Dermatology practice in the times of the COVID-19 pandemic

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Abstract

The severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is implicated in the ongoing pandemic across the globe since December 2019. It was first notified by China from Wuhan on 31 December 2020 and transmission to healthcare workers was first reported on 20 January 2020. Human-to-human transmission is mainly by droplet infection. At present no effective vaccine is available. Our speciality needs to collectively address the urgent issue of risk of transmission in dermatology practice. A case series of Coronavirus Disease 2019 (COVID-19) from Wuhan described that 41.3% of their patients may have acquired the infection from the hospital. Of all the infected health care workers, 77.5% worked in general wards and departments. These data highlight the significant risk of nosocomial transmission of COVID-19 and also the higher risk in general wards and departments compared to the emergency room or intensive care unit. Dermatology patients are generally seen in clinics and in outpatient departments in hospitals. Patients wait together in the waiting area, intermingle and then are seen by the physician in their chamber. This can cause transmission of the pathogen among patients and from patient to physician. Social distancing, hand hygiene and the use of personal protective equipment are important for preventing the spread of infection and dermatology practices also have to incorporate these aspects. Telemedicine is becoming an important tool for the management of dermatology patients in these times. At-risk patients in dermatology also need to be given priority care. Protocols for the use of immunosuppressants and biologics in dermatology during the pandemic are being developed.

Key words: Corona, COVID-19, dermatology, outpatient department, severe acute respiratory syndrome, SARS-CoV-2

Introduction

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a β-coronavirus has been implicated in the ongoing pandemic across the globe.[1] On 31 December 2019, China notified the outbreak to the World Health Organization (WHO) with Wuhan, the capital city of Hubei province in mainland China, as the epicentre.

Important Aspects of the Disease

Pathophysiology

This infection is transmitted via droplets generated by infected individuals during coughing, sneezing or talking and the subsequent inhalation of droplets by others. Viral particles on surfaces may also be picked up and brought into contact with the mouth, nose and eyes. Aerosolization produces the highest risk. All age groups are susceptible, but the elderly with multiple co-morbidities such as diabetes, hypertension, cancer, cardiovascular disease and chronic lung disease appear to be more susceptible and at risk for severe disease and complications; a milder disease has been described in the paediatric age group.[2]

Clinical features

Most of the infected people however are asymptomatic (80–85%), thus posing an even greater risk for spread of the infection. When symptomatic, most cases develop symptoms

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in 4–5 days, though the incubation period can be up to 14 days in some cases. Fever (24.5%), sore throat (7%) fatigue (3.95%), dry cough (16%), anorexia, myalgia, dyspnoea (5%) and sputum production are the commonest symptoms. Headache, nausea, diarrhoea, loss of smell and taste have also been reported.[3] Acute Respiratory Distress Syndrome (ARDS) is the major complication and cause of mortality.

Cutaneous manifestations

A myriad of cutaneous manifestations of COVID-19 have now been reported that include acral erythema with oedema, vesicles or pustules (pseudo-chilblain, covid toes), monomorphic vesicular eruptions, urticarial lesions, maculopapular eruptions, pityriasis rosea-like lesions, enanthems, a purpuric flexural eruption, erythema multiforme, erythema elevatum diutinum-like lesions, purpura, livedo and necrosis. Vesicular eruptions are seen early in the course of the disease whereas pseudo-chilblain presents later in the evolution of COVID-19.[4] None of these presentation are specific or prognostic of the disease. Possible pathogenesis of the cutaneous manifestation is either virus directly invading the endothelial cells of the blood vessels leading to vasculitis like picture or an exaggerated inflammatory response leading to the other manifestations.

Treatment

Remdesivir got emergency use authorisation for treatment of COVID-19 on May 1, 2020. Hydroxychloroquine has been found to be effective in recovery, reducing infectivity and as prophylaxis.[5] The Drugs Controller General of India (DGCI) has recently approved itolizumab to manage moderate to severe COVID-19 infection.[6] Other investigational agents are antivirals like favipiravir; interleukin inhibitors (IL-6 inhibitors) sarilumab, tocilizumab and siltuximab; ivermectin; dexamethasone and other glucocorticoids; convalescent plasma and JAK Stat inhibitors (ruxolitinib, baricitinib).[7-9] In the absence of approved definitive agents for treatment, prevention of transmission of infection by isolation and physical distancing, cough etiquette, hand hygiene and personal protective measures are extremely important.

