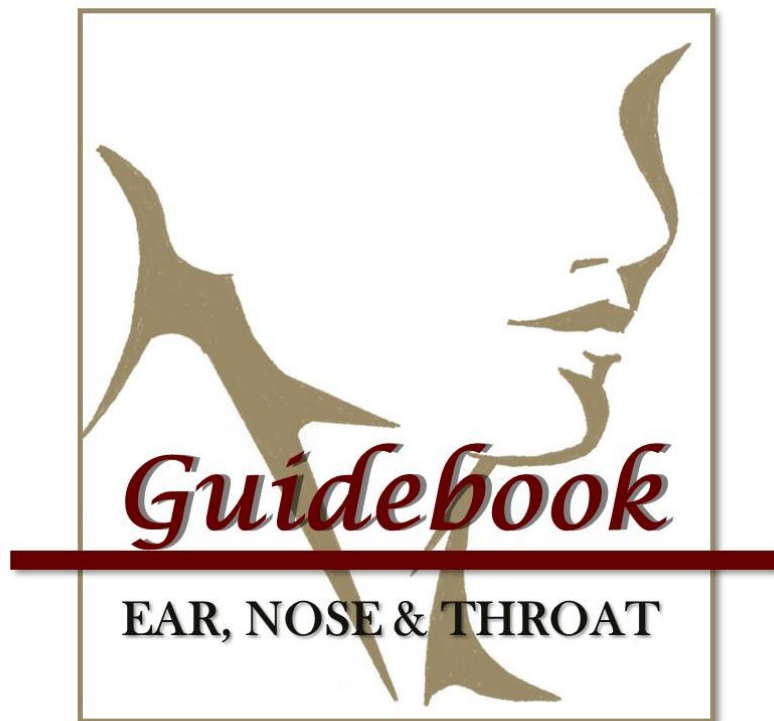


# Ear, Nose & Throat Informational Guide



© Randall S. Fong, M.D.  
2023

This guidebook is for the purpose of supplying you with general information. The information in this website is not, nor is it intended to be, medical advice and is not a substitute for any medical treatment or recommendations from your doctor or medical professional. You should consult your physician or medical provider for advice regarding your individual medical needs.

## **Table of Contents**

### **Introduction**

#### **Ears**

Ear Cleaning

Ear Infection: Otitis Externa (“Swimmer’s Ear”)

Ear Ringing (Tinnitus)

Hearing Loss: When to Seek Evaluation and Testing

Dizziness: General Vestibular Exercises

Dizziness: Benign Positional Vertigo

Dizziness: Meniere’s Disease

Eustachian Tube Measures to Prevent Ear Problems during Travel, Air-flights

#### **Nose**

Nasal Saline and Nasal Irrigation

Nasal Sprays

Nasal Irrigation with Antibiotic (Mupirocin) Solution

Nasal Irrigation with Steroid Solution (Budesonide)

Nose Bleeds (Epistaxis)

Rhinitis Medicamentosa

Olfactory Training for Loss of Smell

#### **Throat, Mouth and Larynx (voice box)**

Mouth (oral) Sores, Stomatitis, Dry Mouth

Throat and Postnasal Phlegm and Mucous

Gastroesophageal Acid Reflux Disease (GERD)

Tonsil Stones

#### **Head and Neck**

Sialoadenitis (swollen salivary glands)

Temporal Mandibular Joint (TMJ)

#### **Miscellaneous**

Over-The-Counter (OTC) Medications

Pediatric OTC Medications.

## **Introduction**

This guidebook contains educational information and instructions for the treatment of a variety of ear, nose and throat (ENT) disorders. These originated as written handouts given to patients during their clinic appointments. Many people find written instructions invaluable, since the amount of information professed to them during a doctor's appointment can be overwhelming and confusing, if not downright intimidating.

Keep in mind however, these are merely guidelines for more common, uncomplicated ENT problems, and not meant to substitute or replace the care and treatment rendered by a medical professional. As, use common sense, don't do any of the remedies if they are uncomfortable or painful or are not effective in alleviating your particular problem, and seek medical attention if your problem persists.

You may also find additional information on a variety of ENT topics at my blog site, which is regularly updated, at [randallfong.blogspot.com](http://randallfong.blogspot.com) or at the website *randallfong.com*.

### **Ear Cleaning: How should you clean your ears?**

First of all, do not use cotton swabs (Q-tips) or any other instrument inside your ears. This can cause more problems by traumatizing the ear or push the wax further towards the ear drum, making subsequent removal more difficult.

One of the simplest methods is via a gentle irrigation. You can create a 1:1 mix of white vinegar (which is also known as acetic acid) and isopropyl (rubbing) alcohol and keep it in a clean container or dropper bottle. Apply this into the ear with a dropper—do not use an object such as a cotton swab—and fill the canal with this solution. If you don't have a dropper, use a cotton ball saturated in the solution and use it as a make-shift dropper by squeezing it into the ear. Massage the solution into the ear by compressing the tragus—the flap of skin and cartilage that lies in front of the entrance into the ear canal. This allows the solution to mix around to clean the ear. Alternatively, you can use a small syringe to gently irrigate the ear.

Caution: make sure the solution is close to body temperature. Otherwise if too cold, you could experience a caloric effect which can cause vertigo or dizziness which can be a highly unpleasant experience.

People have irrigated their ears with warm water or rinsed the ear under the shower. This is an acceptable method, but avoid drying the ear with a cotton swab. If you feel water trapped in the ear, use the solution above just isopropyl alcohol by itself. Alcohol evaporates at a lower temperature than water, and since it easily mixes with water it helps to remove water and effectively dry the ear. It is paramount to remove any excess water, for this too can cause otitis externa or “swimmer’s ear.”

Another method is the use of hydrogen peroxide. This is helpful for firm or very dry ear wax. If you are to use this method, fill the ear canal with the peroxide and allow it to effervesce for about 15 minutes. The by-product of hydrogen peroxide is water, and thus you need to remove the water by the methods just explained above.

For dry, itchy ears: You may place a drop or two of baby oil in the ears once a day as needed for ear itching with a dropper bottle or use a cotton ball as a make-shift dropper—soak it with the oil and squeeze a drop or two into the ear. This helps relubricate the ear canals in patients with dry ears.

DO NOT USE Q-tips or other instruments into your ears.

Also you can check out the following link on the blog site for more details:  
<https://randallfong.blogspot.com/2019/05/ear-cleaning-dos-and-donts.html>

## Otitis Externa (“Swimmer’s Ear”)

*Otitis externa* (OE) is a painful condition that involves the outer ear, namely the tissues lateral to (outside of) the tympanic membrane (ear drum). By contrast, *Otitis Media* is an infection localized behind the ear drum, in the space known as the *middle ear*. In both otitis externa and otitis media, the tympanic membrane also can become infected or inflamed but less often in otitis externa. OE is often very painful. Moisture or water in the ear serves as a milieu for bacteria to thrive: hence the term *Swimmer’s Ear*. The skin of the canal and the outer ear becomes inflamed and swollen. Oftentimes the ear drains fluid and/or pus.

