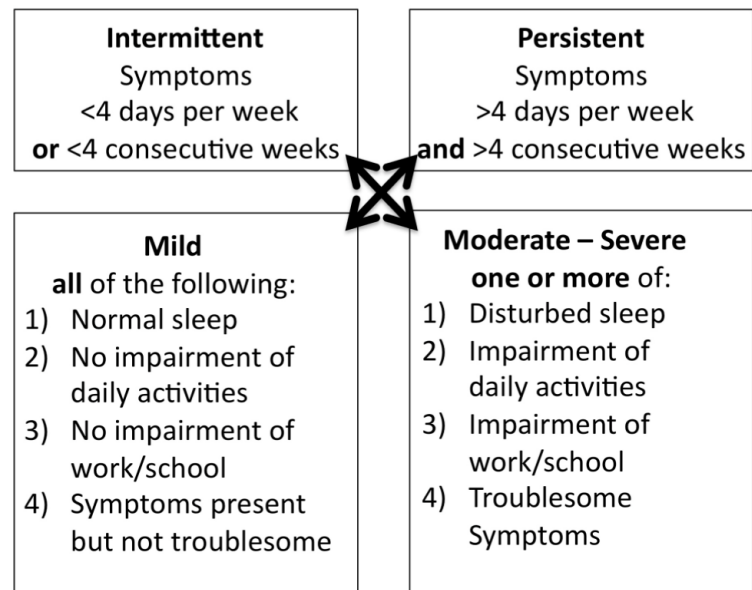


- ✓ Allergic rhinitis is common in children and adults and is a significant cause of morbidity.
- ✓ Symptoms can affect quality of life (2), school performance (3) and impact on family life (4).
- ✓ Patients must be evaluated for asthma symptoms. 75% of children with asthma suffer from AR (5) and AR increases the risk of hospitalisation in children with asthma (6)
- ✓ Patients must be asked about eczema and pollen food syndrome.
- ✓ Patients must demonstrate their nasal spray technique regularly and **adherence to therapy should be established *before* stepping up therapy.**

Diagnosis

- 1. Classic symptoms:** Rhinorrhoea, pruritus (nose, throat, mouth), nasal congestion (mouth breathing, snoring), sneezing
- 2. Careful history** (may identify allergic trigger)
- 3. Examination of the nose to rule out any structural problems**

ARIA Classification of Allergic Rhinitis⁷



Approved: June 2019

Review date: June 2021
(or sooner if evidence or practice changes)

