Short Communication **Journal of Clinical, Experimental and Cosmetic Dermatology**

Nasal and Oral Decontamination is Vital in Mitigating Spread of COVID-19

Kara Capriotti*

Bryn Mawr Skin and Cancer Institute, Rosemont, USA

The novel Coronavirus Disease 2019 (COVID-19) that first appeared in Wuhan China in late 2019 has spread worldwide. The WHO declared the spread of COVID-19 a global pandemic on March 11th. This has led to drastic changes in the routine practice of medicine. State and local governments have restricted non-urgent patient visits, suspended elective surgical procedures and prohibited all healthcare activities deemed to be non-essential.This has limited the ability to practice in both primary care and specialties. Doctors are working swiftly and in unison to solve the resulting practice management problems, along with building consensus opinions as how to approach unique patient issues using telemedicine, virtual visits and other technology-enabled practices. This is happening not only within specialties but across them as well, with the common goal of treating patients in the safest way possible until office doors can safely reopen. There has been intense discussion in the medical literature describing approaches to accommodate thenew dynamics of patient care in the era of a highly contagious viral pandemic.

Much has been learned about COVID-19 in a short period of time. Transmission occurs by skin-to-skin contact with an infected person, aerosolization of infectious virus particles or by touching contaminated items (fomites: patient care equipment, telephones, TV remote controls, countertops,bedding, etc.). Hand to face transmission is now thought to play a vital role in the spread [1]. This is compounded by the significant risk of nosocomial transmission to non-infected patients already hospitalized, with one study reporting 41% of their patients contracting the infection in this manner [2]. Critical care, for example, represents a high-risk environment for nosocomial transmission of SARS-CoV-2 with procedures such as non-invasive ventilation, intubation and suction causing a bioaerosol that may represent more of a potential inoculum than by community transmission [3]. Attention has been focused on the importance of Personal Protective Equipment (PPE). Masks, face shields, gloves and gownsform the physical line of defense to protect front line workers frombecoming infected in the course of providing patient care [4]. New protocols specific to PPE use by the healthcare workforce active in the fight against COVID-19 are being developed.

Viral loads present in clinical samples have pinpointed reservoirs of infectious virus particle production and peak transmission time of virus. RT-PCR assays have demonstrated high viral loads in respiratory samples (nasal, throat swabs and sputum), along with fecal samples [5]. The upper respiratory tract is specifically susceptible to infection by the by SARS-CoV-2 virus. Like SARS-CoV, it demonstrates specific tropism for the ACE2 receptor. This receptor is abundantly expressed in nasal goblet and ciliated cells indicating that the upper airway may be preferentially infected early in the disease making these cells a potential reservoir for SARS-CoV-2 infection. Because SARS-CoV-2 is an enveloped virus, its release does not require cell lysis. The virus can exploit existing secretory pathways in nasal goblet cells for low-level, continuous-release at the early stage with no overt pathology. These discoveries have clinical implications with respect to targeting nasal epithelial cells, especially nasal goblet cells, beyond the current usage of face masks, providing a clinical option for transmission prevention and/or early-stage intervention [6]. Several front-line workers have already described transmission mitigation protocols that involve not only masks but frequent nasal antisepsis for both patients and providers.

***Corresponding author:** Kara Capriotti, Bryn Mawr Skin and Cancer Institute, Rosemont, USA, E-mail: drcapriotti@brynmawrskinandcancerinstitute.com

Received Date: March 23, 2020

Accepted Date: March 31, 2020

Published Date: April 7, 2020

Citation: Capriotti K (2020) Nasal and Oral Decontamination is Vital in Mitigating Spread of COVID-19. J Clinic Exper Cosme Derma 3: 009.

Another important vector is saliva. In a small case series, live coronavirus was detected in the self-collected saliva of 91.7% (11/12) of patients. Serial saliva viral load monitoring generally showed a declining trend. Saliva is a recently approved non-invasive specimen for diagnosis, monitoring, and infection control in patients with COVID-19 [7]. The presence of viral RNA has also been discovered in the tears. This is a potential hazard to healthcare workers in close contact with the face and specifically the eyes of COVID-19 patients [8]. Ophthalmologists in China were among the first to recognize the emergence of a new SARS-like viral syndrome and have sadly been counted as some of the earliest casualties among medical doctors.

The importance of frequent antiseptic use has been broadly recognized. Most attention is focused on alcohol-based hand sanitizer, and the scarcity of it has led to at-home production. Unconventional producers like distilleries and perfumeries are reorienting their manufacturing lines to meet demand. Non-alcohol based antiseptics are gaining particular interest as nasal and oral decontamination agents.

Aqueous povidone-iodine (PVP-I) products have been popular pre-procedural antiseptics for years because of their resistance-free anti-bacterial, antiviral, anti-fungal and anti-protozoal activity. These properties lend themselves to far greater applications than pre-surgical preps.

