Post Lockdown Operational Aviation Medicine Guidelines

For those working in Civil Aviation Sector under threat from Novel Coronavirus Disease 2019 (COVID 19)

T I M E S P A N
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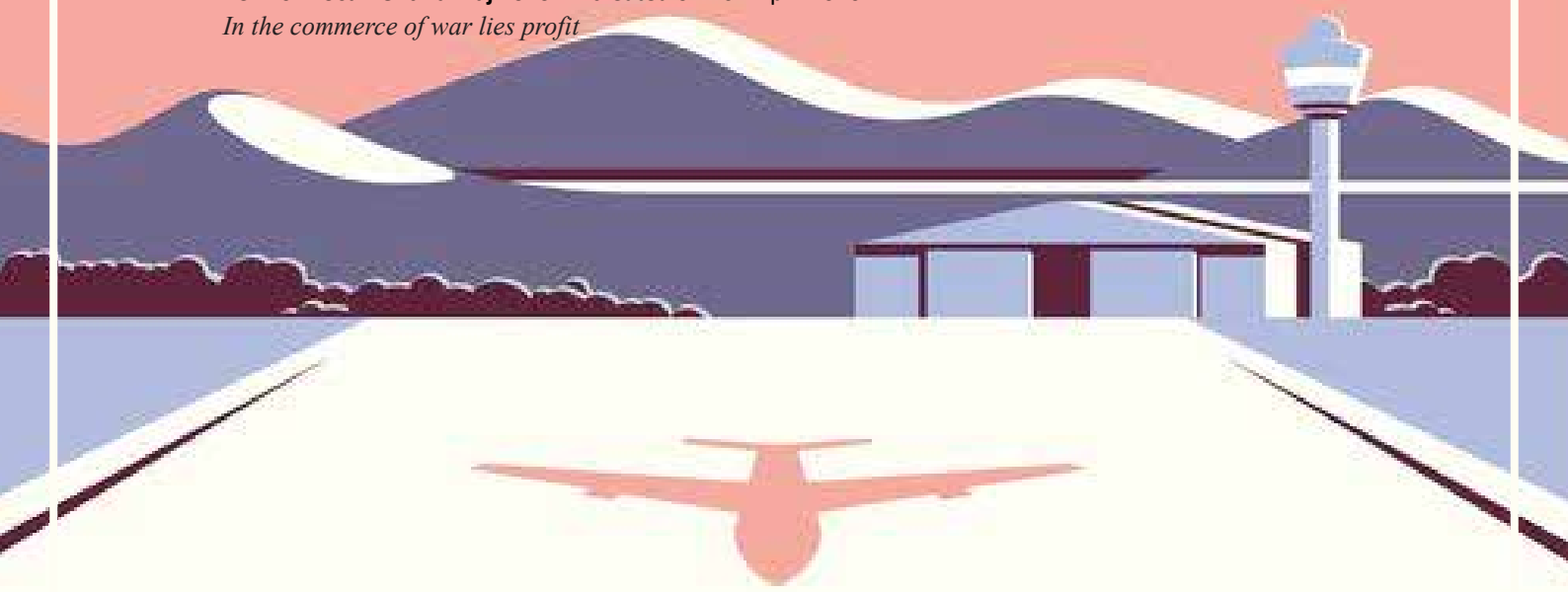
In the commerce of war lies profit



Introduction:

One of the most expensive human resources available to any country are their aircrew, cabin crew and everyone else involved in aviation related duties, probably as expensive as medical and paramedical resource. They are not only capital-intensive resource due to long initial and recurrent training cost, but also due to their niche specialized domains and their availability in limited numbers. The preservation of this human resource becomes exponentially difficult, during pandemic, as instead of being put in isolation through a lockdown, they are by default, required to work at the frontline of infectious disease.

