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10-MINUTE CONSULTATION

Anosmia and loss of smell in the era of covid-19

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What you need to know

- Half of patients with covid-19 may lose sense of smell; guidance states that a new change or loss in sense of smell should prompt a period of self-isolation
- Nine in 10 patients can expect substantial improvement in their sense of smell within four weeks
- Most patients with loss of smell do not require further investigations or referral, although their covid-19 status should be established if possible
- Treatment involves reassurance, olfactory training, safety advice, and topical corticosteroids—but oral prednisolone should be avoided where acute covid-19 infection is suspected

A 46 year old ophthalmologist presents with a two week history of loss of sense of smell and taste. He believes he may have been exposed to covid-19 but, at the time, did not meet the criteria for testing.

With the discovery of covid-19 and as the clinical syndromes associated with this virus have been defined, many areas of practice require updating.

This article is a guide to assessment and management of patients with loss of smell based on review of the current literature and guidelines from the British Rhinology Society and ENT UK, the professional membership body representing ear, nose, and throat surgery in the UK.¹

What you should cover

Olfactory dysfunction is common: estimates of point prevalence in the general population before the covid-19 pandemic suggest that 19.1% of adults (80% in people over 75) suffer from complete or partial loss of smell.²

Causes can be broadly subdivided into *conductive* (physical barriers to odorants reaching the olfactory system) and *sensorineural* (failure of the olfactory system to detect odorants). Causes are outlined in [table 1](#), with the more common causes in the top half of the table and less common causes in the bottom half. A comprehensive history is invaluable, especially if consultations are performed remotely.

Table 1 | Causes of loss of smell

Conductive	Sensorineural
Common causes	
Allergic rhinitis	Post-viral
Rhinosinusitis with or without nasal polyposis	Neurodegenerative disorders including Parkinson's, Alzheimer's diseases
Illicit drugs including cocaine	Psychiatric disorders (depression, bipolar disorder, schizophrenia)
Septal deviation (causing complete loss of smell is rare, would typically associate with unilateral nasal obstruction)	Head injury
Less common causes	
Systemic diseases with nasal manifestations, eg, granulomatous with polyangiitis	Central space occupying lesion
Iatrogenic (nasal surgery, laryngectomy, medication)	Heavy metals and solvents (cadmium, iron, zinc, ammonia)
	Congenital (Kallmann syndrome)

Points to consider include:

Does the person have symptoms that suggest covid-19 infection? (see specific information below).

Is their sense of smell alone affected, or is taste also affected? Ask the patient to try smelling and tasting foods such as herbs, spices, and coffee and to record their ability to smell and taste in a format such as the home assessment test suggested by AbScent³; this can be repeated after six months to track progress. Many patients with loss of smell will also report loss of taste, however this usually reflects loss of flavour perception as a function of smell, rather than true taste disturbance. Asking patients if they can tell if the food is salty, sweet, or bitter may help to differentiate taste which is a function of gustation, as opposed to flavour which is a function of retronasal

olfaction. Gustatory dysfunction is also reported to be common in covid-19, and is thought to occur in 42% of patients.⁴ However, there is insufficient evidence to currently conclude to what extent this is influenced by co-existing olfactory loss or whether it is a genuine independent sequela of covid-19. At present, evidence suggests that most patients suffer impaired gustation as a consequence of a diminished sense of olfaction and as such, the focus of assessment and treatment is directed largely towards the nose.

Do they have accompanying nasal symptoms?

Conductive causes of loss of smell are usually accompanied by other nasal symptoms, such as blockage and anterior nasal discharge ([table 2](#)). These symptoms (including loss of smell) may fluctuate in severity.