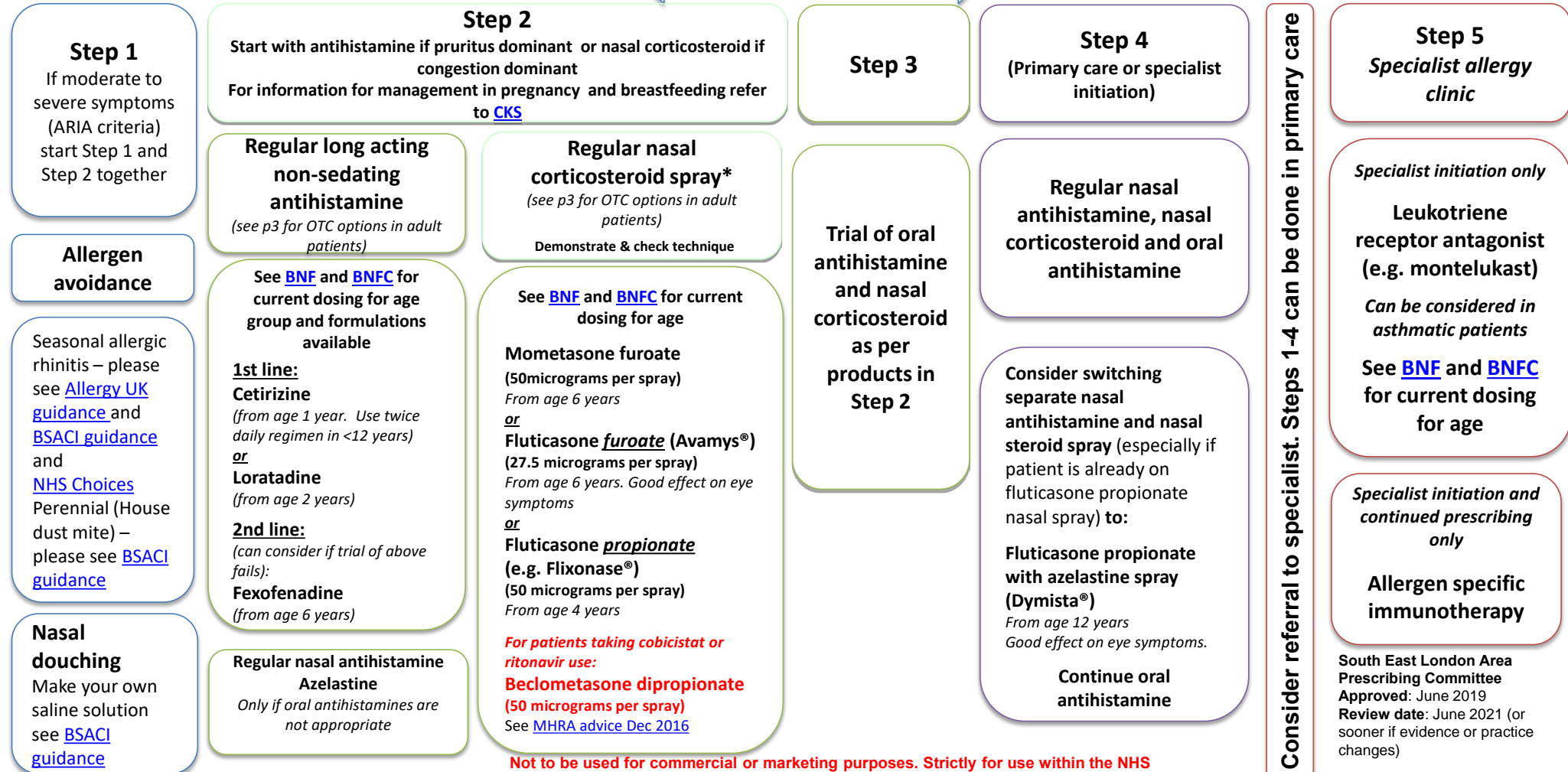
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SEL Integrated Guideline for the Management of Allergic Rhinitis (AR)

Step up treatment if uncontrolled

Allow 8-12 weeks at each step before escalating treatment

Step down when patient gains control



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SEL Integrated Guideline for the Management of Allergic Rhinitis (AR)

Paediatrics

Top Tips

1. For seasonal rhinitis, start nasal spray 1-2 weeks before onset of appropriate pollen season
2. Nasal steroids unlikely to work if there is nasal blockage due to secretions. Try nasal steroid drops or pre-dosing with topical decongestant for 5 days
3. Avoid sedating antihistamines, and intranasal beclometasone (e.g. Beconase®) as it can have systemic effects due to a high bioavailability (*due to interactions beclomethasone is the preferred product in those taking cobicistat or ritonavir however. See MHRA advice Dec 2016*)
4. Avoid and chronic use of decongestants
5. If eye symptoms present consider:
 - Olopatadine eye drops (from age 3) ([see APC recommendation](#))
 - Sodium cromoglicate eye drops

The following may be an indication for referral to Paediatric Allergy Specialist

1. Children with AR who are unresponsive and/or intolerant to conventional treatment
2. Children with diagnostic uncertainty and in whom further investigations (skin prick test +/- sIgE) would be helpful
4. Children who may be considered for desensitisation
5. Multisystem allergy (rhinitis with eczema, asthma or food allergy)

Adults

For seasonal rhinitis, start nasal spray 1-2 weeks before onset of appropriate pollen season

If eye symptoms present consider:

- Olopatadine eye drops ([see APC recommendation](#))
- Sodium cromoglicate eye drops

In severe cases of nasal obstruction thought to be due to allergic rhinitis a short course (e.g. 5 days) of prednisolone 0.5mg/kg could be considered (adults only, max 2 courses per year)

AVOID:

- Sedating antihistamines
- Depot corticosteroids
- Chronic use of decongestants or nasal beclometasone, as has high bioavailability

The following may be an indication for referral to Allergy Specialist

Inadequate control of symptoms on conventional treatment

1. Allergen/trigger identification
2. Consideration of desensitisation
3. Recurrent nasal polyps
4. Multisystem allergy (e.g. rhinitis with asthma, eczema or food allergy)
5. Occupational rhinitis

For adults, the following are available OTC without prescription, which patients could consider buying:

