Taste and smell issues after brain injury

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Introduction

After a brain injury, people may notice changes to their senses of taste and smell. Taste and smell can be different, partially lost or completely lost. For some people, tastes and smells can become unfamiliar or unpleasant.

These changes can be difficult to cope with. They can affect quality of life, enjoyment of food, safety, personal hygiene and emotional wellbeing.

This publication gives information on how taste and smell can be affected by brain injury. It explains how taste and smell can be affected, the effect this can have on daily life, where to get professional support from with this issue and how to cope.

Words or phrases in **bold and underlined** are defined in a glossary at the end.

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Please note that the information in this publication does not replace clinical guidance. You should always seek support from suitably qualified professionals for coping with brain injury. Your GP will usually be the best starting point for this.

How tastes and smells are processed

Our senses of taste and smell are strongly linked with one another.

Our taste buds themselves are made up of five basic tastes. These are: sweet, sour, bitter, salty and savoury (umami). Our tastebuds are located on our tongue and mouth region.

Our nose contains odour receptors, which are sensitive to the molecules that make up different smells.

Both of these systems send information to the brain to process smells and tastes.

While tastebuds process the five basic tastes listed above, the more subtle flavours of things actually come from our sense of smell. Taste and smell therefore work together to allow us to experience a wide range of subtle food flavours. If someone's sense of smell is affected, this can affect the flavour of food. This is why brain injury survivors will often develop problems with both taste and smell at the same time.

Did you know… sometimes when people think that their sense of taste is different, it is actually their sense of smell that is changed. This is because it is our sense of smell that allows us to identify flavours.

Areas of the brain are involved in taste and smell

There are a number of different parts of the brain that are involved in our ability to taste and smell. If these parts are injured, it can affect the quality of smells and tastes perceived.

A part of the brain called the **olfactory bulb** is located close to the front of the brain. The **olfactory bulb** is responsible for processing our sense of smell.

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Damage to this area can affect the quality of both smells and tastes perceived (see the previous section *How tastes and smells are processed*).

The **olfactory bulb** is close to areas of the brain that are involved in processing memories, such as the **cerebellum**. This is why familiar scents are often strongly associated with memories. Injury to these memory structures can therefore affect the ability to recognise smells.

A part of the brain called the **brainstem** contains an area called the **gustatory nucleus**, and this is involved in the process of **gustation**. Injury to this part can therefore affect the quality of tastes perceived.

How brain injury affects tasting and smelling

After a brain injury, taste and smell can be different, partially lost or completely lost. Below are some of the terms used to describe the different ways in which taste and smell can be affected.

Disorders of smell
Anosmia - total loss of sense of smell
Hyposmia - partial loss of sense of smell
Hyperosmia - increased sensitivity to **odours**
Parosmia - distortion in **odour** perception
Phantosmia - perceiving smells that aren't there

Disorders of taste
Ageusia - total loss of sense of taste
Hypogeusia - partial loss of sense of taste
Dysgeusia / parageusia - distortion in taste perception
Phantogeusia - perceiving a lingering false taste that isn't there

It might take time for changes in taste and smell to be recognised, as there may be more urgent things to address directly after the brain injury. Taste and smell problems might therefore only be identified once the person has returned home.

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Recovery and treatment of taste and smell problems

It is possible for people to recover from changes in taste and smell after brain injury. Sometimes this can happen spontaneously. However, if this does happen, it is usually within the first year of injury.

Did you know… Many people who have lost their sense of smell following a brain injury are told that, if there is no recovery within the first year of injury, it is likely to be permanent. However, this isn't entirely true. There may be more hope of improvement for some patients than had previously been thought.

It is possible to regain some ability to detect **odours** several years after the brain injury. This largely depends on how severe the brain injury was. However, there is, unfortunately, no way of predicting if any recovery will happen or how long after injury this may take.

There are no standard treatments for directly repairing the damage caused by **post-traumatic olfactory loss**. Specialists may be able to investigate and treat pre-existing conditions and they may be able to offer some treatments that may help (further information on this is given in the section *Professional support*).