Novel Coronavirus Disease 2019 (COVID-19) has challenged us, in civil aviation medical domain, as nothing else has ever done, in our times. Questions are being asked by pilot's and others, as to what they should do to keep themselves safe, as one pilot who had to a take a passenger flight from Kolkata to Imphal or another one, who was required to command a cargo flight from Delhi to China, with the expected turnaround time of 2 hours or so and back. The flight time, even at peak of infection may vary from few hours to a day, requiring single or multiple landings, which involve exceptional planning and execution of operations, integrated naturally, with the ability to deal with imponderables of aviation.

The burden of responsibility:

"My job is at stake", when in your opinion will the flying restart? Should I take meals from flight kitchen, as the cabin crew are getting exposed much more than cockpit crew? How and when should I use the mask and PPE in case in-flight oxygen breathing is required? Company is not providing proper kits or N-95 mask; I have a small baby at home; what should I do? Where can I buy them? Should I take Tab Hydroxy Chloroquine to prevent infection, as I feel I am at same risk, if not more, as medicos treating positive cases? At least they know that they are dealing with a positive case. I do not know if I am carrying a positive case in my flight.

Such questions are being asked to people like me on daily basis. The anxiety, the suppressed fear, the overt bravery, and controlled concern is so palpable to me as a doctor, that it so naturally gets passed on to self, as the burden of responsibility that should now be delivered, day and night.

Fear of Unknown and Anxiety of Uncertainty:

In the days of information overload, the fear of this unknown enemy is visible even in the answers of so-called experts. "Ideal" advisories are being issued, with no concern to the inherent grade of difficulty, in their implementation process, nor backed by logistics solutions or answers to availability of recommended resources, specially in the locked down stage. Everyone has become an expert in imparting profound knowledge, specially so, when it is not in their domain. The fear is enhanced when the same experts end up by saying that not much is known about the disease or I do not know, from where you can get the kits and items, I am recommending for your safety.

How do we deal with such a situation when knowledge is anecdotal, resources are limited, questions are too many and existential threat exists, amongst the people on the frontline?

In such times when precedence must be set, against a life-threatening enemy, the answers will generally lie and be right, when you step into the shoes of a father or mother knowing that on the other side of the phoneline is your own son or daughter. My attempt is to do exactly that, through this unconventional paper, without documenting the right references in Vancouver style, without listing laboratory protocols as known to the world, without getting numbed by unknown variables, as I know that that answers have to be given immediately, despite everything, as holding the line open on the other side of phone is my son or daughter, seeking answers, in these rough times. 'Moments' get lost, if the answers do not come in time and the price for

that delay is too heavy, hence this attempt.

My earlier communications on the “expected timelines” of this crisis shared with Capt Abhay on 28th March 2020 is attached as Appendix ‘A’ to this document. My thoughts on how to do safe, effective, and logical breathalyser testing in Indian Civil Aviation set up during and post Corona phase, shared with DGCA are enclosed as Appendix ‘B’ to this document.

I have gone through much of corona related medical literature and those issued by WHO, ICAO and GOI. The best answers for medical diagnosis and medical management at hospital level is given in AIIMS Protocol for Covid-19 issued under the auspices of GOI and is attached as Appendix ‘C’ to this document for reference. The best possible guidelines for aircrew are issued as, EASA Guidelines – COVID-19: Guidance on Management of Crew Members and is attached as Appendix ‘D’ to this document for everyone’s reference.

Timelines of Opening the lockdown for Flying
(Presumptions based on analysis dated 28th March 2020)

In times of uncertainty a rough timeline brings order and logic to the ensuing chaos. "When in my opinion would we get over the crisis? When would we start flying?

Many of us are asking the question as to when will flying restart, but are unable to reach the answers, as no one can predict the consequence of first-time events. To give some timelines in these uncertain times is thus especially important for crew, staff and others in aviation world to calm down and organize their lives.