OE can occur after traumatizing the ear, such as scratching it with something like a Q-Tip or other ear-cleaning device, which is a reason to avoid these. Sometimes impacted ear wax can cause OE especially if it traps water behind the impaction or if the wax is dry and the skin of the ear canal.

### The signs and symptoms of otitis externa:

1. Ear pain, often quite severe.
2. Swelling of the ear canal and sometimes of the auricle itself (the outer most part of the ear). Swelling can also extend on the backside of the ear.
3. Ear drainage is sometimes noted.
4. Decreased hearing if canal is swollen nearly shut.
5. Pain and swelling in front of the ear, at the area of the *temporal mandibular joint* (TMJ), leading to:
6. Difficulty chewing or opening and closing the mouth, or malocclusion, where the teeth do not meet correctly, due to a shift in the mandible (lower jaw).
7. Enlarged lymph nodes around the ear or in the upper neck.

### Treatment:

1. Keep the ear completely dry. Avoid water in the ear. This can be accomplished by a cotton ball placed in the ear and then a layer of Vaseline over the outer part of the cotton ball during bathing or showering. Also, avoid swimming or hot tubs (steam and moisture from the latter could enter the ear and aggravate the infection).
2. Topical antibiotic ear drops, often combined with a steroid (e.g., Cortisporin, Ciprodex). The antibiotic goes directly onto the target to kill bacteria and the steroid helps to reduce inflammation and swelling to hasten resolution of the infection.
3. Oral antibiotics are often not needed, unless there are swollen lymph nodes or *cellulitis* (infection of soft tissues such as skin) outside the ear.
4. If ear canal swelling is more severe, an expandable wick can be placed directly into the ear canal. This is a compressed sponge that when activated by fluid, expands to about 5x its original size. This sponge pushes away the tissue swelling and allows the medicine to get deeper onto the target tissues. Since the sponge holds the ear drops, it allows for a continuous contact of the medication to the infected tissue. Warning: placement of the wick can hurt like heck, but the pain eventually subsides once the sponge softens with the drops. Once the swelling resolves, the wick might fall out on its own, but often the doctor needs to remove it, usually around a week later.

### Preventative treatment

1. Keep the ears dry, with methods as above

2. Avoid any foreign objects in the ear such as cotton swabs (Q-tips), bobby pins or other ear picking/cleaning instruments now and in the future, FOREVER.
3. If needing to clean the ears or if you notice a hint of any ear pain, you can use this home-made ear solution:

Mix white vinegar with rubbing alcohol (isopropyl alcohol) 50:50. Place this in a dropper bottle that can be purchased at a pharmacy. Fill the ear canal gently with the solution, massage it in by pushing on the tragus (the flap of skin and cartilage over the canal) and then let the solution run out of the ear. For those who are prone to "swimmers ear", use this in each ear after swimming or bathing. If you cannot find a dropper bottle, then store the solution in a clean container. A makeshift dropper can be made with a small cotton ball: soak a cotton ball with the solution and squeeze the cotton ball to allow the drops to enter into the ear canal.

## **Tinnitus or “Ear Ringing”: Causes and Remedies**

Tinnitus is a sound generated by your inner ear. The quality and intensity of the sound often varies amongst people with this problem. The tinnitus is described in a variety of ways: a persistent ringing; a hiss like air leaking from a tire; like the sound of overhead power lines; like “crickets” or “cicada”; like the ocean sound of a seashell held up to the ear; or for those old enough to remember the cathode-ray television sets, the “ssssss” noise when the television station went off the air. The intensity or loudness also varies from very light and barely noticeable to very loud as happens with me, particularly if I concentrate on it. For some the tinnitus comes and goes; for others, it is constant, like mine. Most tinnitus is a level, persistent noise, though at times can be louder or have a change in pitch for no rhyme or reason.

### **What causes tinnitus?**

Tinnitus occurs when those tiny receptor cell in your inner ear (the *cochlea*) decline in function or there is a problem with nerve that connects the cochlea to the brain. These *hair cells* normally convert sound into electrical energy that is transmitted along the cochlear nerve to your brain; this is how we hear. However, as the cells decline or die off (often as a natural process as we age) the neuron connected to that hair cell may continue sending electrical signals to the brain for reasons not completely understood. This is perceived as tinnitus. Also if the neuron itself is not properly functioning or is damaged, it can still create a neural impulse and send it to the brain. This also creates tinnitus. And when both ears are involved equally, it often feels the noise is generated right there inside your head.

A common cause of a decline of cochlear function is a natural process of aging (called *presbycusis*). Another common cause is a past insult to the ear such as noise exposure (sudden loud noise or long-term exposure to noise). Your doctor can check for other, less common causes, and determine the proper treatment depending on what is found (ie, such as an ear infection, ear wax, side effects of medications, etc).

### **Treatments, remedies**

Barring any unusual or serious findings, the cause of tinnitus is often benign. Unfortunately, there is not a cure per se, and some patients find this disappointing. However, there are some remedies that may help. Again, these won't resolve the tinnitus completely, but should help reduce its intensity and loudness and allow you to adapt to it, such that it becomes less of an annoyance.

Avoid loud noise or use maximal hearing protection when potentially exposed to excessive noise. When shooting firearms, I advocate double hearing protection with ear plugs (preferably custom-fitted plugs) AND ear muffs that cover the ears completely. For hunting, I recommend electronic ear muffs which allows the hunter to hear environmental sounds but activates immediately to attenuate sound when the gun is fired. Also, caution with those earbuds used for music, especially in young kids. Long-term use can cause noise-induced hearing loss and subsequently tinnitus.

Avoid medications that can affect the cochlea, such as aspirin (i.e., dose higher than an 81mg baby-size or regular-sized 325mg once a day dose) and too much NSAID use (i.e., ibuprofen, naproxen). If you're using NSAIDS multiple times a day on a chronic basis, you should see your doctor to see what ails you as there might be other effective therapies to keep you off long-term NSAID use, which has potential adverse side-effects.

Avoid too much caffeine. We live in a highly-caffeinated society. Kids are drinking energy drinks and sweet, super-sized coffee drinks loaded with caffeine. Generally, one or two (8 ounce cups) is O.K. Tinnitus might not resolve with caffeine cessation, but higher doses can make it worse (I've suffered the same when overloading on the coffee at work).

Masking techniques: *Masking* is a technique where a competing noise is created to counteract the tinnitus. Many people with tinnitus already experience masking during the day: the ambient noise of their environment during their routine day at work or school is a natural masker for tinnitus. Some people need masking at bedtime given the lack of ambient noise, which is the time tinnitus can be most distracting. Masking devices create a phenomenon called *residual inhibition*. For instance, you can play an FM radio between stations to create the constant "sssss" sound. Play it for about 15-20 minutes or go to sleep with it. After you turn it off, you may notice a reduction in the level of your tinnitus. Other techniques are to run a fan or play environment CDs or cellphone apps to play sounds found in nature, such as ocean waves or falling rain. The sounds of the natural world have an odd way not only of masking tinnitus, but in calming our minds and lowering levels of anxiety and depression.

