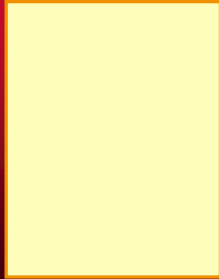


**Managing Allergic Rhinitis**  
**Associate Professor Rohan Ameratunga**



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**Morbidity**

- Fatigue
- Concentration
- Lethargy
- Insomnia
- Emotional well being
- Embarrassment
- Missing school/work
- Halitosis
- Difficulty studying
- Sniffing/snorting
- Blowing nose

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**Case presentation allergic rhinitis 1**

- Mr CS 16 yrs
- Symptoms: sneezing, itchy nose, rhinorrhoea, postnasal drip
- Blocked sensation, headaches and anosmia when particularly bad.
- Poor sleep, frequent waking, tired
- Perennial with a seasonal component

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### Case presentation allergic rhinitis 2

- Symptoms began at 5 yrs, worse each year
- Eye symptoms: red & itching, grittiness
- Uses Loratadine prn
- PMH: eczema in childhood, mild asthma
- FH: sister has asthma
- Environment: villa, old carpet, cat on bed

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### Case presentation allergic rhinitis 3

- Physical findings
- Allergic shiners, sneezing, swelling of the nasal mucosa
- Red eyes
- Chest: mild wheezing

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### Skin test results 4

- Saline                    0 mm
- Histamine                5 mm
- Grass mix                12 mm
- HDM                      10 mm
- Cat                        1 mm
- Dog                        1 mm

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### Epidemiology of allergic rhinitis

- Tecumseh MI 7.5% (M), 8.2% (F)
- Sweden 15% (M), 14% (F)
- Denmark 7%
- Overall 5-20%

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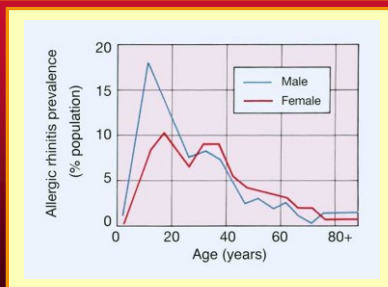
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### Prevalence of allergic rhinitis by age group



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### Increase in Allergic rhinitis

- 1955 5.1 per 100 000
- 1970 10.6 per 100 000
- 1981 19.7 per 100 000

Uk General Practice

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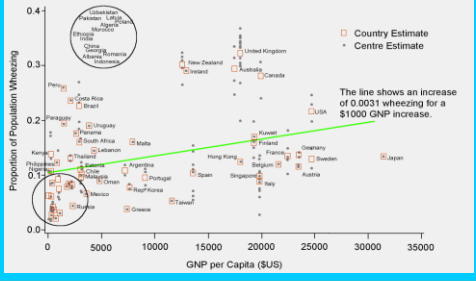
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### Association between prevalence of wheeze in 13-14 year olds and GNP per capita




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### Increase in atopy

- Hygiene (dirt) hypothesis
- Immunisations, antibiotics
- Diet
- Exercise
- Homes better insulated
- Pollution
- Pet ownership
- Occupational

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### Inheritance of atopy

- Neither parent atopic            10%
- One parent atopic                30%
- Both parents atopic              60%
- Both parents and one sib       >80%

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### Pathogenesis

- Response of URT to allergen
- Genetically determined IgE response
- Associated with other allergies
- Most children have an allergic trigger
- Natural history is to improve in later life

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### Nasal features of allergic rhinitis

- Symptoms obstruction, rhinorrhoea, sneezing, pruritus, hyposmia
- Signs swelling, (polyps), twitching, salute

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### Pharyngeal features of allergic rhinitis

- Symptoms soreness, pruritus
- Signs postnasal drip, throat clearing, cough

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### Sinus related features of allergic rhinitis

- Symptoms headache, fullness, lethargy
- Signs tenderness

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### Aural features of allergic rhinitis

- Symptoms pain, popping, pruritus
- Signs bulging drums, fluid, hearing
- Must be considered a cause of recurrent otitis media

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### Seasonal pattern

- Perennial allergic rhinitis  
non-allergic rhinitis
- Seasonal grass, weed and tree  
pollens
- Perennial with a seasonal component

