

# upper airway

## TREATMENT

THE TREATMENT GOAL IS TO BE ABLE TO BREATHE THROUGH THE NOSE BOTH NIGHT AND DAY.

## *Possible treatments for the upper airway*

### *Antihistamines*

After contact with an allergen such as house dust mites or pollen there is an early phase response within 15 minutes lasting 1 to 2 hours. There is a second phase response between 3 and 8 hours later. The relationship between the cause and the response may not be obvious if there is lots of dust mite or a cat in the house and reactions are happening all the time. One reaction can increase the way the airway responds to another irritation (eg. allergy or virus) for several weeks.

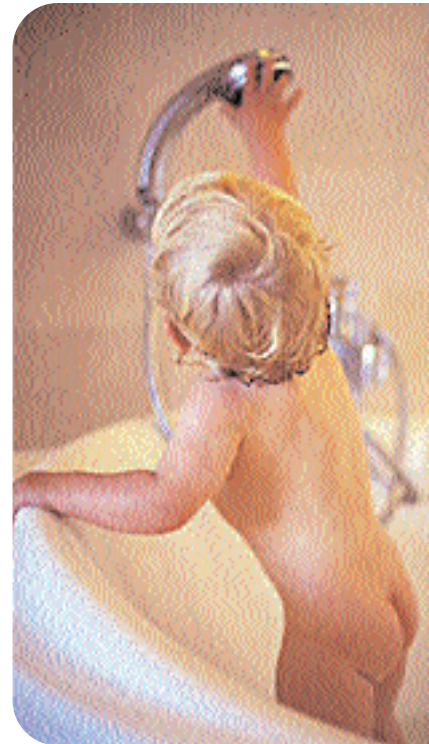
Antihistamines taken just before contact or soon after will reduce the severity of both phases of the reaction. Anticipating a reaction and taking an antihistamine in advance is more effective than treating symptoms.

Try to remember to keep a small supply of non-sedating antihistamines on hand in case you need to take one. Treatment with nasal corticosteroid sprays can cost less than regular antihistamines if treatment is necessary on a daily basis. Allergy attacks can still occur while on a corticosteroid spray but the effects tend to be dampened.

### *Saline*

Saline is particularly valuable at all ages to loosen thick mucus. A remarkable number of mothers have used saline in their babies when they were tiny and then discarded this as a useful treatment when the children grew up.

—A SHOWER, A SWIM ESPECIALLY IN THE SURF or a bath can help clear congestion.



## Using saline to clear crusts and thick mucus

Each nostril can be sprayed several times and the salty water sniffed back. This is safe and can be done 2 or 3 times a day if necessary. Saline can be purchased ready made or made up at home. Plain water up the nose can cause irritation.

- A PRODUCT CALLED NARIUM® can be bought from the chemist.
- NORMAL SALINE (without preservatives or additives) in a large bottle can be bought at the larger supermarkets or the chemist. Use an emptied nose spray container or an eyedropper as a delivery device.
- SALINE CAN BE MADE AT HOME by mixing 1 litre of cooled boiled water with 2 teaspoons of table salt + 1 teaspoon of bicarbonate of soda.

## Topical nasal decongestants

Decongestants (DRIXINE, OTRIVIN etc.) can act quickly to relieve congestion. Side effects on the sensitive little hairs in the nose that clear dirt and mucus and rebound congestion mean they are only good for the occasional use. Avoid using products that contain menthol if you are on the elimination diet or have food intolerance.

## Oral decongestants

Decongestant medications combined with antihistamines are also useful for managing an allergy attack or a cold. For children products like DIMETAPP are popular. Adults have a large array of mixtures and pills from which to choose.

