



Dissertation

Topic- Literature Review on proper Donning and Doffing practices during Coronavirus Pandemic

- By
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About the Industry

- Mahatma Gandhi Hospital (MGH) was set up with the aim of providing world class quality health services with ultra modern techniques at affordable cost. The Hospital has best possible infrastructure & equipped with most modern state-of-art equipment. Highly skilled and experienced Doctors who put in their untiring efforts to provide primary, secondary & tertiary medical care.
- I joined MGH on 1st April 2021 to 1st July 2021 as operations executive where I saw and understood the day to day operations of the organization and lead a team of 25 staff members which included junior residents, nursing incharges, nursing staff and other staff like housekeeping, canteen, etc
- I Did my internship under the guidance of Mr. Sukanta Das, Chief Operating Officer at Mahatma Gandhi University of Medical Science and Technology, Jaipur.



INTRODUCTION

- The rapid spread of the coronavirus disease 2019 (COVID-19) caused by (2019-nCoV), has become a global threat
- Patients suffering with coronavirus disease 2019 (COVID-19) who are in a critical state are at high risk of progressing rapidly into many severe complications hence, they urgently require a high level of care from the Intensive Care Units (ICU).
- The main and most common symptoms through which Covid 19 patients can be identified are fever, dry cough, fatigue, and muscle soreness.
- Critically ill patients with COVID-19 require very high and intensive level of care from physicians and ICU nurses, dietitians, and psychologists as they are at a very risk of progressing rapidly into severe complications such as acute respiratory distress syndrome (ARDS), septic shock, metabolic acidosis, coagulation disorders and multiple organ failure and finally death

INTRODUCTION

- The Frontline as well as healthcare workers are fighting tirelessly to stop the spread of this virus along with curing patients suffering from and its aftereffects. Hence, Ways to avoid the spread of this dangerous virus among healthcare workers is also of utmost importance.
- The frontline healthcare workers are at risk of severe physical and mental consequences directly as the result of providing care to patients with COVID-19 but, being the backbone, they cannot stop fighting and treating the patients hence, there has to be a particular way to avoid the contamination of this virus.

WITH 292 DEATHS, MAHA WORST-HIT

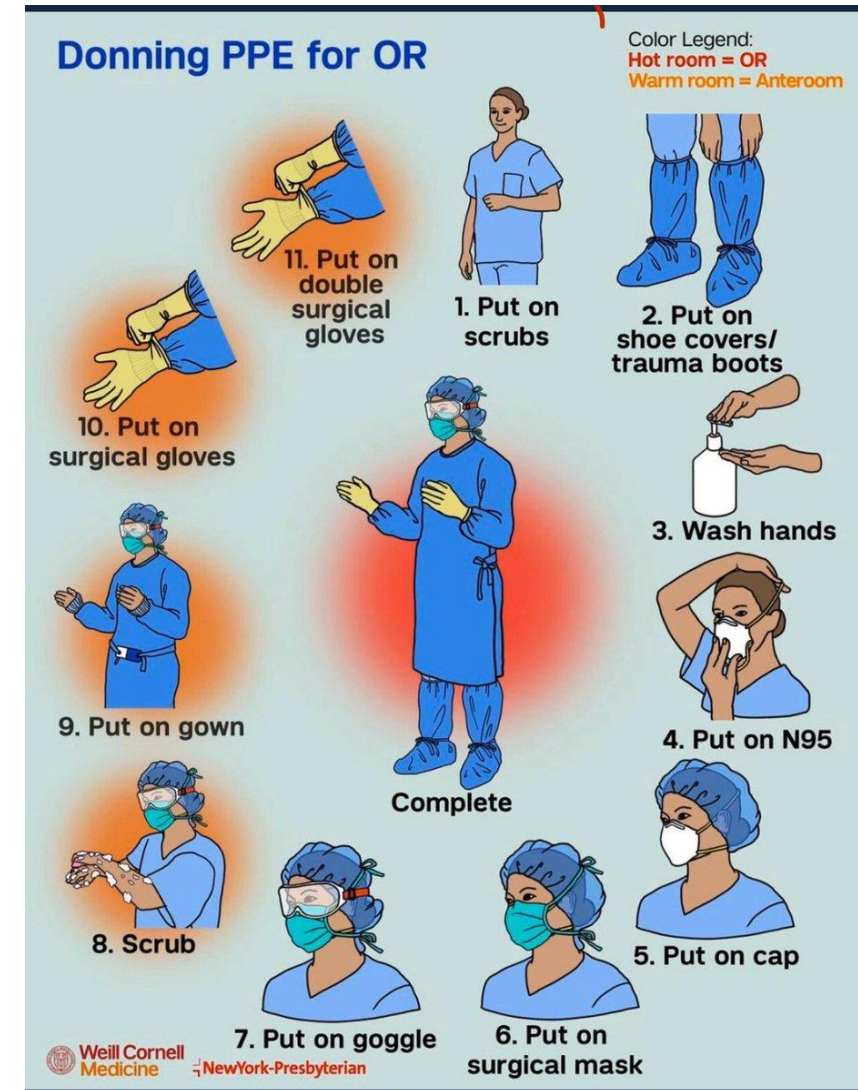
States	Total healthcare worker cases	Total tests conducted on healthcare workers	Positivity (%)	Deaths among healthcare workers
India	87,176	9,95,922	9	573
Maharashtra	24,484	1,58,878	15	292
Karnataka	12,260	1,07,100	11	46
Tamil Nadu	11,169	1,53,727	7	49
Delhi	8,363	61,358	14	51
West Bengal	5,126	65,540	8	21
Gujarat	3,177	29,246	11	35
Telangana	2,704	14,678	18	1
Haryana	2,434	32,787	7	9
Rajasthan	2,398	75,510	3	11
Odisha	2,185	40,849	5	2
MP	2,029	46,516	4	17
UP	1,650	26,557	6	6
Jharkhand	1,275	22,790	6	2
Assam	1,127	16,411	7	3
Punjab	1,055	13,141	8	2
Andhra	994	27,004	4	14
Bihar	940	15,213	6	4