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### Clinical evaluation

- History: age of onset  
progress  
triggers specific  
irritant  
complications  
treatment topical  
oral
- Associated atopic conditions
- Surgery

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### Clinical evaluation

- Environmental hx carpeting, drapes  
lounge suite  
soft toys on bed  
pets, smokers, mould
- Work and school environment

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### Examination of the nose

- Nasal septum (deviation, colour, spurs, ulcers, perforations)
- Turbinates (size, swelling, colour)
- Secretions (colour)
- Sundry (polyps, cysts, foreign bodies, tumours)

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### Physical findings

- Exterior
  - Eczema
  - Nasal crease
- Intranasal
  - Swelling of mucosa, polyps
  - Septal deviation
  - Nasal ulceration
  - Crusting
  - Mucous discharge

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### Investigations

- FBC & diff
- Skin testing
- Sp IgE testing if appropriate
- Immunoglobulins
- CT sinuses

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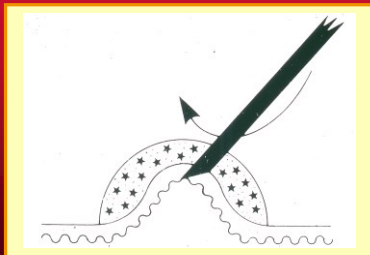
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### Skin testing



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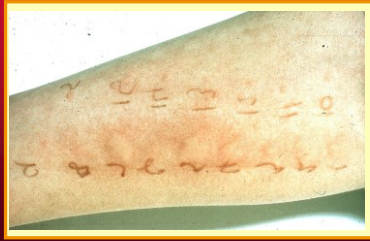
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### Skin testing



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### Differential diagnosis

- Non allergic rhinitis
- Viral, bacterial or fungal rhinitis/sinusitis
- Rhinitis medicamentosa
- Samter's triad
- Foreign body
- Congenital abnormality
- Immune disorder eg Wegeners
- Malignancy

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### Imaging

- Anatomical factors suspected
- Unilateral symptoms
- No response to medical management
- Suspected malignancy
- Pre-surgical

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### Allergens

- Indoor allergens- can be avoided
- Outdoor allergens- cannot be avoided

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### Trigger factors

- Indoor allergens
  - HDM
  - Cats
  - Dogs
  - Moulds
- Occupational factors

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### Trigger factors

- Outdoor allergens
  - Grass pollens
  - Tree pollens
  - Weed pollens
  - Moulds

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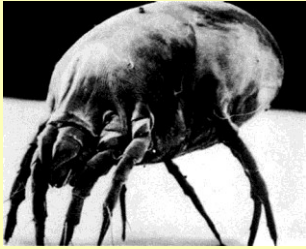
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### Dust mites



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### Dust mite ecology

- Microscopic arthropods
- Feed off human scales
- Prefer high humidity and temperate climate
- Fecal pellets coated with digestive enzymes
- Allergens reside in fecal pellets
- HDM allergy is generally hay fever or asthma

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### Dust mite avoidance measures

- Pillow, mattress and duvet covers- most effective measure
- Wash bedding in a hot cycle
- Dehumidifier or HRV
- Dust mite sprays
- Soft toys: remove or freeze and wash
- HEPA vacuum cleaner
- Remove carpets if feasible

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### Cat allergy

- NZ has one of the highest cat ownership rates in the world
- Fel D1, mw 39 kD, dimeric, from pelts
- Synthesised in the skin
- More than 85% have IgE to Fel D1
- Large allergen, airborne
- Very “sticky”
- Lasts >2 yr after cat is removed
- High concentrations, in schools etc

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### Dog allergy

- Less common than cat allergy
- Major allergen Can F1
- Present in houses, schools etc

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### Cockroach allergy

- Major problem in the US and Africa
- Urban populations are heavily exposed
- Bla g1 (mw 30 kD) and Bla g2 (mw 36 kD)
- Strong correlation with asthma
- Role in AR is being investigated
- Probably not a major problem in NZ