The versatility of PVP-I in dermatology has been demonstrated in clinical trials for over a decade in various formulations for numerous indications. The broad anti-microbial coverage and lack of resistance of PVP-I has proven efficacious, safe and well tolerated in treating on-

ychomycosis, verruca vulgaris, molluscum contagiosum, and chemotherapy-associated paronychia [9-15]. As recently as 2015, PVP-I has been shown to be specifically virucidal to coronaviridae on surfaces. Anti-viral studies have shown that PVP-I is effective against SARS-CoV and MERS-CoV, the coronaviridae responsible for previous outbreaks or SARS and MERS [16,17]. It is also extremely effective against biofilms [18].

PVP-I has demonstrated utility against known vectors of transmission for COVID-19. PVP-I has been used safely in the nasal cavity and sinuses to treata variety of conditions. Dilute 0.08% topical PVP-I sinonasal rinsing solution has been used as an ancillary therapy for recalcitrant chronic rhinusitis, significantly reducing endoscopic signs of infection and inflammatory markers without affecting thyroid function, mucociliary clearance or olfaction [19]. PVP-I is currently used as a Methicillin-resistant Staphylococcus aureus (MRSA) reducing preoperative preparation for application to the nasal passages [20,21]. A single application of PVP-I before surgery was shown effective in eliminating nasal Staphylococcusaureus (S. aureus) in over two-thirds of patients [22]. Off-the-shelf PVP-I swabs were not as effective as products specifically designed for products for S. aureusnasal decolonization [23].

For oral decontamination, PVP-I 7% gargle/mouthwash showed rapid bactericidal activity and virucidal efficacy in vitro at a concentration of 0.23%. PVP-I and may provide a protective oropharyngeal hygiene measure for individuals at high risk of exposure to oral and respiratory pathogens. Protocols involving PVP-I gargle could become useful when used carefully at times of highest transmission risk [24]. PVP-I is already produced for use as a 1% w/w mouthwash every 2-4 hours and as a 0.45% w/w 'sore throat spray' [25,26].

Dermatologists have long used mupirocin ointment in the nares to decrease/eradicate MRSA colonization of the nose [27]. At the outbreak of COVID-19, the importance of broadening this approach to include dilute intranasal PVP-I as an adjunctive measure to reduce the aerosolization of infectious COVID-19 virus particles became apparent. When in contact with patients, my office has adopted the practice of applyingdilute PVP-I gel to the nares with large cotton swabs before donning and after doffing masks. This practice has been well tolerated. All healthcare workers should consider employingthe same nasal antisepsis regime in addition to routine mask use just as hand-washing is used with routine glove use. Much like the universal mask policy of "my mask protects you and your mask protects me", regular oral and nasal decontamination strategies could act in a manner similar to hand washing as a method to further reduce the likelihood of viral transmission. We may soon learn that masks are not enough. Nasal antisepsis with appropriate PVP-I formulations in addition to the use of masks may provide the most effective protection yet against transmission of this highly infectious pathogen.

