

ProCare HospiceCare

On-Demand NEWS

Written by Clinicians, for Clinicians

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Drug-Induced Taste Disturbances

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In hospice, we often encounter patients with decreased appetite, or who say that food "just doesn't taste good anymore," and thus have very little desire to eat. Although there are many things that can cause decreased appetite, especially at end of life, one potential cause that may often be overlooked is drug-induced taste disturbances.

Although it may sound like a relatively minor problem, taste disturbances can significantly decrease a patient's quality of life, and can result in decreased food intake and subsequent weight loss or malnutrition. One study found that an inability to enjoy normal taste and smell can cause severe depression, and, rarely, even suicide.¹ In addition to drug-induced effects, taste disturbances can also be caused by certain medical conditions commonly found in hospice patients, including (but not limited to) renal failure, diabetes, radiation therapy, hypothyroidism, and advanced age.² Add to these conditions the nausea, dyspepsia, or other gastrointestinal issues that hospice patients often experience, and the impact of potential drug-induced taste disturbances could become even more significant.

Taste disturbances can manifest in several ways, including: alterations in taste, which can be unspecified or described as bitter, metallic, salty, or sour; decreased taste sensation; or dry mouth, which affects taste because saliva is necessary for normal taste sensations. Most drug-induced effects are dose- and duration-related, although they can occur after a single dose, and recovery of normal taste will typically return after a reduction in dose or discontinuation of the drug. In some cases, the return to normal taste sensations can take weeks or months.²

Medications

The following is a description of specific medications that have been found to cause taste disturbances.

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Coming Soon

The Realities of the
E-prescribing of
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Newsletter

Our Vision

ProCare HospiceCare will
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the Premier Hospice
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Mission Statement

ProCare HospiceCare
will Provide
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Patient Focused
Medication-Therapy-
Management and
Pharmacy Benefit
Management Systems and
Services.

Drug-induced Taste Disturbances *(continued from page 1)*

The drugs and medication categories mentioned below certainly do not represent an exhaustive list, but is an attempt to highlight medications frequently used by hospice patients. The incidence is usually relatively rare for most of these drugs, however taking more than one implicated medication could cause additive effects on taste and potentially increase the risk that taste disturbances will occur.

Anti-inflammatory and pain medications: Various anti-inflammatory medications can cause taste disturbances, most commonly by decreasing taste sensation due to effects on taste receptor function or synaptic activity. Implicated medications include medications in the corticosteroid class (e.g. prednisone, dexamethasone), as well as etodolac (Lodine[®]), ibuprofen (Advil, Motrin[®]), indomethacin (Indocin[®]), and ketoprofen (Orudis[®]). Other types of pain medications have also been implicated in causing taste disturbances. Morphine can alter taste sensation by causing dry mouth (greater than 10% incidence[®]), although the specific mechanism is unknown. Aspirin and acetaminophen (Tylenol[®]) can decrease and/or alter taste sensation by changing taste receptor function. Skeletal muscle relaxants can also affect taste perceptions; baclofen (Lioresal[®]) decreases/alters taste by inhibiting taste receptor membrane function, while cyclobenzaprine (Flexeril[®]) has been found to cause both dry mouth (due to anticholinergic effects, over 10% incidence) and altered or no taste (due to altered taste receptor function, 1-3% incidence).²

The **anti-anxiety medications (benzodiazepines)** alprazolam (Xanax[®]), triazolam (Halcion[®]), and flurazepam (Dalmane[®]) can alter taste receptor function; diazepam (Valium[®]) causes dry mouth in over 10% of patients by an unknown mechanism.² It appears that lorazepam (Ativan[®]) has not been implicated in causing taste disturbances.

