Procedural dermatology in the COVID-19 era: an online survey of the Philippine Dermatological Society members and practical recommendations for safe practice

Authors: Dim-Jamora, Krisinda Clare C.[1]; Jamora, Maria Jasmin J. [2]; Yu, Jonathan Nevin T. [2], and Dayrit, Johannes F. [3]

ABSTRACT

Background: The novel COVID-19 (Coronavirus Disease 19) predisposes the general population to a high risk of infection. The 106 million population of the Philippines would be considered an at-risk group due to the high density of the populace in cities. As the situation in each country differs during this era of the COVID-19 pandemic, this paper aims to give practical recommendations for safe procedural dermatology practice in the Philippine setting after the lifting of the government-mandated quarantine.

Methods: An online survey was conducted among Philippine Dermatological Society (PDS) members. The survey was sent electronically on March 22, 2020.

Results: A total of 466 or 42% of the PDS's 1100 current members replied to the survey. The top 10 procedures performed among the respondents are: 1. Electrocautery (N=437, 94.38%), 2. Chemical peeling (N=422, 91.13%), 3. Laser & energy based device treatment (N= 341, 73.65%), 4. Botulinum toxin injection (N=323, 69.76%), 5. Excision (N=263, 56.80%), 6. Acne surgery (N=176, 38.01%), 7. Injectable Filler (N=171, 36.93%), 8. Cryotherapy (N=145, 31.32%), 9. Platelet rich plasma injection (N=111, 23.97%) and 10. Scar revision (N=85, 18.36%).

The majority of the respondents have access to personal protective equipment (PPE) such as surgical masks (N=457, 98.7%), face shields (57.67%), goggles (46.00%), protective gown (42.76%) and bonnets (32.83%).

Before the government quarantine, the majority (N=375, 81.17%) of respondents see patients on a firstcome, first-serve system. Only 18.83% (N=87) see patients only by appointment.

Regarding teledermatology, most respondents answered that they would advise patients to do digital consultation with only a minority responding they would not consider doing teledermatology.

Conclusions: In the Philippine setting, the best ways to prevent COVID infection inthe procedural dermatology setting include:

1. Education of staff and patients on proper exposure prevention and sanitation measures.
2. Ensuring the correct usage of PPE.
3. Ensuring physical distancing and reducing patient wait times by scheduling visits on an appointment basis.
4. Sufficient protocols must be made for sanitation before and after each patient visit.
5. Teledermatology in pre-procedure consults and post-procedure follow-ups would reduce the risk of COVID-19 transmission for both patient and physician.

[1] Makati Medical Center, The Medical City Ortigas, & Skin and Cancer Foundation, Inc., Philippines;
[2] Skin and Cancer Foundation, Inc., Philippines;
[3] Research Institute for Tropical Medicine, Philippines, De La Salle Medical and Health Sciences Institute

Commercial funding: None
Conflict of Interest: None

Overview

SARS-CoV-2 or 2019-nCoV is a new respiratory virus first identified in Wuhan City, Hubei Province, China, which results in potentially deadly atypical pneumonia in high-risk populations. Due to the high density of people living in the cities, the Philippines, which has a population of around 106 million, is considered an at-risk group. Based on data from the Department of Health Republic of the Philippines, the death rate from COVID-19 infection is 6.6% [(1)]. Among the high-risk populations in contracting the disease are the elderly and those with decreased immunity (i.e., people with diabetes, cardiac disease, renal disease, on immunosuppressants, and high basal metabolic index).

Dermatology in the Philippines is a combination of medical and procedural practice. It is culturally ingrained that the Filipinos are friendly, and a big chunk of the dermatology visit is allotted on chika (otherwise known as small talk). Filipinos usually bring their friends and family to dermatology visits to introduce the dermatologist and for emotional support. Before the COVID pandemic, it has been customary that most Filipinos do not make appointments when visiting their dermatologist.

As dermatology is an elective practice, the proximity of the dermatologist during physical examination and procedures makes both the health care worker and patient vulnerable and at risk for infection. Which raises the following questions: (1) What are the safe means to practice procedural dermatology in the Philippines? Furthermore, (2) Which safety measures do Filipino dermatologists have to exercise and need to adapt to during this COVID-19 era?

Our paper aims to summarize the guidelines for safe dermatological practice in the Philippine setting during this period. Of particular interest in our paper are surgical, procedural dermatology, laser surgery, and aesthetic procedural dermatology.

Objectives

1. To give a brief overview of the general clinic considerations in the Philippine setting: appointment/visit system; the number of staff per square meter; availability of personal protective equipment (PPE)in the Philippines;
2. To give an overview of the probability of acquiring COVID-19 during office-based procedures in the Philippine setting;
3. To provide recommendations for safe surgical procedural dermatology practice in the post-COVID-19 lockdown;
4. To provide recommendations for safe aesthetic procedural dermatology practice in the post-COVID-19 lockdown;
5. To provide recommendations for the safe use of lasers and energy-based devices in the post-COVID -19 lockdown

Definitions

Procedural dermatology, as defined, is the study, diagnosis, and manipulation of the skin and its appendages. For practical purposes, we can subdivide procedural dermatology into (a) surgical procedural dermatology, (b) aesthetic procedural dermatology; and (c) laser and energy-based devices.

Surgical procedural dermatology, as defined, involves the puncture of the skin barrier beyond the epidermis and thus includes excisions, manual dermabrasion, small-volume liposuction, hair transplantation, Mohs micrographic surgery and cutaneous reconstruction of surgical defects.

Aesthetic procedural dermatology, as defined, is a procedure resulting in cosmetic manipulation of any level of the skin. It includes sclerotherapy, chemical peel, cutaneous soft tissue augmentation with injectable filler material, botulinum toxin injection, rhinophyma correction, laser surgery, and energy-based devices.

Lasers utilize collimated light energy to produce an observable outcome on the skin. Energy-based devices use soundwaves or infrared heat to produce observable changes on the skin and the underlying tissue. Most lasers and energy-based devices are available in dermatology clinics in the Philippines.

Modes of transmission of SARS-CoV-2 in the procedural dermatology clinic

The SARS-CoV-2 coronavirus is a β-coronavirus with a large, single, plus-stranded RNA genome. Angiotensin-converting enzyme 2 (ACE2) is the host receptor, and this virus infects the human respiratory, gastrointestinal, and central nervous system. The following are the routes of transmission that are

relevant to the practice of procedural dermatology and place the dermatologist at risk of being infected with the virus [2]:

1. **Direct droplet (>5-10 µm diameter) transmission:** ingestion or inhalation of respiratory droplets through spray (cough, sneeze, talking without a mask) in close contact (within 1 meter) with a symptomatic person.

