



## Viewpoint Article

# Conundrums of the second line health care workers during the time of a pandemic: analytical solutions based on the experience from a developing country

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## Abstract

The COVID 19 pandemic has affected the entire world, and it is continuing to spread morbidity, mortality, and chaos. The second line of health care workers who are not treating the COVID 19 infected patients also plays a significant role during this pandemic by treating other diseases and screening for COVID 19 infection. Nevertheless, many of them still struggle to identify and understand their role, lost between the idea of self-protection and principles of medical ethics. This article is trying to break the ice by solving a few common conundrums based on India's experiences.

**Keywords:** COVID 19, Health care workers, Pandemic, India

## Background

The COVID 19 pandemic, which broke out on 31st December 2019 in Wuhan, China [1], has invaded all the continents globally, sparing the only Antarctic at the earth's south pole [2]. To date, it has infected 2.9 million of the population in over more than two hundred nations, taking over nine million lives [3]. It has affected every single domain worldwide, including the social, economic, professional, psychological, and physical wellbeing. The front line health care workers are doing a commendable job all over the world in treating infected patients. Let us simulate this pandemic to war in the eighteenth century. Just like there were no long-distance war weapons to destroy the opponent's warhead, this pandemic also lacks a single powerful weapon to seize and demolish the virus. During such wars, tactical line infantry was applied [4]. While the line infantry focused on the heavy front-line combat, light cavalry soldiers called skirmishers or militia were deployed to occupy a tactical position and protect the larger body of friendly troops from the enemy squads' advancement. They were deployed in an irregular open formation to engage the enemy with light combats and thus delay their movement and weaken their morale [5]. While the line infantry soldiers had definite objectives and a proper action plan to achieve them, the light infantry fought in grey zones of objectives, tactics, and plan. The second line of health care workers who are not directly involved in treating the COVID 19 patients are like these skirmishers who operate in grey zones.

India is the second most affected country by COVID 19 invasion, with 5.12 million people infected and eighty-three thousand people losing their lives to the pandemic. Kerala state, which has the highest literacy rate and the doctor-patient ratio in the country, is in a comparatively better state with just more than a lakh infected people and less than five hundred deaths [6]. The government medical colleges, along with the support of a few tertiary health care centers, manage the COVID 19 patients in the state at this stage. The rest of the doctors and the health care facilities, which are the second line health care teams, refer COVID 19 infected patients to the treating centers if they come across any.

## Problems faced by the Second line HCWs

The second line of health care workers (HCWs) faces multiple practical problems, which swing between self-protection and professional ethics, rights, and duties. The questions that storm inside their brains are:

- How long is this pandemic going to last?
- Am I at real risk?
- How long should I continue to take protective measures?
- Being COVID 19 infected or exposed, how is it going to affect me and others?
- Is taking adequate self-protection a right or a duty?
- Is stepping back professionally ethical?
- How do I balance protection measures and professional ethics?
- What can I do in limited settings?

After the brainstorming, even after being adequately informed and educated about the menace, most of us cease to act appropriately and adequately, exposing us to an immense risk of

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infection. A psychological behavior is called 'willful ignorance', 'self-deception', or 'tactical stupidity'. However, as Aldous Huxley once said, "Facts do not cease to exist because they are ignored." Moliere adds that "A learned fool is more a fool than an ignorant fool".

### Risk among HCWs

Data analysis from the COVID 19 statistics from the USA shows that the mortality rate among the COVID 19 infected HCWs is the same as that of the general population [7]. However, the analysis also shows that the mean age of the infected HCWs was much lower than the general population, and the mortality rate among the younger age group is much higher in HCWs [8,9]. The statistical facts are not different in India [10]. Thus, the available data proves that HCWs are at more risk of infection and death from COVID 19 infection than the general population. The probable additional risk factors for the HCWs are:

- a. Increased duration of exposure.
- b. Increased viral load of exposure.
- c. Multiple sources of infection.
- d. Close contact with the infected patient and his fluids.
- e. Poorly ventilated and crowded area of work.
- f. Inadequate nutrition.
- g. Inadequate rest.
- h. Lack of adequate protective equipment.

We need to remember that,

Effective infection = Exposure time x Virus load, with the contribution of the 'Immunity factor'.

### The impact of the infection

Once infected, it has an impact on ourselves and the people around us. The infection will have its impact on the social, physical, and mental states of the HCW by effecting:

- a. Physical illness.
- b. Psychological discomfort.
- c. Quarantine and isolation from the family members.
- d. Lost working days.
- e. Financial burden.
- f. The stigma of the public.