- Fluticasone propionate 50mcg nasal spray
- Beclometasone 50mcg nasal spray (*not preferred for routine prescribing, though may be cheaper than fluticasone OTC. Preferred product for patients on cobicistat or ritonavir, see MHRA advice Dec 2016*)
- Loratadine tabs, liquid
- Cetirizine tabs, liquid
- Sodium cromoglicate eye drops
- Xylometazoline & antazoline eye drops (Otrivine Antistin®)

ENT Red Flags for urgent referral

- Unilateral symptoms including blockage, clear rhinorrhoea and facial pain
- Serosanguinous discharge
- Visual and neurological signs (considering sinonasal malignancy)
- Failure of 3 months maximum medical therapy, particularly where nasal blockage and anosmia remain significant symptoms

References

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2. Silva CHM et al. Braz J Otorhinolaryngol 2009;75:642–649.
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Management



The aims of management are to control symptoms and reduce inflammation



Despite medication, a significant number of patients continue to experience symptoms that impair their quality of life



Avoidance is recommended in all guidelines

Adherence is often poor


- 25% of all asthma and allergy patients do not collect their prescriptions
- Non-adherence may be non-intentional or intentional
- Bedrock of adherence and positive healthcare behaviours is an acceptance of the condition
- Doubts over the need for medication and avoidance measures are closely linked to poor adherence and risk taking behaviour
- Burden of care, interventions and regimens can be difficult to follow
- Asthma and allergy patients bargain with themselves

