

Halitosis (Fetor Oris; Oral Malodor)



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Halitosis is a frequent or persistent unpleasant breath malodor.

Pathophysiology

Halitosis most often results from fermentation of food particles by anaerobic gram-negative bacteria in the mouth, producing volatile sulfur compounds such as **hydrogen sulfide** and **methyl mercaptan**. **Causative bacteria** may be present in areas of **periodontal disease**, particularly when **ulceration** or **necrosis** is present. The causative organisms reside deep in periodontal pockets around teeth. In patients with healthy **periodontal tissue**, these bacteria may **proliferate** on the **dorsal posterior tongue**.

Factors contributing to the overgrowth of causative bacteria include decreased salivary flow (eg, due to **parotid disease**, **Sjögren's syndrome**, use of **anticholinergics**, **salivary stagnation**, and **increased salivary pH**).

Certain foods or spices, after digestion, release the odor of that substance to the lungs; the exhaled odor may be unpleasant to others. For example, the odor of garlic is noted on the breath by others 2 or 3 h after consumption, long after it is gone from the mouth.

Etiology

About 85% of cases result from oral conditions. A variety of systemic and **extraoral** conditions account for the remainder.

The **most common causes** overall are the following:

- Gingival or periodontal disease
- Smoking
- Ingested foods that have a volatile component

GI disorders rarely cause halitosis because the **esophagus** is normally **collapsed**. It is a fallacy that breath odor reflects the state of digestion and bowel function.

Other breath odors: Several systemic diseases produce volatile substances detectable on the breath, although not the particularly foul, pungent odors typically considered halitosis. **Diabetic ketoacidosis** produces a sweet or fruity odor of **acetone**, liver failure produces a mousy or sometimes faintly sulfurous odor, and renal failure produces an odor of urine or ammonia.

Table 1

| Some Causes of Halitosis | | |
|-------------------------------------|--|----------------------------|
| Cause | Suggestive Findings | Diagnostic Approach |
| Oral conditions | | |
| Bacteria on dorsum of tongue | Malodorous tongue scrapings , healthy oral tissue | Clinical evaluation |

Gingival or
periodontal disease

Oral disease, often including bleeding and/or **purulent exudate**
Apparent during the examination
Often history of poor oral hygiene

Clinical evaluation
Dental consultation

Necrotic oral cancer (rare—usually identified before becoming **necrotic**)

Lesion usually identifiable during the examination
In older patients, who often have extensive history of using alcohol, tobacco, or both

Biopsy, CT, or MRI

Extraoral disorders

Nasal foreign body*

Usually in children
Purulent or bloody nasal discharge
Visible on examination

Clinical evaluation
Sometimes imaging

Necrotic nasopharyngeal cancer*

Discomfort with swallowing

Clinical evaluation

Necrotic pulmonary infection (eg, **lung abscess**, **bronchiectasis**, foreign body)

Productive cough
Fever

Chest x-ray
Sputum cultures
Sometimes CT or **bronchoscopy**

| | | |
|---|--|--|
| Psychogenic halitosis | Malodor not detected by others Often history of other hypochondriacal complaints | Clinical evaluation |
| Sinus infection* | Purulent nasal discharge Facial pain, headache, or both | Clinical evaluation Sometimes CT |
| Zenker's diverticulum Gastroesophageal reflux disease (GERD) | Undigested food regurgitated when lying down or bending over | Video barium swallow or upper GI endoscopy |
| Ingested substances[†] | | |
| Alcoholic beverages, garlic, onions, tobacco | Use apparent on history | Clinical evaluation Trial of avoidance |

***Malodor** typically more prominent from the nose than the mouth.

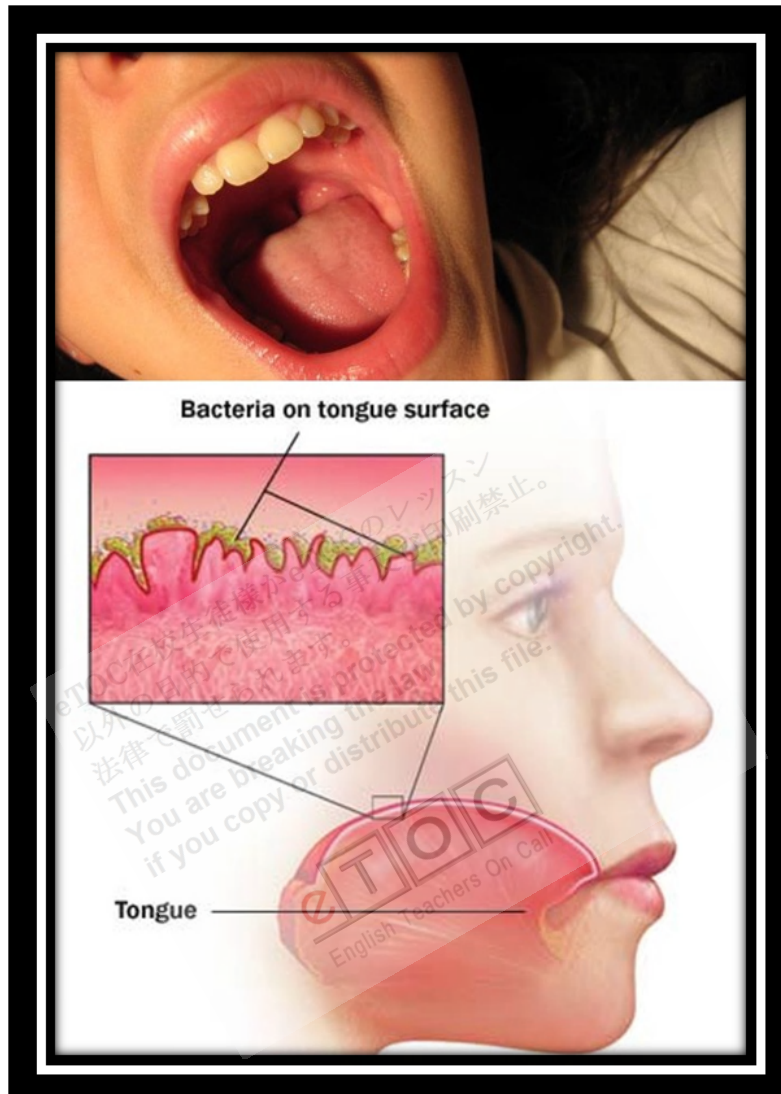
[†]Typically, a diagnosis of exclusion after examination rules out other causes.