Even small improvements in your sense of smell can really improve quality of life. Remaining hopeful and open-minded about exploring treatment options and self-help strategies, such as smell training, is important. The following section gives guidance on this.

Health, safety and hygiene

Our senses of taste and smell provide an important warning system against many health and safety issues, for example detecting smells that could indicate danger or alerting us when food doesn't taste right. The following suggestions can help to compensate for losing these abilities.

- **Fire/smoke** - Fit a smoke alarm, have electrical appliances regularly

serviced, remove plugs when not in use and use an alarm to remind you of food cooking in the oven.

- **Gas leaks** - Have gas appliances regularly serviced and fit a gas detector. You might want to consider fitting an electric cooker and fire.
- **Out-of-date food** - Always eat or throw out food by its 'use by' date. If in doubt, throw it out! Clear out the fridge and cupboards regularly.
- **Identifying products** - Try to keep products such as drinks, bleach, cleaning products and solvents in their original containers. Make sure they are clearly labelled.
- **Home hygiene** - Ask family/ friends/ carers to help empty rubbish bins and keep toilets and kitchen appliances clean to avoid health risks.
- **Personal hygiene** - Be aware of the need to wash yourself, your clothes and bed linen regularly. Use an antiperspirant deodorant and perhaps a shoe deodoriser too. Ask a close friend or family member to advise on any problems in this area.
- **Mouth care** - It is important to keep your mouth clean and to brush teeth regularly, including brushing your tongue as well. Using mouthwash and dental floss helps. It is important to pay regular visits to the dentist.
- **Toxic fumes** - Take precautions and follow manufacturers advice when using products such as paint, cleaning products and solvents. Wear a protective mask, ensure rooms are well ventilated and don't smoke.

Further guidance on safety issues is available on the charity SmellTaste's website at www.smelltaste.org.uk/safety-advice.

Diet and enjoyment of food

Changes to taste and smell can affect appetite and eating in a number of ways:

- The smell of food stimulates appetite, so being unable to smell food in the same way can lead to **reduced appetite** and lack of interest in food.
- Loss of smell can **reduce saliva production**, causing difficulties with eating

dry foods such as biscuits and crackers.

- Foods may be chosen based on their **flavour rather than nutritional value**, leading to a diet that doesn't provide a balanced variety of nutrients.
- **Loss of enjoyment of food** can lead to avoiding eating altogether.
- **Altered taste** may make certain foods, such as meat, taste unpleasant and lead to those foods being avoided.

Any of these problems may effect your choice of food and lead to an inadequate diet. It is very important to maintain a healthy, balanced diet and below are some suggestions to help you do this.

Some of the following suggestions may not be suitable if you have problems with chewing or swallowing and have been advised to eat a softer diet. Consult your GP, **dietician** or **speech and language therapist** for further advice.

Make meals more interesting

- Be imaginative. For example, experiment by using different herbs and spices.
- Use varied colours, such as making colourful salads.
- Use varied textures, such as using seeds, nuts, wholegrain cereals, grated fruit and vegetables or beans and pulses to add texture. Or under-cook vegetables so that they are crunchy.
- Adding bacon bits or grated, strong cheese, such as parmesan, can add flavour to a meal.
- Serve hot and cold foods together. Try ice cream with hot sauce/ stewed fruit, or lasagne with salad.
- Make meals a social time with friends and family.
- Establish a regular routine. Try to eat breakfast, lunch, evening meals and snacks at the same time every day.
- Use a cookbook and try new and interesting recipes.

Ensuring your diet is varied and nutritious

A good, balanced diet is essential for good health. NHS Choices provides advice on this at www.nhs.uk/live-well/eat-well. The 'Food Facts' section of the British Dietetic Association website at www.bda.uk.com/food-health/food-facts.html is also full of useful information.