Antidepressants typically cause taste disturbances via anticholinergic, noradrenergic, or serotonergic effects, and each of the following medications has demonstrated an incidence of 10% or greater: amitriptyline (Elavil[®]), bupropion (Wellbutrin[®]), venlafaxine (Effexor[®]), paroxetine (Paxil[®]), sertraline (Zoloft[®]), trazodone (Desyrel[®]), nortriptyline (Pamelor[®]), and doxepin (Sinequan[®]). Mirtazapine (Remeron[®]), duloxetine (Cymbalta[®]), and fluoxetine (Prozac[®]) share this high incidence and also affect taste by causing dry mouth, although their specific mechanism for doing so is unknown.²

Psychotropic medications that disturb taste sensations frequently do so via anticholinergic effects resulting in dry mouth. Chlorpromazine (Thorazine[®], up to 10% incidence), olanzapine (Zyprexa[®]), quetiapine (Seroquel[®]), and risperidone (Risperdal[®]) share this mechanism, although Risperdal can also cause a bitter taste. As a class of medication, amphetamines (e.g. Adderall[®], Vyvanse[®]) can cause altered or bitter taste sensation and dry mouth, possibly due to a decrease in the "bitter threshold" and alterations of catecholamines at the taste receptor.²

Cardiac medications: Approximately 36% of antihypertensive medications are reported to have adverse effects on taste or smell, and approximately 70% of antihyperlipidemic medications are described as causing taste or smell disturbances¹ – yet another reason to recommend discontinuing lipid-lowering medications when patients enter hospice (in addition to being non-essential and of minimal clinical benefit at end-of-life). There are a variety of ways in which cardiac medications cause taste disturbances. ACE-inhibitors typically do so by altering taste receptor function, and of the ACE-inhibitors, captopril (Capoten[®]) has the highest incidence (up to 9%), including causing sweet, salty, and metallic tastes as well as decreased taste. Enalapril (Vasotec[®]) has an incidence of up to a 5%, and lisinopril (Prinivil, Zestril[®]) and fosinopril (Monopril[®]) are also associated with taste disturbances. The calcium channel blocker nifedipine (Procardia[®]) has the highest incidence of taste disturbances in its class due to altered taste receptor function (up to 9%), with various reported effects (including decreased taste, sweet taste, salty altered taste, and metallic altered taste).

Drug-induced Taste Disturbances

Amlodipine (Norvasc[®]) has also been implicated in causing altered taste by similar mechanisms. Amiodarone (Cordarone[®]) can change taste sensation by inducing hypothyroidism and/or by catecholamine effects. Clonidine causes dry mouth in over 10% of patients, although its precise mechanism for doing so is unknown. Diltiazem (Cardizem[®]) has been reported to cause decreased, altered, and/or no taste by altering taste receptor function, while doxazosin (Cardura[®]) can cause dry mouth and/or altered taste via catecholamine effects. Isosorbide mononitrate (Monoket[®]) is sometimes associated with a bitter taste, likely due to altered taste receptor function.²

Antimicrobial medications frequently cause taste disturbances. It is thought that this may be due to their wide distribution in the body (which is typically by design, so they can reach the infected areas) and their subsequent frequent detection in saliva and other bodily secretions. They also typically have a long half-life, and may accumulate in the body with repeated dosing.³ As with many other drug categories, the specific effects that antimicrobials can have on taste and the mechanisms by which they occur can vary. Cephalexin (Keflex[®]) can cause altered taste by inhibiting the turnover of taste receptor cells, and ampicillin (Omnipen[®]) can decrease taste sensation. Clarithromycin (Biaxin[®]) can produce a decreased or metallic taste sensation due to its effects on taste bud cells. Metronidazole (Flagyl[®]) has a 12% incidence of causing metallic or decreased taste, and does so by changing taste receptor function and/or the development of glossitis.² In one study, sulfamethoxazole (an ingredient in Bactrim[®] and Septra[®]) was found to decrease some tastes (bitter) while increasing others (sucrose intensity and hot sensation).³