Here are my thoughts. Give or take one or two weeks for the predicted timelines. Make your own evidence-based opinions and not on what I think. At the least I can try, while clearly not being in the corridors of power, in real time. The answer lies in going by experience and the resources available in India and ‘What I would have done, if I were the prime minister’:

1. This pandemic like all pandemics, when they started for the first time is till date in the “unknown zone”.
2. I would buy time to get ready for the worse.
3. Three weeks lockdown + prewarning period, when I was bringing in my people from abroad, gave me seven weeks’ time for my team to manage media, inform Indians of what is in store and get ready for the worse.
4. With this time given by the national lockdown, reasonable number of Kits, Ventilators, PPEs, drugs, beds would get created by 10th April 2020.
5. Movement into and out of districts will stabilise and reach zero levels by 10th April 2020.
6. I will start proactive testing from 10th April at district level across the country.
7. Increase in positive cases will occur and peak by 20th April 2020. Isolation of positive cases and quarantine of all will continue.
8. Drop in new cases will start, while deaths will increase from end April 2020
9. Till April end to mid-May worse would be over.
10. Wherever, data start showing zero cases and remain so for 10 days, local area opening will start, around mid-May 2020.
11. Wherever, cities reach "zero new cases figure", movement and economic activity will get permitted. Lockdown will continue in pockets wherever positivity remains.
12. Surface transports will open in pockets with all precautions of minimum contact amongst people by end May 2020.
13. Domestic air movement will start within cities which are 'new case free' by mid to end May 2020.
14. By Jun 2020 successful treatment would be found. Commercial vaccine for the rich will come out by Jun - July 2020. This would be fastest reach to vaccine in the history.
15. Vaccinations, across the world would start around mid-August.16. Deaths will reach NIL mark by October 2020.

17. Herd immunity in India will occur by October November 2020.
18. Threat of COVID 19 will be over by mid December 2020.
19. World will watch for new infections, real time with proactive, covert, or overt intelligence. Districts will be divided into clusters, that can be clamped at a notice of few hours. Anti-Bio-terror official teams would be created at local levels.
20. World would be now ready, to take on life threatening mass infections, better.
21. India will come out stronger with minimum damage like rest of the world.
22. World of terrorism, as it exists today will change.

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Based on available relevant literature on the subject, experience in formulating guidelines for Ebola and H1N1 infection, limitation of known resources, the following guidelines are made. This can form the basis of further refinement by people in the field and are free to add or delete, without any hesitation.

Quick integration of Medicine and Operations:

Till an effective vaccine and a good treatment is found, the life needs to be brought on track through protection by other means. When the issues that range from mild sickness to death of human beings, the matter turns serious and requires lot of wisdom amongst the decision makers and the stakeholders. For better comprehension of the enormity of the issue, it is worth noting the positive role of unconditional "Faith" that runs through those involved, in each landing and take-off, but also their work culture with shifting 'reporting times', rigid scheduling, abnormal sleep wake cycle, shifting meal bowel cycle, a lifestyle completely different from rest of the world, yet they are expected to remain absolutely fit when they take charge of their aircraft duties.

The aircrew, cabin crew, engineers, ground handlers, ATC personnel, airport staff, the managers, the owners, the regulators and travelling public need clarity, on how the processes will change from Corona lockdown phase when flying starts. What changes will occur in existing manuals and SOPs and how operations would be run, once the lockdown opens needs to be shared by each airline department, regulatory bodies and ministries.

Corona threat has brought to the forefront the need to integrate best available options of medical practice, to be quickly integrated with Pre-Flight, In-Flight and Post-Flight phases of operations. Not only has this, to be done now, during the lockdown phase, but also the SOPs be so dynamic that newer options could be introduced seamlessly, while overriding the old ones. Taking forward, from few of the answers given in the attached appendices, I will, to the best of my ability deal with post lockdown operations and their aeromedical considerations in this document, made in shortest possible time frame, least it misses the "Moment".