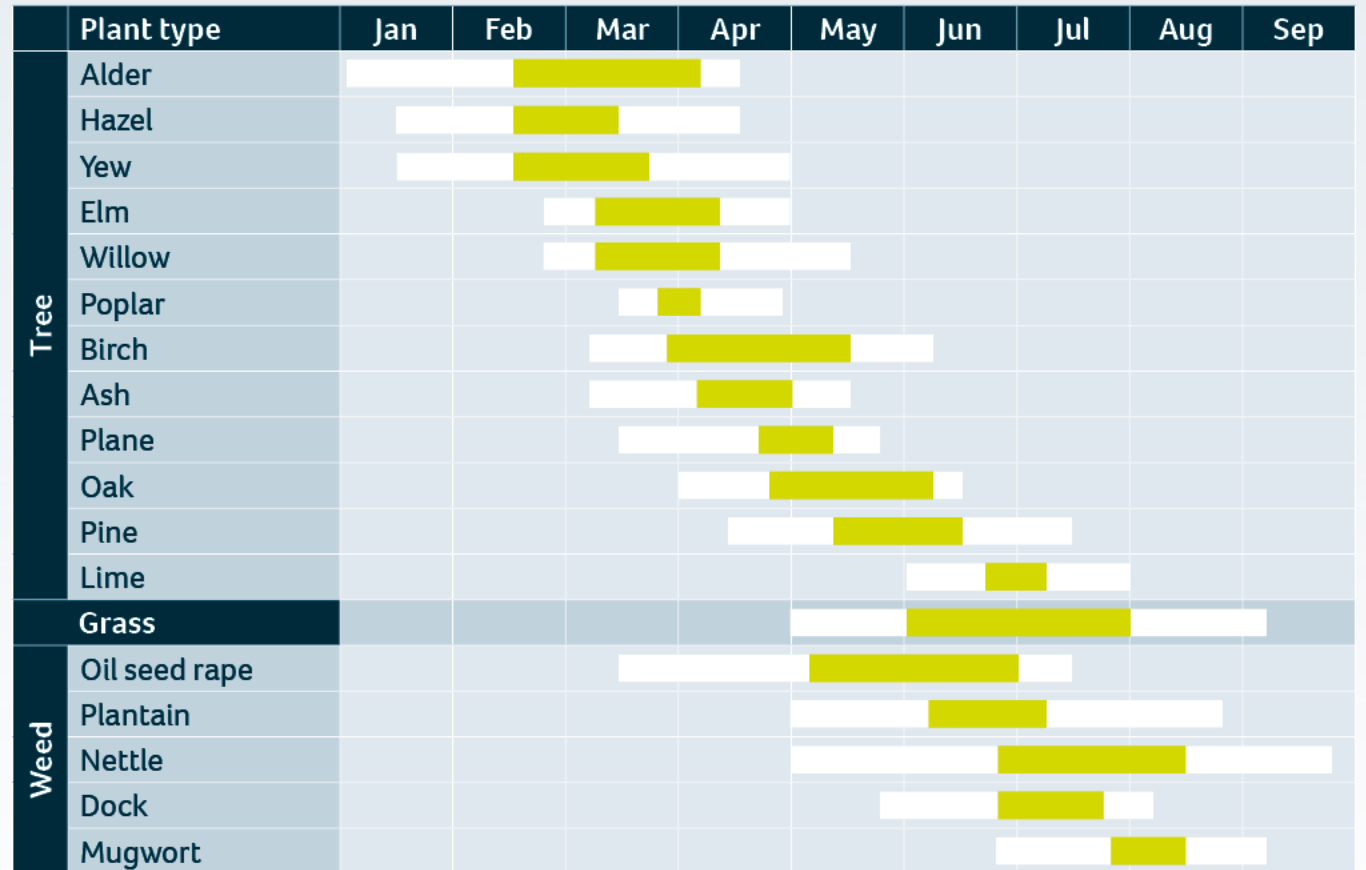


Avoidance of Pollens

Pollen calendar

The timing and severity of pollen seasons differ across the UK from south to north and east to west. This pollen calendar shows the general timing that the main allergenic plants are in flower.

Pollen season:  PEAK



Pollen Avoidance

- Watch the pollen count, know the relevant pollen season
- Use an air filter
- Keep windows closed
- Wraparound sunglasses, Vaseline
- Shower when you get home, wash pollen out of hair and change clothes
- Don't dry clothes on the line if the pollen count is high



Avoidance of HDM

✓ Simple washing over 60°C kills 90% of mites

🌡 Reduce humidity to below 50% - mite density correlates with humidity

↘ Reduce toys and clutter

👍 Soft furnishings

🗑 Hepa filter

👤 Use of impermeable bedding covers

Evidence of avoidance measures

- Cochrane review 2015 no evidence to support HDM avoidance for eczema
- Mite-impermeable encasings are effective in reducing the number of mite-sensitized children with asthma attending the hospital with asthma exacerbations but not the number requiring oral prednisolone (2017)



Non-pharmacological Management

- Nasal saline douching – Cochrane review 2018
- Salt nasal sprays all ages (cheap and safe)
- Allergy products containing Ectoin (protects mucous membranes in eye and nose) can offer relief
- Airsonett – laminar airflow device
- Complementary and Alternative



Antihistamines



- Histamine-1 receptor antagonist
- Competes with histamine for H1 receptor sites
- BUT doesn't displace histamine that is already bound to receptors
- First generation - Chlorphenamine and Diphenhydramine
- Second generation of AH only minimally penetrate BBB
- Cetirizine, Levocetirizine, Loratadine, Desloratadine, Fexofenadine are recommended for SAR management

Side effects and interactions



May increase sedative and respiratory depressant effects of CNS depressants e.g. alcohol and tranquilizers



Loratadine may cause serious cardiac effects when taken with macrolide antibiotics, fluconazole, ciprofloxacin and clarithromycin



Side effects of CNS include dizziness, fatigue, disturbed coordination, muscle weakness



GI reactions include loss of appetite, nausea and vomiting, constipation, diarrhea, dry mouth nose or throat



Cardiac reactions include hypo/hypertension, rapid pulse, arrhythmias



Caution with epilepsy, renal failure and fruit juices

Topical
antihistamine

Azelastine
hydrochloride

Rhinolast (140mcg per spray)

6yrs and above one spray twice daily

Optilast 0.05% (500mcg per 1 ml)

twice daily up to 4 times per day

Mast cell stabilizers

Delayed results

Fewer side-effects than the other treatments

Lodoxamide *>4yrs up to 4 times per day into each eye for up to 4 weeks*

Sodium Cromoglicate *up to 4 times per day into each eye*

Only offer symptom relief but can sting when administered

Leukotriene Receptor Antagonists



Leukotrienes are released from mast cells, eosinophils and basophils



Smooth muscle contraction, mucous secretion, increased vascular permeability and activates other mediators



Blocks leukotrienes from interacting with its receptor



Bronchodilation observed within 2 hours of oral administration



Can be given with food



Caution in hepatic impairment and has several potential drug interactions

Leukotriene Receptor Agonists Interactions and ADRs



Increased toxicity with erythromycin, fluconazole, metronidazole



Decreased effectiveness with phenytoin, phenobarbital



GI (diarrhoea, nausea, vomiting), headaches, fever, skin reactions



Sleep disturbances, dizziness, drowsiness, irritability, cough

Intra nasal corticosteroids



Anti-inflammatory action via gene regulation of immune cells



Inhibit the production of cytokines, leukotrienes, prostaglandin, reduces the recruitment of eosinophils and release of inflammatory mediators



