



# SAFETY GUIDELINES FOR NON-SURGICAL FACIAL PROCEDURES DURING COVID-19 OUTBREAK

Bertossi Dario M.D.<sup>1</sup>, Ash Mohsahebi, Ph.D., FRCS<sup>4</sup>, Philippe Dormstrom M.D.<sup>3</sup>, Izolda Heidenrich M.D.<sup>4</sup>, Ali Pirayesh, M.D.<sup>5</sup>, Alwyn D'Souza M.D.<sup>6</sup>, Hesham Saleh, M.D.<sup>7</sup>, Reha Yavuzer M.D.<sup>8</sup>, Nabil Fakh M.D.<sup>9</sup>, Julia Vent M.D.<sup>10</sup>, Egram Rahman, MS, Ph.D.<sup>11</sup>, Krishan Mohan Kapoor, M.S., M.Ch<sup>12</sup>.

<sup>1</sup>Head of Maxillo Facial Plastic Surgery Unit, Department of Surgery, University of Verona, Policlinico G.B. Rossi Piazzale L.A. Scuro 10 Verona Italy; Professor of Practice Centre for Integrated Medical and Translational Research, University of London, UK;

<sup>2</sup>Professor of Plastic Surgery, Royal Free Hospitals & University College London, UK;

<sup>3</sup>University Witten-herdecke klinik links vom Rhein hautzentrum Köln | Cologne Dermatology;

<sup>4</sup>Cape Town Cosmetic Dermatology Centre, Central Park on Esplanade, Milnerton 2. Division of Dermatology, University of Stellenbosch South Africa;

<sup>5</sup>Plastic, Reconstructive and Aesthetic Surgeon Founder, Amsterdam Plastic Surgery Clinic, the Netherlands Consultant, Burns and Tissue Regeneration Unit University Hospital, Gent, Belgium Research Consultant, University College Hospital, London, UK;

<sup>6</sup>Consultant Facial Plastic Surgeon University Hospital Lewisham London UK;

<sup>7</sup>Consultant Rhinologist/Facial Plastic Surgeon, Charing Cross & Royal Brompton Hospitals Honorary Senior Lecturer, Imperial College of Medicine, London President of the European Academy of Facial Plastic Surgery;

<sup>8</sup>Koc University School of Medicine and Rene Clinic Istanbul Turkey;

<sup>9</sup>Chief of Department of Facial Plastic & Cranio-Maxillo-Facial Surgery Former Vice-President of the Spanish Society of Facial Plastic Surgery Fakh Hospital, Khaizaran Main Street, Lebanon;

<sup>10</sup>Otorhinolaryngologist, Cell biologist Alteburger Straße 336 50968 Köln;

<sup>11</sup>Associate Professor of Plastic Surgery, Royal Free Hospitals and University College London, UK;

<sup>12</sup>Anticlock Clinic, Chandigarh, India; Department of Plastic Surgery, Fortis Hospital, Mohali, India; University of London, St. George's, UK;

## Corresponding Author:

Dario Bertossi MD

Head of Department of Maxillofacial Plastic Surgery

University of Verona

Policlinico G.B. Rossi

Piazzale L. Scuro, 10 - 37134 Verona, Italy

Tel: + 39 045 8126768

Fax: + 39 045 8127437

**Financial Disclosure Statement:** The authors whose names are listed above certify that they have no affiliations with, or involvement in, any organization or entity with any financial interest (such as honoraria; educational grants;

This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1111/JOCD.13530](#)

This article is protected by copyright. All rights reserved

participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or nonfinancial interest (such as personal or professional relationships, affiliations, knowledge, or beliefs) in the subject matter or materials discussed in this manuscript.