## Topical corticosteroid nasal sprays

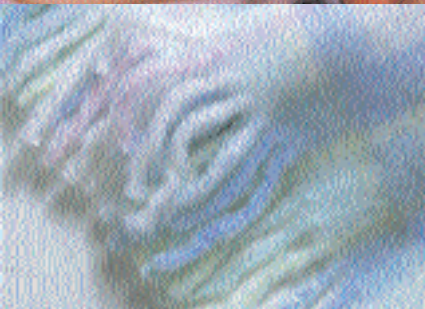
Topical aqueous corticosteroid sprays (ALDECIN, NASONEX, RHINOCORT) will help to relieve the congestion whether the cause is an odour, food intolerance or an airborne allergen. They cannot be used to relieve congestion immediately. They don't start to work for many hours after application and some take days of treatment before the benefits are noticeable. Corticosteroid treatments are wonderfully effective but they do not prevent the release of histamine from mast cells and they only work for as long as they are used.

The dose is very small and fully metabolized so side effects such as thinning of the lining of the nose and thrush are not a problem in children. That said sometimes the sprays make the nose run or nosebleeds are a problem.

## Using topical corticosteroid sprays

The sprays are not that effective if the nose is really blocked. Use saline first to clear mucus and crusts. A decongestant will reduce the swelling and mucus to improve delivery of the spray to the lining of the nose.

Use once or twice daily according to instructions.



### *Nasal Atrovent*

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The topical use of ATROVENT (ipratropium) often used in asthma is also useful to dry up the nose. It is particularly effective for watery secretions. A spray for adults is available. For children one drop or spray once or twice daily of the nebulizer solution mixed to a 50:50 solution with ALDECIN may be advised.

### *The elimination diet for upper airway congestion*

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A trial of the elimination diet for food intolerance is with trying if the nose is blocked all the time. Diet may be the main trigger even in those with dust mite allergy. On the elimination diet the nose may clear and the ability to smell normally may be apparent for the first time ever.

The most significant adverse consequence of the elimination diet is that the nose may become hypersensitive to smells and it may take very little exposure to odours to provoke symptoms.

### *Surgery*

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Children can have very large tonsils and adenoids that don't cause any problem. At present enlarged tonsils tend to be left alone unless there is evidence of sleep apnoea or there are very frequent infections. Remember, however, that mouth breathing leads to dry, sore throats and the initiating problem may be the blocked nose that needs treatment.

There will be some hearing loss with recurrent otitis media. Grommets and their benefits need to be discussed on an individual basis. Recent studies are showing that antibiotics can be withheld more often than not with no increase in adverse outcomes and the insertion of grommets can be delayed without adverse outcomes.

Adults encounter different problems than children with their airways. The size of the middle ear canal is usually big enough to avoid problems from blockage by school age. Adults blow their noses very vigorously and this forces mucus up into the sinuses.

Rhinoscopy has become a useful tool to investigate the nasal passages. Adults tend to have trouble with a crooked nasal septum and may benefit from having it straightened. Polyps that don't respond to prednisone may need to be removed.

The upper airway includes the nose, the throat the sinuses and the middle air canals.



## ABOUT the airway

The nose is the air conditioner for the rest of the airway. It filters, humidifies and warms the air by as much as 25°C before it gets to the back of the throat. The nose guards the lower airway from larger dust particles and gases like sulphur dioxide, ozone and formaldehyde. Normally the main amount of air going through each side of the nose switches from one side to the other every 2 to 7 hours.

Asthma can be provoked in susceptible airways if the nose is not able to filter, warm and humidify the air.

*Smells and perfumes, food chemicals and allergies can all cause upper airway symptoms.*

The cause of a blocked nose is often multifactorial. Babies have small airways so they are unusually prone to a blocked nose and noisy breathing. Some anatomical features such as a very flat mid facial area or a crooked nose can add to the problem. If the nose is a bit crooked or you have a cold, an allergy or an irritation from food, fumes or smoke this breathing pattern can be more noticeable.

Children with chronic upper airway irritation tend to have enlarged tonsils and adenoids. The throat gets dry and sore throats are common. Tooth decay can be another consequence as the saliva does not get a chance to do the housekeeping as it would when the mouth is closed. Saliva dribbles out the mouth into the pillow and the warmth and damp promotes the growth of mould and house dust mites in the pillow. The mouth breathing is unlikely to resolve once the tonsils and adenoids are very enlarged.

A blocked nose reduces smell and taste perception so food can be tasteless. Children demand sour or salty food that tingles the taste buds or they can be quite indiscriminate in their food choices.