*Lipoflavonoids* might also help, which are over-the-counter supplements made to reduce tinnitus. These can be found in pharmacies (i.e., Walgreens, CVS). These non-prescription tablets are derived from flavonoids, naturally occurring phytochemicals found in almost all plant foods thought to have protective effects on the cardiovascular and neurologic systems. Early studies using lipoflavonoids for Meniere's disease (a condition of vertigo, hearing loss and tinnitus) found that many people reported improvement in their Meniere's symptoms. Lipoflavonoids were then suggested for tinnitus in general, though there is not convincing research showing an obvious beneficial effect. I have many patients who swear by lipoflavonoids, experiencing a marked improvement and in some cases complete resolution of their tinnitus. However, this is anecdotal and not scientific proof of its usefulness. I typically tell patients wanting to try lipoflavonoids that the results are "hit-or-miss"--they might or might not notice an improvement.

*Hearing aids* can help but again will not resolve the problem entirely. For those with hearing loss who could benefit from aids, the amplification itself can mask the tinnitus, making it less noticeable. A *tinnitus masker* also can be programmed into the hearing aid device if needed. Sometimes those patients with tinnitus but normal hearing, a masking device in the form of a hearing aid often is helpful.

Stress-relief often helps a great deal. Relaxation techniques, meditation (though be careful not to perseverate on your tinnitus in those quiet moments). Many find exercise very helpful either be actually reducing the tinnitus or distracting attention from to where it is not bothersome.



Likewise, leading a productive life and engaging with family and friends is one of the best therapies, keeping your mind off your tinnitus and onto more important matters.

More details can be found at the Blog Site: [randallfong.blogspot.com/tinnitus causes and tx](http://randallfong.blogspot.com/tinnitus-causes-and-tx)

## Vestibular Exercise Program To Overcome Dizziness

Aims of the exercises:

1. To loosen up the muscles of the neck and shoulder, to overcome the protective muscular spasm and tendency to move "in one place."
2. To train the movement of the eyes, independent of the head.
3. To practice balancing in everyday situations with special attention to developing the use of the eyes and the muscle senses.
4. To practice head movements that cause dizziness, and thus gradually overcome the disability.
5. To become accustomed to moving about naturally in daylight and in the dark.
6. To encourage the restoration of self-confidence and easy spontaneous movement.

All exercises are started in exaggerated slow time and gradually progress to more rapid time. The rate of progression from the bed to sitting and then to standing exercises depends upon the dizziness in each individual case.

### A. SITTING POSITION -- Without arm rests.

1. Eye exercises -- at first slow, then quickly.
  - a. Up and down.
  - b. Side to Side.
  - c. Repeat a and b, focusing on finger at arm's length.
2. Head exercises--head movements at first slow, then quickly.
3. Shrug shoulders and rotate, 20 times.
4. Bend forward and pick up objects from the ground, 20 times.
5. Rotate head and shoulders slowly, then fast, 20 times.
6. Rotate head, shoulder, and trunk with eyes open, then closed, 20 times.

### B. STANDING:

7. Repeat Number 1.
8. Repeat Number 2.
9. Repeat Number 5.
10. Change from a sitting to standing position, with eyes open, then shut.
11. Throw ball from hand to hand (above eye level).
12. Throw ball from hand to hand under knees.
13. Change from sitting to standing and turn around in between.
14. Repeat Number 6.

### C. WALKING:

15. Walk across room with eyes open, then closed, 10 times.
16. Walk up and down slope with eyes open, then closed, 10 times
17. Do any games involving stooping, or stretching and aiming, such as bowling, shuffleboard, etc.
18. Stand on one foot with eyes open, then closed.
19. Walk with one foot in front of the other with eyes open, then closed.

## **Benign Paroxysmal Positional Vertigo (BPPV): Treatments**

BPPV is a result of tiny “crystals” (otoconia) that are dislodged from one part of the inner ear (the utricle) and fall into one of the semi-circular canals of the inner ear. This results in an abnormal signal sent by nerves from the inner ear to the brain when the head moves up and down or from onto one side. This causes the sensation of spinning known as *vertigo*. Fortunately, there are treatments for this.

### **The Epley Maneuver**

This maneuver helps to reposition the dislodged otoconia. It's usually done by a doctor or physical therapist, but one can also do this at home on a bed. This is done for the involved ear (the ear where dizziness occurs when lying on that side). Let's assume we are treating right-sided BPPV (i.e., dizziness occurs when lying on the right ear).

1. Start by lying on your back with affected ear down (head turned to the right) and head slightly hanging (neck extended) off the edge of the bed (providing there is no underlying neck problems, otherwise don't bend the neck), namely lying down on the right side. Vertigo will occur, let it pass, and keep that position for 1-2 minutes.
2. Turn the head slowly toward the opposite left side and keep that position. This helps to move the otoconia (out of the semi-circular canal and back into the utricle where it belongs).
3. Roll the body onto the left side until lying on the left shoulder.
4. Keeping the head turned to the left side, the patient is then brought up into a sitting position.
5. Afterwards, do not to bend over, lie flat and try not to move the head for the rest of the day. Sleep in upright position for 48 hours, and do not lie on the affected (right) side during that time.

Of course, if the left ear is the affected side, then the above exercises are done with the opposite ear.

### **Brandt-Daroff Treatment**

This is a habituation exercise that requires one to repeatedly lie on the effected side, provoking the nystagmus and vertigo.

1. Again start with the Dix-Hallpike maneuver, lying on the affected side and keep that position until the vertigo stops and keeps that position for another 30 seconds.
2. Sit up and you'll like notice a “reversal” vertigo. Wait for this to stop.
3. Lie back down on the affected side again, wait until 30 seconds after vertigo stops, then sit back up. If no vertigo is noted with the ear down, keep the position for 30 seconds before sitting up.
4. This is repeated 10-20 times, three times a day until there is no vertigo for 2 days in a roll.

This type of treatment relies on the phenomenon of *central compensation* (where the brain and central nervous system compensates and adapts for the problem in the inner ear) and thus may take days to several weeks for full resolution.

The majority of patients have complete resolution with either of these methods. Occasionally, one might have a relapse long after, but doing the treatments again allow remission from this problem.

For more information with illustrations, check out the blog site at [randallfong.blogspot.com/2021/02/dizziness-benign-paroxysmal-positional](http://randallfong.blogspot.com/2021/02/dizziness-benign-paroxysmal-positional)

### Meniere's Disease

Meniere's disease is a mysterious, sometimes frightening disease which plagues millions of people. The cause of Meniere's is unknown.

There is a liquid which naturally flows through the chambers and canals of the inner ears, and bathes the nerve endings designated for balance. This fluid moves as the head and body moves. These nerve endings form the vestibular nerve which then sends a message from these inner ear fluid chambers to the brain, informing it of the latest position of the body. The eyes, muscles and joints also send additional positional messages to the brain. The brain interprets these messages, and then sends out instructions to the body so that it can adjust and balance itself.