Table 2 | Nasal symptoms that may accompany loss of smell

Symptoms	Classification	Other associated signs and symptoms	Relevance to patient
Does your nose feel blocked on both sides, and can the most affected side alternate?	Allergic	Sneezing, itching, watery rhinorrhoea, temporal association with allergen	Allergen avoidance and medical therapy with antihistamines and nasal steroids may offer relief
Does your nose feel consistently blocked on one side?	Structural	External deformity	A history of an adult with new unilateral blockage without preceding trauma should prompt face-to-face examination
Does your nose feel consistently blocked on both sides?	Rhinosinusitis	Rhinorrhoea, facial pain, asthma	Intranasal steroids and saline douche are an appropriate first line treatment
Can you detect a foul smell within your nose?	Cacosmia	Purulent discharge, foul smell apparent to others, dental disease	May represent underlying dental disease and should be directed concurrently for dental and ear, nose, and throat review
If you blow your nose, do you get streaks of blood mixed in with the mucus from both sides of the nose?	Epistaxis	Evidence of digital trauma or substance abuse, bruising to minor trauma	Avoid local trauma (eg, nose picking), common anticoagulant and antiplatelet agents are associated with epistaxis
If you blow your nose, do you get streaks of blood from the nostril that feels persistently blocked?	Urgent suspected cancer	Numbness of the face, loose dentition, visible mass	Patient should be informed that sinonasal malignancy is an uncommon but important differential
Do you have a new neck lump?	Urgent suspected cancer	Numbness of the face, visible mass, nasopharyngeal cancer most common in people of southern Chinese descent	Patient should be informed that nasopharyngeal malignancy is an uncommon but important differential

Does the person have any unexplained neurological symptoms? Signs of raised intracranial pressure may indicate a central lesion, although this is an infrequent cause of anosmia. However, common neurodegenerative disorders such as Alzheimer's and Parkinson's diseases have a well known association with loss of smell.

Is the loss of smell isolated? If yes, a sensorineural cause is most likely, and of these, a substantial proportion will be post-viral (caused by pathogens other than covid-19); the loss of smell does not change from day to day, and may be profound.

Covid-19 testing

In May 2020 anosmia was recognised as a symptom of covid-19⁵ in light of accumulating evidence, including a meta-analysis which showed a loss of smell in 55% (95% confidence interval 38% to 70%) of patients with covid-19.⁶ A large online questionnaire based survey found that, in covid-19, loss of smell is usually severe and sudden in onset, but transient in most patients, although 10.6% (95% CI, 5.6 to 17.8) of patients showed no improvement at one month.⁷ It is advisable, therefore, to test for covid-19 infection—either with reverse transcription polymerase chain reaction (RT-PCR) (if presenting within 7–10 days of symptom onset) or serology (if presenting after 10 days)—in any patients with sudden onset loss of smell for whom there is no obvious alternative explanation (eg, obstructing nasal mass, severe allergic rhinitis) and where the SARS-CoV-2 virus is active locally. Most patients with loss of smell and covid-19 infection will report other symptoms, although 16% of patients may have anosmia as an isolated symptom.^{3,7}

What you should do

Most patients with loss of smell can be managed successfully in primary care and will improve without further investigation. A key exception is patients who present with loss of smell and unexplained neurological symptoms or those with more than six weeks of loss of smell.¹ Investigate these patients urgently to exclude central pathology, although the detection rate is very low. For example, meningiomas of the olfactory groove represent approximately 10% of all meningiomas, while primary tumours of the olfactory neuroepithelium (olfactory neuroblastomas) have an incidence of approximately 0.4 cases per million population.

If the patient is suspected or confirmed to have covid-19

Patients who have been referred for RT-PCR testing should be advised to follow UK government advice on self-isolation until results are available. In patients who are suspected to have or who test positive for current or recent covid-19 infection, ENT UK guidance is that covid-19 should be assumed as the cause of the loss of smell.

If there is no suspicion for covid-19 or the patient tests negative

Common conditions such as allergic rhinitis are capably recognised and treated by primary care physicians (table 1), although a GP may wish to consider referral of atypical presentations or patients who do not respond to first line therapy.

Interventions to consider for all patients with loss of smell

“Olfactory training” is a self-management strategy that involves a regular programme of using strong odours or essential oils to trigger recovery of the olfactory system. Although evidence is incomplete, a systematic review of 10 interventional studies (of which one was a randomised crossover design, eight were prospective cohort studies, and one was a retrospective case series) was supportive of its utility in recovering sensorineural loss of smell.⁸ Suggested protocols for olfactory training are well described online (box 1).

