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PAASE Bulletin 18: Use of Povidone-Iodine to reduce transmission of SARS-CoV2 virus

ON PAASE STRATEGIC ACTION GROUP 2: TRIAGE & TREATMENT

Addressed to: COVID-19 IATF, DOH Key Decision-Makers, Senators, Congressmen, Executive and Legislative Branches of the Philippine Government

The use of Povidone-Iodine (PVP-I) is recommended as adjunct to avoiding crowded places, confined and enclosed spaces and close-contact settings; and physical distancing with use of masks / face shields.

Current mitigation methods such as avoiding crowded places, confined and enclosed spaces and close-contact settings, and physical distancing with use of masks / face shields do not reduce viral load in COVID-19-infected patients and are not sufficient to prevent full transmission of the SARS-CoV2 virus. An infected person will continuously and rapidly produce and shed more viruses in spite of these mitigation methods. This is evident in the continuous spread of the virus during the pandemic even under hard lockdown and mask mandates that have been instituted worldwide.

The key towards managing the COVID-19 pandemic spread is to reduce viral load in COVID-19-virus positive patients and asymptomatic close contacts. Reduction of viral load should minimize viral spread from the infected person which should limit severity of the disease as well as transmission to others. Povidone Iodine (PVP-I) represents a safe, cheap and efficacious topical treatment for this purpose. It can also serve as a potential prophylactic for frontline healthcare professionals who are treating COVID-19 patients and are at high-risk of contracting the virus.

The use of PVP-I together with avoiding crowded places, confined and enclosed spaces and close-contact settings, physical distancing and use of masks / face shields can significantly reduce the current transmission rate of COVID-19 especially in light of the highly contagious new variants of COVID-19 from the UK and South Africa, while waiting for the vaccine.

The recommendation is based on the following facts:

(1) Povidone- Iodine (PVP-I) is a water-soluble complex of a safe polymer, called povidone, and molecular iodine (I,2). This unique complex releases 'free iodine', a powerful oxidizing agent that damages the protective envelope or protein shell around a virus or bacterium. PVP-I has been shown to have broad spectrum of activity against a variety

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of viruses and bacteria (1). The mechanism of action of PVP-I is based on direct modification of amino acids and nucleic acids that lead to direct functional inactivation of the pathogen. In studies with influenza virus, PVP-I was shown to modify critical amino acids on viral proteins responsible for viral functions resulting to viral inactivation (2). Moreover, in spite of long-term use, there have been no known cases of bacterial resistance against PVP-I (3).

(2) PVP-I has been used as a standard care for managing viral and bacterial infections in the mouth including sore throats. The compound has a strong history of safety and efficacy and has been recommended by the Australian Commission on Safety and Quality on Healthcare for managing sore throats associated with COVID-19 infection. (4)

(3) In vitro studies show that PVP-I inactivates a wide range of viral and bacterial pathogens by 10,000-fold within 1 minute of treatment including many coronaviruses such as SARS-CoV2 (5,6). The lowest concentration of povidone iodine to be effective in vitro was 0.23%, leading to reduction of viral activity to undetectable levels (6,7).

(4) A recent randomised, controlled clinical trial of 606 COVID-19 patients demonstrated the efficacy of PVP-I as a treatment to significantly reduce viral load in COVID-19 patients and decrease morbidity. The 606 patients were randomised into 2 groups and treated either with PVP-iodine or lukewarm water. After 3 days of 1% PVP-I treatment (gargle, eye drop, nasal rinse), only 11% of the subjects were positive for COVID-19, while the lukewarm water treatment had 96% of patients who remained COVID-19 positive. On the 7th day only 2% of the subjects remained RT-PCR positive for COVID-19 amongst the PVP-I cohort and 70% of the negative control group were still COVID-19 positive. PVP-I treated patients had better survival rates as well as fewer patients required oxygen support compared to the lukewarm water cohort. (8)

(5) PVP-I is not to be used by patients with history of allergy to PVP-I, who have thyroid disease or are on radioactive iodine treatment, known pregnancy and renal failure. Nasal cilia are sensitive to PVP-I but can tolerate concentrations that are less than 2.5% PVP-I. A concentration of 0.5% PVP-I can still inactivate SARS-CoV2 by 4 orders of magnitude.

(6) SARS-CoV2 is highly concentrated in saliva and most likely enters via the mucosa of the nose (as well as eyes and mouth), multiplying in the nasopharynx due to preponderance of cells that highly express ACE2,

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the main receptor for SARS-CoV2 (9). Therefore, an oral gargle and nose rinse with PVP-I are recommended immediately for individuals who test positive for the virus, experience symptoms or are suspected of being exposed to the virus.

(7) Commercial preparations are oral PVP-I 0.45% (Betadine® Sore Throat Spray), PVP-I 1% Oral Solution antiseptic (Betadine® Gargle), and nasal PVP-I 0.5% (Nasodine® Antiseptic Nasal Spray). If commercially-available oral and nasal povidone iodine solutions are not available, the following mode of delivery, dilution and dosing may be instituted (10):

a. Nasal irrigation: 240 mL of 0.4% PVP-I solution (dilution of 10 mL of commercially available 10% aqueous PVP-I in 240 mL of normal saline with a sinus rinse delivery bottle); and
b. Oral/oropharyngeal wash: 10 mL of 0.5% aqueous PVP-I solution (1:20 dilution in sterile or distilled water)

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