

Loss of Smell or Taste After Traumatic Brain Injury

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TBI Factsheet

This fact sheet explains the loss of the sense of smell or taste after TBI.

What you need to know

- Your senses of smell and taste are important for many aspects of your life.
- Traumatic brain injury (TBI) can cause problems with smell and taste.
- Loss of smell is often the cause of loss of taste after TBI.
- Talk to your doctor about changes in your smell and/or taste.

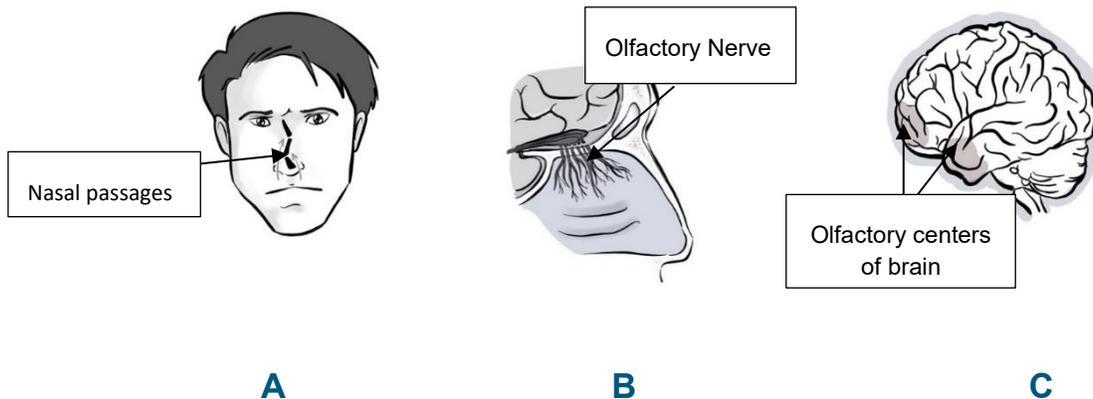
Why are smell and taste important?

- Smell and taste add to our enjoyment and experience of food and nice smells, like perfume or flowers.
- Both smell and taste are important for safety as they serve as warning signs. Our sense of smell can alert us to harmful things around us, like a gas leak or a fire. Things that taste bad or smell a certain way may not be safe to eat or drink.
- Smell and taste prepare the body to digest food.
- Sense of smell and taste helps us form new memories and recall old memories; it can also cause a strong emotional response. For instance, the smell of apple pie can bring on a memory of your grandma and how much you love her.

Why does someone lose their sense of smell after trauma to the head or brain?

As air enters the nose, it triggers certain nerves. These nerves bring information to a part of the brain called the olfactory bulb. That information then goes to the part of the brain that creates our sense of smell. Loss of smell may result from damage to the lining of the nose or nasal passages (diagram A). Other causes may be injury to the nerve that carries smell sensation from the nose to the brain (olfactory nerve, diagram B) or harm to parts of the brain that process smell (diagram C). Other possible causes are infections, toxins, and medicines.

The Traumatic Brain Injury Model System is sponsored by the National Institute of Disability, Independent Living, and Rehabilitation Research, U.S. Department of Health and Human Services' Administration for Community Living. (See <http://www.msktc.org/tbi/model-system-centers> for more information).



Smell and taste are part of an overlapping sensory system. "Flavor" comes almost entirely from the nose. Smell and taste are directly related because they both trigger the same nerves. Taste receptors on the tongue and nerves in the nose work together to tell us about the air we breathe and the food we eat.

How are smell and taste problems found after TBI?

You may not notice smell and taste problems right after TBI. Over time, as you go back to your usual foods and start to recover from the TBI, you may notice problems with smell and taste. If you are concerned about your smell or taste talk to your doctor about it. Different kinds of doctors can check your sense of smell. Such doctors may include physiatrists, who focus on physical medicine or rehabilitation; neurologists, who treat conditions of the nervous system; and ear, nose, and throat (ENT) doctors (also called otolaryngologists). These doctors will decide what tests you may need to see why you have loss of smell or taste and make recommendations for how to manage the problem.