Box 1: Support for olfactory training

- Fifth Sense (www.Fifthsense.org.uk)
- AbScent (www.abscent.org)
- ENT UK advice for patients (<https://www.entuk.org/loss-smell-video-interview-professor-claire-hopkins>)

Use of corticosteroids in loss of smell is controversial, and there are many arguments for and against. The expert working group advice from ENT UK can be summarised as follows:

- Consider topical corticosteroid drops (fluticasone nasule or betamethasone drops) in patients with loss of smell lasting longer than two weeks

- Offer topical corticosteroid sprays to patients with associated nasal obstruction
- Do not offer oral steroids to patients in the first two weeks after covid-19 diagnosis or suspicion (because of likelihood of spontaneous recovery, and risk of side effects and delayed viral clearance)
- Make personalised patient centred decisions for a short course of oral steroids in patients with a persistent loss of smell not related to covid-19 and in those patients with persistent loss of sense of smell following covid-19 after at least two weeks since diagnosis, and discuss with the patient the risks and benefits.

Significant risks include elevated blood glucose, altered mood, psychosis, and avascular necrosis of the femoral head.

Onward referral

A guide to managing loss of smell from ENT UK suggests considering referral when symptoms persist beyond 4-6 weeks in those who are covid-19 negative, and no other cause has been identified, or beyond three months for those who are covid-19 positive.¹ A detailed flow chart to guide the process of initial assessment and management is reproduced from ENT UK in figure 1. Patients should be encouraged to continue first line measures such as topical corticosteroid sprays or olfactory training while they await review from ear, nose, and throat specialists.