A blocked nose interferes with the ability to chew and provokes frequent unfavorable comments at the table such as *Eat with your mouth closed* or something much more derogatory. Constant criticism can lead to poor self-esteem.

Serious obstruction can cause snoring, disturbed sleep or sleep apnoea. Not enough sleep can have a big impact on mood stability and task attention performance. Any underlying learning problems can be exaggerate by poor quality sleep.

- THESE EFFECTS can impact on the quality of life of those around the sufferer.
- THE SNORING keeps others awake.
- WAKEFUL CHILDREN wake their parents etc.



## *Smells and perfumes*

### *Good ventilation is extremely important*

**Cigarette smoke**, cooking fumes and the byproducts of gas burners on cook tops are very irritating for airways and exposure to these chemicals increases the likelihood of developing asthma.

**The smells of moulds**, household cleaning agents and room deodorizers can be particularly noxious and provoke typical food intolerance symptoms.

**New houses** are also full of volatile organic compounds (VOC's) coming from new particleboards, glues, new carpets and wood that can cause food intolerance symptoms.

#### **A new problem is the use of scented oils in oil burners.**

Various smells have special attributes assigned to them that may or may not be true but the use in households where someone is smell sensitive is like recreating the perfume department in large store at Christmas. A similar effect is noticeable where smaller stores in shopping malls send out such strong perfumes that the whole air conditioning becomes contaminated.

**Eucalyptus oil and menthol** in decongestants and muscle balm is another source of highly irritant chemicals

*Headaches, a blocked nose, sinus congestion and irritable behaviour are all well described side effects of exposure to volatile organic compounds.*

**Babies** spend a lot of time being held against the upper body so exposure to perfumed deodorants, smelly hair products and men's after-shave can be very high

**Visiting relatives and friends** can be particularly offensive for the sensitive infant



# diet

## FOOD ALLERGY

We have only observed upper airway symptoms from an undiagnosed food allergy in infants who are exposed to very low levels of allergen via breast milk or very close contact with a carer eating the problem food. This has been peanut butter in most instances. The airway symptoms have cleared with allergen removal and returned with a challenge.

Parents often request skin tests for foods in older children who have no history of the typical acute food allergy reactions. Without a typical history the skin test will be negative.

## FOOD INTOLERANCE

Babies have very small upper airways and it takes very little to block them. As mentioned above, food allergies often cause mucousy upper airways that dry up when the allergens are removed from the diet. Some children with an unrecognized peanut allergy have stopped having a congested nose and a cough when peanuts are removed from family home.

The congestion caused by food intolerance reactions is different from an allergy reaction. In allergies the nose is itchy, there is lots of sneezing especially on getting out of bed in the morning or when there is any cleaning out the cupboard activity or the grass has just been mowed. Usually IgE-mediated allergy reactions don't affect the middle ear.

Milk and wheat are often regarded as being the important dietary components that cause a blocked nose and middle ear disease. Curiously yogurt and cheese are rarely implicated. While it is certainly possible that dairy foods and wheat can cause upper airway congestion it is rarely an isolated dietary intolerance. In most instances where parents present with a firmly held belief that milk and wheat are the cause it turns out to be nothing or some other dietary factor like fruit juice.

Children with middle ear disease often end up with grommets. If a child has ADHD they are several times more likely to have had grommets than a control group. Children with ADHD have often been demanding babies who screamed and had reflux. Whether the screaming or the reflux is a factor in the process is hard to separate out but both have been proposed as a mechanism to explain the increased incidence. In some cases I think it is just a case of the *squeaky wheel*. Children who scream are deemed to be suffering more. It is apparent from seeing children who have eardrums that burst without any complaints that the screamers are bothered more by the discomfort.



A comparison of children with recurrent middle ear infections in the clinic who did not get grommets against those with those who had grommets inserted highlighted only one variable that was highly significant: — a history of sinus congestion in one parent ie. the children had inherited the tendency to have a blocked sinus passage. This is usually a structural (plumbing) problem but in some there may be mucous thickness or mucous flow differences that cause the obstruction.