### Right or duty?

As researchers and participants' safety is concerned, IRB should There are many high-risk categories of people around us whose defense depends on our decisions. They are:

- a. At home- Elderly, Children, Pregnant ladies, Family members with chronic diseases.
- b. At work- Colleagues, Patients with immuno-compromised illnesses, chronic diseases, and multi-organ dysfunctions.

If we down our guard and expose ourselves to the infection, we can act as carriers of the disease to these high-risk categories of people. We might sound brave in facing the disease with our bare hands, but our foolishness and negligence do not give us any right to harm our fellow beings. Our patient comes to us to get a cure for his illness, assuming that we have taken adequate precautions to not cause any harm to him. After all, 'Do no harm' is the basic and the most vital principle of medical ethics. So, taking adequate protection against the infection is more of a duty than a right for an HCW.

### Stepping down- Self-protection v/s professional ethics:

If we do not have any chronic medical condition that puts us at higher risk than others in procuring the infection, stepping down from our clinical practice in the present situation would demand more input from the health care professionals and might be considered professionally unethical in many eyes. However, those HCWs who work at multiple areas and health facilities need to contain themselves in a single health care center. Working in various centers located at different geographical areas increases his chance of exposure, but he also will act as a carrier of the virus from one geographical location to another and thus be a super spreader of the disease. At the same time, he would be compromising multiple health care facilities in these needy times. The high-risk contacts of that HCW in all the facilities would need to go for quarantine, compromising the manpower and thus the function of those health care facilities. As far as we make ourselves available at a single, approachable center for our patients to consult us if required, then stepping down is an intelligent, tactical, logical, and ethical decision that we all need to take.

### What can we do in limited settings?

There are a few fundamental principles that we need to follow as a health care provider. The first and foremost of those is to stop being a high-risk contact. Contact for a health care worker is considered to be of high risk if he had,

- a. Direct physical contact with a confirmed case without PPE
- b. Occupy a position within 2m of a confirmed case without adequate protection for more than 15 minutes
- c. Indirect contact by touching the body fluids of a confirmed case without protection [11].

It means that to avoid being a high-risk contact; we need to have proper personal protection equipment, including face shield/ goggles, face mask, and hand gloves whenever we face a patient. We need to sanitize our hands even though we were wearing hand gloves. Additional protection equipment needs to be used depending on the procedure conducted, e.g., nebulization, endoscopic procedures, surgeries, cardio-pulmonary resuscitation, etc.

Keep adequate physical distance from the patient expect during the physical examination. Allow only a single bystander to enter the consultation room along with the patient, that too only if the situation demands, e.g., elderly, children, pregnant ladies, physically unstable patient, patients who need assistance for mobilization, etc. All the patients and their bystanders need to wear a face mask properly. Always carry minimal accessories to the workplace, and once done, make sure to sanitize the accessories. If the hospital or clinic provides an adequate facility, HCW needs to change clothes to scrubs before starting the consultation and take a shower after the consultation, and before changing back to the routine clothes. Otherwise, the health personnel need to go to the bathroom as soon as he reaches home and, before touching any object, should take a shower and put his clothes for washing. This will help in protecting the other house members from getting infected up to an extent.

Steam inhalation, hypertonic saline gargle, and saline nasal wash can be considered after work, even though various studies debate the protective power of these measures against COVID 19 [12,13]. Studies show that epithelial cells mount an antiviral

effect by producing hypochlorous acid (HOCl) from chloride ions [14]. HCWs should always try to have adequate nutrition, hydration, and rest, especially while working hard in the midst of a pandemic.

### Safety precautions and screening in the institution

The precautions that we need to take depend on our area of activity. Most of the second line HCWs work in either hospital or health clinics.

#### a. Hospital

The stakeholders in a hospital are the medical team, patients, and hospital administration. Lack of a proper screening method and precautions will lead to increased exposure to the virus and thus increase the disease's spread. As most of the secondary hospitals do not have prior experience and thus a pre-set plan to take care of such contagious diseases, it will take time to convince everyone about the need of having such a system in place. When asked about the precaution and the screening plant to be set up in a hospital, the knee jerk reflex response of most of them will be not to take any suspected patients and thus, to refer them to a COVID 19 treatment centre directly. That might sound like a perfect plan to protect the hospital and its employees as well as the other patients from any danger inflicted by the virus exposure and the infection.