If the volume of liquid in the chambers and canals increases, the fluid pressure also increases, sending an incorrect message to the brain. The fluid normally drains into the endolymphatic sac located in the mastoid bone. In Meniere's disease, increased fluid pressure causes the *symptoms* of this disease, which are: sometimes violent vertigo (spinning or movement sensation), nausea, vomiting, hearing loss, tinnitus (ear ringing), ear stuffiness or ear fullness.

*Meclizine* can alleviate and shorten the effects of the acute episode, but this should be used sparingly given side effects of sedation. There are other medications (i.e., *ondansetron*, *phenergan*) which can help control nausea and vomiting. Diuretics are used to reduce the inner ear fluid and often prescribed to prevent or reduce the episodes. Antihistamines are sometimes used as there might be an allergy component to this. To reduce the inner ear fluid, it is important to **decrease salt in the diet**; sodium intake should not exceed 2,000mg per day. Many patients find it helpful to record daily sodium intake in a diary, since one can easily surpass 2,000mg. Also eliminate or reduce caffeine and alcohol intake, and do not smoke. Stress relief can also help. When medication fails to control the disease, surgery might be indicated. Candidates for surgery would be referred to an otology subspecialist.

### **Hearing Loss: When to Seek Evaluation and Testing**

Many patients begin to have hearing loss as they become older. This often is a natural process of aging called *presbycusis*.

Hearing loss can increase problems with communication ability and hearing others during conversation. In some instances, loss of hearing can create safety issues, such as inability to hear warning signs such as sirens, alarms or other people trying to get your attention in potential dangerous situations. There is also a growing body of evidence linking hearing loss and dementia. Hearing loss can either lead to dementia or add to its progression; this is due to due to impaired auditory sensory perception and difficulty processing what is heard. Hearing loss also can lead to social isolation, which ideally should be avoided. Improving hearing via hearing aids (or surgery, if indicated) can prevent onset of dementia, or slow or halt its progression.

We recommend anyone over the age of 55 yrs of age to have an audiogram done, which is a specialized test to check your ability to hear. This is typically done by an audiologist who specializes in hearing health issues. This can be done here in our office, but you are free to seek this through any other facility that provides this service.

### **Eustachian Tube Measures to Prevent Ear Problems during Travel, Airflights**

You may do a Toynbee maneuver, especially when descending or ascending during an airflight or travel by car. This is accomplished by squeezing the nostrils closed with your fingers and blowing your nose against this, to force air into the back of your nose, through the eustachian tubes and into the middle ears to equalize the pressure. You can do this several times to help clear the ears. However, don't do this too forcefully to the point of discomfort.

Chew gum, especially when descending or ascending, also can help. This stimulates swallowing which helps open the eustachian tube. Stop the gum-chewing when no longer travelling or flying; i.e., don't make a habit of chewing gum frequently which can lead to jaw pain and TMJ (temporal mandibular joint) problems.

Oxymetazalone nasal spray (i.e., Afrin spray): Use 1-2 sprays each side of the nose about 10-15 minutes before taking-off for an air-flight or driving through higher altitudes. This should decongest (shrink) the tissues around the eustachian tubes. The effects should last for 12 hours. Do NOT use for more than three days in a row; otherwise you may experience prevent rebound nasal congestion/stuffiness.

### **Nasal Saline and Nasal Irrigation**

Saline (salt) solution is a natural product that is similar to what your nose normally produces. Many people benefit from the use of saline, either as a gentle spray or a more forceful irrigation.

Items you will need:

1. A bulb syringe (like you would use for a baby's nose) or an irrigation bottle.
2. Salt.
3. Baking Soda.

To prepare the solution to irrigate your nose, you will need to boil water for 10 minutes, which will kill all the bacteria. Then add 1/4 teaspoon of salt and 1/4 teaspoon of baking soda for each 8 ounces of water. Alternatively, you may use bottled distilled water (often sold in one gallon bottles). This may be done before boiling, but the lid should be on the pan so the concentration stays fairly close.

If using boiled water, the water should then be cooled to body temperature. This would be a comfortable temperature when tested on your wrist similar to how you would test a baby's

bottle on your wrist for the temperature of the liquid in the bottle.

To prepare the solution to irrigate your nose, you will need to boil water for 10 minutes, which will kill all the bacteria. If you have a clean tap water source or bottled water, then boiling is not necessary. Then add 1/4 teaspoon of salt and 1/4 teaspoon of baking soda for each 8 ounces of water. This may be done before boiling, but the lid should be on the pan so the concentration stays fairly close.

The water should then be cooled to body temperature. This would be a comfortable temperature when tested on your wrist similar to how you would test a baby's bottle on your wrist for the temperature of the liquid in the bottle.

You may store this solution in the refrigerator in a container that is essentially sterile. The container may be "sterilized" by running it through the dishwasher. Your water should be set as hot as it can be set. (If you have small children around the house, you will need to lower the temperature so the child cannot become burned during bath time). If the solution is stored in the refrigerator, you may warm it in the microwave to a comfortable temperature. To sterile the bulb syringe, you may fill it with water and boil-it for 10 minutes. The syringe should be cleaned daily.

You can use saline solution to spray into the nose, drip into the nose or as a rinse or irrigation.

To irrigate or rinse your nose, lean over a sink, close your soft palate by making a "K" sound without actually making the noise; and this will close the soft palate so the



solution will not run into your mouth. Irrigate each side until you get a clear return, or one to two bulbs full of solution per side (2-4 ounces). Didn't worry if the solution does not run from one side to the other; if it comes out of the same side your irrigated, that is O.K.

Alternative: you may use a NeilMed Sinus Rinse Kit that can be purchased here or at your local store, and irrigate as per the above instructions. The kit typically comes with an 8 ounce (240 ml) bottle.

**NASAL SPRAYS**  
**TYPES AND INSTRUCTIONS ON USE**

Following are directions for the use on a variety of nasal sprays. Each has specific indications and use them as directed. Please note how these medications affect you so that we can chart any adverse effects or allergic reactions.

The purpose of the following sprays is to open the nose and improve nasal breathing.

**Nasal Steroids:**

Fluticasone (brands are Flonase, Allerflo (Kirkland-Costco): Ages 4-11 years old: 1 spray each nostril once a day

Ages 12 years and older: 2 sprays each nostril once a day

Triamcinolone (brand is Nasacort): Ages 2-11 years old: 1 spray each nostril once a day

Ages 12 years and older: 2 sprays each nostril once a day

Mometasone (brand is Nasonex): Ages 2-11 years old: 1 spray each nostril once a day

Ages 12 years and older: 2 sprays each nostril once a day

**NOTE (for any of the above sprays):** Use the spray for at least two weeks consecutively; it will not work right away. May decrease to one spray a day afterwards if it is still helpful in keeping the nose open. If you are able to use one spray a day, you may then try using it every other day.

**Other types of nasal sprays:**

Azelastine (Asteline): 1-2 sprays each nostril 1-2 times a day as needed for runny nose, nasal stuffiness, postnasal drainage.