You should choose a range of foods in the correct proportions. Below are some suggestions to help you do this:

- Try to base your meals on starchy foods such as bread, cereals, potatoes, rice or pasta. Aim to include at least one food from this group in each meal.
- Try to eat as great a variety of foods as you can.
- Have at least five portions of fruit and vegetables a day.
- When using milk, be very careful that this hasn't gone off, especially in hot weather.
- Limit foods containing a lot of fat and sugar.
- If you avoid certain foods because they taste unpleasant, look for alternative sources of protein and nutrients. For example, if you cannot eat meat, replace it with fish, beans, eggs or milk.

If you continue to experience difficulty adjusting your diet or have any other dietary concerns, such as diabetes or Coeliac disease that make it difficult to vary the foods that you eat, discuss this with your GP.

You can ask your GP or other healthcare professional for an NHS referral to a registered **dietitian**, who can assess, diagnose and treat diet and nutrition problems. Alternatively, you can find details of registered dietitians in private practice on the Association of UK Dietitians' website at www.bda.uk.com/find-a-dietitian.html.

Avoiding using too much salt

Loss of sense of taste may make people likely to add too much salt or other flavourings, such as garlic or chillies. To avoid using too much salt try the following.

- Follow a recipe or routine to avoid over-salting foods during cooking.
- Avoid adding salt at the table.
- Vegetables that are steamed, baked, roasted or cooked in the microwave retain their natural flavour better than when they are boiled. This reduces the need to add extra salt in cooking.
- Try to add flavour to foods without using salt, for example try different herbs and spices, mustard, lemon juice, vinegar, pickles and sauces. Follow directions for using additional flavourings and try not to add extra, as over-seasoning foods can cause indigestion.

Drinking

Loss of taste and smell can also affect the amount of fluids you can drink, which may result in dehydration. It is also possible to have too much caffeine or sugar in hot drinks to try to make up for an impaired sense of taste.

Government recommendations are to drink 6 to 8 glasses of fluid a day. This includes all drinks such as water, juice, tea, coffee, etc, but not alcoholic drinks, as alcohol dehydrates the body. If exercising heavily, you will need to drink more than this.

- Avoid very strong tea and coffee or try decaffeinated varieties.
- Avoid adding excess sugar to tea and coffee.
- Energy drinks often contain large amounts of caffeine and should only be had in moderation.

Drinking plenty of liquid can help to remove unpleasant tastes from the mouth.

Alcohol

You may have been advised to avoid alcohol because of your brain injury or any medications you are taking. If you are unsure, ask your GP.

- Tolerance to alcohol can be reduced following brain injury. Try to drink in moderation or not at all.

- Remember that alcohol will have the same effect on you even if you cannot taste it.
- Make sure that you know what is in drinks that are brought for you.
- Try drinking low alcohol or alcohol-free beers as an alternative.

More information on why alcohol is generally discouraged after brain injury and tips for coping is available in our publication *Alcohol after brain injury*.

Emotional, cognitive and behavioural issues

There are a number of emotional, **cognitive** and behavioural issues that are associated with taste and smell issues after brain injury. This section discusses these and suggests strategies for coping.

Emotional issues

Many people enjoy tasting food and smelling nice scents, so losing these senses can affect their quality of life. Our sense of smell plays an important role in our memory, mood, and emotions, and is therefore a part of many enjoyable life experiences.

People with smell disorders often express feelings of being disconnected from the world and the people around them. The loss or distortion of smell can significantly impact people's ability to develop and sustain close personal and social relationships. This, combined with the limited awareness of the significance of smell in our lives, can intensify feelings of isolation, potentially leading to depression and anxiety.

On top of this, increased anxiety around social eating and vigilance about smell safety adds to the emotional and mental health challenges faced by those dealing with smell-related issues.

This can cause feelings such as sadness, loss or frustration. People may develop depression due to living with these changes, alongside the other effects of brain injury.

In these cases, it can be helpful to get professional support. Professionals can help with learning ways to manage changed taste and smell, or learning to cope with the emotional impact of living with brain injury. More information on this is available in the section *Professional support*.

