

Patient Education

Treatment and Prevention for COVID-19 or Sinusitis with Oral and Nasal Solution Preparations

Peter McCullough, MD, MPH, FACC, FAHA, FASN, FNKF, FNLA, FCRSA
Claire Price Rogers, MSPAS, PA-C

If you feel you are coming down with a sinus or throat infection and are without antibiotics, a simple mouthwash/gargle solution and nasal spray can be easily prepared at home. The following preparations act as both a preventative as well as a treatment. The main ingredient is 10% povidone-iodine (e.g. Betadine) which is a potent anti-microbial product effective against a wide range of infections including bacterial, viral, and fungal organisms. In clinical trials, a povidone-iodine (PVP-I) solution as dilute as **0.23%** has been shown to be 99.99% effective as an antiviral treatment (in vitro) in just 30 seconds. The dilute PVP-I strengths commonly utilized range from 0.23%-0.6%. [1]
<https://www.americaoutloud.com/dilute-povidone-iodine-nasal-oral-washes-for-the-prevention-and-treatment-of-covid-19/>

Note: Rare allergic reactions have been reported with use of povidone-iodine (PVP-I). PVP-I should not be used in patients undergoing radioactive iodine treatment, pregnant patients, and those with thyroid dysfunction. [1]

PVP-I Product preparation:

Make the following two solutions with 10% povidone-iodine which will be used for both the oral rinse and nasal flush. Our solutions call for 1.5 oz of water, the approximate volume held by a shot glass.

A) 0.5% Dilute Solution

- 1.5 oz tap/bottled water
- 1/2 tsp of 10% **povidone-iodine**
- pinch of salt

B) 0.01% Very Dilute Solution

- 1.5 oz tap/bottled water
- 2 drops of 10% **povidone-iodine**
- pinch of salt



PVP-I treatment to eliminate an established COVID/sinusitis x 1 week:	
6 AM	with 0.5% <i>dilute</i> PVP-I flush nose, sniff back, and spit out; gargle x 30 seconds. Take Allegra D.
Noon	with 0.01% <i>very dilute</i> PVP-I flush nose and gargle.
6 PM	with 0.01% <i>very dilute</i> PVP-I flush nose and gargle.
Midnight	with 0.01% <i>very dilute</i> PVP-I flush nose and gargle. Take Mucinex-DM.

PVP-I daily regimen for COVID/sinusitis prevention :	
6 AM	with 0.01% <i>very dilute</i> PVP-I flush nose, sniff back, and spit out; gargle x 30 seconds.
6 PM	with 0.01% <i>very dilute</i> PVP-I flush nose and gargle.

Performing the nasal flush: You may use a bulb syringe (a) or a nasal mister/spray bottle (b) as shown below. To utilize the bulb syringe: bend over the sink, squirt the dilute povidone-iodine solution into each side of your nose one nostril at a time (while aiming for the back of your head rather than the top of your head), sniff back into back of throat, and spit out. Follow the schedule outlined in the charts above.



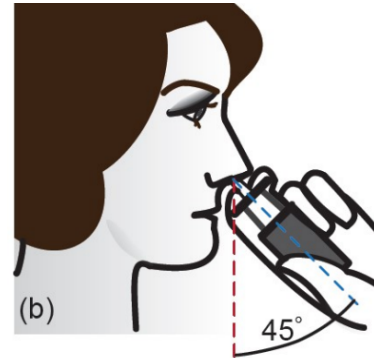
Source for bulb syringes:
https://www.amazon.com/Medline-Sterile-Bulb-Ear-Syringe/dp/B00PB9KSB6/ref=sr_1_3?crid=35F8PW9MSIQFW&keywords=2+oz+bulb+syringe&qid=1640926887&s=hpc&sprefix=2+oz+bulb+syringe%2Chpc%2C67&sr=1-3



Source for nasal mister/spray bottles:
https://www.amazon.com/dp/B01M5K4DTU/ref=cm_sw_r_oth_apip_Dre8Bndgjmqa

You may find that it is more convenient to use a nasal mister/spray bottle, particularly while traveling. Typically these bottles dispense about 0.15 ml which is the equivalent of about 3 drops from an eye dropper. Choudhury [3] has shown that 5 drops from an eye dropper in each nostril is the adequate volume to treat an infection. Therefore, we recommend 2 pumps in each nostril of a 0.5% dilute solution as part of the treatment plan for an established infection as well as for prevention measures.

Follow schedule in charts above on page 1 & 2. To allow the most effective delivery of antiseptic nasal spray, it is important to orient the bottle at an approximate 45 degree angle. (see diagram) [2]



Alternatives to Povidone-iodine:

If you are pregnant, allergic to iodine, have thyroid dysfunction, or are undergoing radioactive iodine treatments, other options include dilute hydrogen peroxide (HP) as a gargle and nasal spray or sodium hypochlorite (NaHCl) solution to substitute as an oral rinse/gargle only. NaHCl solutions have safely been used for a century in dentistry due to their highly effective antimicrobial effects as an oral rinse.