Azelastine and nasal steroid spray (ie, Flonase or Nasacort): 1 spray of Azelastine in each nostril, followed by one spray of your nasal steroid into each nostril. Do this 2 times a day.

Ipratropium (Atrovent): 1-2 sprays affected nostril, 1-3 times a day as needed for runny nose, postnasal drainage.

**NOTE:** To best deliver the spray, use the opposite hand to spray the opposite side of the nose (i.e., right hand for the left nose, left hand for the right), pointing the nozzle laterally towards the outer side of the nose (i.e., aim it to the outer corner of the eye). You want to avoid spraying it onto the septum (the partition or wall in the middle of the nose).

Some of the side effects of the nasal sprays include nasal dryness, nose bleeds, sore throat, headaches. To prevent these, use the following:

Nasal saline (ie, different brands are Ocean, Ayr, Neil Med bottle, Neti pot): Saline solution is a natural product that is similar to what your nose normally produces. Use 1-2 sprays each nostril 3 or more times a day to rinse and moisturize the nasal passages. This can be purchased over the counter. (NOTE: if having a CT or MRI of the head or sinuses, do not use saline the day prior and the day of the procedure; fluid may trap in the sinuses giving a false positive finding).

Nasal gel (ie, Ocean, Ayr): apply pea-size amount twice a day to nose on both sides with clean finger or qtip. This can be purchased over the counter.

### **Nasal Rinse with An Antibiotic Solution (Mupirocin)**

This treatment is often useful for nasal or sinus infections, particularly in those who have had prior sinus surgery. This method allows the antibiotic to directly contact the nasal and sinus mucosa that is infected, thereby preventing the use of an oral antibiotic that must circulate through your entire system to get to the targeted tissues.

Items you will need:

1. 8 ounce bottle of **Neil Med** solution. This essentially is saline solution (a salt solution that is similar to your body's natural secretions). You can find this in most stores or pharmacies. Make sure you use a clean water source. You may boil the water as below, or purchase a large bottle of distilled water.
2. Instead of the above, you can make your own solution and use a baby bulb syringe for irrigation. See the instructions, *Nasal Saline and Nasal Irrigation*.
2. Bactroban (mupirocin 2%) ointment, one tube (usually 15 grams per tube). This requires a prescription which your doctor will provide.

Alternatively, if you want to make your own saline solution, following are the items you will need:

1. A bulb syringe (like you would use for a baby's nose) or a Neil Med bottle
2. Salt.
3. Baking Soda.
4. One 15 gram tube of Bactroban (mupirocin 2%) ointment

To prepare the solution to irrigate your nose, you will need to boil water for 10 minutes, which will kill all the bacteria. Then add 1/4 teaspoon of salt and 1/4 teaspoon of baking soda for each 8 ounces of water. This may be done before boiling, but the lid should be on the pan so the concentration stays fairly close. The water should then be cooled to body temperature. This would be a comfortable temperature when tested on your wrist similar to how you would test a baby's bottle on your wrist for the temperature of the liquid in the bottle.

You may store this solution in the refrigerator in a container that is essentially sterile. The container may be "sterilized" by running it through the dishwasher. Your water should be set as hot as it can be set. (If you have small children around the house, you will need to lower the temperature so the child cannot become burned during bath time). If the solution is stored in the refrigerator, you may warm it in the microwave to a comfortable temperature. To sterile the bulb syringe, you may fill it with water and boil-it for 10 minutes. The syringe should be cleaned daily.

Mix 5 grams (1/3 of a 15 gram tube) of Bactroban to 8 ounces of the saline solution as prepared above. Or you may add this to 8 ounces of Neil Med saline solution.

First irrigate your nose with saline without the Bactroban to cleanse your nose. How to irrigate your nose: Lean over a sink, close your soft palate. To do this, you can attempt to make a K sound without actually making the noise, and this will close the soft palate so the solution will not run into your mouth.

Afterwards, gently irrigate your nose on each side, three times a day with about 30 ml (one ounce) on each side with this Bactroban solution. Usually you will need to do this for 7-10 days.



801 Welch Road  
Stanford, CA 94305

STANFORD UNIVERSITY SCHOOL OF MEDICINE  
DEPARTMENT OF OTOLARYNGOLOGY-HEAD & NECK SURGERY

Adult Clinic (650) 723-5281  
Clinic Fax (650) 725-6685

## Budesonide (Pulmicort) + Saline Irrigation/Rinse

Peter Hwang, MD

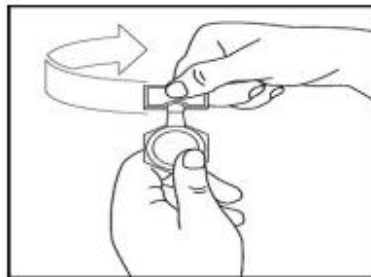
Jayakar Nayak, MD, PhD

Jane Wang, RN, MSN, FNP

Budesonide (Pulmicort) is an anti-inflammatory steroid medication used to decrease nasal and sinus inflammation. It is dispensed in liquid form in a vial. Although it is manufactured for use with a nebulizer, we intend for you to use it with the NeilMed Sinus Rinse bottle (preferred) or a Neti pot.

### Instructions:

1. Make 240cc of saline in the NeilMed bottle using the salt packets or your own saline recipe (see separate handout).
2. Add the entire 2cc vial of liquid Budesonide (Pulmicort) to the rinse bottle and mix together.
3. While in the shower or over the sink, tilt your head forward to a comfortable level. Put the tip of the sinus rinse bottle in your nostril and aim it towards the crown or top of your head. Gently squeeze the bottle to flush out your nose. The fluid will circulate in and out of your sinus cavities, coming back out from either nostril or through your mouth. Try not to swallow large quantities and spit it out instead.
4. Perform Budesonide (Pulmicort) + Saline irrigations 2 times daily.



Budesonide (Pulmicort) vial to be twist opened before emptying into Neilmed Sinus Rinse bottle or a Neti pot.



### **Nose Bleeds (epistaxis)**

First blow your nose to remove any retained blood clots; this often can slow or even stop the bleeding. Then pinch the nose firmly (the soft part of the nose above both nostrils) for at least 15-20 minutes. This often applies pressure to the bleeding sites. Keep your head elevated up; do not lean forward.

If bleeding continues, then you may use either of the over-the-counter (OTC) nasal sprays below, which helps to constrict nasal vessels and often helps with bleeding:

- Oxymetazalone nasal spray (ie, Afrin spray): 1-2 sprays each nostril twice a day for three days, then discontinue. Helps to open a stuffy nose or prevent nosebleeds. Stop after three days to prevent rebound nasal stuffiness.
- Neosynephrine nasal spray: 1-2 sprays each nostril each nostril 3-4 times a day for three days, then discontinue. Helps to open a stuffy nose or prevent nosebleeds. Stop after three days to prevent rebound nasal stuffiness.
- You may also apply the nasal sprays to a cotton ball and place it into the side of the nose that is bleeding.