The Truth:

In view of the above it is quite clear that there are no real answers, with anyone. Crew and all aviation staff, who go out there at airports for work are at huge risk, like police or cleaners or cab drivers etc. Medical staff are probably safer than most as triage is done separately, barrier nursing protocols are well known and doctors dealing at wards are better protected than a pilot or a cabin crew. More you mingle, more chances are to get infected, specially from unknown source. Every time you come back home, you are not sure if you are a carrier and whether you are putting your near and dear ones at risk of infection. Once infected the only option is get into 14 days of institutional or hospital quarantine and if symptoms worsen move from ward to ICU. There are no options to choose your hospital or doctor. Worse, there is no treatment or vaccination available yet. Then why should we fly again; why not wait till COVID -19 is reduced or minimised?

Motivation to take on the risk head-on and Fly:

Time and again human race get challenged by events created by nature or by man. Time and again people have led from the front to overcome the challenge and survive. The motivation of doing so comes from the instinct of fight or perish. Many a times, the real reasons for going out to fight the adversary (Corona) comes from the maternal and paternal instincts, to protect your near and dear ones even at huge risk to themselves. Even in these initial days of Covid-19 crisis it is a group of people small and big who surprise us by their grit, determination and dedication. The reasons for such bravery are so personal that it amazes us to the extent of getting wonderstruck. Leadership within a person and in those around him or her also plays an important part in such an amazing act of unconscious bravery. National leadership and the idea of nation being in difficulty, is the final push to move people into the battle zone. We also are at war today, till we overcome.

In the commerce of war lies the profit. Profit that is fair and that will be shared amongst the winners. That is a good reason to start flying, at the earliest, with all the precautions permitted by the resources available with us. To fight is better than to perish financially or otherwise. Loosing therefore is not an option.

Post Lockdown Guidelines for Management, Operations and Commerce (Scheduled Airlines, NSOPs, Helicopter Services):

1.Management to be ready for dynamic flying schedules through changing Green, Orange and Red sectors for both domestic and International flying ops.

FCII has suggested to GOI the all or none approach for opening the skies. They have perceived that industry will be financially better off, with all or none approach and is willing to wait till all sectors are ready to open. That will happen only when Corona crisis comes completely under control.
Civil Aviation Minister on the other hand is cautious yet inclined to open gradually, as Corona situation starts coming under control.
Cargo Flights, Offshore Helicopter Operations, Medical Evacuation Flights and Special Flights are permitted, even now, during the lockdown stage.

2.Sector colours are likely to stabilize by 6 to 8 months from start of ops post lockdown. Flying to start by mid-May 2020

I feel that flying will start to cover Green (safer) sectors first and open the Orange when it turns Green. No flying will be permitted to operate in Red sectors. The industry should be ready to alter operations as sectors change colours for at least 6 to 8 months. By mid-December things are likely to stabilize and most of the domestic sectors will turn Green. International sectors will open a week or two later than domestic sectors and will follow the same pattern of Green, Orange and Red, occasionally changing colours as incidence of positivity of infection alters across the worlds' Hubs and Spokes. Domestic Flying likely to start lazily, from 2nd week of May 2020.

3.High powered "Zero red tape," Airline Management Committee for Post lockdown phase to be formed and be available 24x7 to take commercial, operational and policy decisions based on competitive market forces and regulatory directives. Various Sub Committees to be available 24x7 to the high-powered committee.

The above process is likely to last till October 2020, after which it can be scaled down. The first 2 to 4 weeks of operations will decide the airlines position in the market. Hundreds of probable scenarios need to be worked out now, during the 10 days window available before the lockdown opens. They can be tweaked later short of real time assessments. All budgetary clearances to be given on day to day basis for logistics, engineering, safety ramp up. For a month or till the initial chaos reduces the Security and Medical resources can be upgraded to higher levels of management.

4.*D (– 15) days: Leader owner to take a call and inform the last man, on why the airline is taking the risk to fly, with no treatment and without vaccination?*

Management, Crew and all staff should come together as one. No one should be forced to come for work. From day one the option should be given to those who want to sit at home in the safe zone to remain there; rest can come and help with as many landings as possible, keeping everyone safe, to the extent possible.

The difference in today's situation and pre-Covid days is that the risk levels have got raised comparatively. Now that we know the character of the enemy the protection levels can be raised through personal examples, for others to follow. The fear will slowly dissipate, with each surviving day in war zone. By then treatment and vaccine will get discovered. That would scale down the risk and protection levels, once again to levels better than we have seen before.

