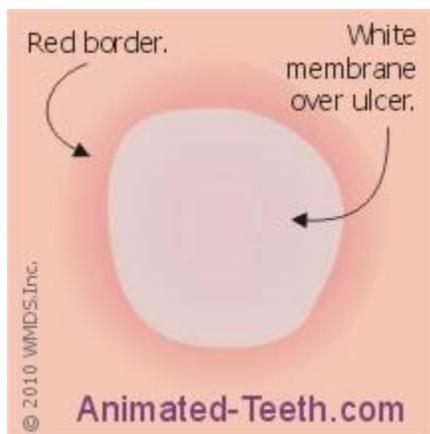


Dan Ebb, D.D.S. What are canker sores?

*Canker sores are painful, round or oval ulcerations that form inside a person's mouth. They typically have a **white membrane-coated center** and a **red surrounding border**. They can be expected to **heal within a two-week time frame**.*

[The second page of our topic describes [characteristics of canker sores, as well as how to differentiate them from other types of mouth sores](#), in much greater detail.]

Canker sores are the **most common type of recurring mouth ulceration**. [Other terms that can be used to refer to canker sores are "recurrent minor aphthous ulcers" and "recurrent minor aphthous stomatitis."](#)



What causes canker sores to form?

*The cause of canker sores is not well understood. Their formation, however, is thought to be related to an **abnormal response of the sufferer's immune system**.*

It's theorized that canker sores form when a person's immune system becomes mobilized by the detection of what it interprets to be foreign molecules.

The activation of the immune system triggers an assault upon the offending molecules, somewhat similar as to what happens when a person's immune system attacks a transplanted organ. The carnage created by this attack results in the formation of ulcers, which are termed canker sores.

What triggers canker sore outbreaks? - The risk factors.

There are a number of factors that can play a role in triggering canker sore outbreaks. *One, or even a combination, of the following risk factors may play a role in the formation of canker sores for any one individual.*

Toothpastes and mouthwashes that contain sodium lauryl sulfate (SLS).

Research suggests that *products that contain sodium lauryl sulfate ("SLS"), a foaming agent found in most toothpaste and mouthwash formulations, may be associated with an increased risk for canker sore outbreaks.*

This may be due to SLS's drying effect on the protective surface of oral tissues. Once this protective layer has been compromised, the tissue underneath is more vulnerable to irritants such as acidic foods.

Several studies have reported that participants who used SLS-free toothpaste experienced fewer canker sores. This reduction was found to be as high as 81% in one study. This same study also reported that some participants felt that the canker sores that did form were less painful (than those that developed during those time periods when they did use SLS-containing products.)

Mechanical trauma to oral tissues.

Physical trauma often precedes the formation of canker sores. This trauma might take the form of a self-inflicted bite, irritation from a sharp tooth edge, or possibly trauma from some type of food such as a crisp chip. 38% of the participants of one study felt that their canker sores were precipitated by trauma.

Emotional stress / Psychic stress.

Many people who suffer from canker sores report that the appearances of their ulcers coincide with periods of psychological stress. A higher incidence of canker sore breakouts is also associated with patients who have been diagnosed with a psychological disorder. Research has found that patients with genetic defects linked to increased anxiety traits experience higher rates of aphthous ulcer outbreaks.

Diet: Nutritional deficiencies.

Research has suggested that canker sore outbreaks may be associated with a poor diet and/or nutritional deficiency. Some of the nutritional deficiencies that have been correlated with the presence of canker sores are:

- [Vitamin deficiencies](#): B₁, B₂, B₆, B₁₂, C

- **Other nutrients:** zinc, folic acid, iron, selenium, calcium

Diet: Allergies and sensitivities.

Allergies to foods (or other substances) have been postulated as being a trigger for canker sore breakouts. Any substance that comes into contact with the person's oral tissues must be considered to be a potential causative agent. If an allergy is suspected the individual might choose to maintain a "*diet diary*" so to help them (and their dentist) identify the most likely candidates associated with the causation of their sores. In some cases allergy testing might be considered.

Some of the dietary substances identified by researchers as being potential triggers for canker sore outbreaks are:

- **Cereal grains:** buckwheat, wheat, oats, rye, barley, the gluten protein found in grains
- **Fruits and vegetables:** lemons, oranges, pineapples, apples, figs, tomatoes, strawberries
- **Dairy:** milk, cheeses
- **Other foods:** nuts (walnuts), chocolate, shellfish, soy, vinegar, French mustard
- **Additives:** cinnamonaldehyde (a flavoring agent), benzoic acid (a preservative)
- **Other substances:** toothpastes, mints, gums, dental materials, metals, medications

Hormonal changes.

For women, *there may be a relationship between canker sore formation and certain phases of their menstrual period.* It has also been reported that some women notice *a remission of their canker sores during pregnancy.* Neither of these observations has been adequately documented nor explained by research.

Genetics.

Some research suggests that *there may be a genetic predisposition for canker sores.* One study found that 35% of those persons who experience canker sores have at least one parent who also suffers from these ulcers. Another study found that 91% of identical twins both suffered from canker sores whereas only 57% of fraternal twins did. People who have a positive family history for canker sores typically experience them at an earlier age and with a greater level of symptoms.

Infectious agents - Bacterial.

Chemical compounds typically associated with bacterial infections have been isolated from canker sores. And this finding suggests that ***some strains of bacteria could be causative agents for these ulcers***. In one research study, 95 different bacterial species were found to be associated with the study group's canker sores. Only 3 of these bacterial species were common to both the study group and the control group.

Infectious agents - Viral.

Viruses may play a role in canker sore formation by way of causing an immune response. Some of the strains of viruses whose presence has been associated with aphthous ulcers are: cytomegalovirus (CMV), human papilloma virus (HPV), human herpes virus-8 (HHV-8), Epstein-Barr virus (EBV), human [immunodeficiency](#) virus (HIV) and herpes simplex virus (HSV-1).

Medical conditions.

Several different medical conditions can be associated with the presence of canker sores (and other forms of aphthous ulcers as well). For those patients who experience persistent difficulties with canker sores ***consideration must be given to the presence of an underlying undiagnosed systemic disease*** and the need for an evaluation and testing by a physician.

A few of the medical conditions that have been associated with the presence of mouth ulcers are: Behcet's disease, neutrophil dysfunction diseases, inflammatory [bowel diseases](#) (celiac and Crohn's), HIV-[AIDS](#), MAGIC disease, and Sweet's syndrome.

Medications.

The use of nonsteroidal anti-inflammatory drugs (NSAIDs), beta blockers, chemotherapeutic agents, and nicorandil have each been suggested as possibly placing a person at greater risk for outbreaks of canker sores.

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