**Conflicts of Interest:** None declared.

**Word count:** 2089

Accepted Article

PROF. DARIO BERTOSI (Orcid ID : 0000-0002-8635-9967)

DR. WOLFGANG G PHILIPP-DORMSTON (Orcid ID : 0000-0002-2845-654X)

DR. KRISHAN MOHAN KAPOOR (Orcid ID : 0000-0002-3134-4266)

Article type : Original Contribution

Corresponding author mail id :- dario.bertossi@univr.it

## **SAFETY GUIDELINES FOR NON-SURGICAL FACIAL PROCEDURES DURING COVID-19 OUTBREAK**

**Bertossi Dario M.D.<sup>1</sup>, Ash Mohsahebi, Ph.D., FRCS<sup>4</sup>, Philippe Dormstrom M.D.<sup>3</sup>, Izolda Heidenrich M.D.<sup>4</sup>, Ali Pirayesh, M.D.<sup>5</sup>, Alwyn D'Souza M.D.<sup>6</sup>, Hesham Saleh, M.D.<sup>7</sup>, Rezha Yavuzer M.D.<sup>8</sup>, Nabil Fakh M.D.<sup>9</sup>, Julia Vent M.D.<sup>10</sup>, Eqram Rahman, MS, Ph.D.<sup>11</sup>, Krishan Mohan Kapoor, M.S., M.Ch<sup>12</sup>.**

<sup>1</sup>Head of Maxillo Facial Plastic Surgery Unit, Department of Surgery, University of Verona, Policlinico G.B. Rossi Piazzale L.A. Scuro 10 Verona Italy; Professor of Practice Centre for Integrated Medical and Translational Research, University of London, UK;

<sup>2</sup>Professor of Plastic Surgery, Royal Free Hospitals & University College London, UK;

<sup>3</sup>University Witten-herdecke klinik links vom Rhein hautzentrum Köln | Cologne Dermatology;

<sup>4</sup>Cape Town Cosmetic Dermatology Centre, Central Park on Esplanade, Milnerton 2. Division of Dermatology, University of Stellenbosch South Africa;

<sup>5</sup>Plastic, Reconstructive and Aesthetic Surgeon Founder, Amsterdam Plastic Surgery Clinic, the Netherlands Consultant, Burns and Tissue Regeneration Unit University Hospital, Gent, Belgium Research Consultant, University College Hospital, London, UK;

<sup>6</sup>Consultant Facial Plastic Surgeon University Hospital Lewisham London UK;

<sup>7</sup>Consultant Rhinologist/Facial Plastic Surgeon, Charing Cross & Royal Brompton Hospitals Honorary Senior Lecturer, Imperial College of Medicine, London President of the European Academy of Facial Plastic Surgery;

<sup>8</sup>Koc University School of Medicine and Rene Clinic Istanbul Turkey;

<sup>9</sup>Chief of Department of Facial Plastic & Cranio-Maxillo-Facial Surgery Former Vice-President of the Spanish Society of Facial Plastic Surgery Fakh Hospital, Khaizaran Main Street, Lebanon;

<sup>10</sup>Otorhinolaryngologist, Cell biologist Alteburger Straße 336 50968 Köln;

<sup>11</sup>Associate Professor of Plastic Surgery, Royal Free Hospitals and University College London, UK;

<sup>12</sup>Anticlock Clinic, Chandigarh, India; Department of Plastic Surgery, Fortis Hospital, Mohali, India; University of London, St. George's, UK;

**Corresponding Author:**

Dario Bertossi MD

Head of Department of Maxillofacial Plastic Surgery

University of Verona

Policlinico G.B. Rossi

Piazzale L. Scuro, 10 - 37134 Verona, Italy

Tel: + 39 045 8126768

Fax: + 39 045 8127437

**Financial Disclosure Statement:** The authors whose names are listed above certify that they have no affiliations with, or involvement in, any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements) or nonfinancial interest (such as personal or professional relationships, affiliations, knowledge, or beliefs) in the subject matter or materials discussed in this manuscript.

**Conflicts of Interest:** None declared.

**Word count:** 2089

**Background:** The novel coronavirus (COVID-19) pandemic is expected to last for an extended time, making strict safety precautions for office procedures unavoidable. The lockdown is going to be lifted in many areas, and strict guidelines detailing the infection control measures for aesthetic clinics are going to be of particular importance.