5.Renegotiate with Insurance, Medical, Hospitality and Surface Transport providing Partners to be part of the battle:

Covid-19 should get comprehensively inserted in the both personal and or institutional insurance contract to cover the risk of Covid Infection and its complications. Insurance partner needs to ensure that the entitled class of accommodation and treatment will be made available to all, at Hospitals of their choice, even while on isolation beds. If possible, families to be included as an exception for the duration of this crisis. This should cover both domestic and international locations.

Hotel contracts to provide entitled transit accommodation, food and provide all the protection as per prevailing real time WHO and Government guidelines. This should cover both domestic and international locations.

Cab and Bus providers to also follow the Covid norms of protection as per prevailing real time WHO and Government guidelines. This should cover both domestic and international locations.

6.Ramping up Engineering, Safety and Medical materials and services:

All Covid related materials like Disinfectants, Surface and hand wipes, PPEs, Masks, Overalls etc. are to be procured at best negotiated price but ensuring quality through international and domestic certification process. If possible, any item required by the company employees for personal or family's use should be made available on payment.

7.Passenger Clearance through "Aarogya Setu" App and MEDIF Forms to be made mandatory for all
At the time of booking MEDIF form to be submitted by all passengers and cleared through existing process.

Passengers should carry Aarogya Setu app for a check during entry to airport or as devised by the airline. After getting cleared by AAI the final boarding to be decided by the airline staff. If required Thermal Scanner/-Sensor Thermometers can be used at the entry to aircraft to permit or deny travel.

8.Arrangements for transporting Corona Positive Case amongst Staff if deemed necessary or as a payed service.

Ideally surface transport like big Car/Ambulance should be used to evacuate crew or other staff, from remote places etc. In exceptional circumstances, a positive case, may have to be transported by air once the clearance is received through DGCA/MEDIF. When serious symptoms have not developed, a case can be transferred in special Aviation Cleared cabins, after removing six seats at the rear end of the aircraft, on payment or otherwise. Special arrangement for extra oxygen, monitors, Mechanical Suction apparatus, Backup Batteries, medical escorts etc. may have to be made and cleared by engineering department, a day or few hours in advance of departure time. Other passengers need to be totally shielded from this cabin.

9.Breathalyser Testing for Cockpit and Cabin Crew:

Guidelines as placed in **Appendix 'B'** to this document should be followed.

Post Lockdown Guidelines for Air Crew, Cabin Crew (Scheduled Airlines, NSOPs, Helicopter Services)

1.Flying Dress for Ladies & Gentlemen aircrew/cabin crew personal kit:

•Since the schedules will be unpredictable till stability is reached, at least six overnight kits and six daily return kits should always be ready at home.
•Metal attachments to uniform and formals should be avoided temporarily. A soft name tab for example would help in inadvertent breaks in outermost virus protective clothing cover.
•A soft inner summer/winter overall should be used.
•A fresh scarf over the neck area could be of help to cover exposed surfaces and will bring style too.
•Ideal dress would be to wear a light weight, sweat proof, fire retardant, flying overall with usual pockets, right from home with socks covering the lower end of the trousers. The overall should have Velcro to cover the wrists.
•Light weight Boots preferably with zips should be preferred.
•WW II flying glasses/goggles with sweat absorption felt margins are ideal to use in today's conditions.
•One set of PPE kit should be carried in personal bag into the cockpit. This is in addition to the kits being issued for the flight subject to number of takeoffs, landings, and flight times.
•Alcohol swipes ready to be carried on travel to be part of personal kit.
•Small double water bottles to carry cold water on person.
•Homemade sandwiches/high energy chocolates/small snacks to be carried for duty time.
•When entering the cab, ask for "Aarogya Setu" app to see that the driver is not in risk zone.
•Idea is to minimize cockpit door opening during flight and nil contacts with cabin crew.
•Two large fresh double bed sheets and an inflatable pillow to be carried in overnight kit. If not satisfied at the overnight hotel housekeeping service, please cover the hotel bed with your own sheet.
•IFS should recommend minimum cabin crew staff for the flight as required by safety regulations. (DGCA & ICAO)
•Airline to decide on minimum inflight passenger service during the Covid crisis. Till then Dry food and water self service should be encouraged amongst the travelling public.
•Covid announcements and safety instructions should be followed as approved by regulators.
•Physician Kits and First Aid Kits to be increased on the recommendation of medical department.
•Additional kits to deal with Covid-19 like PPEs, Masks, Human Waste Disposable bags to be carried on board.
•Training in Covid-19 Safety precautions, use of new equipment, donning, doffing and discarding of PPEs etc. to be carried out meticulously by Medical team.

