

## Anosmia - loss of smell

The exact mechanisms behind the sense of smell remain a mystery. Odour molecules in the air are breathed into the nose, and funneled inside the nasal cavity to the olfactory epithelium (tissue). This small cluster of cells, located roughly in line with the top of the cheekbones, is covered with tiny hairs ('cilia') and a thin layer of mucus. Each cell is connected to an olfactory neuron, or nerve cell. The cilia trap the inhaled odour molecules. The information on the molecules is transmitted to the olfactory neurons, then relayed via the nervous system to the brain, where the smell is processed and experienced.

'Anosmia' means the loss of the sense of smell. There are numerous medications, diseases, hormonal disturbances and chemicals that can disrupt the sense of smell, sometimes permanently. People are less sensitive to smells the older they get, and women tend to have a more acute sense of smell than men. There is some evidence that smell sensitivity may be inherited, to a degree.

### Tasting is actually smelling

It is commonly thought that the flavour of food is experienced by the 'tastebuds' on the tongue; in fact, the mouth distinguishes only rudimentary information on sweetness, saltiness, sourness and bitterness. Odour molecules from food rise to the olfactory epithelium and supplement the information from the tongue with much more sophisticated data. That's why food tastes bland when you have a head cold; the olfactory epithelium is clogged with mucus and can't function properly.

### Smell adaptation

If you smell an odour for long enough, you eventually stop noticing it. This is because prolonged exposure to a strong smell is believed to saturate the olfactory epithelium with odour molecules to the point where information is no longer delivered to the brain. This is called 'adaptation'. Loss in smell sensitivity is only temporary and is particular to that 'over-smelled' odour. Recovering from adaptation depends on the individual but can range from a few seconds to a couple of minutes.

### Everyday factors which diminish the sense of smell

The sense of smell can be dampened by everyday factors, including:

- **Smoking** - particularly for the half hour after smoking a cigarette.
- **Nasal mucus** - caused by a number of ailments, such as colds, influenza, hay fever or sinusitis.
- **Adaptation** - experienced when the olfactory cells are flooded to saturation point with particular odour molecules.

### Factors that disrupt the sense of smell

Anosmia means loss of the sense of smell, while hyposmia means reduced smell sensitivity. Measuring the degree of 'smell loss' is difficult, since the experience of smell is subjective. Unlike other senses, there is no diagnostic test that can judge smell sensitivity with objective accuracy. However, different factors that are known to interfere with the smell sense include:

- **Chemicals** - a wide range of industrial chemicals, including heavy metals, inorganic and organic compounds, acids and pollutants.
- **Diseases of the hormonal system** - such as diabetes, Cushing's syndrome and hypothyroidism.
- **Diseases of the nervous system** - such as Alzheimer's disease, multiple sclerosis, migraine, Korsakoff syndrome, brain tumours, brain lesions and epilepsy.

- **Drugs** - stimulants (such as amphetamines and cocaine), depressants (such as morphine), some antibiotics and other drugs, including the vasoconstrictors in nasal sprays.
- **General diseases** - such as bronchial asthma, leprosy and cystic fibrosis.
- **Trauma** - including blows to the head or injuries to the nose.

## Olfactory neurons can regenerate

The nerve cells servicing the olfactory epithelium are unique to the nervous system. Unlike nerve cells anywhere else in the body, the olfactory neurons are able to recover or regenerate after injury. This means that incidences of anosmia can be temporary.

## Where to get help

- Your doctor
- Ear, nose and throat specialist.

## Things to remember

- Anosmia means loss of the sense of smell, while hyposmia means reduced smell sensitivity.
- The olfactory neurons are able to recover or regenerate after injury.
- Smell sensitivity decreases with advancing age.

**This page has been produced in consultation with, and approved by:**

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