**Methods:** A virtual meeting was conducted with the members (n=12) of the European Academy of Facial Plastic Surgery Focus Group to outline the safety protocol for the non-surgical facial aesthetic procedures for aesthetic practices

in order to protect the clinic staff and the patients from SARS-CoV-2 infection.

The data analysis was undertaken by thematic and iterative approach.

**Results:** Consensus guidelines for non-surgical facial aesthetic procedures based on current knowledge are provided for three levels: precautions before visiting the clinic, precautions during the clinic visit, and precautions after the clinic visit.

**Conclusions:** Sound infection control measures are mandatory for non-surgical aesthetic practices all around the world. These may vary from country to country, but this logical approach can be customized according to the respective country laws and guidelines.

**Keywords:** COVID-19, Coronavirus, Aesthetic Clinic, Aesthetic Medicine, Consensus Guidelines,

## **Introduction**

The COVID19 outbreak, caused by the SARS-Cov2 virus, has had an unprecedented impact on global health systems<sup>1-19</sup>. The economic burden induced by lockdowns will need to be carefully mitigated by “next phase” responses, which will vary with country and viral burden. While many medical

practices are being run with online consultations<sup>10</sup>, some countries have recently decided to allow the opening of practices requiring one-on-one contact like dental, physiotherapy, for emergencies provided they strictly follow the guidelines detailing the infection control measures<sup>12-13</sup>.

Facial aesthetic non-surgical procedures, although having a well-documented impact on quality of life, are not considered essential medical services and conscious efforts should be made to minimize infection in this sector. The nature of our work carries a very high inherent risk of contagion for both patient and practitioner.

Due to the primary involvement of the face and neck, specifically the perioral and nasal regions, and our field is at a particular occupational hazard due to the risk of aerosol generating procedures<sup>13-14</sup>. Strict global measures are constantly evolving, and discrete guidelines need to be instituted and kept current. In our largely elective field, both staff and resources should ideally be allocated through careful protocols in order to prevent COVID-19 infection.

## **Method**

### a. Focus Group Composition

The International European Academy of Facial Plastic Surgery (EAFPS) focus group is composed of 12 facial plastic surgeons and dermatologists from Germany, India, Italy, Lebanon, Netherlands, South Africa, Turkey and the UK.

### b. Focus Group (FG) Methods

The FG members have discussed recommendations for resuming elective non-surgical facial aesthetic work using a topic guide. The virtual meeting was led by a facilitator (DB) and contemporaneous notes were recorded by another author (ER). The facilitator used a topic guide to ask the group members to explore the problem in question and factors for mitigation.

The topic guide was developed by the lead author after thorough literature review and cross checking with available guidelines in different specialties.

To minimize the number of the prompts and equal participation, the facilitator used an open questioning style.

c. Analysis

The transcriptions of the discussion were subsequently analyzed by a multidisciplinary research team in form of iterative and thematic approach. During this process data was verified systematically, discussion was made around the interpretive analysis and exploring the potential research bias.

**Result**

Various steps were recommended in order to deliver a safe elective service, with inputs from the public and private health systems of many countries. In addition to the respective country recommendations, these guidelines hope to guide the "next phase" after the lockdown ends. The recommendation was divided into three phases for both the patients and HCPs.

Level 1- Guidelines ‘before’ the visit to the clinic

Level 2- Guidelines ‘during’ the visit to the clinic

Level 3- Guidelines ‘after’ the visit to the clinic

**Level 1: Guidelines ‘before’ the visit to the clinic**

**PATIENT:** Patients should be furnished with concise, simple information regarding household behavior and the risk of contagion and transmission . It is crucial to provide patients with straightforward and clear information for precautions at home regarding coronavirus infection prevention. The SARS-CoV-2 virus is transmitted primarily via large droplet spread with a range of approximately 2m, and the infection rate is known to decrease with social distancing and the wearing at least surgical masks<sup>1-19</sup>. The appointment should thus be scheduled well in advance with the recommendation of social distancing and avoidance of hospital visits or contact with COVID19 positive cases. Two days before the appointment, patients should receive an e-mail with a protocol on the office routes, they will have to follow (Scheme 1-2) and some forms to