Source: Health ministry

About Donning of PPE Kits

- Nurses and other hospital staff should wear(donning) PPE (Personal Protective Equipment) before they contact any COVID-19 patient.
- Certain fundamental ways of Donning of PPE kits is suggested by various national and international bodies under their standard protocols for the treatment of Covid 19 patients.



About Doffing of PPE Kits

- Doffing refers to the proper taking out or removal of PPE Kits after visiting and treating the infected patients. The given picture shows a way of doing that-

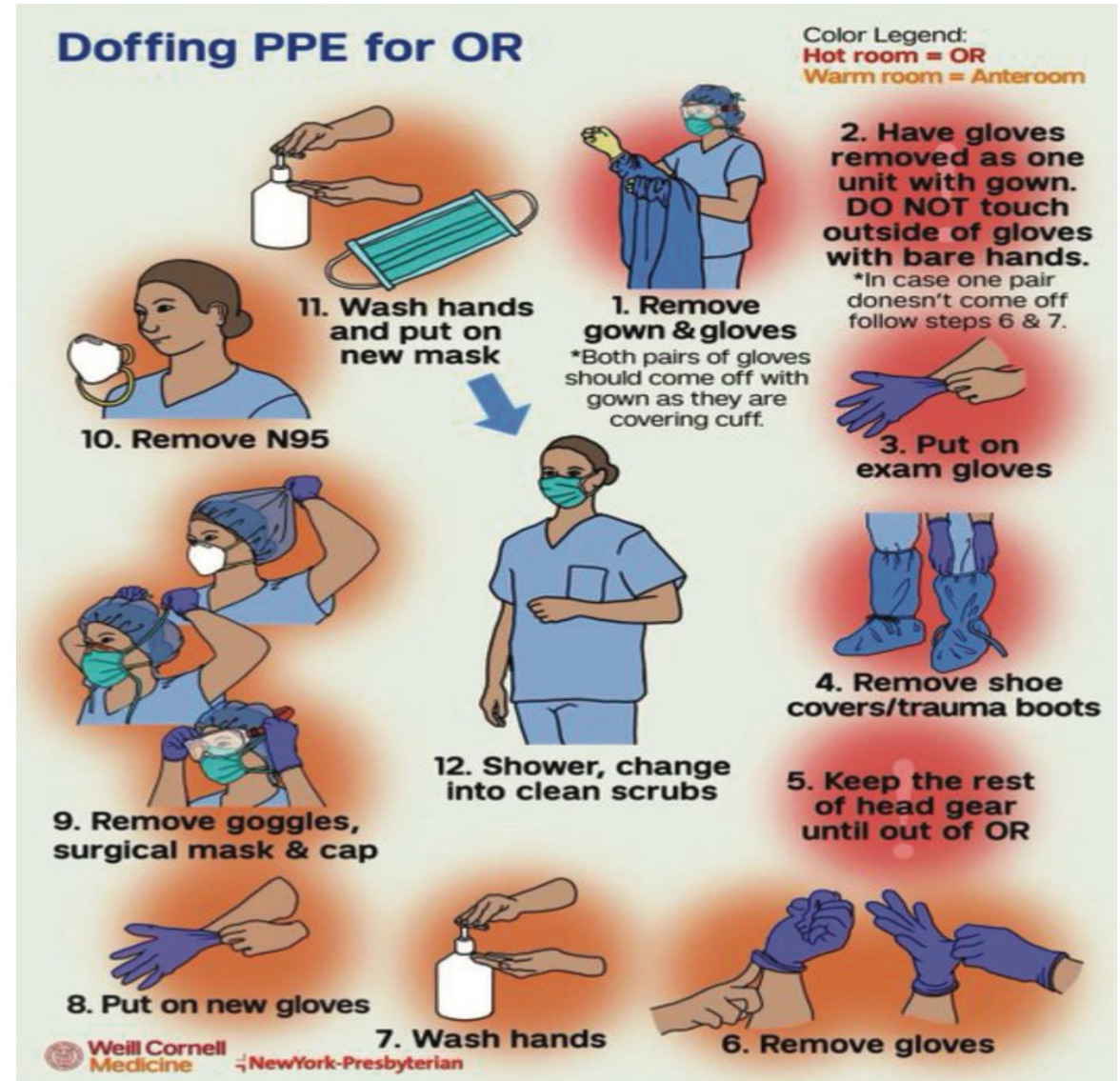


Figure 3. Illustrations of the steps for doffing PPE from Weil Cornell Medicine, Columbia Presbyterian Hospital, New York, New York.

General Advisory

- A general suggestion /advice is that the that ICU nurses should ideally wear two layers of medical caps, two layers of masks (a 3M N95 1860 mask and a surgical mask over N95), three layers of gowns, three layers of gloves, more than two layers of shoe covers, an eye full coverage goggle and a thick face shield so that all the potential openings in the body are sealed.
- For better isolation and avoidance of any cross-contamination among healthcare workers, COVID-19 ICU is divided into three separate areas: clean, buffer and contaminated zones
- Hand hygiene is another very important step that should be taken into a fair consideration, it points to washing hands with a good disinfectant and water for atleast 20 seconds. All the door knobs/handles should be disinfected by using a good alcohol-based sanitizer spray before and after touching it

Literature Review

- Common observations like Acute psychological stress, as well as unusual experiences including hallucinations and delusions, are very common in critical care unit patients and have an association with post-critical care and psychological morbidity such as post-traumatic stress disorder (PTSD), depression and anxiety. (Richards-Belle A, Mouncey PR, Wade D, *et al*, 2020).
- Over 3,600 U.S. [healthcare workers have died](#) due to Covid-19 so far, which is substantially far more than the official figures reported by the Centres for Disease Control and Prevention. (The Guardian and Kaiser Health News).
- Early data suggest a proper implementation in strategies which lead to reduction in the chances of infections like proper donning and doffing of PPE kits, shorter shift lengths, and mechanisms for mental health support could reduce the morbidity and mortality amongst HCWs. (Shaukat N., *et al*, 2020).
- The main source of transmission of COVID-19 is from infected patients, and the main routes of transmission are following- respiratory droplets of the infected person and in person contact transmission. High-concentration aerosol exposure in a closed environment may also cause transmission. Standard precautions Should be routinely used, checked, and maintained in all areas of the hospital and patients should be isolated from contact and droplets. (Zhonghua Jie He He Hu Xi Za Zh, *et al*, 2020).