↓ bronchial inflammation ↓ oedema
↓ mucus secretion



Nasal Sprays: Choices and doses

- **Fluticasone (Avamys/Nasofan/Flixonase/Pirinase)**
4-11yrs 50mcg once or twice daily
12 yrs and above 100mcg once or twice daily
- **Mometasone (Nasonex/Clarinate)**
3-11 yrs 50mcg daily
12 yrs and above 100-200mcg daily
- **Beclometasone (Beconase/Nasobec)**
6 yrs and above 100mcg twice daily (increased bio-availability)
- **Budesonide (Rhinocort)**
6 yrs and above 64mcg twice daily
- **Combination – Fluticasone and Azelastine (Dymista)**
12 yrs and above one spray twice daily
- **Combination – Olopatadine and Mometasone (Ryaltris)**
12 yrs and above two sprays twice daily
- **Azelastine (Rhinolast) – Antihistamine only**
Over 4 years – Twice to four times daily
- **Sea Water Spray (Sterimar)**
3 yrs and above two – six times daily

How to use a nasal spray

Nurses in Allergy

Standard Operating Procedure

Topical Nasal Corticosteroid Spray

bsaci
improving allergy care
through education, training and research

Using a topical nasal corticosteroid spray is recognised as a first line treatment to control nasal congestion for both allergic and non-allergic rhinitis. This type of spray is often referred to simply as a steroid nasal spray.

Steroid nasal sprays are used for both persistent and seasonal rhinitis. Rhinitis caused by perennial allergens such as the house dust mite are more likely to cause persistent symptoms and require continuous long-term treatment especially when a patient has symptoms such as nasal blockage (1,2).

Systemic absorption of nasal corticosteroid sprays depend on the bioavailability of the drug. Long term use of corticosteroid nasal sprays are considered relatively safe, but it is advisable to use a spray with a low systemic bioavailability when patients require continuous treatment for extended periods (3).

The application of a steroid nasal spray is localised to the affected area. The spray works by reducing inflammation and associated symptoms of increased mucus production and possibly sneezing. It does not work immediately and can take up to two weeks before a patient perceives the benefit from using a steroid nasal spray. In seasonal allergic rhinitis (hayfever) treatment should begin two weeks before symptoms are expected to start (4, 5) therefore ensuring the efficacy of the spray by the time the trigger allergen is in the air.

It has been shown that nasal douching before the use of a steroid nasal spray will enhance efficacy and generally improve symptomatic control (2).



Nasal Corticosteroid Sprays			
Generic Name	Proprietary Name	Can be prescribed for	Bioavailability
Triamcinolone Acetonide	Nasocort	over 12 years two sprays each nostril od children 6-11 years one spray each nostril od children 2-6 years one spray each nostril od	46%
Beclomethasone Dipropionate	Beconase	over 6 yrs two sprays each nostril bd	44%
Budesonide	Rhinocort Aqua	over 12 years two sprays each nostril bd	31%
Flunisolide	Syntaris	over 14 years two sprays each nostril bd children 5-14 years one spray each nostril bd	Up to tds 20-30%
Fluticasone & Azelastine	Dymista	over 12 years one spray per nostril bd	1.86%
Mometasone Furoate	Nasonex	over 12 years two sprays each nostril od children 6-11 years one spray each nostril od	Up to bd 0.46%
Fluticasone Propionate Fluticasone Furoate	Flixonase, Nasofan Avamys	over 12 years two sprays each nostril od children 4-11 years one spray each nostril od Avamys - from 6 years	Up to bd 0.42%

Decongestants



Oral or nasal decongestants (pseudoephedrine, phenylephrine)



Relieve nasal congestion but not recommended as part of rhinitis guidelines



Contraindicated in uncontrolled hypertension, severe coronary artery disease



Prolonged use leads to rhinitis medicamentosa (only use for 3-5 days)



Side effects - agitation, insomnia, headache, palpitations limit use

Ocular Symptom Control



Avoidance, cold compresses and eyewashes

Oral antihistamines

Mast cell stabilizers (Sodium Cromoglycate)

Olopatadine (Epinastine and mast cell stabilizer
>3yrs twice daily

Ketofall (Ketotifen) >3yrs twice daily

Topical Corticosteroids

Refer to Ophthalmologist for more advanced
treatment e.g. Verkazia (Ciclosporin from > 4 years)