be filled and returned 12 hours before the appointment (Scheme 3). Vital information relates to Covid-19 contact, quarantine or symptoms during the preceding 15 days. One primary information that is essential to obtain is a declaration that the patient has not been in quarantine and has not had coronavirus symptoms in the last 15 days. If the answer to any of this is definite, the doctor must order a Covid-19 test for the patient. Another option is to postpone the procedure for at least two weeks.

**HCP AND STAFF:** The enclosed brochure (Scheme 4) may be distributed via e-mail, whatsapp, we chat or any other encrypted electronic means. A virtual appointment or telemedicine is alternative for scheduling a screening appointment upfront, with form regarding epidemiological and clinical questions to be sent to the patient that must be filled and re-submitted two days prior to the appointment (Scheme 3). Patients with positive answers or suspected of infection need to undergo ELISA tests (blood samples) and swabs the 24 hours before scheduled appointment in order to get approval. Despite negative results these patients are requested to self-quarantine and practice social distancing because of their suspicious symptoms.

#### **Level 2:** Guidelines ‘during’ the visit to the clinic

**PATIENT:** Patients are requested to attend alone, without accompanying persons or family members or pets. They must attend wearing surgical masks and gloves, are requested to respect scheduled appointment times and (Figure 1a) asked to wait outside the office when not (Figure 1b). Absolute respect for the schedule is a requirement, and patient turnaround time must be planned. People coming before or after a given time will be asked to wait outside the office or in their cars. A series of pre-determined in-office routes must be decided, and patients should get access only by following these routes. These pre-determined in office routes must be decided with patients having access to only these. Temperature testing (Tympanic or infrared device) (Figure 1c) should be completed before access to waiting areas where a minimum of 2m



between patients and 10 square meters per person, should be maintained (Figure 2a). As soon they get to the waiting area, they will be then requested to follow a healthcare professional (HCP) who guides them to a room where they wash their hands and face (Figure 2b), they may be supplied with a labeled t-shirt (cost is 10 euros or 12 US dollars which we give them as a gift) which they may keep after the treatment (Figure 6). After disinfecting hands and applying a headband, they progress to photography (Figure 2c). If the toilet is used, it should be flushed while the seats are covered by the lid to prevent any aerosolization<sup>20</sup>. Following that, they wear a hairband, disinfect their hands, and are guided to see the photographer where appropriate (Figure 3a). Meanwhile we store their clothes and personal belongings if any, in a designated box or a plastic bag (Figure 3b). After the photo session, an additional hair cuff is supplied and patient is directed to the treatment room. (Figure 3c). One hour per appointment is allocated to each procedure, irrespective of whether for consultation or facial treatment (injection, laser or medication) (Figure 4). The face is disinfected with sodium hypochlorite 1% solution. At the end of their session the patient exit the office, will collect the plastic bag with their belongings from a separate room and go to administration before leaving the clinic. It is strongly recommended that all financial transaction is carried out by electronic means avoiding physical handling of money or payment cards.

**HCP AND STAFF:** HCPs follow preferably a different in-practice route, and, at the beginning of the working day, changing into single use scrubs, FFP2 (N95) masks and additional surgical masks over them (which, along with gloves and hair cuff, has to be changed for every patient). Eye shields or protective glasses are recommended to be cleaned with sodium hypochlorite 1% after every patient consultation. If a nasal or intraoral procedure is requested (filler or medication) 0,23% povidone-iodine solution, which is virucide, may be used in a dosage of two sprays per nostril before entering the office<sup>21</sup>. Oral rinse with the same solution may be used, as may eye drops of 1 drop diluted 1:100

(povidone-iodine 10%).