2. **Contact transmission:** respiratory droplets from an infected person come into contact with the physician's oral, nasal, and eye mucous membranes. Again, face to face contact between the dermatologist and the patient in conversation can place them at risk during procedures focusing on the face.

3. **Indirect contact transmission through environmental surfaces (self-inoculation):** the physician touches contaminated environmental surfaces or objects used by an infected person (fomites, instruments) and then conveys the virus from their hands into their mouth, eyes, and nose [3]. Virus transmissibility from contaminated surfaces to hands for the SARS-CoV-2 virus has not been demonstrated yet. The dermatologist uses many instruments on patients that may be contaminated with infected droplets (dermoscopes, brushes, non-disposable surgical instruments). According to the World Health Organization (WHO), the SARS-CoV-2 virus has remained viable on the following surfaces: copper (4 hours); cardboard (24 hours), plastic and stainless steel (3 to 4 days); cloth and wood (1 day); glass (2 days); medical mask, outer layer (7 days). [4]

4. **Direct contact of the physician's hands with conjunctival, nasal, or oral mucosa of infected patients.** SARS-CoV-2 has been detected in tears and conjunctival secretions[5]. The physician is at risk when touching a patient during physical examination or during procedures performed in these areas, such as performing fillers on the lips.

5. **Aerosol or airborne transmission** – inhalation of the airborne SARS-CoV-2 virus within "droplet nuclei" (particles < 5 µm), especially in high concentrations in an enclosed space [3] which are the results from evaporation of larger droplets or exists within dust particles. [6].

In summary, the transmission of the SARS-CoV-2 virus in the dermatology settings may occur through droplet, contact, and aerosol transmission routes. [7] For settings with aerosol-generating procedures, The WHO general recommendations include droplet, contact, and airborne precautions. [4]

Procedural dermatology in the Philippine setting

A survey was conducted via electronic medium among the members of the Philippine Dermatological Society (PDS) to give the authors a general overview of their clinical practice. The survey was sent electronically on May 20, 2020. A total of 466 or 42% of 1100 PDS dermatologists answered the online survey. The end goal of this survey is to formulate basic recommendations for the safe resumption of the clinic post-COVID lockdown.

The survey showed that the majority of Philippine Dermatological Society members practice in three central regions, National Capital Region, Region 4A and Region 3. Clinic size averaged 64 sqm with an average of 5 staff and usually located either in the hospital or a stand-alone clinic. Many also indicated their clinics were in the shopping malls.

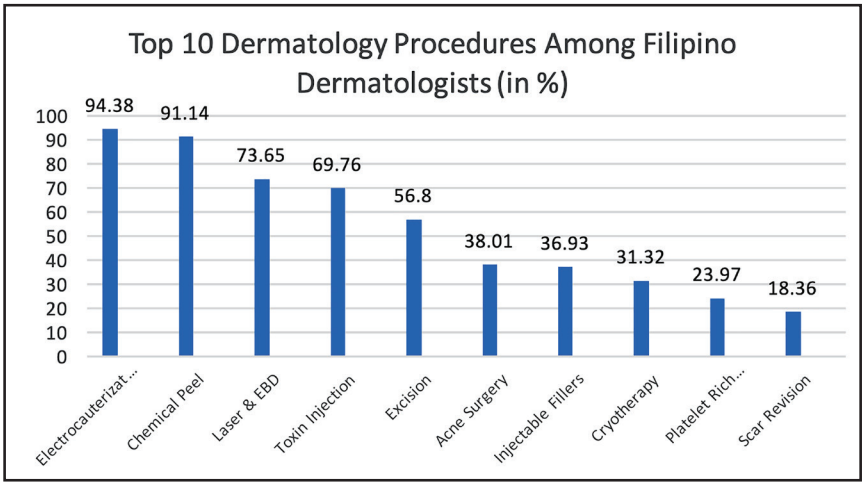


Figure 1. Bar graph showing the top 10 Dermatology procedures among Filipino dermatologists (in %)

The top 10 procedures (Fig. 1) performed among the respondents are: 1. Electrocautery (N=437, 94.38%), 2. Chemical peel (N=422, 91.13%), 3. Laser & energy based device treatment (N= 341, 73.65%), 4. Botulinum toxin injection (N=323, 69.76%), 5. Excision (N=263, 56.80%), 6. Acne surgery (N=176, 38.01%), 7. Injectable Filler (N-171, 36.93%), 8. Cryotherapy (N=145, 31.32%), 9. Platelet rich plasma injection (N=111, 23.97%) and 10. Scar Revision (N=85, 18.36%)

Personal Protective Equipment is a cornerstone of the protection of our health care workers. Majority of the Filipino dermatologists have access to surgical masks in their daily practice (N=457, 98.7%). Face shields (57.67%), goggles (46.00%), protective gown (42.76%), and bonnets (32.83%) are also some of the protective gear available in some of the dermatology clinics. (Fig. 2)

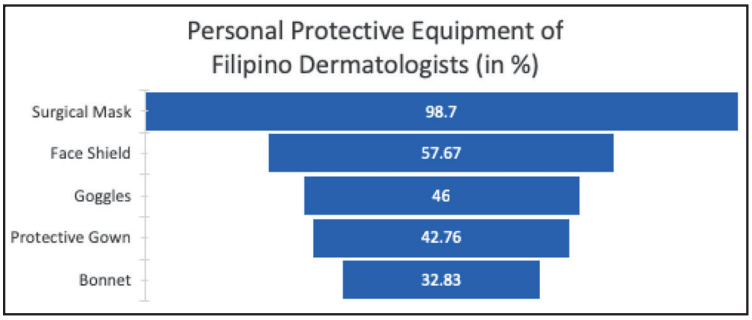
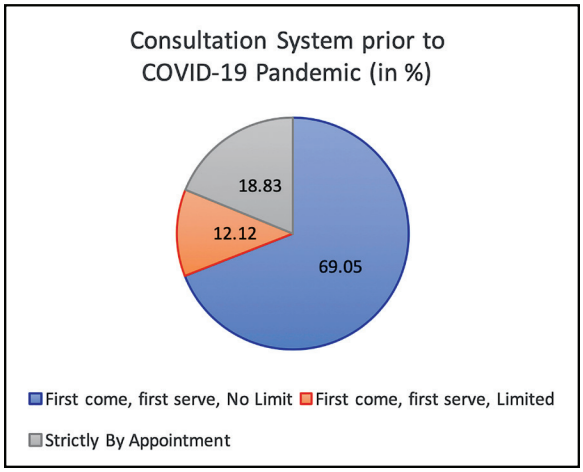