Gastrointestinal and urinary tract medications: Several medications in these categories affect taste by causing dry mouth due to their anticholinergic effects, including ondansetron (Zofran[®]), tolterodine (Detrol[®]), and oxybutynin (Ditropan[®], which has an incidence over 10%). Omeprazole (Prilosec[®]) also causes dry mouth, but the specific mechanism is unknown. Other medications cause taste alterations by direct effects on taste receptor function, including famotidine (Pepcid[®]) and promethazine (Phenergan[®]). Chlorhexidine (Peridex[®]) is reported to commonly produce salty or altered taste sensations.²

Antineoplastic agents have very high incidences of causing decreased or no taste because they cause the death of rapidly dividing taste bud cells; these medications include doxorubicin (Adriamycin), cyclophosphamide (Cytoxan[®], Neosar[®]), and carboplatin (Paraplatin[®]). Cisplatin (Platinol[®]) has an incidence of up to 77% for decreased or no taste, and it also passes into saliva and causes a bitter taste.² It is typically recommended to discontinue antineoplastic agents when patients enter hospice, unless they are being used for palliation of symptoms that preferred agents cannot manage.

Antiretroviral medications: Protease inhibitors such as indinavir (Crixivan[®]), ritonavir (Norvir[®], also in Kaletra[®]), saquinavir (Invirase[®]), and nelfinavir (Viracept[®]) are used to treat HIV and have been found to cause significant taste disturbances. Medication compliance with protease inhibitor regimens is very important, as non-compliance can contribute to development of viral resistance. However, in one study, 18% of patients stopped taking their protease inhibitor because of the taste alterations they experienced. In another study, 38% of HIV patients reported that their medications tasted bad, and 21% reported that their medications interfered with their sense of taste. Protease inhibitors have been found to have an unpleasant taste of their own, predominantly described as bitter but also described as metallic, astringent, and burning; they also have a more general effect on patients' taste perceptions by decreasing the intensities of some tastes while increasing others.⁴ Antiretroviral medications are not palliative in nature, and should typically be discontinued when a patient can no longer adhere to the regimen or when the late stages of the disease have been reached.

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Drug-induced Taste Disturbances *(continued from page 3)*

Other medications sometimes used in hospice

The antihistamines loratadine (Claritin®) and cetirizine (Zyrtec®) can cause dry mouth due to their anticholinergic effects, both with an incidence of over 10%. The anticonvulsant topiramate (Topamax®) has an estimated 3-15% incidence of altered taste, 1-5% incidence of dry mouth, and 1-2% incidence of loss of taste. The antidiabetic medication glipizide (Glucotrol®) is reported to cause "severe" taste disturbances in 1% of patients, while metformin (Glucophage®) causes less severe taste alterations in 1-5% of patients. The sleep aid Zolpidem (Ambien®) causes altered taste sensation in less than 1% of patients by altering taste receptor function, while Lunesta® (eszopiclone) causes altered or metallic tastes in up to 40% of patients. Dicyclomine (Bentyl®) frequently causes dry mouth due to its anticholinergic effects (over 10% incidence), but can also cause absence of taste by an unknown mechanism. The anti-Parkinson's medication levodopa (an ingredient in Sinemet® and Stalevo®) can cause decreased or bitter taste, as well as dry mouth. Hyoscyamine (Levsin®) can affect taste sensations by causing dry mouth, and has also been described as causing an absence of taste sensation. Ipratropium (Atrovent®, also in Duoneb®) can cause taste disturbances by causing dry mouth due to its anticholinergic effects (over 10% incidence).²

Conclusion

It is clear that many medications can adversely affect taste perception in different ways and to varying degrees, and our hospice patients may be taking several of these medications and possibly experiencing additive effects. Many factors present at end-of-life can contribute to loss of appetite and decreased oral intake; however, it is important to consider that a patient's medications may also be contributing to taste disturbances. This problem is yet another reason to discontinue non-essential medications and to use the lowest effective doses whenever possible; if a non-drug solution is available to manage a patient's symptom, it should be used first-line because all medications have potential side effects. Also, perhaps knowing that a change in taste sensation and resulting loss of appetite may be due to a medication side effect and is not "all in my head" may help ease a patient's anxiety about the situation and enable them to deal with the situation more effectively.

References:

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