Evaluation

History: History of present illness should ascertain duration and severity of halitosis (including whether other people have noticed or complained), adequacy of patient's oral hygiene, and the relationship of halitosis to ingestion of causative foods.

Review of systems should seek symptoms of causative disorders, including nasal discharge and face or head pain (**sinusitis**, **nasal foreign body**), productive cough and fevers (**pulmonary infection**), and regurgitation of undigested food when lying down or bending over (**Zenker's diverticulum**).

Predisposing factors such as dry mouth, dry eyes, or both (**Sjögren's syndrome**) should be noted.



<http://www.rayur.com/wp-content/uploads/2012/07/Halitosis.jpg>

Past medical history should ask about duration and amount of use of alcohol and tobacco. Drug history should specifically ask about use of drugs that can cause dry mouth (eg, those with **anticholinergic effects**).

Physical examination: Vital signs are reviewed, particularly for presence of fever.

The nose is examined for discharge and foreign body.

The mouth is examined for signs of periodontal disease, dental infection, and cancer. Signs of apparent dryness are noted (eg, whether the mucosa is dry, sticky, or moist; whether saliva is foamy, stringy, or normal in appearance).

The **pharynx** is examined for signs of infection and cancer.

Sniff test: A sniff test of exhaled air is conducted. In general, oral causes result in a **putrefying, pungent** smell, whereas systemic conditions result in a more subtle, abnormal odor. Ideally, for 48 h before the examination, the patient avoids eating garlic or onions, and for 2 h before, the patient abstains from eating, chewing, drinking, gargling, rinsing, or smoking. During the test, the patient exhales 10 cm away from the examiner's nose, first through the mouth and then with the mouth closed. Malodor that is perceived as worse through the mouth suggests an **oral etiology**; malodor that is perceived as worse through the nose suggests a nasal or sinus etiology. Similar malodor through both nose and mouth may suggest a systemic or pulmonary cause. If site of origin is unclear, the **posterior tongue** is scraped with a plastic spoon. After 5 sec, the spoon is sniffed 5 cm from the examiner's nose; a bad odor suggests the malodor is caused by bacteria on the tongue.

Red flags: The following findings are of particular concern:

- Fever
- Purulent nasal discharge or sputum
- Visible or palpable oral lesions

Interpretation of findings: Because oral causes are by far the most common, any visible oral disease may be presumed to be the cause in patients with no **extraoral symptoms** or signs and a dentist should be consulted. When other disorders are involved, clinical findings often suggest a diagnosis.

In patients whose symptoms seem to be related to intake of certain food or drink and who have no other findings, a trial of avoidance (followed by a sniff test) may clarify the diagnosis.

Testing: Extensive diagnostic evaluation should not be undertaken unless the history and physical examination suggest an underlying disease. Portable sulfur monitors, **gas chromatography**, and chemical tests of tongue

scrapings are available but best left to research protocols or to specific dental offices that focus on halitosis evaluation and treatment.

Treatment

Underlying diseases are treated.

If the cause is oral, the patient should see a dentist for professional cleaning and treatment of gingival disease and caries. Home treatment involves enhanced oral hygiene, including thorough flossing, toothbrushing, and brushing of the tongue with the toothbrush or a scraper. Mouthwashes are of limited benefit but some with **oxidant formulations** (typically containing chlorine dioxide) have shown greater short-term success. **Psychogenic halitosis** may require psychiatric consultation.

Geriatrics Essentials

Elderly patients are more likely to take drugs that cause dry mouth, which leads to difficulties with oral hygiene and hence to halitosis, but are otherwise not more likely to have halitosis. Also, oral cancers are more common with aging and are more of a concern among elderly than younger patients.

Key Points

- Most halitosis results from fermentation of food particles by anaerobic gram-negative bacteria that reside around the teeth and on the dorsum of the tongue.
- **Extraoral** disorders may cause halitosis but are often accompanied by suggestive findings.
- It is a fallacy that breath odor reflects the state of digestion and bowel function.
- Mouthwashes provide only brief benefit.

Reference: <http://www.merckmanuals.com>