Figure 2. Bar graph showing the Personal protective equipment of Filipino dermatologists (in %)

With regards to the consultation system before the COVID-19 government quarantine, 69.05% (N=319) of the respondents were seen on a first-come, first-served basis with no patient limit. 12.12% (N=56) were seen on a first-come, first-served basis, limited. Only 18.83% (N=87) was seen strictly by appointment only. (Fig. 3)



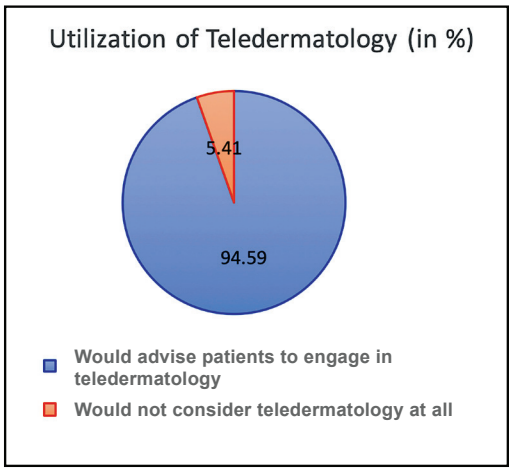


Figure 4. Pie graph showing the utilization of Telemedicine among Filipino dermatologists (in %)

Finally, regarding the utilization of teledermatology, 94.59% of the respondents answered that they would advise patients to engage in teledermatology while 5.41% responding they would not consider doing teledermatology. (Fig. 4)

General procedural dermatology COVID-19 safety considerations in the Philippine setting

General considerations

As community transmission intensifies within the Philippines, dermatology clinics must consider all patients as potential carriers; thus, it is essential to pre-screen all patients and do temperature checks before any visit.[8] Pre-symptomatic patients are asymptomatic at the time of positive testing, but develop symptoms within seven days of testing. A study on 26 healthcare workers with COVID-19 showed that 65% worked while symptomatic and 17% had only mild, nonspecific symptoms (not the typical fever, cough, shortness of breath, or sore throat)[9]. One study found that 57% of 23 COVID-19 positive nursing home residents were asymptomatic at the time of testing, but most developed symptoms seven days after testing [10]. Therefore, careful pre-appointment screening through

telephone triaging is necessary before booking face to face consultations.

Physical distancing and appointment preparation

Before the COVID-19 pandemic was declared, the majority of the respondents have a first come- first serve approach to patient visits. It was not unusual to have 10 to 20 people waiting in the dermatologist's reception area resulting in overcrowding. Currently, in the COVID-19 era, such close contact (within 6 feet) would increase the transmission of the virus from prolonged close contact and must be avoided[8]. Scheduling appointments will allow appropriate screening for COVID-19 symptoms and exposure and proper spacing, further preventing the spread of the virus [11].

Digital consultation prior to any procedure is highly encouraged since a significant percentage of Filipinos have access to smartphones.[12] The patient must fill up a history form (health declaration form) with regards to community exposure and have the document sent back via e-mail. As with the recommendations of the Centers for Disease Control and Prevention (CDC), it would be prudent to call the patient 24 hours before the procedure and screen for COVID-19 symptoms.

Therefore, our group recommends that Filipino dermatologists adopt an appointment basis to allow for screening, physical distancing, and proper sanitation of the treatment areas between consultations and procedures.

Staff education

The available data published on the educational attainment of Filipinos shows that only 10.1% of the population finished a college education, and a large percentage of 27.5% did not finish elementary education.[13] As such, we must include our non-health care worker staff in the discussion of the dermatology clinic's sanitation steps.

Educating personnel on the mode of transmission of SARS-CoV-2 and its symptoms is essential in the screening of patients and staff. The dermatologist must explain to non-medical staff in clear, simple terms so that they can screen patients appropriately.[11]

Physical setup

Based on the results of our survey, the average size of the dermatology clinic in the Philippines is 64 square meters. As per the recommended guidelines on physical distancing, patients must sit at least 2 meters apart and also 2 meters from the front of the clinic staff. [14] Physical distancing can be adequately accomplished as long as proper controls are done on the number of staff and patients entering the clinic at any one time.

Respiratory protection for the dermatologist

In performing aerosol-generating procedures to avoid aerosol transmissible diseases, respiratory protection for the dermatologist in an enclosed room should be at least a fit-tested N95 filtering face piece respirator. [15]

General ventilation: General ventilation dilutes and replaces contaminated air before the concentration of chemicals reaches unacceptable levels. It may disperse particulate matter into the environment. Fresh air should be drawn in through an air inlet, pass through the source of surgical smoke, and be evacuated through an exhaust fan opposite the air inlet, creating a zone of negative pressure. Therefore exhaust fans should be combined with local exhaust ventilation (LEV) devices like smoke evacuators to clear surgical plume [16].

Local exhaust ventilation (LEV) is any device designed to capture and clear surgical smoke from the site of emission and minimize exposure to personnel. LEV may be in 2 forms:

(1) A room suction system or

(2) A smoke evacuator system with the following components[16]

   (a) Suction unit or vacuum source – The turbine or more powerful rotary evacuator pump should generate suction power with the minimum threshold volume of airflow generated at 0.012–0.017 m^3/s [17,25]

   (b) Filters should be at least 3-4 and include the following:

      (i) Activated charcoal filters to absorb toxic organic gases [18]

      (ii) HEPA filters which retain 99.97% of particles sized 0.3-µm and above [17,18] or

(iii) Ultra-low particulate air (ULPA) filters which retain 99.9999% of particles sized 0.1 µm and above and are superior when combined with charcoal filters for laser smoke evacuation[18, 19]

(c) Smoke tubing – Tubing with a wider internal diameter may increase the airflow by 5–10% using the same suction strength.

(d) Inlet nozzle- of the tubing should be held close approximately 2.5cm away from the treatment site to achieve efficient evacuation and may capture up to 99% of surgical smoke [16]

(e) Miscellaneous considerations: Noise level of 60 Db or less is recommended, portability, the cost-effectiveness of disposable accessories, and maintenance costs should be considered before purchasing [19]

Personal protective equipment

With the majority of the Filipino dermatologists having surgical masks in their daily practice (N=457, 98.7%), standard personal protective equipment (PPE) recommended for all healthcare workers are a respirator with no valve or surgical mask, goggles or face shield, hair cover, surgical gown over a scrub suit, and shoes dedicated for clinic use. *We recommend that the patient wear a surgical mask or respirator if the lesion is not in the perioral area. Using a face shield or goggles will allow mobility of the clinic staff.* The staff must be informed that the PPE to be used is in conjunction with the risk exposure of each procedure. *(20)* Emphasis must be given that reusable goggles or face shields must not to be shared and be sanitized after each patient.