Sometimes airborne allergies and food intolerance are both a problem for the same individual and both areas need to be managed for the nose to function as a patent part of the airway.

Anyone who has hayfever in spring knows that when allergies cause reactions in noses there is a lot of watery discharge. For this reason those with allergies usually don't get blocked middle ear canals.

# airborne

## ALLERGIES

*Some examples of activities that will usually cause allergy reactions in the nose:*

Jumping on furniture, pillow fights and rolling around on the floor (dust mites)

Visiting friends and elderly relatives (house dust mite and cats)

Sleepovers and holiday houses (house dust mite and cats)

Taking clothes or bedding out of storage (house dust mite and mould)

House cleaning (house dust mite and mould)

Lawn mowing and playing in the grass (pollens, mites and mould)

Dry windy days (pollen and house dust mites)



*In children who have airway reactions to allergens, an allergy reaction and a viral respiratory infection are hard to distinguish.*

*All nose symptoms should be treated early with an antihistamine, as the allergy symptoms will be relieved.*

*Once an allergy reaction has been triggered and not treated it can be mistaken for a bad cold.*

## upper allergy



**Dust mites** In Sydney and the East Coast of Australia there are ideal conditions for year round proliferation and activity in house dust mite populations. *Dermatophagoides pteronyssinus* is the mite that likes living in a humid house. Carpets and a lack of desire or time for house cleaning make homes particularly house dust mite friendly.

Before you realize that you could be well if only you were more motivated to get out the vacuum cleaner, research has shown that zealous cleaning can disturb the ecology in a carpet such that the house dust mite levels can be even higher and more troublesome. Tiled floors seem to be the most house dust mite unfriendly surface.

Exposure to levels of house dust mite allergen greater than 2 mg/g of dust causes sensitization to and exposure to greater than 10 mg/g increases the risk of asthma. In Sydney the average house has 38 mg/g. In Lismore the levels were even higher at 60 mg/g. In Alice Springs the level was <1 mg/g but even there a house was found to have very high levels because there was a carpet-lined indoor Jacuzzi.

**Cockroaches** can also cause allergies. The allergy particles are found in the bodies, cast skins, secretions, egg casings and faecal material.

**Exposure to fungal spores** is usually highest outdoors unless there is a particular indoor source. In areas with morning frost like Canberra and in highly irrigated areas where the cotton grows, allergies to ground mould can be particularly troublesome. Fungal spores peak early morning when humidity is high but dry spores are highest late afternoon when humidity is very low and it is windy. Lawn mowing, leaf raking and being in a barn where there is mouldy hay can cause tremendous increase in exposure to fungi. Compost can also be a source of allergen and bacteria particles that can cause severe airway reactions.

**Pollens** can be a problem everywhere. The type of pollen that causes most allergies varies from region to region. If you have any allergy tendency then you are likely to have a pollen allergy from middle childhood through adult life. The manufacturers of TELFAST® have produced an excellent little book with good photographs of grasses, trees and weeds with location maps and the season when they send their pollen into the air. Heavy pollens from plants that are bee-pollinated like wattle do not cause much allergy.

Pollen spores peak in the early morning after sunrise as the temperature rises. Low humidity also favours pollen release. As the temperature falls late in the day the pollens that were airborne fall to the ground.

Pollen particles can vary in size. Most pollen particles are greater than 10 mm in size and remain in the upper airway causing symptoms in the nose and eyes.

**Cat hair** is everywhere. The allergic particles are found mainly in cat saliva. Male cats produce more allergen than females and some cats produce more than others. Children who own a cat carry a lot of allergen around with them, causing symptoms in those with allergies who get close. This can be a challenge in the classroom or when a favourite cat-loving relative or friend comes to visit. Losing the cat from the family home doesn't help that much as the cat allergen hangs around for at least 6 months and often for years.

**Small rodents** like guinea pigs, rats and mice can cause allergies.

**Horse** allergies are found in highly allergic individuals. In general if a patient reports a horse allergy it is a sign that he or she is *really allergic* and much more atopic than someone who just has a problem with pollens.