

# Halitosis (Bad breath)

Up to 50% (22 to 50%) of the population suffer from bad breath and approximately half of these experience a severe problem leading to personal and social discomfort and social embarrassment. The “mouth air” of those suffering from more severe halitosis is tainted with compounds including hydrogen sulphide, methyl mercaptan and organic acids leading to foul smelling air.

## Aetiology

The source of the bad odour is located within the oral cavity in approximately 90% of cases of halitosis meaning only a small percentage of cases are due to non-oral causes such as a serious underlying medical condition which warrants immediate referral to a doctor (eg.) Diabetes

The tongue is considered the biggest source of bad breath and is considered the main cause in up to 90% of cases by some experts; so other causes like gingivitis are considered a cause in only a fraction of cases compared to tongue hygiene.

Oral microorganisms most likely to cause halitosis are gram-negative bacteria species which includes likes of *treponema denticola*, *porphyromonas gingivalis*, *prevotella intermedia*, *bacteroides loescheii*, *enterobacteriaceae*, *centipeda periodontii* and *fusobacterium nucleatum* (this oral bacteria list is not exhaustive).

## Common Causes

- Failing to brush teeth twice daily
- Improper cleaning of dentures
- Bad breath in morning. This affects most people and dry mouth is the most common cause
- Alcohol: Alcohol causes dehydration and less saliva production leading to bad breath
- Smoking: this is often called “smokers’ breath” which is a stale scent caused by the scent of cigarette smoke lingering in the mouth and the chemicals from cigarette smoke mixing with saliva
- Certain foods and drinks such as onion and garlic or coffee and acidic fizzy drinks
- Infection (more below)

## More specific causes

- **Tongue bacteria:** Considered one of the main causes of bad breath. It can be caused by catarrh from the back of the throat and nasal area. It is more often caused by a general build-up of oral bacteria due to poor dental hygiene. Brushing the tongue with toothpaste (especially if coated) can help. A tongue scraper or cleaner may be used in more severe tongue coating. Despite the tongue being considered the biggest factor in halitosis, simple general oral hygiene measures described later such as regular teeth brushing, flossing, and staying well hydrated will minimise build up of bacteria in all areas of the mouth including the tongue (not just the gums and teeth)
- **Gum disease (gingivitis):** due to poor oral hygiene. Bacteria in plaque cause a bad odour
- **Tooth decay:** like the bacteria that cause food to break down (creating plaque) and causing gingivitis, the bacteria trapped in a decaying tooth can emit a foul smell

- **Trapped food:** Food getting caught between the teeth getting broken down by bacteria
- **Dry mouth:** Poor saliva flow means food debris is less likely to get washed away. Described in more detail above.
- **Acid reflux from the stomach:** These acids have a sour odour causing bad breath
- **Diabetes:** Diabetics are more prone to high blood sugar levels meaning higher glucose levels in saliva which promotes oral bacteria growth (glucose is a food source for bacteria) leading more dental plaque. Well controlled diabetes and good oral hygiene reduces this risk in diabetes
- **Chest infection:** phlegm or mucus infected with bacteria or viruses that a coughed up can have a smell
- **Other infections:** Tonsil, throat, and sinus infection: the bacteria or viruses involved can emit a foul smell
- **Other chronic conditions:** Certain lung conditions, kidney and liver disease, chronic irritation of the stomach and oesophagus, and autoimmune disorders such as Sjogren disease can cause halitosis.

## Diagnosis in severe cases

It is rare that someone must get diagnosed with halitosis as they will be aware of it themselves or those close to them will make them aware of it and the steps described in this article will ease symptoms in most cases

Specific diagnosis tools are only used in rare cases where halitosis is so severe and persistent despite simple and well recognised steps including improved dental hygiene and improving diet.

In this situation, three methods for measuring halitosis are:

1. Organoleptic measurement
2. Gas chromatography
3. Sulphide monitoring.

Organoleptic measurement has shortcomings but is still the gold standard method to assess halitosis in severe cases.

## Interventions to stop bad breath

Improving oral hygiene is the number one step to improving bad breath. Some of the other interventions described below in addition to the usual oral hygiene interventions like regular brushing and flossing may be considered if bad breath persists despite good oral hygiene.

- **Regular brushing:** Brushing teeth morning and night with fluoride and anti-microbial toothpaste. Do not rinse the mouth out with water straight away after brushing as this will rinse away the fluoride and anti-microbial benefits of brushing in the minutes after brushing.
- **Dental flossing:** Should be done daily using the proper technique.
- **Regular dental check-ups:** A dental check-up with dentist once a year and cleaning with dental hygienist every 6 months.
- **Dental mouthwash daily:** There are also specific brands of mouthwashes on the market specifically designed to tackle bad breath
  - The gold standard was traditionally chlorhexidine but there are many others with other ingredients and work by reducing volatile sulphide compounds (VSC) by reducing bacteria
  - Side effects of mouthwashes may include staining of teeth (more in the case of chlorhexidine), a burning sensation and changing sense of taste
- **Balanced diet:** Eating a healthy balanced diet limiting sugary foods and drinks

- **Drinking water:** regularly throughout the day. An average of two litres per day for adults is advised.
- **Chewing sugar free gum.** Chewing gum loosens food and dead cells from teeth, gums, and tongue and promotes saliva production. Sugar-free gum sweetened with xylitol is very effective for easing bad breath because xylitol inhibits mouth bacteria. To get the full benefit of chewing xylitol-sweetened gum, aim to chew it for at least five minutes after meals.
- **Probiotics:** This is less proven, but some research in Japan found that consuming sugar-free yogurt with probiotic bacteria twice a day for six weeks reduced bad breath by reducing levels of odour-producing sulphide compounds. One Japanese study found that eating yogurt with the probiotic strains of streptococci and lactobacilli bacteria has the best effect.
- **Avoid crash diets:** Apart from the many other negative effects of crash diets, a low-carbohydrate diet breaks fat into ketones to create ketosis. These ketones accumulate in urine and saliva and can cause bad breath. The effect of ketones in the mouth is a metallic taste in the mouth and a smell that is described as sweet, fruity or like the smell of nail polish remover. Drinking plenty of water will dilute the concentration of ketones thus reducing bad breath from ketones.

*References upon request*

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