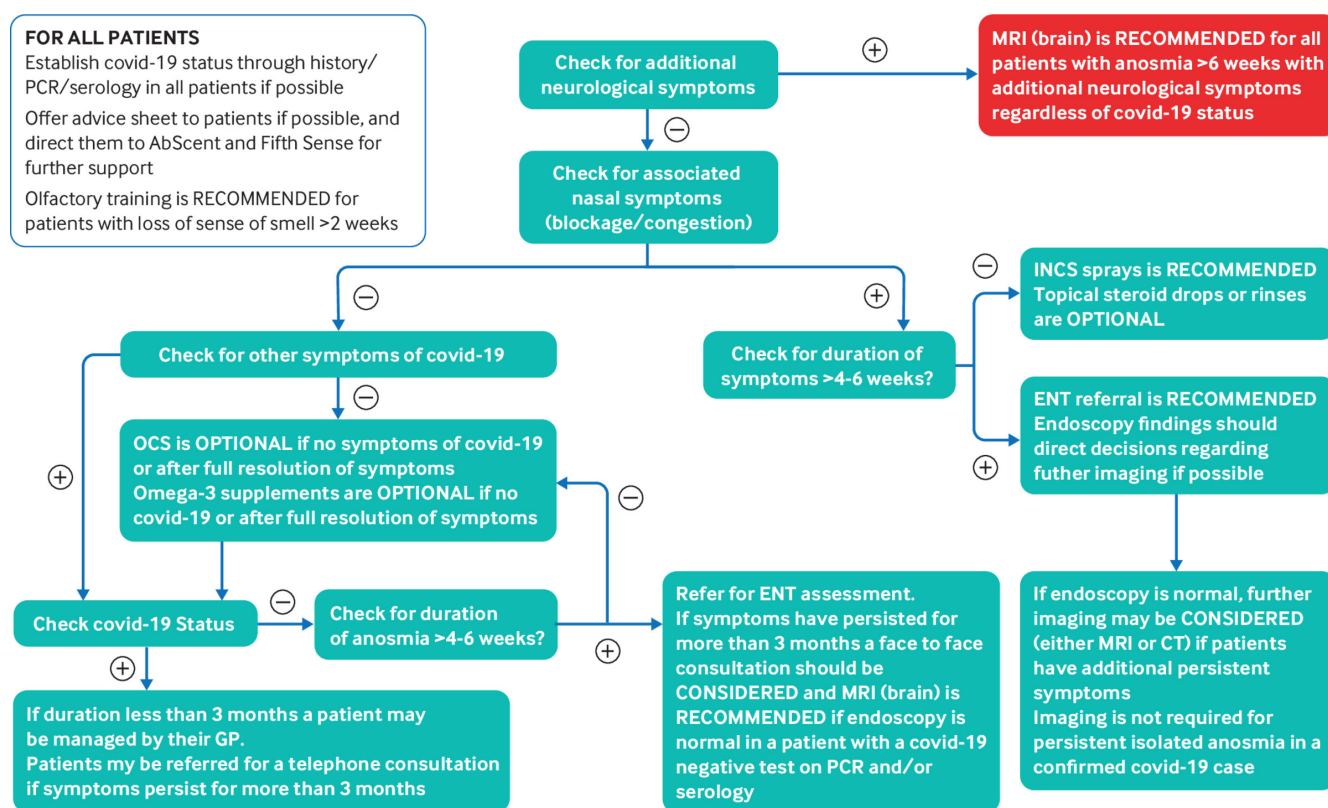


Fig 1 | ENT UK flowchart for management of loss of smell. INCS=intranasal corticosteroids

Patient centred care

Patients with loss of smell suffer significant detriment to their quality of life, and a description of one patient's experience is captured in box 2. In addition, people with covid-19 associated anosmia may report anger at having been exposed to infection, frustration at inability to access testing at the time of onset, and guilt at spreading infection to others. Consider some of the key messages in box 3. A patient information leaflet is also available for loss of smell in covid-19.⁹

Box 2: Patient perspective

Anosmia is like experiencing the world in two dimensions. I dearly miss the energising aroma of strong morning coffee and the soothing effect of spring scents. Appetite has dampened and fine wines which I loved have lost their depth and complexity. There are no smells to evoke good memories and I have lost an important coping mechanism. I feel constantly insecure of missing unhealthy fumes or rotten food. Friends trivialise this condition and show no empathy. Social media helped to

put me in touch with similar patients, which has given me reassurance that I am not alone.

As a patient the thing I needed most was knowledge of prognosis and treatment. The media was fascinated by this phenomenon but only seemed to care about its importance as a marker for self-isolation. I now need hope and would like to see more translational research in this field. I also need help to adapt to this new world and focus on what I still have, rather than what I lost.

Box 3: Advice for patients

- Support is available from charities such as Fifth Sense (www.Fifth-sense.org.uk) and AbScent (www.abscent.org)
- Online patient support groups can be helpful in lieu of family or friends who may struggle to empathise
- Olfactory training offers a safe strategy that may be of benefit to some patients in recovering some ability to smell

- Rigorous adherence to “use by” dates on food and drink until the sense of smell has returned
- Ensure smoke alarms are functioning and tested regularly until sense of smell has returned
- 9 out of 10 patients with covid-19 loss of sense of smell can expect significant improvement within 4 weeks
- Only a minority of patients will require investigation, referral, or medication

Education into practice

- What symptoms would make you suspicious of covid-19 and direct you to testing?
- What value judgements will you have to make when considering the risk of steroid treatment versus the benefit of improvement in a patient's sense of smell?

How this article was created

This article was created through review of existing literature regarding management of anosmia, and with updates pertinent to covid-19 related loss of smell. Evidence was identified through PubMed and guidelines were sourced from both Public Health England and ENT UK.

How patients were involved in the creation of this article

We involved a patient with anosmia secondary to covid-19 as a co-author to ensure that we addressed questions relevant to patients. We have also involved both AbScent and Fifth Sense, two charities set up to support patients with loss of sense of smell, who have critically reviewed the manuscript. We accessed, with permission, a social media group for patients with anosmia to help ensure that we address recurring themes in their posts. With the guidance of patients, we have expanded focus on the initial encounter between doctor and patient, with specific guidance on when to investigate and offer treatment, and the likely prognosis for patients with loss of sense of smell associated with covid-19.

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Further details of *The BMJ* policy on financial interests are here: <https://www.bmj.com/about-bmj/resources-authors/forms-policies-and-checklists/declaration-competing-interests>

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