However, that is a response without any foresight. As COVID 19 infection can manifest with various symptoms that can mimic many other common conditions, the clinical decision always roams around in a misty area of chaos. Moreover, if we do not want to take any chance at all, then the 'suspected cases' will constitute a major share of the total patient population. This 'refer all' plan will have a tremendously adverse effect on each of the stakeholders described below:

1. Hospital administration: - Under the plan mentioned above, many patients will get referred from the hospital. Once word of mouth spreads that the hospital is not admitting most of the patients in their outpatient or the inpatient departments, the rest of the patients also feel reluctant to go to that particular hospital. This will bring a massive financial crisis to the hospital.
2. The medical team: - The suspected patients will include many patients with chronic illnesses, especially the ones with chronic respiratory diseases, which used to take treatment from a medical team for the last many years. Referring them away in such a situation will destroy their trust in that medical team. The financial crisis faced by the hospital administration will slowly meltdown on the hospital staff.
3. Patients: - Referring to all the suspects will deny proper treatment for many patients who present with overlapping symptoms. It will add to their difficulty, morbidity, and mortality.

Once convinced about the need for a proper plan, the first and most crucial step to be taken is to set up a 'triage' lead by trained and educated medical professionals, mostly nurses. Remember that if the gate is not guarded well, the fort will fall in no time. The next step is to set up a small clinic near the triage area, which can be called a 'Fever clinic' to avoid the patients' stigma. Any suspicious patients who need to consult in any outpatient departments can be directed to this fever clinic where a doctor with all the personal protection equipment (PPE) will attend to them. The particular consultant they wanted to

consult with can be contacted over the phone, and the instructions can be followed. If that consultant wants to attend to the patient, he can do that in the fever clinic with proper PPE. Medications can be given for the illness, and the patient should be advised to get evaluated for COVID 19 infection at that time itself or later if the symptoms are not getting better. Once the COVID 19 infection is ruled out, the patient can attend the normal outpatient department after that. Only urgent and unavoidable investigations, if at all warranted, need to be done for the patients attending the fever clinic to avoid exposure of the radiology technician, lab staff, other patients, etc.

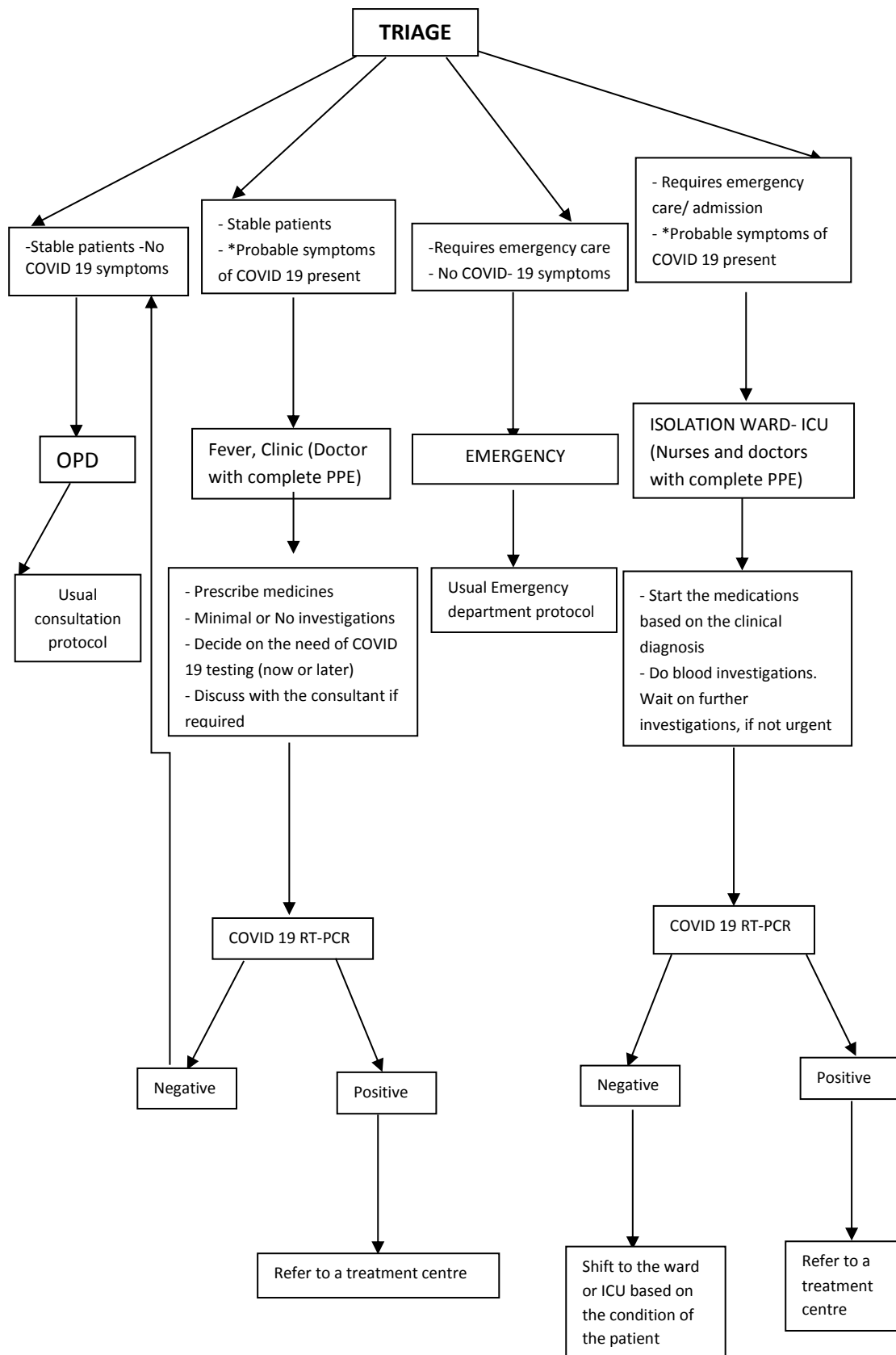
A ward called 'Infectious disease ward' needs to admit the suspected patients who require inpatient care. There should be separate rooms for each patient to avoid cross-infection. A proper donning and doffing area should be set up. It will be better if one or two rooms of this ward can be converted to a semi-ICU with ventilator and monitoring facilities. Instead of that, if the hospital has multiple ICUs, one can be dedicated to the suspected patients. The patients can be directly admitted to this ward from the triage protecting the emergency department from exposure. All the medical staff, including the doctors who attend the patients in this ward, need to wear proper PPE. One bystander needs to stay with the patient without going out of the room, and another person needs to stay outside the ward to bring medications, food, etc. X-ray and ECG should be done only if warranted as an emergency. Blood samples can be collected by the staff nurse and handed over to the lab. Throat swab should be sent immediately for COVID 19 evaluation. Once the result comes positive, he should be referred to a COVID 19 treatment facility, and if negative, he can be shifted to the normal ward or ICU depending on the patient's clinical condition. This action plan is briefed in Figure 1.

