USE OF POVIDONE IODINE AS A NASAL AND ORAL ANTISEPTIC TO PREVENT SPREAD OF SARS CoV-2 VIRUS

Virucidal effect of Povidone Iodine Poly Vinyl Pyrrolidone - a water soluble polymer - and Iodine – "PVP-I") is well known and well established. (Bidra et al. 2020)

There is growing evidence and recommendations to use Povidone Iodine for protection of Health Care workers and patients. (Frank et al. 2020) (Mady et al. 2020)

I have attached recommendations from a UK based group (Annex1) and an individual recommendation from US (Annex2) circulated among the Association membership herewith.

Details of the properties, mechanism of action, possible side effects, safe dosage and proposed protocols are elaborated in the attached documents.

Here is an executive summary with the recommendation for the common situation:

Exclusion criteria:

1. Allergy (Povidone Iodine and other constituents)
2. Thyroid Dysfunction, Iodine therapy
3. Pregnancy
4. Renal Failure
5. Dermatitis Herpatiformis

The 0·5% PVP-I solution is administered in a dose of 0·28–0·3 ml into each nostril

9 mL of the 0·5% PVP-I solution is then introduced into the oral cavity and used as a mouthwash. Care is taken to ensure the solution is distributed throughout the oral cavity for 30 seconds and then gently gargled or held at the back of the throat for another 30 seconds before spitting out

"*We acknowledge that the proposal we present extrapolates in vitro finding into the in vivo setting and that assumptions are made that under normal circumstances we would confirm with in vivo data prior to recommendations for use. However, given the strength of in vitro evidence and the low risk, minimal cost and global applicability of the proposed intervention, which amounts to disinfection of the oro/nasal cavities, we feel that there is little to lose and potentially much to gain.*"

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Detailed Suggested Protocol [1]

In the hospital setting, we propose that a 0·5% PVP-I solution (0·55 mg/mL available iodine) be applied to the oral, oropharyngeal and nasopharyngeal mucosa of patients with presumed/confirmed COVID-19 and the healthcare personnel in close contact with this cohort. At these concentrations antiviral activity is still optimal and staining of teeth is minimal and reversible.

Additionally, we propose the same application of PVP-I for a second cohort, that includes all patients having procedures (including examination) in or around the mouth and nose or procedures that transit those areas and the healthcare professional carrying out those procedures. During the current phase (April 2020 onwards) of the COVID-19 outbreak, the second cohort should include all patients, not just those with suspected/confirmed COVID-19 infection. Procedures in the second cohort would include, but not be limited to, dentistry and oral surgery, ENT examination and treatment, endo- tracheal intubation, endoscopy and bronchoscopy.

Exclusion criteria: A history of allergy to PVP-I or its relevant excipients (alkyl phenol ether sulphate (ammonium salt), disodium hydrogen phosphate dodecahydrate), all forms of thyroid disease or current radioactive iodine treatment, lithium therapy, known pregnancy, renal failure and dermatitis herpetiformis. The protocol should not be used in a sustained manner in children, but can be used as a single episode, *e.g.* for dental treatment.

Medicament:

There is currently no commercially available iodine based 'mouthwash' in the UK. Instead, a 10% solution of PVP-I licensed for oral mucosal use is diluted to 1:20 using sterile water to yield a 0·5% w/v solution, which has 0·55 mg/mL available iodine. This is an 'off-label' use of a licensed product, although a single application of diluted (or un-diluted) PVP-I to mucosa for antisepsis may be on licence – check summary of product characteristics.

Pre-administration:

1. Patients must have exclusion criteria checked and to be informed of the benefits and risks of the proposed treatment, with verbal consent taken and documented.

2. Healthcare professions to be offered the administration as a form of PPE, with risks and potential benefits explained and consent gained akin to prior to immunisation (e.g. the 'flu jab'), again after checking exclusion criteria

Method of application:

Step 1 – **for all patients/ healthcare professionals in described groups**: The 0·5% PVP-I solution is administered in a dose of 0·28–0·3 ml into each nostril, preferably using an atomising device (2 sprays for an average device) or if not from a syringe. The contralateral nostril is occluded and the recipient, if conscious, sniffs (with mouth closed) during the atomisation/instillation in order to maximise coverage of the nasal cavity and nasopharynx. This will give a total dose of 0·33 mg of iodine.

Step 2 – **conscious patients and healthcare professionals**: 9 mL of the 0·5% PVP-I solution is then introduced into the oral cavity and used as a mouthwash. Care is taken to ensure the solution is distributed throughout the oral cavity for 30 seconds and then gently gargled or held at the back of the throat for another 30 seconds before spitting out. It is assumed that at most 1 mL of the solution

will be retained (based on self-testing using high-accuracy scales, subtracting salivary production) and absorbed, giving an anticipated maximum total dose of 0·55 mg of iodine. If a nasal pump atomising device is used, 7 sprays are used aimed in different directions and then 'licked' around the inside of the oral cavity, yielding 0·54 mg of iodine (0·14 mL per actuation for most commercially available nasal atomisers at 0·077 mg iodine per actuation).

Step 2 – **unconscious patients**. At the time of routine mouthcare, an oral care sponge swab or similar is soaked in 2 mL of 0·5% PVP-I solution and carefully wiped around all oral mucosal surfaces. Most of this solution will be retained in the mouth/ oropharynx (a small amount remaining in the sponge), giving a maximum total dose of 1·1 mg iodine.

Timing of delivery:

Patients hospitalised for confirmed/ suspected COVID 19 and healthcare workers engaged in their care: Steps 1 & 2 should be undertaken every 6 hours for patients and up to four times per day for healthcare workers (maximal frequency two hourly). For healthcare workers, it is advised that steps 1 & 2 are performed prior to contact with the patient/patients and if repeated contact is occurring, repeated every 2–3 hours, up to 4 times per day. This will give a maximum iodine intake of 3·52 mg for HCW and conscious patients and 5·72 mg for unconscious patients.

Patients attending for dentistry/oral surgery, ENT examination and treatment, endoscopy and bronchoscopy and any other action to be carried out close to or in the mouth or nose: The patient should undergo steps 1 & 2 prior to examination or treatment. Healthcare workers conducting the procedure or in close proximity should perform steps 1 & 2 prior to contact with the patient and if multiple patients are being seen, repeat every 2–3 hours, up to 4 times a day. Dosages are the same as above but are single exposures for patients. (Kirk-Bayley, Sunkaraneni, and Challacombe 2020)

1. The use of Povidone Iodine nasal spray and mouthwash during the current COVID-19 pandemic may reduce cross infection and protect healthcare workers. J Kirk-Bayley MRCP FRCA EDIC FFICM Consultant Intensivist & Anaesthetist, Royal Surrey County Hospital VS Sunkaraneni LLM FRCS (2009) Consultant Rhinologist, Royal Surrey County Hospital SJ Challacombe, PhD, FRCPath, FDSRCS, FMedSci, DSc(h.c), FKC Martin Rushton Professor of Oral Medicine, King's College London May 04, 2020 Draft version, awaiting journal acceptance and full peer review (PRE PUBLICATION)

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