The Indian Scenario

The first case of SARS-CoV-2 infection in India was reported on 30 January 2020.[10] In fact the first three cases which were reported in Kerala were Wuhan-returned students. The mortality rate of COVID-19 in India is estimated to be around 1.55%.[11]

In India, the high density of population, low doctor-to-patient ratio, deficiency of test kits, ventilators and personal protective equipment are major challenges in managing this pandemic.[12]

Risk of Transmission during Dermatology Treatment

The changed scenario in health care delivery around the world in the wake of the COVID-19 pandemic demands that the risk of transmission in dermatology practice to be urgently addressed. Though most dermatology patients are non-emergencies, we still have to ensure that clinicians and infrastructure are available for patient care since the pandemic is likely to be prolonged.

There will be significant risk of nosocomial transmission of SARS-CoV-2 and the higher risk in general wards (including dermatology) compared to the intensive care unit, perhaps due to a relative laxity in use of personal protective measures.

Viral loads in the upper respiratory tract specimens of infected patients are higher soon after the onset of symptoms indicating that risk of transmission is higher in the earlier stages of the infection.[13] Asymptomatic infected individuals therefore act as disease spreaders.[14,15] Virus particles have been found to survive for several days on multiple surfaces though surface transmission of virus may not be a major factor for its transmission and spread.[16]

High patient volumes in most dermatology outpatient settings mean that, despite screening of patients, there are chances of asymptomatic or minimally symptomatic carriers coming in contact with many care providers as well as other patients. Some infected individuals may undergo surgical procedures or get admitted, resulting in prolonged exposure of healthcare professionals. The risk of patients acquiring the infection from an infected doctor or hospital staff is also significant.

Dermatology patients are generally seen in private clinics and in the outpatient department of medical colleges. Patients and their attenders/ family members usually wait together in the waiting area, intermingling before being seen by the physician in their chamber. This has the potential to cause transmission of the pathogen among patients. The dermatologist, while examining a patient and performing surgical procedures, results in close contact of the patient, adding another potential point of infection.

Risk Abatement in Dermatology Outpatients

The coronavirus pandemic in India has changed the way we practice dermatology. In general, to reduce the chances of exposure and to maintain the working staff strength, the staff can be divided into groups as minimum number required during consultation period and rotated in shifts. The Indian Association of Dermatologists, Venereologists and Leprologists (IADVL), Association of Cutaneous Surgeons (India) and other professional bodies have suggested certain measures to reduce risk to patients and physicians during this pandemic. Some of the measures are as follows:[17,18]

Measures in the waiting area

1. Decrease the number of chairs in the waiting area and keep chairs apart atleast at a physical distance of 1.5 metres between each of them.

2. Reduce waiting time by giving prior appointments
3. The room should be well ventilated. About 12-15 air exchanges per hour is best for particle removal from air space. Well-designed natural ventilation is more effective than air conditioning for infection control. Home air conditioning systems recirculate cold air and air exchange per hour is not sufficient for infection control in patient care areas.
4. Ultraviolet germicidal irradiation can be considered
5. Screening of patients in the waiting can be done using a questionnaire asking about fever, cough, breathlessness and other COVID-19 symptoms, and history of contact with cases. Screening can also be done on a phone. It must be borne in mind that patients may conceal details due to the stigma associated with the infection. Non-contact infrared thermometers are now commonly used for rapid screening of patients for fever but might not always give reliable readings.
6. Alcohol-based hand sanitizers are to be kept in the waiting area and patients should be encouraged to use them with the help of educational posters. Handwashing area should be available in the waiting area if possible.
7. Reading material and toys should not be kept in the waiting area. Surfaces like glass tabletops and doorknobs should be disinfected using alcohol-based sanitizers at the end of the day.
8. It should be ensured that the patients, their attenders and the staff wear mask properly at all times and the same should be emphasised repeatedly and the same can be made available to patients.
9. Staff should ensure that the above laid measures to be adhered to. Those dealing with patients directly should wear adequate mask, goggles, face shield and disposable gown.