All clinic staff must wear a facemask and goggles or face shield. Levels of personal protective equipment used in the Philippine setting are as follows:

Level 1: Scrub suit and surgical mask

Level 2: Scrub suit, surgical mask, goggles/personal glasses, clean gloves

Level 3: Scrub suit, gown/coverall, N95 respirator mask, goggles, clean gloves

Level 4: Scrub suit, gown/coverall, N95 respirator mask, goggles/face shield, surgical cap, shoe cover/shoes dedicated to the site and double gloves

Use of teledermatology

Teledermatology is the use of telecommunication technologies to convey medical information over varying distances through audio, visual, and data communication. Its use includes consultation, diagnoses, treatment, and even the education of patients.

In the Philippines, 41.09% population of the 106 million Filipinos are smartphone users;[12] thus, teledermatology is an emerging field in dermatology that grants patients from separate location access to

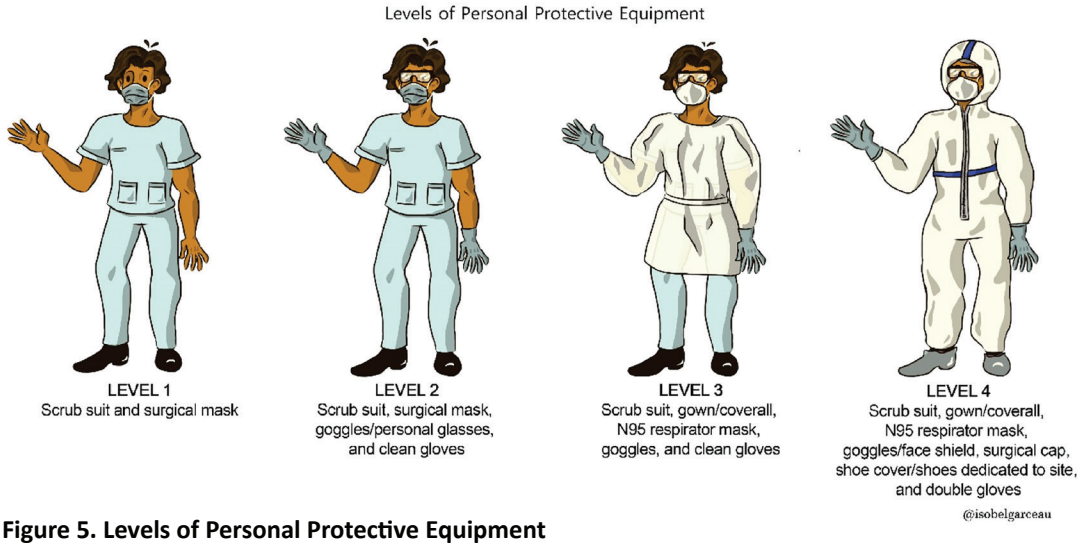


Figure 5. Levels of Personal Protective Equipment

a dermatologist through teleconferencing or digital media. The adoption of teledermatology reduces the risk of infection among the dermatologist and the patient.[21]

In the Philippines, the process must be simplified for ease of understanding. Upon contacting the clinic, the agreed-upon professional consultation fee is settled through online banking and third-party payment modalities such as GCash, Instapay, PayMaya, and PayMongo.

The clinic staff sets up the agreed-upon agreed upon time for the teleconference. The patient and doctor agree on the digital teleconference platform. For simplicity of use, the group recommends utilizing digital platforms that are easy for the patient to download. Among the digital platforms available in the Philippines are Zoom, Whatsapp, Viber, Instagram, Facebook Messenger, and Google Meet.

After teleconsultation has been carried out, the follow-up schedule is agreed upon by the dermatologist and the patient. The Dermatologist documents the teleconsultation in an electronic medical record or paper record. The Dermatologist sends the prescription or laboratory request via e-mail or the digital platform of choice.

With 41.09% of the Filipinos having access to smartphones, teledermatology in pre-procedure consults and post-procedure follow-ups would decrease the risk of COVID transmission for both patient and physician. We do not recommend any specific digital platform due to the inherent security risks of each one. Consultation with an information technology specialist is encouraged.

Preparation of the patient and environment

Emphasis must be given on simple to follow instructions as follows:

1. Have the patient wear a mask at all times except when the lesion of concern is on the face;

2. Have the patient wash their hands with soap and water upon entering the clinic. Prioritizing the use of soap and water over hand gel. Have alcohol available for the patients at all times;

3. Clean the area frequently touched by the patient with the following approved disinfectants and allow them to dry with the designated contact time (Table 1)[22]:

Table 1. Approved Environmental Protection Agency (EPA) disinfectants available in the Philippines [22]

Brand Name	Active Ingredient	Surface	Contact Time(mins)*
Comet Disinfecting Bathroom Cleaner	Citric Acid	Hard, non-porous	10
Clorox Commercial Solutions® Clorox® Disinfecting Wipes	Quaternary Ammonium	Hard, non-porous	4
Clorox Multi-Surface Cleaner + Bleach (other variants will require 5-10 minutes)	Sodium hypochlorite	Hard, non-porous	1
Clorox Healthcare® Bleach Germicidal Wipes	Sodium hypochlorite	Hard, non-porous	3
Lysol Bathroom Cleaner	Citric acid	Hard, non-porous	5
Lysol® Disinfecting Wipes (All Scents)	Quaternary Ammonium	Hard, non-porous	10
Lysol Brand Heavy Duty Cleaner Disinfectant Concentrate	Quaternary Ammonium	Hard, non-porous	5
Lysol® Disinfectant Spray	Quaternary ammonium; Ethanol	Hard, non-porous	10
PURELL Professional Surface Disinfectant Wipes	Ethanol	Hard, non-porous	5
Windex Disinfectant Cleaner	L-Lactic Acid	Hard, non-porous	5

Surgical smoke from electrocautery (surgical diathermy)

In our survey of Filipino dermatologists, electrocautery or electrodessication was considered the top procedure performed by Filipino dermatologists.