Early phase allergic conjunctivitis



Both seasonal and perennial allergic conjunctivitis are two acute disorders



Inflammation of the conjunctiva (the membrane covering the white part of the eye)



Increased vasodilation and lacrimation



Itching



Photophobia



Sensation of foreign body



Late Phase allergic conjunctivitis



Chronic allergic disease

eosinophils, conjunctival fibroblasts, epithelial cells, mast cells and TH2 lymphocytes



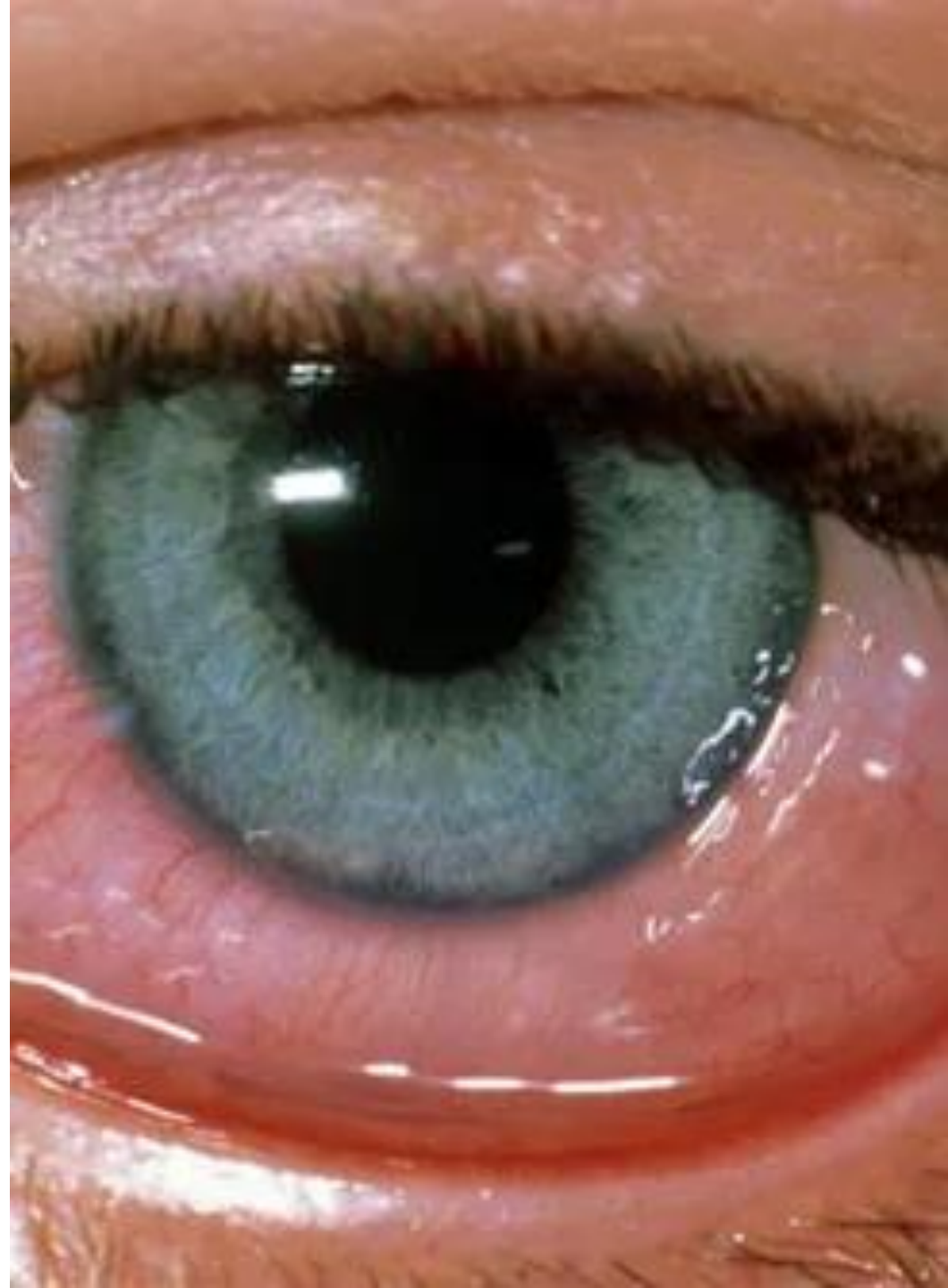
Vernal keratoconjunctivitis

graded based on severity and common in summer



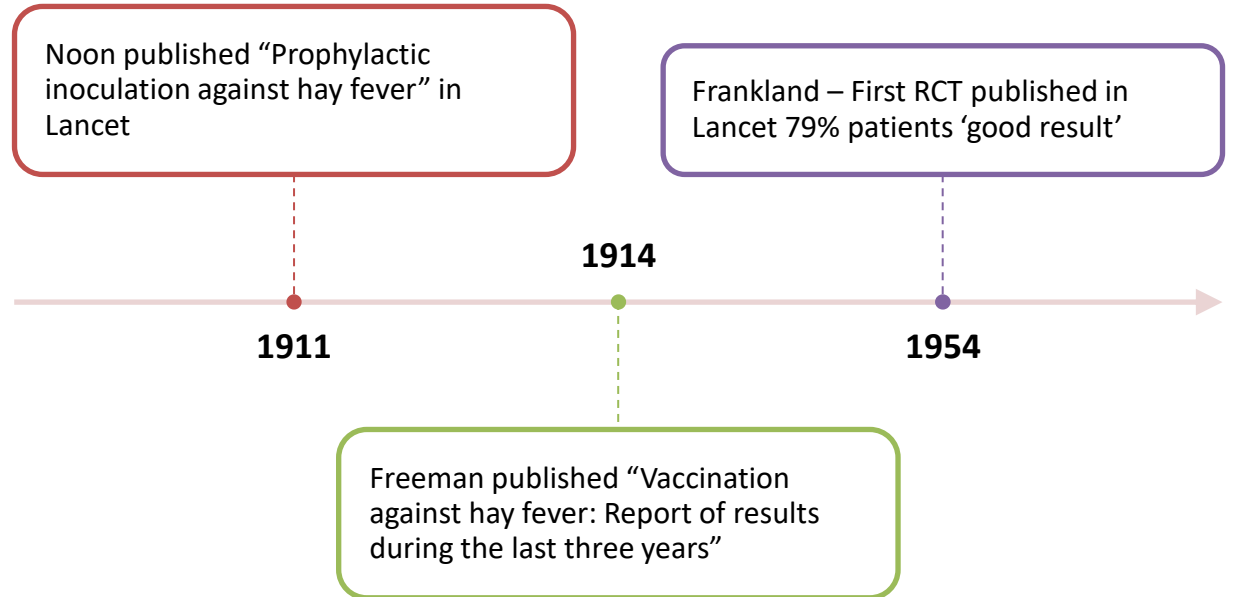
Atopic keratoconjunctivitis

chronic, bilateral disease with no seasonal correlation



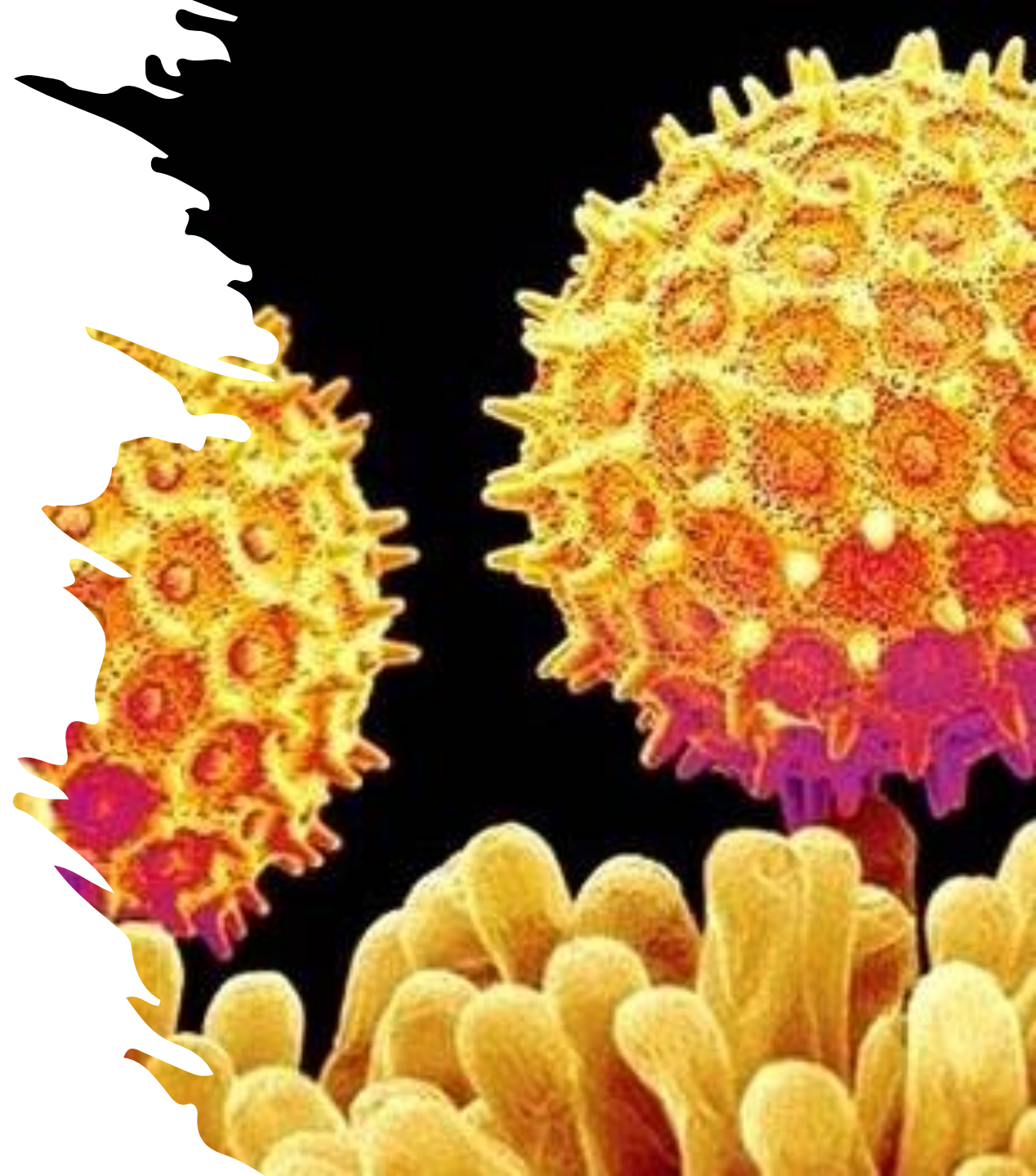


Immunotherapy



How does IT work?

- Promotes induction of blocking protective IgG antibodies
- Increases regulatory T lymphocytes
- Shifts allergen specific antibody production from IgE to IgG4
- Blunts seasonal increases in IgE levels
- Downregulates IgE mediated histamine release
- Immune deviation from TH2 to TH1 allergen specific response