Measures in the consultation room

1. Handshakes to be avoided. Namaste is better for greeting patients
2. Not more than one patient should be allowed inside the chamber even in busy outpatient departments. In case, an attender for the patient is required, proper precautionary measures with use of mask and hand sanitisation to be ensured.
3. An N95 mask, face shield, goggles and gloves should be worn by the dermatologist in the consultation room while examining patients. Measures to reduce risk of contamination during examination need to be incorporated including examination of the lesion from a distance which may not always be possible. Hence, the lesion can be quickly examined closely with head of the patient turned away from the doctor to one side and patient should be instructed not to speak during examination. Relevant history can be asked keeping patient at a minimum distance of 1.5 metres. The mask should be disposed properly after use and should not be reused. Face shields and googles add on to the protection especially in high risk cases,
4. Tabletops and dermoscopes should be disinfected after every consultation.

Measures in the operation theatre

Many elective procedures are being deferred, but procedures cannot be postponed indefinitely.[19] It is better to consider asymptomatic patients as potentially infectious and develop standard operating procedures, which makes elective procedures safer for patients and physicians alike. Use ofair cleaning systems (air purifiers with high-efficiency particulate air [HEPA] filters), better ventilation, smoke evacuators, surface disinfection, and use of personal protective equipment for doctors and staff are some of the measures which can make elective dermatologicalsurgical procedures safer. Unless contraindicated, mouth and nose of the patient should be covered with a facemask during laser procedure and while using energy based devices for source control.

Measures to be taken in phototherapy units

Due to COVID-19, most of the outpatient departments are closed resulting in closure of phototherapy units as well. Phototherapy may be associated with a higher risk of transmission because chambers are closed and shared by many patients.[20] UVA and UVB has been hypothesised to inhibit SARS-CoV-2 as UVA and UVB have virucidal effect on other SARS-CoV but their efficacy specifically to inhibit SARS-CoV-2 therapy is not known.[21] UVC has been studied to have virucidal effect on SARS-CoV-2 with its upper limit determined for the log-reduction dose (90% reduction) was calculated as approximately 10.6 mJ/cm^2 (median), while the true value was around 3.7 mJ/cm^2 (median).[22] The following precautions should be incorporated while delivering phototherapy:

- Patients should be screened for symptoms of COVID-19 at every visit
- The patient should wear a triple-layer surgical mask or homemade cotton mask and not to remove it throughout the phototherapy session
- Patients should bring their own goggles or goggles should be cleaned with hypochlorite before their use by the next patient
- Patients should be given disposable bags to keep their clothes and the bags are to be subsequently discarded
- They should be given prior appointments with at least 30 minutes' gap between two appointments
- Use of a hand sanitizer before and after entering the phototherapy unit
- Areas which are repeatedly touched like handles, and patient changing rooms should be disinfected with 1% sodium hypochlorite.
- Home based phototherapy solutions like PUVASOL can be offered to patients whenever feasible.

Treatment of At-risk Dermatology Patients

Dermatology patients at higher risk of COVID-19 include:

1. Patients of chronic skin conditions like psoriasis, atopic dermatitis and urticaria with co-morbidities like diabetes, hypertension, asthma, cardiac abnormalities, renal disease and liver disorders
2. Elderly and pregnant patients with chronic/ emergent skin conditions
3. Patients with severe/chronic skin conditions on corticosteroids and other immunosuppressants
4. Patients on biologics

Chronic skin conditions with co-morbidities

Clinical data on COVID-19 indicate that mortality is higher for people with chronic diseases and associated comorbidities.[23] Hence such individuals should take strict care about shielding measures like protective isolation, hand hygiene and personal protective measures.

Immunosuppressive therapy

Broad immunosuppression caused by conventional immunosuppressants across multiple cytokine axes can increase susceptibility to and persistence and reactivation of viral infections. Immunosuppressants also decrease the cytokines that recruit and lead to differentiation of the immune cells required to clear viral infection. on the other hand, these inflammatory mediators can become hyperactivated in COVID-19 producing a "cytokine storm", which can lead to mortality; withdrawal of broadly immunosuppressive drugs might therefore increase the risk of precipitating this cytokine storm. Hence, there are divergent views on the stoppage/ continuation of immunosuppressive therapy during this pandemic.[24]

Currently, the protocol accepted by most experts and dermatological associations is that patients continue taking their immunomodulator/immunosuppressive therapy unless they become infected by SARS-CoV-2.[25] However, if the skin disease is stable, it is better to wean patients off immunosuppressants. Table 1 gives the present understanding for the two common groups of patients with respect to immunosuppressive therapy.