2. Preventing the Spread of airborne infection

All the ways of spread are well known and talked about. Imagine few more ways it spreads that is so relevant for our crew:

•Infection can be transmitted indirectly, through use of infected cutlery, crockery, glasses and cups in hotels and eating outlets, canteens, schools, airports, cockpits etc.
•Through fomites i.e. pillows, blankets, napkins, common towels, or through children using each other's articles like pencils or toys
•Dry sweeping of living and sleeping rooms or hospital wards, shaking of blankets can carry infections between the occupants.
•Still remotely droplet infection can get transmitted through food.
•A patient suffering from viral disease has greater range of infectivity, even when breathing quietly as virus being small can cling to a minute droplet and can be carried with the air current further away.

Cabin crew are likely to get exposed, much more due to inevitable mingling with the travelling passengers, in semi closed environment for hours, compared to cockpit crew. Service of food to cockpit crew by cabin crew be avoided. During the high-risk period it is worth discussing the reduction in inflight services to bare minimum. The crew strength can also be reduced to bare minimum for safe in- flight operations.

3. Use of Hydroxy Chloroquine for Prophylactic use in High Risk Workers: All Aviation Related Workforce including pilots and cabin crew need to be considered as High-Risk Workers:

Sharing the below reference for consideration and use in aviation by AIIMS through DGCA. The concept study as recommended in point 8 below has been initiated by ICMR as informed in daily Corona Briefing by Ministry of Health on Television dated 18th April 2020.

DISCLAIMER
Below document is only for reference and recommended to be used unless cleared by DGCA
"The National Taskforce for COVID-19 recommended the use of hydroxy-chloroquine for prophylaxis of SARS-CoV-2 infection for:
(1) Asymptomatic healthcare workers having direct contact with suspected or confirmed cases of COVID-19
(2) Asymptomatic family contacts of confirmed cases

This recommendation is subject to the following conditions:

1.Hydroxy-chloroquine is found to be effective against coronavirus in laboratory studies and in-vivo studies. Currently there is no direct evidence about its role for prophylaxis. The recommendation for the use of hydroxy-chloroquine as prophylactic agent against SARS-CoV-2 infection is based on empirical evidence, as well as risk-benefit consideration, and its safety profile.

2.Dose:
a.Asymptomatic healthcare workers: 400 mg per week for 8 weeks
b.Asymptomatic family contacts of confirmed cases: 400 mg per week for 4 weeks.

3.The drug is not recommended for children under 15 years of age.

4.The drug is contraindicated in persons with significant hepatic or renal dysfunction and those with known hypersensitivity to 4-aminoquinoline compounds

5.This recommendation would require approval from DCGI/CDSCO

6.The drug has to be given only on stamped prescription

7.The prophylactic use of hydroxychloroquine should be coupled with the pharmacovigilance for adverse drug reactions either through self-reporting using the Pharmacovigilance Program of India (PvPI) helpline/app or active monitoring.

8.Simultaneously, a proof of concept study should be initiated to document the effect of hydroxychloroquine at the earliest.

9.All asymptomatic contacts of laboratory confirmed cases should be kept in quarantine as per the national guidelines, even if they are on prophylactic therapy."