High-frequency electrocautery in cutting and coagulation modes causes thermal destruction of tissue resulting in boiling and membrane rupture, the release of cellular contents as fine particles creating "surgical smoke (surgical plume)." [15, 23] 95% percent of surgical smoke is made up of water, while 5% contains potentially hazardous particles (blood fragments and tissue material, toxic gases and vapors and infectious organisms like bacteria and viruses.[24] Around 77% of particulate matter in surgical smoke are particles of ranges from 0.07 and 0.31 µm, which may quickly deposit in bronchioles and alveoli. The three hazards to dermatologists from surgical plume are respiratory irritation, possible carcinogenesis, and possible infectious transmission. Smoke plume from electrosurgery has been said to be twice as harmful than lasers [25], and exposure to electrosurgical smoke plume has been compared to smoking six unfiltered cigarettes. Concerningly, a survey conducted by National Institute for Occupational Safety and Health (NIOSH) revealed that only half (47%) of physicians used a smoke evacuator or local exhaust vacuum during laser surgery, and even fewer (14%) reported that a smoke evacuator was used during electrosurgery.[15]

Viral aerosolization by electrosurgery comes from research with other viruses such as Hepatitis B. [15,26] Currently, there is no research evidence that COVID-19 is transmissible through surgical smoke and no data on surgical exposures from smoke plumes resulting in definitive infection from COVID-19 disease. [15,19] In this current COVID-19 pandemic, surgical diathermy should be minimized or avoided due to the high risk of viral spread among operating room personnel in infected patients.[15]

We also recommend the regular use of a smoke evacuator for all procedures requiring electro-cauterization or electrosurgery.

Procedure	Time (minutes)	Blood splatter?	Aerosol Generation?	Level of PPE
Electrocautery	15-30	minimal	yes	4
Toxin Injection	5	minimal	nil	2
Filler Injection	20	minimal	nil	2
Chemical Peel	5-20	nil	nil	2
Acne Surgery	30-60	minimal	nil	3
Platelet Rich Plasma Injection	30-60	medium	nil	3
Cryotherapy	5	nil	nil	2
Non-ablative Laser	30	nil	nil	2
Ablative Laser	30-60	minimal	yes	4
Energy-Based Device	60	nil	nil	2
Excision	40	Medium-Max(depends on size & location)	Nil if no cauterization; yes if with cauterization	4
Mohs micrographic surgery	180	Medium-Max(depends on size & location)	Nil if no cauterization; yes if with cauterization	4
Reconstruction	60	Medium-Max(depends on size & location)	Nil if no cauterization; yes if with cauterization	4

Table 2. Personal protective equipment use based on the type of procedure

Working distance

During procedures and when examining a patient, the dermatologist is usually distanced within 1 foot close to the patient. To prevent close facial proximity between patient and doctor, magnifying loops can increase patient to physician distance. When using loops with at least 3.5- 4.0x magnification, perfect visual acuity is maintained up to 35 millimeters instead of having the face directly to the patient. [27]

We recommend using a magnifying loop to examine small lesions on the face to increase the patient to physician distance while maintaining visual acuity.

Personal protection on the day of the procedure

For procedural dermatology, the necessity of the procedure lies upon the clinical judgment of the dermatologist. Consider that in the Philippines, the top 5 procedures in the survey are electrocautery, chemical peels, laser treatments, toxins, and excision.

Consider the time, distance to the patient, amount of blood splatter, and aerosol generation when assessing the type of personal protective equipment to use (Table 2):

Re-using personal protective equipment

In Metro Manila tertiary hospitals, personal protective equipment (PPE) is for single-use. However, being a third world country, it is not uncommon to reprocess personal protective equipment in smaller private and government hospitals due to limited supply.

In line with the United States Centers for Disease Control (CDC) recommendations, PPEs with any tears, small holes should be immediately discarded. Laundry detergent is the mainstay of use. Laundry staff should use reusable hand gloves, masks, apron, and face protection (goggles/face shield) when cleaning. Soak the reusable gowns in water with detergent before sending off for laundry. Clean by immersing in detergent and hot water solution and scrub to remove visible soil. Allow drying under the sun. [28]

Special concerns during excision

In our group's survey, the most common surgical procedural dermatology procedure is excision. Wide excision, excision with narrow margins, and Mohs micrographic surgery with reconstruction are included under this category. Among the necessary procedures are the surgical management of melanoma and non-melanoma skin cancers.

For both melanoma and non-melanoma skin cancers, teledermatology can be used to evaluate patients, and laboratory tests ordered before the visit. Complete history and physical examination are made on the day of the procedure. It must be emphasized that the patient must wear an N95 mask at all times to reduce the transmission of the virus via exhalation or talking.

For melanoma, the management of melanoma requires prompt excision with a margin to remove the clinical lesion.[29] For non-melanoma skin cancers, wide excision decreases the contact time with the patient.[30] If Mohs micrographic surgery is necessary, we recommend the patient secure a COVID-19 Reverse transcription-polymerase chain reaction (RT-PCR) test 72 hours before the procedure.

Surgical procedural dermatology considerations in the Philippines

To minimize the spread of COVID-19 during office-based excisional surgery, consider the following steps in the patient flow:

1. After setting an appointment, do a digital consult to thresh out any questions before the procedure. The dermatologist may talk to the patient and significant others during the online consultation. Give all pertinent instructions, which include refrain from touching elevator buttons and other medical facility objects until they enter the clinic.

2. After the patient arrives, he/she should wash his/her hands with soap and water for 20 seconds. If a sink is not available, an alcohol pump must be used and readily available to disinfect the hands.

3. After checking in at the reception, bring the patient to the procedure rooms.

4. Limit the staff that comes in contact with each patient. Note down the staff that comes in contact with each patient as source control. Clinical observers are discouraged at this time.

5. Check all personal protective equipment before use and wear the appropriate level of personal protective equipment for each procedure.

Wear a surgical mask at all times while in the clinic.

6. Use a smoke evacuation device to limit virus particles during any aerosol-generating procedure.

7. Do sanitation of frequently touched surfaces before and after each patient contact using an antiviral disinfectant. Staff must wear gloves when carrying this out.

8. Call the patient 5-7 days after each procedure to screen for any symptoms and answer post-operative questions via digital consultation [14]

Aesthetic procedural dermatology considerations In The Philippines

Aesthetic procedures most commonly done by the respondents include chemical peel, laser, toxin injection, injectable fillers, and platelet-rich plasma injection. These will still be in high demand, especially after a prolonged lockdown. Patients coming for treatment would want to improve their positive image and overall well-being. We should consider the time involved in performing these procedures since the longer time spent with patients, the higher the risk with exposure to the SARS-CoV-2 virus.

Procedures chemical peels and toxin injections have short patient contact times; thus, we recommend using a level 2 personal protective equipment. Forego the use of fans or other air generating cooling devices to eliminate the risk of dispersing aerosol droplets. Skin procedure treatments, which are labor and time-intensive, include microneedling, platelet-rich plasma injection, thread lifts, and injectable fillers, which may result in a small amount of bleeding- these would require PPE Level 3. While performing these procedures, consider having a dedicated treatment room to maintain sanitation, and limit the number of procedures done in a day.