Headway's publications *Depression after brain injury* and *Anxiety after brain injury* offer further guidance on these topics.

Cognitive and behavioural issues

Frontal parts of the brain are largely responsible for thinking skills and controlling behaviour. Injury to them can therefore cause problems such as **cognitive** impairment, **disinhibition**, **executive dysfunction** or aggressive behaviour.

Because of its position in the brain, injuries to the front of the brain can also commonly affect the **olfactory bulb**. Therefore it is common for people to have **cognitive** and behavioural issues alongside problems with olfaction.

Headway's range of publications on cognitive and behavioural effects of brain injury offer information on these issues and practical ways of dealing with them. You can browse through and download these from our Information Library.

Professional support

Unless there are very obvious problems with taste and smell early on after brain injury, these might not be identified until later, for example when the brain injury survivor returns home. It might therefore be necessary to visit a GP or neurologist for assessment and referral to an appropriate professional.

The type of professional support needed will depend on the issue being

experienced. Some of the professionals that may be able to help with taste and smell issues after brain injury are described in this section.

Unfortunately it is usually not possible to 'fix' taste and smell problems after brain injury. Professionals may therefore focus on offering guidance on coping.

- **ENT specialists** - these are doctors who specialise in problems with the ear, nose and throat. They may be able to help by assessing the smell or taste issues and offering suitable treatments or advice.

- **Dietician** - if you are struggling to maintain a healthy diet, a dietician might be able to help you with forming diet plans to make sure you are getting a good balance of nutrients despite your problems with taste and smell.

- **Neuropsychologists, psychologists or counsellors** - if you are struggling with the emotional, **cognitive** or behavioural impact of living with taste or smell problems after brain injury, psychologists might be able to help you with coping. **Neuropsychologists** specialise in assessing and supporting people affected by brain injury with their emotions, **cognition** and behaviour, while psychologists and counsellors can offer talking therapies to help with processing feelings about life with brain injury.

- **GPs and nurses** - changes in smell and taste can sometimes be caused by medication. If you are concerned that your medication is having this effect, speak to your GP or nurse. Never stop taking your medication or change your dosage without first consulting your GP.

There might also be clinics near you that specialise in taste and smell problems, although these might not be specifically for people with brain injury. The charity SmellTaste offers a list of clinics around the UK that can assess and support people with taste and smell problems. For more information, visit www.smelltaste.org.uk/clinics.

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Glossary

Brainstem - a part of the brain responsible for basic functions such as breathing, heart rate, blood pressure, sleeping and consciousness. The brainstem is the location for the **gustatory nucleus**.

Cerebellum - a part of the brain largely responsible for processing balance, co-ordination and movement, also involved in memory. It is located at the back of the brain and looks like a smaller, smoother brain.

Cognitive - skills related to learning, processing information and thinking.

Dietician - a professional that assesses and treats problems with diet and nutrition.

Disinhibition - being unable to process and think through behaviour before performing it.

Executive dysfunction - a range of thinking skills that allow us to complete tasks such as making decisions, weighing up information, multitasking, sequencing and correcting mistakes.

Gustation - the process of tasting.

Gustatory nucleus - a part of the brain responsible for passing information on from the mouth to the brain to process taste.

Neuropsychologists - psychologists who are specially trained to assess and treat people with neurological conditions, including brain injuries.

Odour - smells, scents.

Olfactory bulb - a part of the brain responsible for processing smells, located close to the front of the brain.

Post-traumatic olfactory loss - loss of sense of smell following head injury.

Speech and language therapist - a professional that assesses and advises on speech and language issues, as well as issues with chewing and swallowing.

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As a charity, we rely on donations from people like you to continue being able to provide free information to those affected by brain injury. To donate, or find out how else you can get involved with supporting our work, visit www.headway.org.uk/get-involved.

If you would like to leave feedback for this publication, please consider completing our short survey at www.surveymonkey.co.uk/r/hwpublications or contact us at publications@headway.org.uk.

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