In the future, if the existing COVID 19 treatment facilities get completely consumed, all other health care facilities might need to step in. Having a planned facility, as mentioned before, will come in handy in such a situation as everyone knows the basic rules and plan in managing contagious diseases and the hospitals have to duplicate the system, one for the suspected cases and another one for the proven cases, without affecting the usual functioning of the hospital. It is equally important to educate all the hospital staff and the patients about the pandemic, its implications, and the hospital's action plan to avoid confusion and panic.

#### b. Health clinics

It will be useful to have a separate room to see the suspected patients with proper PPE. However, that requires a proper triage area and adequate facilities for the same. It is not practical in most of the small clinics to have such a system. Patients should be educated about the importance of attending a higher facility if they have suspected symptoms, using banners and posters outside the small clinics. The HCWs in the clinics should take adequate protective measures, as mentioned before. Polyclinics, where multiple doctors share the same room at different times of the day, need to be avoided as that can turn out to be a crucial contamination point. Also, remember that each HCW should be operating in a single institution during this pandemic period because of the reasons we discussed before.

In such a demanding unprecedented pandemic era, to be safe and provide safety, we need to follow a principle-based practical approach based on scientific evidence.



\*Probable symptoms of COVID 19 includes Fever, running nose, sneezing, dyspnoea, cough etc. But if the clinical presentation is highly suggestive of COVID 19 infection, evaluation for the same should be ordered from the 'fever clinic' without delay.

**Figure 1** Screening and precaution plan for hospitals

## Abbreviation

COVID 19: Coronavirus; HCW: Health Care Workers; PPE: Personal Protective Equipment

## Declaration

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## Availability of data and materials

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## Authors' contributions

Akhil Paul (KP) is the principal investigator of this manuscript (Viewpoint). KP is the responsible author for the study concept, design, writing, reviewing, editing, and approving the manuscript in its final form. KP has read and approved the final manuscript.

## Ethics approval and consent to participate

Author conducted the research following the Declaration of Helsinki. However, Viewpoint Articles need no ethics committee approval.

## Consent for publication

Not applicable

## Competing interest

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