- Protects against disease progression
- Symptomatic improvement for years after the treatment is discontinued



A close-up photograph of a woman with voluminous, curly brown hair. She is wearing a white lab coat and is captured in the middle of sneezing. Her eyes are closed, and her nose is buried in a white tissue held by both hands. The background is a soft, out-of-focus outdoor setting with greenery and a building.

Side effects

SCIT

- Localized swelling and itching, lethargy, rhinitis symptoms, higher risk of severe reactions with SCIT especially venom

SLIT

- Oral pruritis, ulcers, lip and oral swelling, itchy ears, sneezing, throat irritation, abdominal pain, nausea, can induce rhinitis symptoms, very rarely severe

Criteria for Immunotherapy



Symptoms strongly suggestive of AR, with or without conjunctivitis



Evidence of IgE sensitization (positive SPT and/or serum-specific IgE) to one or more clinically relevant allergen



Experience moderate-to-severe symptoms which interfere with usual daily activities or sleep despite regular and appropriate pharmacotherapy and/or avoidance strategies



Take advantage of long-term effects on AR and it's potential to prevent asthma

Sleepy

Aching

Cranky

Watery

Pain

Plugged

Itchy

Scratchy

Cough



Pollen Food Syndrome

- Birch - apple, pear, cherry, peach, nectarine, apricot, plum, kiwi, hazelnut, almond, celery, carrot, potato
- Birch/Mugwort - celery, carrot, spices, sunflower seed, honey
- Grass - melon, watermelon, orange, tomato, potato, peanut
- Ragweed - Melon, banana, courgette, cucumber
- Plane - hazelnut, peach, apple, melon, kiwi, peanuts, maize, chickpea, lettuce, green beans

Summary



Allergy to airborne antigen is extremely common and triggers allergic rhinitis and asthma

It should be treated as one airway one disease

Allergen avoidance can be effective in specific situations but is hard to achieve and often expensive and impractical

Daily non-drowsy antihistamines and steroid nasal spray are the main daily recommended treatments

Immunotherapy is the only disease modifying option