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### Pollens

- Grasses: Rye, Cocksfoot, Timothy, Vernal
- Weeds: Plantain, Privet (irritant)
- Trees: Birch, Acacia, Pines, Olive, Plane
- Moulds: Alternaria, Aspergillus

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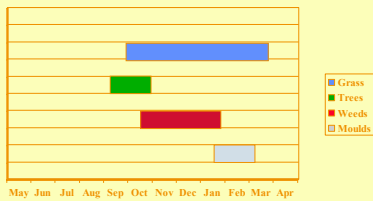
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### Pollens



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### Therapeutic options

- Allergen avoidance
- Anti-inflammatory therapy
- Immunotherapy
- Surgery

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### Drug treatment



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### Drug treatment

- Decongestants: oral or topical
- Antihistamines: oral or topical
- Cromoglycate
- Ipratropium
- Nasal steroids

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### Decongestants

- Oral or nasal
- Oral: tachyphylaxis
- Nasal: danger of rhinitis medicamentosa
- Use for 2-3 days as adjunctive therapy
- Side effects aggravation of hypertension, glaucoma, urinary retention

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### Antihistamines

- May need twice daily treatment
- Larger doses may be needed
- Combinations of AH can be useful
- Combination with nasal steroids
- Some newer antihistamines can sedate
- Expense was a significant barrier for therapy
- Syrup is more expensive

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### Nasal steroids

- Useful for both AR and NAR
- Useful in combination eg antihistamines
- Helps reduce late phase reactions
- Adverse effects, crusting and epistaxis
- Fewer SE with aqueous preparations
- Inspect nasal mucosa every 3 months
- Adequate technique
- Will not work immediately

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### Nasal steroids: correct technique



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**Not recommended**

- Yearly depot steroid injections
- Intranasal steroid injections
- Long term oral steroids

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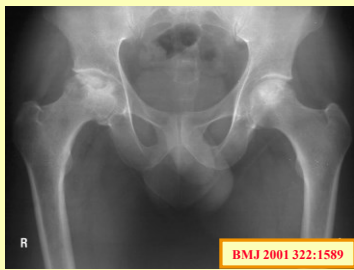
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**Avascular necrosis after depot steroid injections for hayfever**



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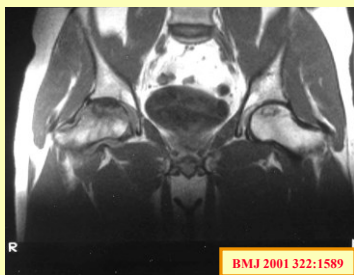
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**Avascular necrosis after depot steroid injections for hayfever**



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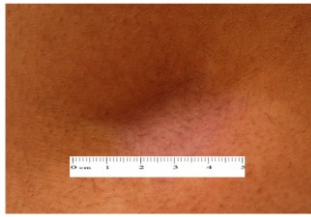
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### Gluteal atrophy caused by depot steroid injections for hay fever



Ameratunga WAO Journal 2013

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### Immunotherapy

- Requires identification of specific allergens
- Administered in two phases
- Generally given for 3-5 years continuously
- Benefit for hay fever is well established
- Small risk of local and systemic reactions

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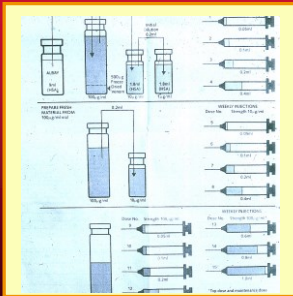
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### Desensitisation



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### Non-allergic rhinitis

- Prevalence upto 50%
- Pathogenesis not understood ?vasomotor
- Aggravated by alcohol, irritants, spicy foods
- No response to allergen avoidance or to desensitisation
- May respond to topical steroids, antihistamines or ipratropium

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### Rhinitis medicamentosa

- Common problem
- Occurs after 5-7 days of treatment
- Worse with topical decongestants
- Danger of septal perforation
- Treat underlying problem
- Use topical steroids or short course of oral steroids

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### Occupational allergic rhinitis

- Prevalence 5-15%
- Generally better on weekends, vacations
- Chemicals, latex, flour, animal products

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### Indications for referral