Plastic/Acrylic windows panels or glass partitions should be used to decrease staff and HCP exposure<sup>22</sup>. In order to avoid contamination in any area of the office all unnecessary material should be removed (leaflets, magazines, covers, water fountains, dresses etc.). In order to avoid contamination by walking frequently between different areas, it is recommended that hand sanitizers and hand-washing facilities are readily available in all patient and staff areas and clinic staff which is encouraged to use it with high frequency making the rule of 1 glove which is the “new skin” and a second glove which is patient related and is going to be changes at every procedure. The same rule applies to water bottles and disposable glasses.

### **LEVEL 3: Guidelines ‘after’ the visit to the clinic**

**PATIENT:** Limiting face-to-face interaction with non-family members will remain a challenge in the immediate post-operative period and should be clarified upfront in the pre- and post-operative procedure form. Compliance in this regard remains the responsibility of the patient (Scheme 3). A reduced frequency of post- treatment visits is recommended , with avoidance of unnecessary hospital encounters. The day after procedure , patients may send a photo via whats-up or any other encrypted electronic method and communicate with an assistant regarding body temperature and clinical conditions. This is assessed in a week again, and further follow up is arranged as appropriate.

**HCP AND STAFF:** Following every procedure, t he HCP removes her/his shield, surgical masks and double gloves. Whenever possible, the window is opened for 10 minutes while a professional cleans and disinfects all devices and room with 1% sodium hypochlorite or a phenolic detergent three to four times a day. They should be well trained in hand hygiene protocols<sup>23-40</sup> . This is ideally done while another patient is having photographs taken . Air disinfection can be further achieved with UV or O3 devices<sup>41</sup>.

A minimum of 10 minutes for HCP to relax is recommended. All routine post-operative care ought to be completed via video consultation which is done between noon and 1 pm or 7 pm to 8 pm at scheduled days.

**DISCUSSION:** During the current Covid-19 pandemic, at the very first weeks all non-essential procedures were provisionally suspended worldwide, with re-allocation of resources in many public and private hospitals. In-office consultations and procedures were thus not possible. Closure of surgical theatres constituted a further preventive measure for the wide viral spread and peak particularly in China, Europe and the USA. Currently, preliminary epidemiological experience even in high risk areas shows that spread is mitigated by wearing appropriate mask as a personal preventive device as well as correct hand sanitizing<sup>1-40</sup>. Furthermore, every Medical specialty has started to develop protocols to protect staff and patients.

In response to this pandemic, our focus group has developed a process to stratify procedures and clinical levels with protocols that aim to minimize the risk of contagion and the diffusion of COVID-19 infection.

### **Limitation**

The present study has several limitations. Although the author has utilized widely accepted method of Expert focus group discussion, it is often mentioned that they act as ‘Expert and Judge’<sup>42</sup>. Also, because of the qualitative nature of the interpretation, to address the reflexivity and Hawthorne effect, the analysis was based strictly on the transcription, critical appraisal of the literature and multidisciplinary research analysis<sup>43</sup> to minimise bias.

### **Conclusion**

Although, finding an optimal guideline in limited timeframe remains elusive, Nonetheless, the present first ever clinical safety guideline for the non-surgical facial aesthetic procedures can help designing conceptual framework for the COVID-19 safety guidelines in aesthetic practices across the globe.

#### REFERENCES:

1. World Health Organization. Rolling updates on coronavirus disease (COVID-19). (<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/events-as-they-happen>). Accessed March 29, 2020.
2. Italian ministry of health, updates on coronavirus infection. (<http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus.jsp?area=nuovoCoronavirus&id=5351&lingua=italiano&menu=vuoto>) Accessed April 22, 2020.
3. Lai C-C, Shih T-P, Ko W-C, Tang H-J, Hsueh P-R. Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents*. 2020;55(3):105924.
4. WHO. Coronavirus Disease 2019 (COVID-19) Situation Reports. April 1 2020. *WHO Situat Rep*. 2020;2019(72):1-19.
5. Kapoor KM; Kapoor A. Role of Chloroquine and Hydroxychloroquine in the Treatment of COVID-19 Infection- A Systematic Literature Review. *medRxiv*. 2020:2020.03.24.20042366.
6. Rana M, Kundapur R, Maroof A, et al. Way ahead - Post Covid-19 Lockdown in India. *Indian J Community Heal*. 2020;32(2 Special SE-Advisory):175-183.

