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## Dry mouth - from Natural Standard

Last updated: Monday, August 22, 2011

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### AUTHOR INFORMATION

### Medically Related

Symptoms	Diseases	Medications	Procedures
None listed	None listed	None listed	None listed

### BACKGROUND

Dry mouth, or xerostomia, is a reduction of saliva production. Xerostomia is a common problem, and it is important not to ignore a dry mouth. Xerostomia is not a disease, but it may be a symptom of various medical conditions, a side effect of a radiation to the head and neck, or a side effect of a wide variety of medications.

The average healthy adult produces about three pints of saliva in 24 hours. This secretion serves many purposes. Saliva is important in the digestive process of breaking foods down for absorption and use by the body. Saliva washes away food and plaque from the teeth and helps prevent tooth decay. Saliva also limits bacterial growth that can dissolve tooth enamel or lead to mouth infections. Saliva neutralizes damaging acids in the mouth, enhances the ability to taste food, and makes it easier to swallow.

Xerostomia is a common complaint found often among older adults, affecting approximately 20% of the elderly. Mouth dryness may be due in part to the effects of aging. According to proposed theories, as individuals age, the salivary glands may secrete less saliva.

Xerostomia may be caused by medications, such as antihypertensives, antidepressants, analgesics, tranquilizers, diuretics, chemotherapy, and antihistamines. Xerostomia may also be caused by other health conditions, such as bone marrow transplants, endocrine disorders, stress, depression, nerve damage to the neck of face areas, and Sjogren's syndrome (an autoimmune disease). Also, radiation treatment that is focused on or near the salivary gland can temporarily or permanently damage the salivary glands.

Methods to reduce mouth dryness include hydration (drinking plenty of fluids such as water) and sucking on sugar-free lozenges, which can stimulate the production of saliva.

Although the treatment depends on the cause, dry mouth is often a side effect of medications. Dry mouth may improve with an adjusted dosage or new prescription.

### CAUSES AND RISK FACTORS

Age: As individuals age, the salivary glands may secrete less saliva. Thirst and the perception of thirst also may change. The less fluid the body has available (such as during dehydration), the less saliva is produced. Thirst receptors in the brain may become less responsive to the body's need for fluids. Xerostomia is more often related to the medications taken by older adults rather than to the effects of aging.



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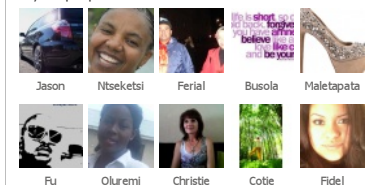
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**Medications:** Many prescription and non-prescription medications can cause xerostomia. Examples of medications causing xerostomia or dry mouth include: antihypertensive drugs, such as propranolol (Inderal®) and enalapril (Vasotec®); antidepressant drugs, such as amitriptyline (Elavil®) and doxepin (Sinequan®); analgesics, such as morphine (MS Contin®) and oxycodone (OxyContin®); diuretics, such as furosemide (Lasix®); anorexiants for weight loss, such as phentermine (Fastin®); psychotropic drugs, such as lithium (Eskalith®) and thioridazine (Mellaril®); decongestants, such as pseudoephedrine (Sudafed®); and antihistamines, such as diphenhydramine (Benadryl®) and hydroxyzine (Atarax®).

Chemotherapeutic drugs can change the flow and composition of the saliva. Radiation treatment that is focused on the face or neck can temporarily or permanently damage the salivary glands.

It should be noted that, while there are many drugs that affect the quantity and/or quality of saliva, these effects are generally not permanent.

**Sjogren's syndrome:** Sjogren's syndrome is an autoimmune disease that causes xerostomia and dry eyes. In Sjogren's syndrome, white blood cells attack the moisture-producing glands in the body.

**Other conditions:** Other health conditions, such as Alzheimer's disease, bacterial and viral infections, human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS), bone marrow transplants, endocrine disorders, Parkinson's disease, Bell's palsy, stress, anxiety, depression, and nutritional deficiencies, may cause xerostomia.

**Nerve damage:** Trauma to the head and neck area from surgery or wounds can damage the nerves that supply sensation to the mouth. While the salivary glands may be left intact, they cannot function normally without the nerves that signal them to produce saliva.

## SIGNS AND SYMPTOMS

Aside from the sensation of dryness in the mouth, xerostomia may result in: saliva that seems thick, stringy; sores or split skin at the corners of the mouth; cracked lips; bad breath; difficulty speaking and swallowing; sore throat; an altered sense of taste; and increased plaque, tooth decay, and gum disease. In women, lipstick may adhere to the front teeth due to dryness.

## COMPLICATIONS

In addition to difficulty with eating and talking, dry mouth may cause dental problems. Saliva helps maintain a balance of bacteria in the mouth and is antibacterial. Without enough saliva, the bacteria and other organisms in the mouth can grow too quickly, causing cavities, infections, and mouth sores. Saliva also washes away acids and food particles left in the mouth after eating. Therefore, a lack of saliva can cause cavities and gum disease.

