



# Cancer Survivorship Patient Education on Post-Treatment Care

## Change in Taste/Flavor and Nutrition

*Joel B. Epstein DMD, MSD, Riva Touger-Decker, PhD & Heidi Ganzer, RD*

### **What is it?**

Taste sensation is comprised of multiple taste functions, affected by reduced saliva, oral health and oral hygiene. Taste is affected by the presence and function of taste receptors on the cell surface. The taste signal is then transmitted by nerve function to the brain. Flavor is a complex sensation that involves taste, smell, texture, temperature, as well as visual and memory functions.

### **How common is it among head and neck cancer patients?**

Taste is affected in all patients with head and neck cancers that are treated with radiation with/without chemotherapy. Taste can be reduced, altered or lost in cancer care. Taste may be altered due to the primary tumor or treatment of the cancer. Secondary mouth infection can occur and also affect taste.

Mouth care, dental health, and habits such as tobacco use, alcohol, oral hygiene and diet affect taste. Taste change can persist for months and continue indefinitely following treatment.

### **What are the signs/symptoms?**

Taste loss, lack of good taste, bad taste, altered tastes in the mouth and in the taste of food may occur. Taste change may be associated with bad breath. Post treatment taste and flavor alterations may impact food choices, appetite, intake and nausea and result in weight loss and nutritional deficiencies. This often results in loss of interest in and pleasure from food and may affect quality of life.

Sweet taste and fatty taste change may affect energy intake. Salty taste may be related to electrolyte intake. Umami (good or pleasant taste) and fatty taste may impact quality and quantity of food eaten.

### **How is it diagnosed?**

Taste, smell and flavor changes are most commonly reported verbally. Specific questions can be asked to assess the nature of the change, the severity and impact. There are standard questionnaires that assess these functions. Taste and smell can also be tested by applying specific tastes and smell, but this is not commonly done. An oral exam and saliva measure can be completed.

It is important to report any changes including flavor, saliva and appetite change to your health care providers.

### **How is it treated?**

If you have taste/flavor changes, treatable underlying causes should be identified. For example, oral problems such as gum disease, dental infection, mouth infection and dry mouth can be managed.



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Changes in your diet and food choices may be recommended. It is important to identify those foods that are pleasurable and to avoid foods that have a “bad taste” and those that lead to mouth sensitivity. Working with a registered dietitian nutritionist (RDN). S/he will help you plan a diet that highlights pleasurable tastes and flavors and avoids those that cause nausea or vomiting. Avoid medications that worsen taste alterations, if possible. If you have dry mouth, avoid medications that make the dry mouth worse. Prescription saliva stimulating medicines may be given. People with continuing taste change may be managed with some medications that may be provided by specialists with interest in taste function and oral/dental care providers when the mouth condition is affecting diet.

### **When should I call my doctor?**

Inform your doctor of ongoing or new symptoms. If you do not report these symptoms, they will not be identified.

### **Where can I learn more?**

Web resources:

Multinational Association of Supportive Care in Cancer - [MASCC.org](https://www.mascc.org)

Oral Cancer Foundation (OCF) – <https://oralcancerfoundation.org/>

Support of People with Oral Head & Neck Cancer (SPOHNC) - <https://www.spohnc.org/>

### **Table 1: Prevention and Management of Taste Change**

Dietary/nutrition counseling (see Table 2 for more detailed information)

Food preparation: seasoning, spices, acidic foods, umami

Dietary supplements as needed

Management of oral disease and dry mouth

Medical Interventions for taste function



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**Table 2: Symptoms Impacting Taste and Nutrition Tips to Manage<sup>1-4</sup>**