<https://www.iapsmupuk.org/journal/index.php/IJCH/article/view/1465>.

7. Gilbert M, Dewatripont M, Muraille E, Platteau J-P, Goldman M. Preparing for a responsible lockdown exit strategy. *Nat Med*. 2020.
8. Lawton G. How do we leave lockdown? *New Sci*. 2020;246(3277):10-12.
9. Chen W, Huang Y. To Protect Healthcare Workers Better, To Save More Lives. *Anesth Analg*. March 2020:10.1213/ANE.0000000000004834.
10. Sun S, Yu K, Xie Z, Pan X. China empowers Internet hospital to fight against COVID-19. *J Infect*. April 2020:S0163-4453(20)30183-3.
11. Meng L, Hua F, Bian Z. Coronavirus Disease 2019 (COVID-19): Emerging and Future Challenges for Dental and Oral Medicine. *J Dent Res*. 2020;99(5):481-487.
12. Der Sarkissian SA, Kim L, Veness M, Yiasemides E, Sebaratnam DF. Recommendations on dermatologic surgery during the COVID-19 pandemic. *J Am Acad Dermatol*. April. 2020:S0190-9622(20)30610-1.
13. Rothan HA, Byrareddy SN. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *J Autoimmun*. 2020;109:102433.
14. Fisher D, Heymann D. Q&A: The novel coronavirus outbreak causing COVID-19. *BMC Med*. 2020;18(1):57.
15. Huang Z, Zhao S, Li Z, et al. The Battle Against Coronavirus Disease 2019 (COVID-19): Emergency Management and Infection Control in a Radiology Department. *J Am Coll Radiol* 2020.
16. Udwardia ZF, Raju RS. How to protect the protectors: 10 lessons to learn for doctors fighting the COVID-19 coronavirus. *Med journal, Armed Forces India*. March 2020.

17. Emadi S-N, Abtahi-Naeini B. Coronavirus Disease 2019 (COVID-19) and dermatologists: Potential biological hazards of laser surgery in epidemic area. *Ecotoxicol Environ Saf.*2020;198:110598.
18. Freeman EE, McMahon DE. Creating Dermatology Guidelines for Covid-19: The Pitfalls of Applying Evidence Based Medicine to an Emerging Infectious Disease. *J Am Acad Dermatol.* April 2020.
19. Ienca M, Vayena E. On the responsible use of digital data to tackle the COVID-19 pandemic. *Nat Med.* 2020;26(4):463-464.
20. Liu Y, Ning Z, Chen Y, et al. Aerodynamic Characteristics and RNA Concentration of SARS-CoV-2 Aerosol in Wuhan Hospitals during COVID-19 Outbreak. *bioRxiv.* 2020.
21. Kirk-Bayley J, Combes, J, Sunkaraneni V, Challacombe, S. The Use of Povidone Iodine Nasal Spray and Mouthwash During the Current COVID-19 Pandemic May Reduce Cross Infection and Protect Healthcare Workers (March 28, 2020). Available at SSRN: <https://ssrn.com/abstract=3563092>.
22. U.S. Department of Labor: Occupational Safety and Health Administration. Guidance on Preparing Workplaces for COVID-19. *Saf Heal.* 2020.
23. Guan W, Ni Z, Hu Y, et al. Clinical characteristics of 2019 novel coronavirus infection in China. *medRxiv.* January 2020:2020.02.06.20020974.
24. Khurana A, Sharma KA, Bachani S, et al. SFM India Oriented Guidelines for Ultrasound Establishments During the COVID 19 Pandemic. *J Fetal Med.* 2020.
25. Zou L, Ruan F, Huang M, et al. SARS-CoV-2 Viral Load in Upper Respiratory Specimens of Infected Patients. *N Engl J Med.* 2020 Mar 19;382(12):1177-1179.