HP Product Preparations:

Make the following two dilute HP solutions with 3% hydrogen peroxide. The 1% HP is to be used as an oral rinse and gargle. Some patients are unable to use the 1% solution in the nasal cavity due to stinging/burning. To improve tolerability, our recommendation is to dilute the HP even further to 0.3% for all nasal applications. Additionally, saline nasal irrigation reduces inflammation through a variety of mechanisms which can be particularly beneficial during a viral respiratory infection. [7]

A. 1% Hydrogen Peroxide Oral Rinse:

- 1 oz tap or bottled water
- 3 tsp 3% hydrogen peroxide
- pinch of salt

B. 0.3% Hydrogen Peroxide Nasal Solution:

- 1.5 oz tap or bottled water
- 3/4 tsp 3% hydrogen peroxide
- pinch of salt

C. Isotonic Saline for Nasal Flushing:

- 2.5 oz tap or bottled water
- 1/8 tsp salt

HP treatment to eliminate an <u>established</u> COVID/sinusitis x 1 week:	
6 AM	with 0.3% dilute HP flush nose and blow out; gargle with 1% HP x 30 seconds. Take Allegra D.
Noon	flush nose with isotonic saline and gargle with 1% dilute HP x 30 seconds and spit out.
6 PM	flush nose with isotonic saline and gargle with 1% dilute HP x 30 seconds and spit out.
Midnight	flush nose with isotonic saline and gargle with 1% dilute HP x 30 second and spit out. Take Mucinex-DM.

Daily regimen for COVID/sinusitis <u>prevention</u> :	
Once daily	flush nose with 0.3% HP and blow out; gargle with 1% dilute HP x 30 seconds and spit out.

D. Mouthwash Preparation 0.05% Sodium hypochlorite (NaHCl) Solution:

- 1.5 oz tap or bottled water
- 1/8 tsp of household bleach

Directions: to make the sodium hypochlorite solution, combine household bleach and water. Rinse mouth and gargle with 3 tsp of solution twice daily for 15-30 seconds and spit out. [4] *Take caution to avoid eye and nose area with bleach solution; preparation is only to be used as a mouthwash.*

Nebulizing with dilute Hydrogen Peroxide (HP) solution:

Nebulizing is a process where a small machine converts medication in liquid form into a mist in order to inhale the product through the nasal passages, throat, and lungs. This therapy can be utilized for both prevention as well as treatment for viral illnesses. The volume of medication held in the chambers vary in size depending on the unit, typically between 1-2 tsp (5-10 mL). When diluting the HP, you will want to purchase normal saline which is readily available at many retailers such as Walmart.

You can purchase a variety of nebulizers online. The tabletop versions are a little larger yet more durable, with the hand-held version being smaller and more convenient.



Tabletop: https://www.amazon.com/Portable-Handheld-Machine-Adults-Daily/dp/B08SL3KZFC/ref=sr_1_40?keywords=tabletop+nebulizer&qid=1638735628&sr=8-40



Handheld: https://www.amazon.com/Portable-Nebuliser-Handheld-Nebulizador-Breathing/dp/B0881M5H1L/ref=sr_1_30?keywords=tabletop+nebulizer&qid=1638735694&sr=8-30

Nebulizing Instructions:

When nebulizing dilute 0.3% hydrogen peroxide, you should experience complete comfort with use. To prepare this solution, mix 9 drops of 3% HP with 1 tsp of saline. You should not experience any burning or discomfort when using this solution.

*For greater therapeutic effect, add 1 drop of Lugol's iodine. [5]

Prevention/post-exposure: 2-3 minutes of nebulization 2 or 3 times daily is adequate. However, you will need to nebulize longer when utilizing a more dilute solution.

Treatment for symptomatic individuals: 10-15 minutes sessions should be utilized 3-4 times daily or until experience improvement in symptoms. Continue this process until you are 24-48 hours post-symptom resolution to prevent relapse.

- [1] Arefin, MK. "Povidone Iodine (PVP-I) Oro-Nasal Spray: An Effective Shield for COVID-19 Protection for Health Care Worker (HCW), for all." *Indian J Otolaryngol Head Neck Surg*. 2021;1-6. doi:10.1007/s12070-021-02525-9
- [2] Basu et al. "Evaluation of patient experience for a computationally-guided intranasal spray protocol to augment therapeutic penetration." <https://www.medrxiv.org/content/10.1101/2021.08.31.21262495v1.full.pdf>. Accessed 3 Dec 2021.
- [3] Choudhury et al. 2021, "Effect of 1% Povidone Iodine Mouthwash/Gargle, Nasal and Eye Drop in COVID-19 patient." *Bioresearch Communications*. Dhaka, Bangladesh, 7(1), pp. 919-923. <https://www.bioresearchcommunications.com/index.php/brc/article/view/176/159>
- [4] De Nardo R, Chiappe V, Gomez M, Romanelli H, Slots J., "Effects of 0.05% Sodium Hypochlorite Oral Rinse on Supra Gingival Biofilm and Gingival Inflammation." *Int Dent J*. 2012 Aug;62(4):208-212. doi: 10.1111/j.1875-595X.2011.00111.x. Epub 2012 May 11. PMID: 23017003.
- [5] Levy, Thomas E 2021, "Hydrogen Peroxide (HP) Nebulization for Respiratory Virus Prevention and Treatment." 6 Oct 2021.
- [6] McCullough, Peter 2021, "Oral and Nasal Virucidal Therapy in Prevention and Treatment of COVID-19." *America Out Loud*. <https://www.americaoutloud.com/oral-and-nasal-virucidal-therapy-in-prevention-and-treatment-of-covid-19/>
- [7] Rabago, D., Zgierski, A. Saline Nasal Irrigation for Upper Respiratory Conditions. *Am Fam Physician*. 2009 Nov 15;80(10):1117-9. PMID:19904896; PMCID: PMC2778074.