Toxins and filler injections accounted for fourth and sixth most done aesthetic procedures, respectively. Most botulinum toxin procedures are performed in less than 15 minutes and produce no aerosol and are generally not close to the orifices (mouth, nose, and eyes). Botulinum toxin injections can be considered minimal risk and the use of three ply-surgical masks, wrap-around safety glasses, gowns, and gloves. All vials, injectables, and other necessary pieces of equipment must be prepared and laid out before the patients coming into the treatment room to reduce the exposure time of the products. [31]

Injectable fillers are injected in many areas of the face. Multiple facial sites may need to be scheduled on different days to reduce contact time. Midface injections involving the cheeks would not generate aerosols, and a level 2 PPE is advised. However, areas involving the nose tear troughs, lips, and oral cavity may increase the risk of generating aerosols that need at least a level 3 PPE with the use of an N95 mask, full goggle and face shields apart from the use of gowns and gloves [32]. Patients may remove their mask if treating around the cheek and mouth area and afterward, a new surgical mask given to them and worn immediately after their treatment. The patient should be advised not to talk during the procedure, or a small silicone tape may be applied over the mouth or a small custom mask to cover the nose and mouth, but keep the cheeks exposed.

Laser and energy-based devices in the Philippine Setting

The results of our survey revealed that laser treatments ranked 3rd (73.65%) among the most commonly performed procedures in the Philippine dermatology clinics.

The most commonly used lasers by dermatologists in the Philippines include carbon dioxide lasers for bulk ablation and fractional resurfacing , and hair removal lasers such as diode and the long-pulsed Nd:YAG. The nanosecond Nd: YAG laser has been widely used in aesthetic clinics for the management of melasma and tattoo removal during the last five years. Relatively new lasers in the Philippines today include the alexandrite, picosecond Nd: YAG, Er: YAG and Er:glass resurfacing lasers, and the new generation vascular lasers (577 nm and 585 nm). These new lasers have been used for facial rejuvenation, treatment of vascular abnormalities, and correction of pigmentary problems. The C02 and Er:YAG lasers are presently being used for dermatological surgery and bulk ablation of benign lesions.

The authors feel that Filipino dermatologists who utilize lasers in their aesthetic practice should be made aware of recently published guidelines and practical considerations on the appropriate and safe use of lasers during the COVID-19 pandemic. These guidelines will ensure safety for both health care professionals

and patients and will limit further transmission of the SARS-CoV-2 virus during procedures.

Various lasers used on the face and neck region as part of medical or aesthetic treatments are often mechanically disruptive; thus, a high degree of safety protocols should be deployed during the COVID-19 pandemic. Recently published articles raised awareness on the risks involved, especially when treating the face and neck with lasers. The two major important things to consider in the treatment of these areas include: (1) the inherent risks associated with prolonged contact time at proximity with patient airway; and (2) that these treatments most often emit airborne debris particles and contaminants. [33]

As previously mentioned, controversy still exists in the literature on whether health care professionals eventually get infected after exposure to surgical smoke during laser procedures. [34] Studies have demonstrated that surgical vaporization was able to contaminate the staff's personal protective equipment (PPE) with infective virions. [35] The airborne contaminants are associated only with specific wavelengths and applications of laser and dependent on the degree of laser-tissue interaction. The biohazard may not be limited to HPV airborne transmission, but also includes bacteria and other viruses such as human immunodeficiency virus (HIV), hepatitis B virus (HBV), and possibly SARS-CoV. The laser-tissue interactions during ablative surgery release carbon particles, viruses, bacteria, deoxyribonucleic acids (DNA), and toxic gases. [36-39]

In most of the studies done on plume contamination, CO2, Nd:YAG and KTP lasers have been used, and results were variable and inconclusive. However, during this time of COVID-19 pandemic, extra precautions should be applied when performing laser procedures close to the nose and pharynx because of higher viral load in these areas, both in symptomatic and asymptomatic individuals. This is because consensus exists on SARS-CoV-2 diffusion by droplet transmission, both from symptomatic and asymptomatic individuals. Because dermatology practice also involves treatment and laser ablation of skin, hair, and mucosal surfaces of the head and neck region, it is conceivable that every laser procedure in these areas is considered high risk. [40]

Few consensus guidelines for head and neck laser surgeries based on existing literature have been published recently to guide dermatologists and other aesthetic physicians in their current practice. More emphasis is placed on laser surgeries of the head and neck area and mucosal surfaces, pending publication of more robust specific evidence. The present guidelines discuss practical precautionary measures when using ablative and non-ablative laser procedures but did not enumerate the specific type and wavelength of lasers, perhaps due to lack of studies on COVID-19 transmission related to laser procedures. [33,34,40,41]

The recommendations by Gallo and Locatello, Emadi and Abtahi-Naeini, Project AescertTM, the British Medical Laser Association have been summarized and synthesized based on what is applicable in the Philippine setting.[1,2,9,10] The British Medical Laser Association (BMLA) adapted its guidelines from the British Association of Dermatologists, British Association of Dermatologic Surgeons, and British Association of Maxillofacial surgeons. [33,34,41,42]

The recommendations from the above-mentioned guidelines are as follows:

1. Postpone laser surgery or treatment if not urgent or if only for cosmetic purposes. Practitioners performing laser procedures during the COVID-19 pandemic should clearly state verbally and in writing why the procedure could not be deferred and the clinical need for the laser procedure.

2. Recommend Reverse Transcriptase-Polymerase Chain Reaction (RT-PCR) test for detection of SARS-CoV-2 RNA before every procedure, if feasible.

3. For small and easily accessible lesions, conventional surgery or resection by cold instruments should be preferred over laser surgery.

4. Ideally, laser surgery should be performed in an operating room with a highly efficient negative-pressure system.

5. Laser handpieces should be sterlized after each use with alcohol or appropriate autoclave procedures. Surgical gloves should be changed frequently, especially after direct contact with instruments and laser handpieces.

6. As much as possible, avoid cooling positive air pressure devices (often used for pain management) as they may increase the risk of transmission of COVID-19). [33]

7. The staff should wear highly protective PPE, including goggles and gloves, and highly

protective masks (i.e., N95) with gas adsorption filters. Patients undergoing laser procedures should wear a mask during the procedure. If the face is being treated, the patients may remove masks for the procedure, but they should be provided with a new, three-ply surgical mask following the procedure. [33]

8. Disposable double plume evacuation systems with filters that remove particulates up to 0.1 µm (the so-called ultralow particulate air filters) should be available in the treatment room.

9. Minimize the presence in the operating or laser room of all the unnecessary personnel and perform adequate training for all staff members to enhance awareness about the hazards of the surgical smoke in the COVID-19 outbreak.