26. van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and Surface Stability of SARSCoV-2 as Compared with SARS-CoV-1. *N Engl J Med*. 2020 Mar 17.
27. Institute of Medicine. *The Use and Effectiveness of Powered Air Purifying Respirators in Health Care: Workshop Summary*. National Academies Press; 2015.
28. Dan N. Stone, Edward L. Deci, Richard M. Ryan. Beyond Talk: Creating Autonomous Motivation through Self-Determination Theory. [http://selfdeterminationtheory.org/SDT/documents/2009\\_StoneDeciRyan\\_JGM.pdf](http://selfdeterminationtheory.org/SDT/documents/2009_StoneDeciRyan_JGM.pdf).
29. Yan Y, Chen H, Chen L, et al. Consensus of Chinese experts on protection of skin and mucous membrane barrier for health-care workers fighting against coronavirus disease 2019. *Dermatol Ther*. 2020;(March):1-7.
30. Zheng Y, Lai W. Dermatology staff participate in fight against Covid-19 in China. *J Eur Acad Dermatology Venereol*. 2020;n/a(n/a).
31. Houghton C, Meskell P, Delaney H, et al. Barriers and facilitators to healthcare workers' adherence with infection prevention and control (IPC) guidelines for respiratory infectious diseases: a rapid qualitative evidence synthesis. *Cochrane database Syst Rev*. 2020;4:CD013582.
32. Chen Y, Pradhan S, Xue S. What are we doing in the dermatology outpatient department amidst the raging of the 2019 novel coronavirus? *J Am Acad Dermatol*. 2020;82(4):1034.
33. Ahmed F, Zviedrite N, Uzicanin A. Effectiveness of workplace social distancing measures in reducing influenza transmission: a systematic review. *BMC Public Health*. 2018;18(1):518.
34. Qian H, Zheng X. Ventilation control for airborne transmission of human exhaled bio-aerosols in buildings. *J Thorac Dis*. 2018;10(Suppl 19):S2295-S2304.

35. Ministry of Health S. Environmental Cleaning Guidelines for Healthcare Settings ( Summary Document ) Summary of Recommendations. 2013.
36. Geller C, Varbanov M, Duval RE. Human coronaviruses: Insights into environmental resistance and its influence on the development of new antiseptic strategies. *Viruses*. 2012;4(11):3044–3068.
37. Rabenau HF, Cinatl J, Morgenstern B, Bauer G, Preiser W, Doerr HW. Stability and inactivation of SARS coronavirus. *Med Microbiol Immunol*. 2005;194(1):1-6.
38. Rutala WA, Weber DJ. Disinfection and sterilization in healthcare facilities. Bennett Brachman's *Hosp Infect* Sixth Ed. 2019;(May).
39. Van Doremalen N, Bushmaker T, Morris DH, et al. Aerosol and Surface Stability of SARS-CoV-2 as Compared with SARS-CoV-1. *N Engl J Med*. 2020;382(16):1564-1567.
40. Kampf G, Todt D, Pfaender S, Steinmann E. Persistence of coronaviruses on inanimate surfaces and their inactivation with biocidal agents. *J Hosp Infect*. 2020;104(3):246-251.
41. Beck SE, Wright HB, Hargy TM, Larason TC, Linden KG. Action spectra for validation of pathogen disinfection in medium-pressure ultraviolet (UV) systems. *Water Res*. 2015 Mar 1;70:27-37.
42. Chew-Graham CA, May CR, Perry MS. Qualitative research and problems of judgement: lessons from interviewing fellow professionals. *Fam Pract*. 2002;19(3):285–289.
43. Holden JD. Hawthorne effects and research into professional practice. *J Eval Clin Pract*. 2001;7(1):65–70.





jocd\_13530\_f1.tif



jocd\_13530\_f2.tif



jocd\_13530\_f3.tif



jocd\_13530\_f4.tif