Other pertinent points with respect to immunosuppressants are:

Systemic corticosteroids: Doses of prednisolone >20 mg/day if received for > 4 weeks should not be abruptly stopped; these should be tapered to <10mg/ day as per schedule. Of note, systemic corticosteroids are part of currently recommended COVID-19 treatment protocols.[26]

Methotrexate**:** It has the advantage of a much shorterhalf-life (three to 10 hours) than other immunosuppressants (except corticosteroids). Hence, it can be stopped for the duration of illness/risk period, and as it is washed away from the body quickly, will not suppress the body's immunity against the virus.

Other immunosuppresants**:** Washout period is usually three months. So it is generally preferred to continue them unless the patient becomes positive forSARS-CoV-2.[27]

Small molecules: Apremilast and other smaller molecules are easier to stop due to their shorter half-lives; they could then be restarted later based on convenience. Their weaker immunosuppressive effects are also an advantage in the present context.

The evidence for and against these recommendations is not very strong and generally based on expert opinions or position statements. With time, stronger recommendations may become available.

Biologics

It is not known if biologic therapies render patients more susceptible to SARS-CoV-2, but in the pre-coronavirus era, respiratory infection rates with biologics were comparable to placebo. Compared to conventional immunosuppressants, biologics do not target vital domains within the viral immune response and hence may not significantly impact viral clearance; a more lenient approach may be taken with the latter. If a patient has confirmed SARS-CoV-2 infection, symptoms of COVID-19 or symptoms of flu with history of contact with a case, the biologic needs to be stopped or therapy postponed. In patients at risk of developing COVID-19, the decision to continue or stop would depend on:[28,29]

a. Half-life: As half-lives of biologics are longer, it is better to take a case by case decision on their stoppage/ continuation. As their effects last longer, there may be no harm in stopping them for a short duration, but there is a risk of anti-drug antibody formation with treatment cessation and subsequent resumption.[30]
b. Severity of skin disease: If the disease is severe, the biologic is to be continued. If the clinician feels that the disease may aggravate on stopping the biologic leading to a more inflamed state (increasing the chance of acquiring COVID-19 and its complications), then also the biologic needs to be continued. If a history of severe previous relapses exists, it is better to continue the biologic. If the disease is of moderate severity and can be controlled with an alternative or safer biologic, then that switch is to be made. If the disease is mild and the biologic is used for convenience, it should be stopped.
c. The views and concerns of the patient
d. The baseline risk of the person for developing significant COVID-19 infection (co-morbidities, age).
e. Stress levels along with additional factors as above
f. Wherever follow-up by telephone/mobile/email/video consultation is not possible, it may be safer to stop the biologic.

Published data from controlled trials comparing specific biologics with placebos for overall infection rates and rates of upper respiratory infections and nasopharyngitis can guide decisions regarding continuation or discontinuation of biologic therapies in psoriasis.[31] Recommendations for specific groups of biologics are provided in Table 2.

Oral retinoids and thalidomide

Systemic retinoids and thalidomide are apparently not harmful in COVID-19 patients and need not be stopped or their dose adjusted. However, pregnancy tests and adequate contraceptive measures are to be reinforced for all teratogenic drugs. Where follow-up and patient compliance with instructions are doubtful, it is better not to prescribe these drugs and advice stoppage if the patient is already on them.

Specific skin disorders

To reduce the load on hospitals whose priority is treatment of COVID-19 patients, only those dermatological patients with severe disease should be treated as in-patients. All patients before admission should be tested for SARS-CoV-2.

Dermatology treatment should be carried out as much as possible with advice on telephone, email or other online modes. This would also reduce both chances of patients getting exposed to the virus and risk to health workers.