10. Place all used materials in biohazard bags. Proper disposal necessary.

The above recommendations on using lasers in dermatology and aesthetic practice during the COVID-19 pandemic should complement the advice offered by professional societies and governmental agencies. Updates will be provided in the future as soon as studies on the safety of laser procedures in the setting of the COVID-19 pandemic have been completed, and robust evidence has been published.

Conclusion

In the Philippine setting, the best ways to prevent COVID infection in the procedural dermatology setting include:

- Education of staff and patients on proper exposure prevention and sanitation measures.
- Ensuring the correct usage, donning, and removal of personal protective equipment appropriate for the planned dermatologic procedure.
- Ensuring physical distancing and reducing patient wait times by scheduling visits on an appointment basis.
- Sufficient protocols are made for sanitation before and after each patient visit.
- The use of teledermatology in the pre-and post-procedure period to minimize exposure of both patient and clinic staff.
- Proper patient screening, choice of procedure, the timing of scheduling, protection for physician, staff, and patient, and use of equipment should be used before conducting each procedure contemplated.

The cornerstone in mitigating the infectivity of COVID-19 disease in the outpatient dermatology clinic is the education of the staff and health care workers. It must be impressed that dermatologists explain to their staff why the steps are being done to prevent transmission of SARS-COV 2 coronavirus.

Personal protective equipment is necessary to prevent infection. The good news is that the majority of Philippine dermatologists have access to surgical masks with some using N95 masks. Face shields, goggles, and bonnets are also some of the protective gear available to Philippine dermatologists.

Data from 466 Philippine dermatologists show that the most commonly done procedures are electrocautery, chemical peels, laser treatments, toxins, and excision. Since these procedures are usually performed within 1 foot close to the patient, proper use of recommended PPE and the use of magnifying loupes may be used to increase the physical distance between patient and physician.

Only 18.83% of Filipino dermatologists schedule patients by appointments before the COVID-19 outbreak. Filipino dermatologists need to adjust accordingly by limiting visit times. All patients should be scheduled by appointment to allow for appropriate risk screening before the visit and to give proper physical distancing in the clinic. The appointment-based system will also give the staff time to sanitize the consult and treatment areas in between patients.

Teledermatology will play a significant role in the practice of dermatology during this pandemic and the future. The dermatologist needs to be flexible as local COVID rates and community transmissibility rates change, and as the needs of the community for dermatologic services change. Because COVID-19 may manifest in multiple ways on the skin, it is incumbent on the dermatologist to prioritize their safety and health, and use their best judgment in assessing and managing patients seeking their care.

REFERENCES

(1) "COVID-19 Case Tracker" (2020) *Department of Health*. Available from: https://www.doh.gov.ph/covid-19/case-tracker. Accessed April 15, 2020.

(2) Peng X, Xu X, Li Yuqing et al. Transmission routes of 2019-nCoV and controls in dental practice. Int J of Oral Science (2020)12:9.

(3) Adhikari SP, Meng S, Wu YJ, et al. Epidemiology, causes, clinical manifestation and diagnosis, prevention and control of coronavirus disease (COVID-19) during the early outbreak period: a scoping review. *Infect Dis Poverty*. 2020;9(1):29.

(4) "Cleaning and disinfection of environmental surfaces in the context of COVID-19: Interim guidance 15 May 2020 " (2020) *World Health Organization*. Available from: https://apps.who.int/iris/handle/10665/332096. Accessed April 15, 2020.

(5) Wang LS, Wang YR, Ye DW, Liu QQ. A review of the 2019 Novel Coronavirus (COVID-19) based on current evidence. *Int J Antimicrob Agents*. 2020:105948.

(6) Guo Z-D, Wang Z-Y, Zhang S-F, Li X, Li L, Li C, et al. Aerosol and surface distribution of severe acute respiratory syndrome coronavirus 2 in hospital wards, Wuhan, China, 2020. Emerg Infect Dis. 2020 Jul

(7) Islam MS, Rahman KM, Sun Y et al. Examining the Current Intelligence on COVID-19 and Infection Prevention and Control Strategies in Health Settings: A Global Analysis. Infect Control Hosp Epidemiol 2020 May 15;1-29.

(8) "Interim U.S. Guidance for Risk Assessment and Work Restrictions for Healthcare Personnel with Potential Exposure to COVID-19". (2020) *Centers for Disease Control and Prevention*. Available from: https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-risk-assesment-hcp.html. Accessed April 15, 2020

(9) Arons MM, Hatfield KM, Reddy SC et al. Pre-symptomatic SARS-CoV-2 Infections and Transmission in a Skilled Nursing Facility. NEJM 2020: 1-10 (April 24, 2020, NEJM.org)

(10) Kimball A, Hatfield KM, Arons M, et al. Asymptomatic and Pre-symptomatic SARS-CoV-2 Infections in Residents of a Long-Term Care Skilled Nursing Facility - King County, Washington, March 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69(13):377-381.

(11) "Outpatient and Ambulatory Care Settings: Responding to Community Transmission of COVID-19 in the United States". (2020) *Centers for Disease Control and Prevention*. https://www.cdc.gov/coronavirus/2019-ncov/hcp/ambulatory-care-settings.html. Accessed April 7, 2020.

(12) Sanchez MJ. (2019) Number of mobile phone internet users in the Philippines from 2017 to 2023. *Statista*. Available from: https://www.statista.com/statistics/467186/forecast-of-smartphone-users-in-the-philippines/

(13) "The Educational Attainment of the Household Population (results from the 2010 Census). (2013) *The Republic of the Philippines Philippine Statistics Authority*. Available from: https://psa.gov.ph/content/educational-attainment-household-population-results-2010-census. Accessed April 7, 2020.

(14) "How to Protect Yourself and Others." (2020) Centers for Disease Control and Prevention. Available from: https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html. Accessed on: April 4, 2020

(15) Karuppal R, Surendran S, Patinharayil G et al. It is time for a more cautious approach to surgical diathermy, especially in COVID-19 outbreak: A schematic review. Journal of Orthopaedics. July-August 2020 (20): 297-300.

(16) Katoch S, Mysore V. Surgical smoke in Dermatology: Its hazards and management. J Cutan Aesthet Surg 2019;12:1-7.

(17) Mowbray NG, Ansell J, Horwood J et al. Safe Management of Surgical Smoke in the Age of COVID-19. Br J Surg 2020. May 03 (Online ahead of print) Published online in Wiley Online Library (www.bjs.co.uk). DOI: 10.1002/bjs.11679

(18) "What you Need to Know About Surgical Smoke Plumes " (2019). Available from: http://www.boviemedical.com/2016/02/01/what-you-need-to-know-about-surgical-smoke-plumes/. Accessed on May 28, 2020.