Also use nasal saline spray on a regular basis. Nasal dryness often precipitates nosebleeds:

- Saline (ie, Ocean, Ayr, or Neil Med bottle): 1-2 sprays each nostril 3 or more times a day. This can be purchased over the counter.
- Nasal gel (ie, Ocean, Ayr): use this in addition to a saline spray to provide longer-acting moisture to the nose. Apply pea-size amount twice a day to nose on both sides with clean finger or qtip. This can be purchased over the counter.

Afterwards, avoid nose blowing and any heavy lifting and no bending at the waist for at least one week. Sneeze with mouth wide open. If you are taking aspirin or an NSAID (ie, ibuprofen), stop these unless you are required to take them for a medical or heart condition.

If despite these measures the bleeding still continues, then seek additional help at your nearest emergency room; they will have better means at their disposal to treat this problem, sometimes requiring an ENT specialist.

### **Rhinitis Medicamentosa**

Rhinitis medicamentosa is a condition resulting from chronic over-the-counter nasal decongestant spray use. It is caused by rebound congestion and engorgement of the nasal mucosa after the effects of the nasal spray have worn off. This results in recurrent nasal stuffiness and obstruction which often times is worse than the original insult that caused the nasal stuffiness and congestion. The key to treating this problem is to wean off the nasal decongestant spray completely.

The following is a treatment plan to slowly wean off the nasal spray. It consists of diluting your nasal spray with saline solution as follows:

1. Mix 3/4 nasal spray and 1/4 saline and use this for 1 week.
2. Mix 1/2 nasal spray and 1/2 saline and use this for the second week.
3. Mix 1/4 nasal spray and 3/4 saline and use this for the third week.
4. After this, completely discontinue the nasal spray use.

One simple method to accomplish the dilutions is to use the nasal decongestant spray until it is 1/4 empty, then fill the rest with saline. Use this 1/4 diluted spray until it is 1/4 empty and fill it again with saline (this will create a mix of 1/2 nasal decongestant and 1/2 saline). Do this again for the last dilution.

Saline can be found over-the-counter at most stores and pharmacies. Brand names include *Ocean Spray*, *Ayr* or a *Neil Med* kit that comes with a bottle and packets of powder that you mix with clean water.

You will likely also be placed on a nasal steroid spray and to use this as directed on a daily basis. You are to use this while you are using the diluted nasal decongestant spray as instructed above. The effects of the nasal steroids, however, take approximately 1 to 2 weeks before you realize a benefit and, therefore, you should use this daily until instructed to do otherwise by your physician. Your physician may also place you on steroid pills to take by mouth and this will also help in relieving the congestion while you are being weaned off your nasal spray. Be sure to use these pills as instructed. Side effects with the steroid pills include upset stomach or mood changes and if these are bothersome, please call your physician.



### **Olfactory Training (to help improve sense of smell)**

Prolonged loss of smell can occur after certain viral infections such as the flu or COVID infection. There are adequate medical therapies to address this, but olfactory training can be of benefit to improve one's sense of smell (and subsequently sense of taste, since these two senses go hand in hand). Some studies have shown 21-26% of patients had a significant improvement after three months of this form treatment.

#### Instructions:

Purchase substance with strong scents such as essential oils with spice or fruit extracts with strong odor.

Sniff in at least four different scent types:

1. Flora (such as rose, lavender)
2. Citrus (i.e., lemon, orange)
3. Spice (such as clove, peppermint, rosemary)
4. Fresh or effervescent scents (i.e., eucalyptus)

Smell each for about twenty seconds, twice a day for three months.

**Instructions to improve mouth soreness, mouth dryness, recurrent aphthous ulcers and stomatitis**

1. Drink plenty of fluids, but avoid too much caffeine
2. Massage the salivary gland to improve saliva flow, can do this every 1-2 hours while awake with firm pressure, rubbing from front to back to move saliva out of the gland. Once improved, you should then do this three times a day or more to prevent recurrence of blockage.
3. If mouth is dry methods to improve saliva production include: sour candy (or sour sugarless candy if you are diabetic) 3-4 times a day, such as Lemon Drops or Skittles or Gummy Worms. Or add some lemon to your drinking water. But avoid these measures if it worsens mouth discomfort.
4. Warm compress the gland three times a day if noticing gland swelling.
5. Change your tooth paste to a different type, such as Arm and Hammer baking soda and peroxide. Or brush using baking soda (sodium bicarbonate) and hydrogen peroxide instead of tooth paste.
6. Biotene lozenges, spray or gum may help improve moisture and reduce mouth soreness. These can be purchased over-the-counter.
7. Mylanta or Maalox, one teaspoon swish and spit up to three times a day for mouth soreness or mouth sores.
8. Add a probiotic to your diet or yogurt (with live lactobacillus cultures, typically found in most yogurts).
9. *Mouth Kote*: an over-the-counter oral moisturizing spray for dry mouth; can be purchased online.

Drainage, mucous and phlegm, from postnasal (back of nose) or throat.

Secretion and mucous formation are normal functions of the tissues of your nose and throat. These secretions also are produced from the lining tissue of the trachea, bronchi (tiny tubes leading to your lungs) and your entire gut. Drainage from the back of the nose down the throat is also normal, but most of us are not conscious of this occurring. Reduced saliva (saliva production can decrease as we age) the tissues become drier and mucous thicker. There is no way to cure this completely but following are ways that could help reduce the viscosity (thickness) of the mucous.

1. The nose is responsible for properly humidifying air before it enters the throat, trachea and lungs. If it becomes dry, everything after it can get dry, leading to increased mucous thickness and “phlegm.”

Use **nasal saline** products to improve nasal moisture. (ie, different brands are Ocean, Ayr, Neil Med bottle, Neti pot): Saline solution is a natural product that is similar to what your nose normally produces. Use 1-2 sprays each nostril 3 or more times a day to rinse and moisturize the nasal passages. This can be purchased over the counter. (NOTE: if having a CT or MRI of the head or sinuses, do not use saline the day prior and the day of the procedure; fluid may trap in the sinuses giving a false positive finding).

Also use **nasal gel** (i.e., Ocean, Ayr): apply pea-size amount twice a day to nose on both sides with clean finger or q-tip. This can be purchased over the counter.

2. Increase water intake. Stay well-hydrated. Avoid too much caffeinated drinks (such as sodas, teas, coffees) since these can act as a diuretic and cause your body to loose water.

3. Reduce salt. Ideally, sodium intake should be nor more that 2,000 mg (milligrams) per day. Check the nutrition labels on the foods you eat and don’t add extra salt to your meals.

4. Reduce fatty foods. Especially in red meats such as beef and pork and fried foods. The fat can increase mucous thickness

5. Trial of dairy avoidance for at least two weeks. Eliminate all dairy products made by cows (i.e., milk, cheese, ice cream, yogurt, etc). It is believed some of the mild proteins can increase mucous viscosity, even later in life.