References

1. Centers for Disease Control and Prevention.
2. Wang D, Hu B, Hu C, Zhu F, Liu X, et al. (2020) Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. JAMA323: 1061-1069.
3. Jing G, Jie Li (2020) Expert consensus on preventing nosocomial transmission during respiratory care for critically ill patients infected by 2019 novel coronavirus pneumonia. Respiratory care committee of Chinese Thoracic Society 17: 20-21.
4. Holland M, Zaloga D, Friderici C (2020) COVID-19 Personal Protective Equipment (PPE) for the Emergency Physician. Vis J Emerg Med 100740.
5. Pan Y, Zhang D, Yang P, Poon LLM, Wang Q (2020) Viral load of SARS-CoV-2 in clinical samples. Lancet 20: 411-412.
6. Waradon S, Huangl N, Béc C (2020) SARS-CoV-2 Entry Genes Are Most Highly Expressed in Nasal Goblet and Ciliated Cells within Human Airways. Quantitative Biology Cell Behavior.
7. Kai-Wang K, Tsang O, Yip C (2020) Consistent Detection of 2019 Novel Coronavirus in Saliva. Clin Infect Dis 149.
8. Loon SC, Teoh, SC, Oon LL, Se-Thou SY, Ling AE, et al. (2004) The severe acute respiratory syndrome coronavirus in tears. Br J Ophthalmol 8: 861-863.
9. CapriottiK, CapriottiJA (2015) OnychomycosisTreated With a Dilute Povidoneiodine / Dimethylsulfoxide Preparation. IntMed Case Rep J8: 231-233.
10. CapriottiK, Stewart KP, Pelletier JS, Capriotti J (2016) Treatment of Onychomycosis With Dilute Topical Povidone-Iodine in a Dimethylsulfoxide Solvent System. Jour Clin Res Trial 3: 1-3.
11. Capriotti K, Stewart KP, Pelletier JS, Capriotti J (2015) A Novel 2% Povidone-Iodine Solution for the treatment of Common Warts: A Randomized, Double-Blind, Vehicle-Controlled Trial. DermatolTher 5: 247-252.
12. Capriotti K, Pelletier J, Barone S, Nuckolls C, Capriotti J (2017) Povidone-Iodine as Treatment for Human Papillomavirus. In Human Papillomavirus Infection 1-10.
13. Capriotti K, Stewart K, Pelletier J, Capriotti J (2017) Molluscum Contagiosum Treated with Dilute Povidone-Iodine: A Series of Cases. Jour Clin Aesthet Derm10: 41-45.
14. Capriotti K, Stewart K, Pelletier J, Capriotti J (2017) Chemotherapy-Associated Paronychia Treated with Dilute Povidone-Iodine: A Series of Cases. Cancer Manag Res 9: 225-228.
15. Capriotti K, Anadkat M, Choi J, Kaffenberger B, McLellan B, et al. (2019) A Randomized Phase 2 Trial of the Efficacy and Safety of a Novel Topical Povidone-Iodine Formulation for Cancer Therapy-Associated Paronychia. Invest New Drugs 37:1247-1256.
16. Kariwa H, Fujii N, Takashima I (2006) Inactivation of SARS Coronavirus by means of povidone-iodine, physical conditions and chemical reagents. Dermatology 212: 119–23.
17. Eggers M (2019) Infectious Disease Management and Control with Povidone Iodine. Infec Dis Ther 8: 581-593.
18. Tessema B, Wycherly B, Arumugam S, Capriotti K, Pelletier J, et al. (2018) Efficacy of Dilute Povidone-Iodine Preparations Against Multi-Drug Resistant Biofilms of Staphylococcus aureus, Klebsiellapneumoniae, Pseudomonas aeruginosa and Candida albicans. Paripex-Indian Journal of Research 7: 376-377.
19. Panchmatia R, Payandeh J, Salman R, Kakande, E, Habib AR, et al. (2019) The efficacy of diluted topical povidoneiodine rinses in the management of recalcitrant chronic rhinosinusitis: A prospective cohort study. Eur Arch of Oto-Rhino-Laryng 276: 3373-3381.
20. Profend® Nasal Decolonization Kit, PDI Healthcare.
21. 3M® Skin and Nasal Antiseptic, 3M, Saint Paul, MN.

22. Rezapoor M, Nicholson T, Tabatabaee RM, Chen AF, Maltenfort AG, et al. (2017) Povidone-Iodine Based Solutions for Decolonization of Nasal Staphylococcus aureus: A Randomized, Prospective, Placebo-Controlled Study. J Arthroplasty 32: 2815-2819.

23. Hill RLR, Casewell MW (2000) The in-vitro activity of povidone iodine cream against Staphylococcus aureus and its bioavailability in nasal secretions. J Hosp Infect 45:198-205.

24. Eggers M, Koburger-Janssen T, Eickmann M, Zorn J (2018) In Vitro Bactericidal and Virucidal Efficacy of Povidone-Iodine Gargle/Mouthwash Against Respiratory and Oral Tract Pathogens. Infec Dis Ther 7: 249-59.

25. BETADINE® Gargle & Mouthwash, Mundipharma Pharmaceuticals Pte Ltd, Singapore.

26. BETADINE® Sore Throat Spray, Mundipharma Pharmaceuticals Pte Ltd, Singapore.

27. Hill R, Casewell M (1990) Nasal carriage of MRSA: The role of mupirocin and outlook for resistance. Drugs ExpClin Res 16: 397-402.

Henry Journal of Acupuncture & Traditional Medicine

Henry Journal of Anesthesia & Perioperative Management

Henry Journal of Aquaculture and Technical Development

Henry Journal of Cardiology & Cardiovascular Medicine

Henry Journal of Case Reports & Imaging

Henry Journal of Cell & Molecular Biology

Henry Journal of Tissue Biology & Cytology

Henry Journal of Clinical, Experimental and Cosmetic Dermatology

Henry Journal of Diabetes & Metabolic Syndrome

Henry Journal of Emergency Medicine, Trauma & Surgical Care

Henry Journal of Haematology & Hemotherapy

Henry Journal of Immunology & Immunotherapy

Henry Journal of Nanoscience, Nanomedicine & Nanobiology

Henry Journal of Nutrition & Food Science

Henry Journal of Obesity & Body Weight

Henry Journal of Cellular & Molecular Oncology

Henry Journal of Ophthalmology & Optometry

Henry Journal of Perinatology & Pediatrics

Henry Publishing Groups, 41341 Red Birch Dr, Aldie, VA, 20105, USA
Tel: +1 571-275-4480; E-mail: contact@henrypublishinggroups.org
https://www.henrypublishinggroups.com/