Post Lockdown Guidelines for Medical Department

- This is the time, Medical Department should be at the forefront, working 24x7, with and for the safety of aircrew, ground staff, engineers, ATC crew and their families. This is an emergency never seen before. Duty medical officer and Nodal Specialist Officer must remain on duty in 8 hourly shifts.

- The status of availability of Corona Hospital Beds in all major hospitals across the cities in India and abroad be monitored and managed 24x7.

- Real time availability status be provided to HODs and Management on daily basis.

- It is the responsibility of Medical Services Department to ensure that the PPEs issued are of top quality and enough for preflight, inflight, post flight phase of all sectors.

- Use of 3 Ply surgical mask is 4 hours or if becomes wet earlier. It should be replaced thereafter. N-95 mask can be used for 8 hours and discarded thereafter. PPEs can be used from entry to exit from cockpit and discarded in special disposal bags to be carried inflight for this purpose.

- SOPs and training of all in proper use of PPEs must be completed by video connects.

- SOPs for disinfection and sanitization to be practiced. (Refer Appendix 'E' attached to this document)

- Plan must be in place to test and monitor all, including close contacts of all crew and ground staff before and after high risk flights.

- SOPs for in house Quarantine Procedure for asymptomatic contacts, admission for positive cases, process for dealing with children, family members and old retired personnel should be effectively in place.

- SOPs for unforeseen situations developing abroad and connections with Indian Embassies should by now be in place.

- SOPs for special officer for each referral hospital and ambulance service be in place.

- Special Mobile Medical Team be made and trained at major airline bases and should be ready to provide the office/ home care.

- Medical staff and those involved in flight be treated as frontline staff for the purpose of issue of equipment and providing additional insurance cover for the Covid 19 period.

- Preventive medication and all PP precautions be provided without any delay.

- Pvt Labs be shortlisted to do tests for all airline staff who want to get the test done, as they are to be treated as frontline worker.

- SOPs for how to make insurances claims for emergency OPD consultation or admissions be in place.

- Plan for Contingencies:
    1. Sudden movement of DM Team to hot spots
    2. Sudden movement of troops from City A to B by special domestic flights.
    3. SOP for immunization program for airline staff.
    4. SOP for giving Preventive Drugs to Frontline staff.
    5. Carriage of Dead bodies by flight and related paper work.
    6. Disinfection and Disinfestation of aircrafts, ground vehicles and staff.
    7. SOP for VVIP aircraft.

Conclusion:

The text of the document is original written by me, without any cut and paste, in the format as thoughts flew into words with honesty and belief in aviators. This is a small effort from me, as a tribute, to frontline warriors from the world of Civil Aviation and a feeble attempt to keep them safer and healthier, during this exceptional time. I had to work against time to bring this document out at the earliest. It should be used only as an advisory. This is the version 1. Next edition will come soon.

Please go through the attached Appendices too, as they may be of help to someone in the field. Once again, from a big fan of Entrepreneurs, Owners and Investors to make it possible for people to fly in your aeroplanes, of brave pilots and all those involved in making flying safe in India.

We are proud of you, the pilot and all your colleagues, who have been on the forefront of the war against COVID 19, while remaining in line of your duty...Hat's off...Once again ...very proud...stay safe... lots of love and regards.

Many happy Landings. May my country prevail.

References:
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2. Environmental cleaning, disinfection and bio-medical waste management, Ministry of Health and Family Welfare, New Delhi, 06 March 2020
3. 2019 Novel Coronavirus Prevention and Management, Preparedness Document AIIMS, New Delhi February 5, 2020
4. Manual of Health for Armed Forces 2003
5. EASA Guidelines – COVID-19 Guidance on Management of Crew Members in relation to the SARS-CoV-2 pandemic Issue no: 01 Issue date: 26/03/2020 (Attached as Appendix 'C')
6. IATA Medical Manual 6th Edition
7. Operational considerations for managing COVID-19 cases or outbreak in aviation Interim guidance 18 March 2020
8. Personal Notes and communications

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