6. Also tarter or more acidic foods (i.e., citrus fruits, sour candy) may help improve saliva production.

7. Use a **humidifier** at bedside. This helps moisturize the nasal, mouth and throat tissues (and especially helpful for those who sleep with their mouth open, which bypasses the normal moisturizing process of the nose).

8. Honey might help. There have been some studies showing the benefit of honey. Try one teaspoon (5ml) in at least 8 ounces of water or light tea (but overdo it on the caffeine as per Instruction no. 2).

9. You may use of **guaifenesin** (i.e., Mucinex) up to twice a day, but at least 8 ounces of water. This helps to loosen the mucous. Avoid guaifenesin or mucinex with other medications (ie, avoid Mucinex-D, or Mucinex-DM).

### **Gastroesophageal Reflux Disease (GERD)**

Gastroesophageal reflux disease (GERD) occurs when stomach acid washes upwards into the esophagus. Classic symptoms of GERD include heartburn and/or a sensation of stomach acid coming up towards the throat, sometimes causing a sour taste. Not everyone has these classic symptoms though. In the ENT profession, GERD is manifested by an irritation in the larynx (voice box) and the part of the throat near and around the larynx. Symptoms may present as a foreign body sensation in the throat, hoarseness upon waking up in the morning, as a chronic dry-type cough, throat clearing or may be totally asymptomatic and be noted as an ulcer or redness in the larynx when the physician examines it. Known irritants that exacerbate this condition are: 1) alcoholic beverages; 2) caffeine; 3) chocolate; 4) spicy foods; 5) stress.

#### **RECOMMENDATIONS:**

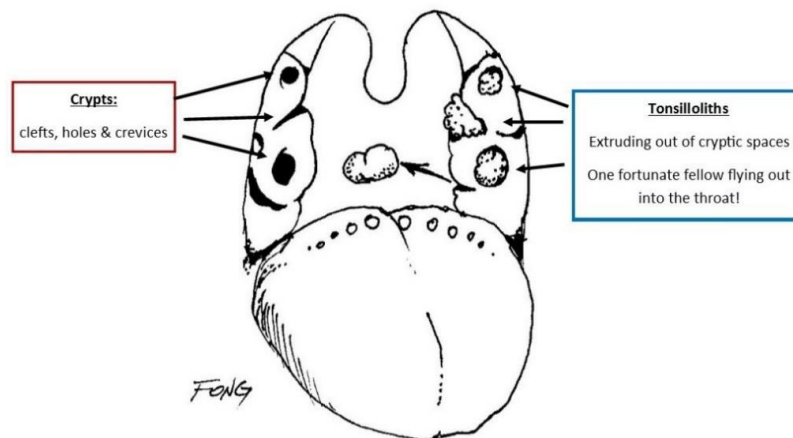
1. Elevate the head of the bed so that it is slanted thirty degrees. This can easily be done by placing 2 x 4 blocks -or a couple of books -under the legs of the headboard. Lying on a pillow will flex the neck, but this will not be helpful. The stomach needs to be lower than the throat.
2. Limiting the intake of food or liquids prior to retiring will decrease the chance of stomach acid washing back up into the esophagus and into the throat. Thus, don't eat or drink two to three hours before going to bed.
3. Taking Tums or antacids before going to bed will be helpful. Your doctor may also recommend an over the counter medication such as omeprazole (Prilosec) OTC. If so, take one per day before meals for at least 30 days. If a stronger medication is needed, a prescription will be provided.
4. If there is an ulceration or a lesion that does not heal, then a direct laryngoscopy and biopsy under anesthesia in the operating room may be indicated to rule out other causes of the ulceration or lesion.
5. If this problem continues and the measures mentioned above are not helpful, then it may be necessary to refer you to a gastroenterologist for further evaluation and treatment, including an upper endoscopy to check the entire esophagus and stomach.

## Tonsil Stones (Tonsilloliths)

### What are tonsil stones and how they form

The mucosal epithelium (the lining tissue of the mouth and throat) naturally sloughs off, but in some people this sloughed epithelium traps into a tonsillar *crypt*—a space or crevice or hole within the tonsil.

These crypts are natural features of the tonsil. This trapped epithelium can further accumulate, building upon itself much like an oyster builds a pearl, and then becomes colonized with bacteria typically found in the mouth. This imparts the foul odor and taste. And voila! A tonsillolith is created.



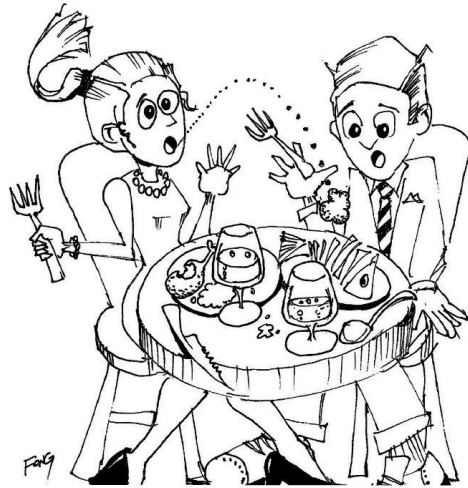
This typically is a benign condition especially if there is no underlying tonsil infection and the tonsil does not look odd or suspicious for something like a tumor.

### Treatment

1. Daily warm salt water gargles even when not noticing the tonsil stones—this cleanses the tonsils and may prevent stone formation in the first place.
2. You can also use a Water-Pik to cleanse the tonsils daily which would blast the crypts and get them really cleaned.

If there has been no significant throat pain or recurrent tonsillitis with these, a tonsillectomy is not needed unless this condition worsens in the future, causing infections or throat pain, difficulty swallowing or if it significantly impacts your quality of life.

I try to dissuade patients from surgery such as a tonsillectomy otherwise; mainly with adults, postop pain can be quite severe (often the worse pain you could experience) lasting for at least a week after surgery.



*Coughing up a tonsil stone on a date*

**Instructions to prevent recurrent infections of the salivary gland (sialoadenitis)**

1. Drink plenty of fluids. Caffeinated beverages do not count, since these act as a diuretic, causing you to lose more fluid. Increase water intake, or use an electrolyte drink such as Gatoraid.
2. Massage the gland every 1-2 hours while awake with firm pressure, pushing and rubbing from front to back to move saliva out of the gland. Once improved, you should then do this three times a day or more to prevent recurrence of blockage.
3. Sour candy (or sour sugarless candy if you are diabetic) 3-4 times a day, such as Lemon Drops or Skittles. Adding lemon to your drinks also helps, or drinking very tart juices such as cranberry juice, with plenty of water.
4. Warm compress the gland three times a day.
5. Anti-inflammatory medication such as ibuprofen (i.e., Motrin, Advil) or naproxen (i.e., Aleve) as needed for pain or discomfort. Alternatively, you may take these daily for 1-2 weeks to alleviate any inflammation within the gland. Don't take these if you have had problems with these in the past or if you have stomach ulcers or bleeding problems or are on blood thinners.

These measures often help to reduce or prevent the recurrences of sialoadenitis. Items #1, 2 and 3 should be done daily, even when not having the pain or discomfort.