In diseases like psoriasis, pemphigus or erythroderma on follow-up, admission may be advised only if the disease worsens. Severe drug reactions (especially toxic epidermal necrolysis), flares of pemphigus, pustular psoriasis and the like would require admission.

a. Psoriasis: For psoriasis patients diagnosed with COVID-19, the International Psoriasis Council recommends physicians to discontinue or postpone use of immunosuppressant medications as such therapies are contraindicated in patients with active infections.
b. Skin cancers: Only highly symptomatic lesions with rapid growth, ulceration, perineural involvement, poorly differentiated tumors and those with patient-specific risk factors such as immunocompromised state should be considered for treatment in the immediate future.[34]
c. HIV: Anti-HIV drugs may be effective against COVID-19. Therefore, HIV patients receiving standard antiretrovirals might not have an increased risk for COVID-19. However, the general immunodeficiency in these patients may still place them at a higher risk.[35]

Table 1: Protocol for immunosuppressive therapy

Group of patients	Immunosuppressive therapy modification	Reasons for modification/no modification
Patient with confirmed COVID-19	Stop immunomodulator/immunosuppressive therapy (except corticosteroids)[25] Wean off corticosteroids slowly Stop treatment for 4 weeks or till patient has completely recovered, whichever is later	Chances of aggravation of secondary bacterial infections More severe COVID infection and complications Wean steroids slowly to prevent adrenal suppression (specific evidence minimal)
High risk patients (age>60 years, cardiac abnormalities, pulmonary disease, chronic renal or liver disease, diabetes, hypertension, cancers, obese)	Assess benefit-to-risk ratio of the drug If benefit (life saving) > risk: Continue therapy If risk>benefit: Discontinue therapy Avoid use of double immunomodulators together	Significantly increased risk of a serious course of illness and mortality with COVID-19

Table 2: Recommendations for the use of biologics during the COVID-19 pandemic

Type of biologic	Recommendations	Reasons
TNFα inhibitors	Not to start as new therapy for any patient Switch to IL-17 inhibitor or safer conventional therapies when the patient is worried or has a high risk COVID infection	Broadest and most efficient biologics which suppress the immune system. They also carry black box warnings in the presence of infections[32]
IL-12 inhibitors	To be stopped	IL12 is specifically required to fight viral infections. Inhibition can make the patient more susceptible to COVID-19
IL-17 inhibitors and IL-23 inhibitors	To be continued	Have specific targets and are less immunosuppressive. Good options to switch to from other biologics
Rituximab	To be continued in case of severe disease/if severe flares expected on discontinuation Switch to IVIG/safer alternatives if disease moderate to mild	Risk versus benefit analysis IVIG does not suppress the immune system
Omalizumab	In case of essential requirement, the first 2 injections of omalizumab need to be given in the hospital. Patients can be taught to self-inject at the second visit in order to continue the remaining injections at home if they are competent and confident enough to do so. Corticosteroids/immunosuppressants as replacement for omalizumab can be used in the lowest possible doses to control urticaria[33]	Risk of anaphylaxis maximum at first 2 injections and then visits can be reduced to decrease exposure risk

IL: Interleukin, TNF: Tumor necrosis factor, IVIG: Intravenous immunoglobulin

Other Problems for Dermatology Departments/ Clinics

1. Use of dermatology wards as isolation wards leading to reduced numbers of beds for dermatology admissions
2. Depleted workforce due to dermatology residents, faculty and even private practitioners being dedicated to COVID-19 jobs. Approximately 50% of the actual dermatology resident strength has been dedicated to COVID-19 wards leaving on ground half strength especially in government set ups.
3. Training of PG residents may be affected and virtual classroom teaching may be a partial solution
4. Shortage of hydroxychloroquine for dermatological conditions due to its recommended use as prophylaxis against COVID-19.

Dermatologists are also encountering skin complaints in healthcare workers and others during this pandemic:

1. Aggravation of pre-existing skin disease due to prolonged friction, epidermal barrier disruption, excessive sweating and hydration effects of personal protective equipment (PPE). Prolonged use of PPE by medical and paramedical personnel during healthcare services has led to increased numbers of occupational skin problems such as burning, itching, stinging, erythema, papules, erosions, maceration, scaling, pressure urticaria, contact dermatitis, aggravation of acne, seborrheic dermatitis and folliculitis[36-38]
2. Frequent handwashing and excessive use of sanitizers and alcohol disrupts the skin barrier leading to hand dermatitis. Use of emollients and barrier creams, particularly after each handwash and before wearing PPE should be promoted among healthcare workers.[39]
3. Drugs used to treat COVID-19 infection like hydroxychloroquine and antivirals can lead to drug reactions which need to be identified early and managed. These might be confused with cutaneous manifestations of COVID-19 per se.
4. Dermatological conditions can lead to fever which can pose a diagnostic problem in the initial screening for COVID-19 and a dermatologist may need to provide his services on that account.

