

## BAD BREATH?

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Bad breath, halitosis, malodor, fetor oris are names for an oral condition of unpleasant breath odor that is objectionable to others. Bad breath can indicate a serious disease, or be a condition of social embarrassment. Everyone experiences halitosis from time to time.

Research classifies halitosis as either transitory or chronic. Transitory halitosis is food-related, and lasts up to 72 hours. Chronic halitosis is oral-related and can be a sign of medical or systemic conditions, such as diabetes. Disorders of the oral cavity (intra-oral) cause 85-90% of all the cases of chronic halitosis. Some common causes are: food retention, poor oral hygiene, decay, periodontitis (gum disease), and not cleaning the tongue. Secondary causes include mouth breathing, systemic medications, ethnic foods, special diets, alcohol, smoking and dentures. These factors increase oral bacteria count, and they produce compounds like hydrogen sulfide, methyl mercaptan, dimethyl sulfide. These compounds are collectively known as volatile sulphur-containing compounds, or VSC, and are the source of bad breath.

Although bad breath is most frequently thought to originate from the stomach contents, with the exception of belching and vomiting, most odors that are not intra-oral in origin enter our breath through the lungs.

Mouth odor varies in intensity and quality. These traits are diagnostic indicators of underlying disease. Halitosis linked to disease is more intense and has a quality unique to the underlying source. Oral odors originating from non-oral sources require a proper diagnosis necessitating a thorough exam and history. It is well established that systemic disorders, medication and ear, nose or throat (ENT) problems can all contribute to halitosis.

Gram-negative anaerobic bacteria-producing VSCs are the chief cause of oral malodor. The tongue dorsum and periodontal sulcus are the primary bacteria breeding locations. Two VSCs, hydrogen sulfide and methyl mercaptan, interfere with collagen and protein synthesis, increase gingival sulcus permeability, enhance the passage of bacteria-produced toxins into the bloodstream, and accelerate the infection process.

Diagnosing the causes of halitosis can be difficult for a medical or dental provider. Family, friends and spouses can help identify and provide information on duration, frequency, time of day, and intensity. There is also equipment available to help with diagnosis, such as volatile sulfur monitors, bacterial culturing tests, and organoleptic judges. Two examples of sulfur monitors are the halimeter and the periotemp. The halimeter measures the amount of offending VSCs present in breath. The periotemp measures temperatures of periodontal pockets. Elevated temperatures indicate bacteria-caused periodontal disease. The same bacteria that cause the periodontal disease also cause malodor.

The United States mouthwash industry exceeds \$850 million annually. Studies in consumer reports show mouth rinses and other commercial sprays have short effective periods, or no effect at all. Halitosis must be controlled on a molecular level rather than masking with washes or sprays. Mechanical debridement (manually removing bacteria or diseased tissue) and

chemotherapeutic adjuncts (topical medications) best achieve elimination of odor producing bacteria. Mechanical debridement includes daily deplaquing of the tongue dorsum through devices designed for use on the tongue. Chemotherapeutic products should be alcohol and sugar free, and contain antibacterial agents effective in controlling malodor. Effective chemotherapeutic products include 0.2% chlorhexidine (Peridex), Listerine, and new, two-phase oil:water mouthwashes.

Clinical care of malodor can include use of pre- and post-antibacterial rinses, plaque and calculus control, preventive care, advanced restorative procedures, patient education, and long-term recare (6 months). Additional malodor control techniques include eating smaller, more frequent meals, drinking more water with lemon, and chewing sugarless gum to increase salivary flow. Breathasure is a product that has been found effective in controlling metabolized foods like garlic and onion odor from being expressed through the lungs.

When all routine measures to resolve malodor have failed in a short period of time, systemic causes need to be suspected, and a complete medical evaluation is indicated. While halitosis is usually due to benign oral problems, it may be the manifestation of a serious disease.