### **Temporal Mandibular Joint (TMJ) Instructions**

The TMJ is located just in front of your ear. It includes a the ball-and-socket joint where your jaw attaches to your skull. There is also an intervening disc that allows for smooth movement of your jaw when talking or eating. However, this site can become irritated and inflamed, leading to ear pain or ear fullness or a sense of ear pressure, ringing in the ear, jaw pain and headaches. Following are methods to help with TMJ inflammation :

1. Soft diet for two weeks. Avoid too much chewing. Avoid firm chewy food (i.e., raw vegetables, rare or chewy meat). Avoid opening the mouth wide (ie, avoid large food items such as thick sandwiches, large firm fruits such as apples, pears, etc)
2. No gum chewing
3. Avoid tensing the jaws or grinding the teeth. Avoid “popping the ear by manipulating (opening and closing, or repeatedly "yawning") the jaw; this is actually causing TMJ popping and not clearing the eustachian tubes, and thus may be trading one problem for another. This can lead to ear fullness, sometimes ear pain, sometimes distorted hearing.
4. Warm compress to the TMJ area just in front of the ear.
5. Massage the TMJ area (area just in front of the ear).
6. Anti-inflammatory medication such as ibuprofen (i.e., Motrin, Advil) or naproxen (i.e., Aleve) as needed for pain or discomfort (if these medications are not contraindicated for you). Alternatively, you may take these daily for 1-2 weeks to alleviate any inflammation around the TMJ.
7. Make an appointment with you DENTIST to check for any wear-facets on your teeth. If problems are noticed, then he or she may need to create a mouth appliance to cover your teeth to prevent teeth grinding. This also helps to alleviate problems with the TMJ and prevent future dental problems as well.

### **Over-The-Counter (OTC) Medication Instructions**

One or more of the following medications are often recommended for the purposes listed. Use them as directed. Please note how these medications affect you so that we can chart any adverse effects or allergic reactions.

Guaifenesin (i.e., Mucinex): 1 tablet twice a day as needed, with at least 8 ounces of water. Helps to thin mucous and secretions.

Loratadine (Claritin), Cetirizine (Zyrtec) or Fexofenadine (Allegra): for allergy symptoms of runny nose, sneezing, eye itching.

Neosynephrine nasal spray: 1-2 sprays each nostril each nostril 3-4 times a day for three days, then discontinue. Helps to open a stuffy nose or prevent nosebleeds. Stop after three days to prevent rebound nasal stuffiness.

Oxymetazalone nasal spray (i.e., Afrin spray): 1-2 sprays each nostril twice a day for three days, then discontinue. Helps to open a stuffy nose or prevent nosebleeds. Stop after three days to prevent rebound nasal stuffiness. Or can use this prior to an air-flight or driving through higher altitudes to keep ears clear.

Low dose Oxymetazalone (i.e., Afrin) spray: can be used daily at bedtime to help with nasal stuffiness. One spray each nostril at bedtime, but not more often. Used for patients on nasal CPAP or who have nasal stuffiness when sleeping or lying down.

Nasal saline (ie, different brands are Ocean, Ayr, Neil Med bottle, Neti pot): Saline solution is a natural product that is similar to what your nose normally produces. Use 1-2 sprays each nostril 3 or more times a day to rinse and moisturize the nasal passages. This can be purchased over the counter. . (NOTE: if having a CT or MRI of the head or sinuses, do not use saline the day prior and the day of the procedure; fluid may trap in the sinuses giving a false positive finding).

Nasal gel (i.e., Ocean, Ayr): apply pea-size amount twice a day to nose on both sides with clean finger. This can be purchased over the counter.

Ponaris nasal emolient: 2-3 drops each side of nose three times a day as needed for nasal dryness, or chronic thick nasal mucous.

Medications for reflux (acid coming up from stomach), heartburn, stomach upset: Omeprazole OTC (brand is Prilosec OTC), famotidine (Pepcid)

**Over the counter medications: with Pediatric Doses**

Below are instructions for medications that do not need a prescription and can be purchased over the counter.

**PAIN MEDICATIONS (dosing based on body weight)**

Acetaminophin (Tylenol):

Dose for children: 10mg per kilogram (kg) every 4-6 hours (or 5mg per pound).

Comes in elixir (liquid) of 160mg/5ml.

Ibuprofen (Motrin, Advil)

Dose for children: 10mg/kg per 6-8 hours (or 5mg per pound).

Comes in elixir (liquid) of 20mg/ml or 40mg/ml.

**MUCOUS THINNER, EXPECTORANT** (used to thin mucous and secretions from nose, throat and chest).

Guaifenesin (Robitussin, Mucinex)

Dose for children (2-3 years old): 50-100mg every 4 hours as needed for thick mucous, cough, with plenty of water.

Comes in elixir (liquid) usually of 100mg/5ml. (½ to one TEASPOON every 4 hrs as needed)

**ANTI-HISTAMINES** (Used for runny nose, sneezing, itching)

Loratadine (Claritin)

Comes in 1mg/ml liquid, or 10mg ODT (oral disintegrating tablet)

Dose for children:

2-6 yrs old: 5mg (5ml or one teaspoon) once a day

Older than 6 years: 10mg (two teaspoons) once a day, or one ODT per day.

Cetirizine (Zyrtec)

Comes in 1mg/ml liquid.

Dose for children:

2-5 years old: 2.5mg (2.5ml or ½ teaspoon) per day

6-11 years old: 5mg (5ml or one teaspoon) per day

12 and older: 5 to 10mg (5ml to 10ml or 1-2 teaspoons) per day.

Diphenhydramine (Benadryl)

Comes in 12.5mg/5ml liquid or 25mg and 50mg tablets. Caution: can cause drowsiness and sleepiness.

Dose for children:

2-5 years old: 6.25mg (2.5ml of the liquid form) every 4-6 hours as needed; 37.5mg maximum per day.

6-11 years old: 12.5-25mg (5-10ml of the liquid form) every 4-6 hours as needed; 150mg maximum per day.

12 and older: 25-50mg (10-20ml of the liquid form) every 4-6 hours as needed; 300mg maximum per day..

DECONGESTANTS (Used for nasal congestion/stuffiness)

Pseudoephedrine (Sudafed).

Comes in 15mg/5ml or 30mg/5ml liquid

Dose for children:

2-5 years old: 15mg every 4-6 hours as needed.

6-11 years old: 30mg every 4-6 hours as needed.

12 and older: 60mg every 4-6 hours as needed.

Caution: use sparingly since decongestants can have a stimulant effect, raise heart rate and blood pressure, and can cause insomnia and over-activity.

NASAL SPRAYS

Saline (ie, Ocean, Ayr, Neil Med saline kit, Neti Pot): 1-2 sprays each nostril 2-3 or more times a day, or if using an irrigation device, gently squirt some of the solution into each nostril. Saline solution is a natural product that is similar to what your nose normally produces. This can be purchased over the counter.

Nasal gel (ie, Ocean, Ayr): apply pea-size amount twice a day to nose on both sides with clean finger. This can be purchased over the counter.