Change in Legislation

Telemedicine is very important in providing healthcare in these times. Dermatology consultations are mostly non-emergencies and since the beginning of the pandemic, had been stopped in many clinics and medical colleges. Dermatology is a visual subject and with the availability of phones with good quality cameras, patients can send their images and laboratory reports to doctors and seek their opinion. A teledermatology consultation thus reduces the requirement of doctor visits. The patient gets continued support; changes in management or a clinic visit if required can also be suggested. Online platforms may also be used to facilitate virtual staff/ team meetings to coordinate patient care.

The Bombay High Court in its verdict delivered on 27 July 2018 had deemed prescriptions without diagnosis and consultation, and treatment on online platforms without physically examining the patient as illegal.[40] After the pandemic outbreak, the Board of Governors (Medical Council of India) promulgated guidelines on telemedicine on 25 March 2020.[41] These guidelines state that a registered medical practitioner (RMP) can prescribe patients treatment via online platforms as a first consultation or as follow-up; consent is implied when the patient initiates a consultation. The RMP can ask for an in-person visit any time during the consultation and he can charge patients. He is bound by medical ethics during these consultations and there are certain prescription restrictions (category X drugs). These guidelines are a way forward for dermatology patients requiring continuity of care and for new patients who want to consult physicians without risking exposure in this environment. The IADVL has also issued a position statement on 6 April 2020 which supports these protocols.

COVID-19 Vaccination in Dermatology Practice

As of 18 February 2021, at least seven different vaccines across three platforms have been rolled out all over the globe. Simultaneously, more than 200 additional vaccine candidates are in development phase, of which more than 60 are in clinical development. Vulnerable populations in all countries are the highest priority for vaccination. In India, after the formal approval by DGCI for the emergency use of COVID-19 vaccine, the vaccine drive was launched on 16th Jan 2021 targeting healthcare and frontline workers.[42] Two vaccines namely COVISHIELD (Recombinant, replication-deficient chimpanzee adenovirus vector encoding the SARS-CoV-2 Spike (S) glycoprotein) and COVAXIN (Whole-Virion Inactivated Vero Cell derived). Vaccination drive has now been directed to cover individuals over 60 years of age and those in age group 45-59 years with co-morbidities and current prolonged use of oral corticosteroids or immunosuppressants medications.[42] Many of these patients including those with co-morbidities might be on immunosuppressants or immunomodulators for a dermatological indication. Hence, it becomes impertinent to keep ourselves abreast of the latest society and government guidelines for vaccination in patients on immunosuppressants.

Patients on immunomodulators/immunosuppressants

As per the American College of Rheumatology (ACR) COVID-19 Vaccine Clinical Guidance Task Force (updated on Mar 4, 2021), for hydroxychloroquine, apremilast, IVIG, glucocorticoids, sulfasalazine, mycophenolate, azathioprine, cyclophosphamide (oral), TNFi, IL-17, IL-12/23, IL-23, Belimumab and oral calcineurin inhibitors does not warrant any modifications to either immunomodulatory therapy or vaccination timing. Methotrexate and janus kinase inhibitors are to be withheld for 1 week after each vaccine dose. IV

cyclophosphamide should be planned approximately 1 week after each vaccine dose whenever feasible. Taking all COVID-19 preventive measures in the patient, Rituximab can be scheduled such that the vaccine is initiated approximately four weeks prior to next scheduled rituximab cycle and after vaccination, delay rituximab 2-4 weeks after 2nd vaccine dose, if disease activity permits.[43] MOHFW has issued no specific change in vaccine timing or modification for patients on above mentioned immunomodulatory drugs.[42]

Dermatology practice post vaccination of dermatologist and staff: Recommendations as above for use of PPE by healthcare personnel post vaccination remains unchanged.[44]

In conclusion, the COVID-19 pandemic has taught us that patient safety is of paramount importance and we should strive towards it. If our patients are safe, we also remain safe. A simple formula of Avoid, Restrict and Abbreviate can be immensely helpful.

- Avoid: Routine clinics/ minor surgeries/physical appointments unless emergency or severe
- Restrict: Number of visits/ number of staff/generation of aerosols
- Abbreviate: Length of contact/waiting times/treatment.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Conflicts of interest

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