How does loss of smell and taste affect your appetite?

- The smell of food triggers the appetite; loss of smell can lead to reduced appetite and lack of interest in food.
- Loss of smell can reduce saliva production. This makes dry foods, like biscuits and crackers, harder to eat.
- Many foods that are needed for a balanced diet may no longer be appealing; this can lead to a diet that doesn't have a balanced variety of nutrients.
- Changes in taste may make some foods, such as meat, taste bad and make you avoid those foods.
- Any of these problems may affect what food you choose and lead to a poor diet.

Smell and taste problems can impact day-to-day life and lead to safety risks:

- Loss of appetite or loss of enjoyment or interest in food can make you eat too little, which may result in not getting important vitamins and nutrients that the body needs, and/ or lead to unsafe weight loss.
- Not feeling satisfied by food can cause you to eat too much because you are constantly searching for something to satisfy the lack of taste; this can lead to unsafe weight gain and/or other health problems.
- Some may use too much salt in attempt to add flavor, which can contribute to health problems, such as high blood pressure.
- Eating old or rotten food or eating something toxic may lead to food poisoning.
- Inability to smell gas leaks, toxic fumes or chemicals, which can be harmful if undetected.
- Inability to know which liquids are harmful or poisonous, and which liquids are safe.
- Loss of smell may lead to not knowing when you need to bathe, put on deodorant, or wash your clothes. This will result in poor hygiene.

Are there other challenges associated with loss of smell and taste?

The parts of the brain involved in smell and taste are close to parts of the brain that deal with other functions. If the areas of the brain that deal with taste and smell are injured, other nearby parts of the brain may also be injured. As a result, some people with taste and smell problems may also have the following issues:

- Emotional problems (depression, irritability)
- Behavioral problems, such as being impulsive or aggressive
- Trouble seeing and responding to others' feelings
- Reduced concern for others' feelings and needs

Will your sense of smell and taste get better?

- Recovery can happen. Research shows that 30% of affected people get better naturally over time.
- The sooner your symptoms improve, the better. Most people who improve do so 6 to 12 months after TBI.
- The chance of getting better over time is more likely if you have mild loss of sense of smell.
- Some people recover the ability to identify strong odors, but not more subtle scents.

How can you help yourself if you have loss of smell or taste?

- Cook with lots of spices (but be careful not to add too much salt!).
- Try foods that are hot and spicy.
- Choose foods that are salty, sweet, bitter, or sour.
- Find foods that have texture or crunch, such as pretzels.
- Set reminders to eat.
- Consider using a smart phone app that tracks the nutrients and calories you are getting each day.

- Ask your doctor about vitamin supplements.
- Put dates on food and open cartons; check expiration dates before eating.
- Install smoke alarms on every floor. Keep fire extinguishers handy.
- Choose an electric oven or stovetop instead of gas.
- Buy a high-quality natural gas detector that gives a warning signal if there is a leak. Some gas detectors can be linked to the gas supply to automatically shut it off. This is especially helpful if a leak occurs while you're out, so you don't walk into a house full of gas. You can also get detectors for propane, butane, and liquefied petroleum gas (LPG) if you use gas cylinders, for instance, on a boat.
- When using household cleaners, make sure the area is well ventilated or use a mask.

References

Hummel, K. I., Whitcroft, P., Andrews, A., Altundag, C., Cinghi, R. M., Costanzo, M., Welge-Luessen, A. (2017). Position paper on olfactory dysfunction. *Rhinology*, 54(26), 1–30.

Drummond, D., Douglas, J., & Olver, J. (2017). "I really hope it comes back" - Olfactory impairment following traumatic brain injury: A longitudinal study. *NeuroRehabilitation*, 41(1), 241–248. doi: 10.3233/NRE-171477.PMID: 28505998

Authorship

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