<b>Nutrition Impact Symptom Affecting Taste</b>	<b>Nutrition Tips</b>	<b>Cooking or Food Preparation Tips</b>
<b>Dry Mouth</b>	<p>Keep fluid or a portable water container with you at all times; goal consuming 64-80 ounces of fluid daily.</p> <p>Suck (do not chew) on ice chips; chewing on ice could damage teeth.</p> <p>Use sugar-free gum or sugar-free hard candy to moisten the mouth.</p> <p>If the mouth is not sensitive use tart foods, seasoning to help stimulate saliva.</p> <p>Avoid alcohol or mouth rinses with alcohol, caffeinated beverages and tobacco that contribute to dry mouth.</p> <p>When eating alternate between liquids and solids.</p> <p>A cool mist humidifier can help moisten the mouth</p> <p>If your doctor has recommended medication for dry mouth, use as prescribed.</p> <p>Over the counter saliva substitutes can give temporary relief of dry mouth and taste changes.</p> <p>Keep mouth clean by rinsing after each meal/snack; brush teeth according to directions provided by doctor.</p>	<p>Choose foods high in fluid (i.e. watermelon, peaches, hot cereal, soups, etc.).</p> <p>Make your own ice with flavored waters or liquids to enhance taste (i.e. use mint, fruit juice, etc.).</p> <p>Make smoothies/milk shakes; this can help increase fruit/vegetable intake.</p> <p>Use Italian salad dressing or other prepared marinade, balsamic vinegars, apple cider vinegar, cooking wines, etc. for marinades.</p> <p>Soften foods like bread, toast or potatoes with milk or broth. This will moisten food and add protein and/or flavor.</p> <p>Use sauces, butters, cream or milk, or gravies to moisten food.</p> <p>Use a blender to mash or blend foods.</p> <p>Use yogurt, juice or jelly to moisten foods.</p> <p>Use olive, canola, avocado, almond or coconut oil to make foods more slippery.</p> <p>Prepare softer cooked meats (i.e. chicken or fish).</p> <p>Soups, broths and casseroles are moist and easy to eat.</p> <p>Soft cooked eggs, cottage cheese, ricotta cheese are all moist, high protein food choices.</p>



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<p><b>Taste Changes</b></p>	<p>Provide specific information to your dietitian or doctor about your taste challenges (i.e. no taste, foods too sweet or salty, metallic taste, etc.). This will help your health care provider give specific information to counter your taste challenge.</p> <p>Use mindful eating to determine what foods/fluids are most appealing to you and what food/fluids to avoid or have an aversion to. This will help the dietitian help you with your nutrition plan.</p> <p>If your doctor has recommended medication or a specific oral care regime follow as recommended.</p> <p>Rinse mouth with a sodium bicarbonate and salt rinse (1/2 tsp. baking soda, 1/2 tsp. salt, 1 cup warm water).</p>	<p>Minor additions to your food preparation may make a significant impact on the way foods tastes. Keep practicing what you are doing to find what works best for you.</p> <p>Use fresh herbs or seasoning such as rosemary, dill, parsley, basil.</p> <p>If mouth is not sensitive, marinate foods in balsamic vinegar, wine, prepared marinades.</p> <p>Try the FASS™ method by Rebecca Katz for flavoring food (i.e. fat, acid, salt and sweet).</p> <p>If things have a metallic taste use plastic silverware, chopsticks or finger foods to avoid heightening the metallic taste. Cooking with glassware can also decrease metallic taste.</p> <p>If metallic taste add a sweetener such as maple syrup, honey, agave nectar. Also adding a source of fat such as olive oil, butter or a nut butter can help.</p> <p>If food tastes too salty add a small amount of lemon juice (drops) and to reach the desired taste.</p> <p>If food tastes too bitter add a sweetener (i.e. honey, maple syrup, agave nectar or fruit-based marinade).</p> <p>If food tastes too sweet add lemon or lime juice.</p> <p>Aromatic bitters and a small amount of freeze-dried coffee can also decrease a heightened sense of sweetness.</p> <p>If yogurt is too sweet try plain yogurt and add a little honey until desired taste is achieved.</p> <p>If food tastes “like nothing” add sea salt until the flavor can be identified. Adding an acid may also help (i.e. lemon or lime juice).</p> <p>Use protein foods meat; eggs, milk or yogurt, tofu, beans or legumes, etc.</p> <p>Experiment with seasonings cinnamon, ginger, nutmeg cumin, curry, all spice, etc.</p> <p>If food tastes bitter use a fruit based marinade.</p>
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<p><b>Thick Saliva</b></p>	<p>Keep a portable water container with you with a goal of consuming 64-80 ounces of fluid daily.</p> <p>If your doctor has recommended medication to help with dry mouth use as prescribed.</p> <p>Rinse mouth with a sodium bicarbonate and salt rinse (1/2 tsp. baking soda, 1/2 tsp. salt, 1 cup warm water).</p> <p>A cool mist humidifier can help moisten the mouth.</p>	<p>If mouth is not sensitive use papaya juice or pineapple juice to help thin secretions.</p> <p>If mouth is not sensitive use diet club soda or diet carbonated beverages to thin secretions (sugar may increase damage of teeth).</p> <p>Puree or use a blender to make foods easier to consume.</p>
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### References:

1. Ganzer H, Touger-Decker R, Parrott JS, Murphy BA, Epstein JB, Huhmann ME. Symptom burden in head and neck cancer: impact upon oral energy and protein intake. *Support Care Cancer* 2013; 21:495-503.
2. Epstein JB, [Thariat J](#), [Bensadoun RJ](#), [Barasch A](#), [Murphy BA](#), [Kolnick L](#), [Popplewell L](#), [Maghami E](#). Oral complications of cancer and cancer therapy: From cancer treatment to survivorship. *CA Cancer J Clin* 2012;62(6):400-22.
3. Kolnick L, Deng J, Epstein JB, Migliorati CA, Rezk J, Dietrich MS, Murphy BA. Associations of oral health items of the Vanderbilt Head and Neck Symptom Survey with a dental health assessment. *Oral Oncol* 2014;50(2):135-40
4. Coa KI, Epstein JB, Ettinger D, Jatoi A, McManus K, Platek ME, Price W, Stewart M, Teknos TN, Moskowitz B. The impact of cancer therapy on the diets and food preferences of patients receiving outpatient therapy. *Nutrition and Cancer* 2015; 67(2):339-53.
5. Ganzer H, Touger-Decker R, Byham-Gray L, Murphy BA, Epstein JB. The eating experience after treatment for head and neck cancer: A review of the literature. *Oral Oncol* 2015; 51:634-42.
6. Epstein JB, Smutzer G, Doty RL. Understanding the impact of taste changes in oncology care. *Support Care Cancer* 2016;24(4):1917-31.
9. Barasch A, Epstein J. Assessment of taste disorders. *BMJ Best Practice* Sept 2016. <http://bestpractice.BMJ.com/best-practice/monograph/971.html>.

### References:

1. Katz, R with Edelson M. *One Bite at a Time: Nourishing Recipes for Cancer Survivors and Their Friends*. 2<sup>nd</sup> edition. Ten Speed Press an imprint of the Crown Publishing Group, division of Random House, Inc.; 2008.



## **Cancer Survivorship Patient Education on Post-Treatment Care**

2. Katz, R with Edelson M. *The Cancer-Fighting Kitchen: Nourishing, Big-Flavor Recipes for Cancer Treatment and Recovery*. New York, Ten Speed Press an imprint of the Crown Publishing Group, division of Random House, Inc.; 2009.
3. Ganzer H, Epstein J, Touger-Decker R. Nutrition Management of the Cancer Patient. In *Nutrition and Oral Medicine*. Springer Science, New York; 2014.
4. Elliott, L. Symptom Management of Cancer Therapies. In Leser M, Ledesma N, Bergerson S, Trujillo E *Oncology Nutrition for Clinical Practice*. Oncology Nutrition DPG. Academy of Nutrition and Dietetics 2013, page 120.