(19) Stratton M. (2017) "Surgical Smoke Transmits Infectious Diseases; Here's How to Stop It." Available from: https://www.infectioncontroltoday.com/operating-room/surgical-smoke-transmits-infectious-diseases-heres-how-stop-it. Accessed on May 28, 2020.

(20) "Healthcare Facilities: Preparing for Community Transmission" (2020). Centers for Disease Control and Prevention. Available at: https://www.cdc.gov/coronavirus/2019-ncov/hcp/guidance-hcf.html. Accessed on May 21, 2020.

(21) Wu Z, McGoogan JM. Characteristics of and Important Lessons from the Coronavirus Disease 2019 (COVID-19) Outbreak in China. JAMA [Internet] 2020; available from: https://jamanetwork.com/journals/jama/fullarticle/2762130

(22) "List N: Disinfectants for Use Against SARS-CoV-2" (2020). *United States Environmental Protection Agency*. Available at: https://www.epa.gov/pesticide-registration/list-n-disinfectants-use-against-sars-cov-2. Accessed on April 30, 2020.

(23) Lewin JR, Brauer JA and Ostad A. Surgical smoke and the dermatologist. J Am Acad Dermatol 2011;65:636-41

(24) "Understanding and controlling the hazards of surgical smoke." (2011) Becker's ASC Review. Available from: https://www.beckersasc.com/asc-accreditation-and-patient-safety/understanding-and-controlling-the-hazards-of-surgical-smoke.html. Accessed on May 28, 2020.

(25) "Control of Smoke From Laser/Electric Surgical Procedures (DHHS (NIOSH) Publication Number 96-128. " (1996) *Center for Disease Control and Prevention*: The National Institute for Occupational Safety and Health (NIOSH). Available from: https://www.cdc.gov/niosh/docs/hazardcontrol/hc11.html.

(26) Brat, G. A., Hersey, S., **Chhabra, K.**, Gupta, A., & **Scott, J.** (2020). Protecting Surgical Teams During the COVID-19 Outbreak: A Narrative Review and Clinical Considerations. *Annals of Surgery*, 1. https://doi.org/10.1097/SLA.0000000000003926

(27) Danielle Wajngarten and Patrícia Petromilli Nordi Sasso Garcia (2019). Effect of magnification devices on dental students' visual acuity. PLoS One. 2019; 14(3): e0212793. 2019 March 27.

(28) "Operational Considerations for Personal Protective Equipment in the Context of Global Supply Shortages for Coronavirus Disease 2019 (COVID-19) Pandemic: non-US Healthcare Settings". (2020) *Centers for Disease Control and Prevention*. Available at: https://www.cdc.gov/coronavirus/2019-ncov/hcp/non-us-settings/emergency-considerations-ppe.html. Accessed March 25, 2020

(29) " Short-Term Recommendations for Cutaneous Melanoma Management During COVID-19 Pandemic Version 3 (5/6/2020)". (2020). *National Comprehensive Cancer Network*. Available at: https://www.nccn.org/covid-19/pdf/Melanoma.pdf. Accessed on March 25, 2020

(30) "Advisory Statement for Non-Melanoma Skin Cancer Care During the COVID-19 Pandemic (Version 4, May 22, 2020) (2020). *National Comprehensive Cancer Network*. Available at: https://www.nccn.org/covid-19/pdf/NCCN-NMSC.pdf. Accessed on May 30, 2020

(31) Dover JS, Moran ML, Figueroa JF, et al. A PATH TO RESUME AESTHETIC CARE EXECUTIVE SUMMARY OF PROJECT AesCert™ GUIDANCE SUPPLEMENT: PRACTICAL CONSIDERATIONS FOR AESTHETIC MEDICINE PROFESSIONALS SUPPORTING CLINIC PREPAREDNESS IN RESPONSE TO THE SARS-CoV-2 OUTBREAK [published online ahead of print, 2020 May 2]. Facial Plast Surg Aesthet Med. 2020;10.1089/abc.2020.0239. doi:10.1089/abc.2020.0239

(32) "COVID-19 Safe Cosmetic Injecting Guide 2020" (2020). *Australasian Society of Aesthetic Plastic Surgeons and the Australasian Society of Cosmetic Dermatologists*. Available at: https://aestheticplasticsurgeons.org.au/wp-content/uploads/2020/05/ASAPS-ASCD-COVID-SAFE-INJECTING-GUIDE-2020-v7.pdf. Accessed on: May 30, 2020

(33) Gallo, O, Locatello, LG. Laser-assisted head and neck surgery in the COVID-19 pandemic: controversial evidence and precautions. *Head & Neck*. 2020; 1– 2. https://doi.org/10.1002/hed.26271

(34) Ilmarinen T, Auvinen E, Hiltunen-Back E, Ranki A, Aaltonen LM, Pitkäranta A. Transmission of human papillomavirus DNA from patient to surgical masks, gloves and oral mucosa of medical personnel during treatment of laryngeal papillomas and genital warts. *Eur Arch Otorhinolaryngol*. 2012; 269(11): 2367- 2371. https://doi.org/10.1007/s00405-012-2049-9.

(35) Smalley PJ. Laser safety: risks, hazards, and control measures. *Laser Ther*. 2011; 20(2): 95- 106. https://dx.doi.org/10.5978%2Fislsm.20.95.

(36) Ravishankar A., Turetsky Y., Novotny S., Allen T., Farah R.S. Implementing laser safety standards in the outpatient Academic dermatology clinic: a quality improvement based study. Laser Surg. Med. 2019 doi: 10.1002/lsm.23174

(37) Sarnoff D., Gotkin H., Doerfler B., Gustafson J., Hanke C.W. The safety of laser skin resurfacing with the microablative carbon dioxide laser and review of the literature. J. Drugs Dermatol. JDD. 2018;17:1157–1162

(38) Bargman H. Laser safety guidelines. J. Clin. Aesthetic Dermatol. 2010;3:18–19.

(39) 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; 382: 1177- 1179. https://doi.org/10.1056/NEJMc2001737.

(40) Emadi SN, Abtahi-Naeini B. Coronavirus Disease 2019 (COVID-19) and dermatologists: Potential biological hazards of laser surgery in epidemic area [published online ahead of print, 2020 April 6]. *Ecotoxicol Environ Saf*. 2020;198:110598. doi:10.1016/j.ecoenv.2020.110598

(41) Lister T. Clinical guidelines for laser procedures during the COVID-19 pandemic. April 2020. https://www.bmla.co.uk/clinical-guidance-for-laser-procedures-during-the-covid-19-pandemic/