## DIAGNOSIS

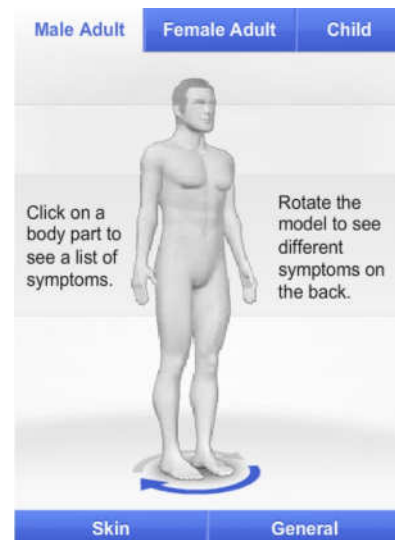
To determine if an individual is suffering from xerostomia, a doctor or dentist likely will examine the individual's mouth and review their medical history. Sometimes, blood tests and imaging scans of the salivary glands are needed to identify the cause. The doctor will check for underlying health conditions that may also be causing dry mouth.

**Sialometry:** Sialometry is the measurement of the rate of saliva production. Sialometry uses collection devices that are placed over salivary glands. The salivary glands are stimulated, usually using chemicals such as citric acid, and the flow of saliva from the glands is measured. This procedure can be performed in a doctor's office.

## TREATMENT

A doctor will determine the underlying cause of dry mouth in the patient and then take steps to minimize the underlying cause, such as stopping a medication causing the dry mouth. For many individuals, however, little can be done to alter the underlying cause. However, there are methods to manage the symptoms of dry mouth.

If the dryness is due to drugs or medications, it may be possible for a doctor to advise the individual to stop taking those drugs, reduce their intake, or switch to another "less drying" medication. If the dryness is due to a specific disease, such as diabetes, proper treatment of the disease will decrease the intensity of dry mouth symptoms. Occasionally, it is not known what causes dry mouth. Examples of these conditions include Sjogren's Syndrome or rheumatoid arthritis. In these instances, dry mouth symptoms are treated. Prescription medications should never be discontinued or decreased unless under the supervision of a doctor or pharmacist.



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Symptomatic treatment typically includes four areas: increasing existing saliva flow, replacing lost secretions, control of dental cavities, and specific measures, such as treatment of infections.

Saliva stimulants (also called sialagogues), such as sugarless candies and chewing gum, may be used to stimulate saliva flow when the saliva glands are still functioning. Individuals should be advised to take frequent sips of water throughout the day and to suck on ice chips. Eating foods such as carrots or celery may also help patients with residual salivary gland function. The addition of flavor enhancers, such as spices and fruit extracts, may make food more palatable to individuals complaining of their food tasting bland, papery, salty, or otherwise unpleasant.

Lubricants such as Orajel® or Vaseline® and glycerin swabs on the lips and under dentures may relieve drying, cracking, soreness, and damage to the mucous membranes (such as lips). These lubricants may also be used as a substitute for saliva in some individuals.

There are several over-the-counter (OTC) products that are available to provide assistance in the management of xerostomia. These products range from saliva substitutes and stimulants to products designed to minimize dental problems.

Saliva substitutes: Artificial saliva or saliva substitutes can be used to replace moisture and lubricate the mouth. Artificial salivas are formulated to mimic natural saliva, but they do not stimulate salivary gland production.

Commercially available products come in a variety of formulations including solutions, sprays, gels, and lozenges. In general, they contain an agent to increase the thickness of the saliva. They include carboxymethylcellulose or hydroxyethylcellulose, minerals such as calcium and phosphate ions and fluoride, preservatives such as methyl- or propylparaben, and flavoring and related agents.

Some commercially available saliva substitutes include: **Moi-Stir®** Oral Swabsticks swabs; Optimoist® spray; Saliva Substitute® liquid; and Xero-Lube® Artificial Saliva sodium-free spray.

Saliva stimulants: Over-the-counter (OTC) saliva stimulants are available. Natrol Dry Mouth Relief® uses a patented pharmaceutical grade of anhydrous crystalline maltose (ACM) to stimulate saliva production. Natrol Dry Mouth Relief® lozenges may be dissolved in the mouth three times daily.

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Dentifrices: A dentifrice is a preparation for cleansing and polishing the teeth; it may contain compounds, such as fluoride, to stop dental cavities. Dentifrices that may help decrease dry mouth include Biotene® Dry Mouth Toothpaste and Biotene® Gentle Mouthwash.

Pilocarpine tablets: Pilocarpine tablets (Salagen®) are used to treat dryness of the mouth and throat. These decreases in saliva production are caused by a decrease in the amount of saliva that may occur after radiation treatment for cancer of the head and neck or in patients with Sjögren's syndrome. Pilocarpine stimulates the salivary glands to produce saliva. Pilocarpine is only available with a prescription.

Pilocarpine should not be used in those with uncontrolled asthma, narrow-angle glaucoma, iritis (inflammation of the iris), or individuals who are pregnant. The most common side effects are increased sweating and gastrointestinal disturbances, such as nausea and diarrhea.

Cevimeline: Cevimeline (Evxac®) is another prescription medication used to stimulate the production of saliva. Cevimeline is indicated for the treatment of symptoms of dry mouth in individuals with Sjögren's syndrome. Side effects are similar to pilocarpine.

Other medications: Human interferon alfa (IFN-a) is currently undergoing clinical trials to determine the safety and efficacy of low-dose lozenges in the treatment of salivary gland dysfunction and xerostomia in patients with Sjögren's syndrome.

## **INTEGRATIVE THERAPIES**

Unclear or conflicting scientific evidence:

Acupuncture: The practice of acupuncture originated in China 5,000 years ago. Today, it is widely used throughout the world and is one of the main pillars of Chinese medicine. There is some limited evidence suggesting that acupuncture may stimulate salivary flow in some patients with dry mouth. More studies of better design are needed to evaluate this use.