- Use of topical steroids on a daily basis
- Complications from treatment
- Failure to respond to treatment
- Multiple allergies
- Allergen identification assistance required
- Advice on allergen avoidance measures

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### Chronic sinusitis

- Symptoms present longer than 12 weeks in adults
- Eosinophilic inflammation or chronic infection
- Associated with abnormal sinus CT scans
- No response to oral antibiotics

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### Classification of bacterial sinusitis

- Acute bacterial sinusitis- infection lasting 4 weeks but symptoms resolve completely
- Subacute bacterial sinusitis- infection lasting between 4 to 12 weeks, but resolves completely
- Chronic sinusitis- symptoms lasting more than 12 weeks

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### Conditions causing chronic sinusitis

- Allergic and nonallergic rhinitis
- Samter's triad (AERD)
- Primary or secondary ciliary dyskinesia
- Cystic fibrosis- polyps
- Tumors- usually unilateral symptoms
- Immunodeficiency disorders
  - CVID, IgA deficiency etc
- Granulomatous diseases eg Wegener's
- Fungal sinusitis- controversial

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### Pathogenesis of nasal obstruction

- Viral and bacterial upper respiratory infections
- Allergic and nonallergic rhinitis
- Immunodeficiency disorders
  - CVID etc
- Anatomic factors
  - Deviated septum, concha bullosa, polyps

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### Mechanical obstruction

- Deviated nasal septum
- Concha bullosa
- Foreign body
- Nasal polyps
- Congenital atresia
- Lymphoid hyperplasia
- Nasal structural changes found in Down's syndrome

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### Primary and secondary ciliary dysfunction

- Kartagener's syndrome
- Tobacco smoke
- Viral URTIS
- Increased viscosity of mucus eg Cystic fibrosis
- Any cause of chronic sinus disease
- Drugs
  - Anticholinergics
  - Anesthetic agents
  - Benzodiazepines

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### Complications of chronic sinus disease

- Orbital- mechanical effects
  - Diplopia, proptosis
  - Periorbital erythema, swelling
- Bone erosions
  - Periosteal abscesses
- Brain invasion
  - Intracranial abscesses causing neurologic symptoms

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### Chronic sinus disease is associated with asthma

- Mechanism is not completely understood
- Failure to control upper airway inflammation leads to poor asthma control
- Post nasal drip is only one mechanism
- United airways disease ARIA

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### Testing in chronic sinus disease

- CT or MRI  
Anatomic defects, tumors, fungi
- Skin testing or specific IgE testing
  - Inhalants
- Sinus aspiration for cultures
- Immunoglobulins
- Aspirin challenge- AERD

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### Treatment of chronic sinus disease

- Nasal steroid spray
- Decongestants- temporary
- Steam inhalation
- Nasal irrigation- Neilmed or equivalent
- Antibiotics with exacerbations
- Ad hoc course of Itraconazole- fungal sinusitis
- Surgery

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### Samter's triad

- Nasal polyps
- Aspirin sensitivity
- Asthma
- May respond to Leukotriene antagonists or aspirin desensitisation

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**Case presentation Samter's triad  
(Aspirin exacerbated respiratory disease)**

- Mr LW 36 yrs
- Symptoms: Blocked sensation, headaches and anosmia Minimal sneezing.
- Poor sleep, frequent waking, tired
- Perennial

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**Case presentation Samter's triad**

- Asthma, frequent courses of prednisone
- Asthma worse with aspirin
- Reactions to Diclofenac also
- Skin testing negative
- CT scan pansinusitis and polyps
- Aspirin challenge not undertaken

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**Case presentation Samter's triad**

- Functional endoscopic sinus surgery and polypectomy
- Nasal steroids
- Low salicylate diet- temporary
- Monteleukast
- Aspirin desensitization

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### Indications for surgery in chronic sinus disease

- Anatomical problems eg polyps, foreign body
- Suspected malignancy
- Skeletal abnormalities eg deviated nasal septum
- Failure to respond to medical therapy
- Chronic sinus disease

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### Surgical procedures

- SMR
- Septoplasty
- Polypectomy
- Partial turbinectomy
- Vidian nerve section
- Rhinoplasty
- Cautery of inferior turbinates

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