Literature Review

- Protocol deviations are common during PPE doffing, and some deviations are committed by the health care workers doffing assistant and/or trained observer. Self-contamination was common. PPE donning/doffing are complex and deserve additional study. ([Jennie H. Kwon](#), *et al.*, 2018).
- Health-care workers (HCWs) though are aware of the importance and criticality of donning and doffing procedure, but they lack the knowledge about dispersion of virus (Kamakshi Garg, *et al.*, 2020).
- Lack of proper PPE Kit Donning and availability lead to nurses wearing trash bags at a New York hospital. Some of the Healthcare workers died within days because of not Donning a PPE kit
- Contact precautions (CPs), the use of gloves and gowns, have been widely used for many years to prevent pathogen transmission between patients in health care facilities. Despite this recommendation, adherence is often variable, owing largely to perceptions that CPs are burdensome to use. (Rubin MA, *et al.*, 2021).

Literature Review

- Specifications for the components of PPE to be worn during delivery of care are important, not only to reduce the likelihood of transmission to HCWs from a barrier standpoint but to also ensure comfort and safety as wearing PPE increases the risk of heat stress and the loss of dexterity (Mona Hers, *et al.*, 2015).
- Only 67.8% of participants gave the right response to the question regarding the sequence of donning and doffing of PPE. (Santosh Ojha, *et al.*, 2021)
- Regardless of the PPE being distributed, becoming proficient in donning and doffing this equipment is paramount, this may contribute to reduced rates of nosocomial spread of COVID-19 (RobertMcCarthy, *et al.*,2020).
- Healthcare personnel contaminated themselves in almost 80 percent of the PPE simulations because of poor ways. Devising better standardized PPE protocols and implementing innovative PPE education are necessary to ensure HCP safety. (Kang, et al. (2017)

Research Question and Objective

- Research Question-

- How important is the practice of proper Donning and Doffing in healthcare settings and how useful it is to prevent infections during the Covid 19 Pandemic?

- Objectives-

- To collect, study and synthesize the information and data on the effects of improper donning and doffing practices and the importance of correct procedures to wear and dispose a PPE Kit, studied in the past 10 years.
- To suggest some ways to improve the donning and doffing practices undertaken by healthcare workers during the Covid 19 Pandemic.

Conclusion

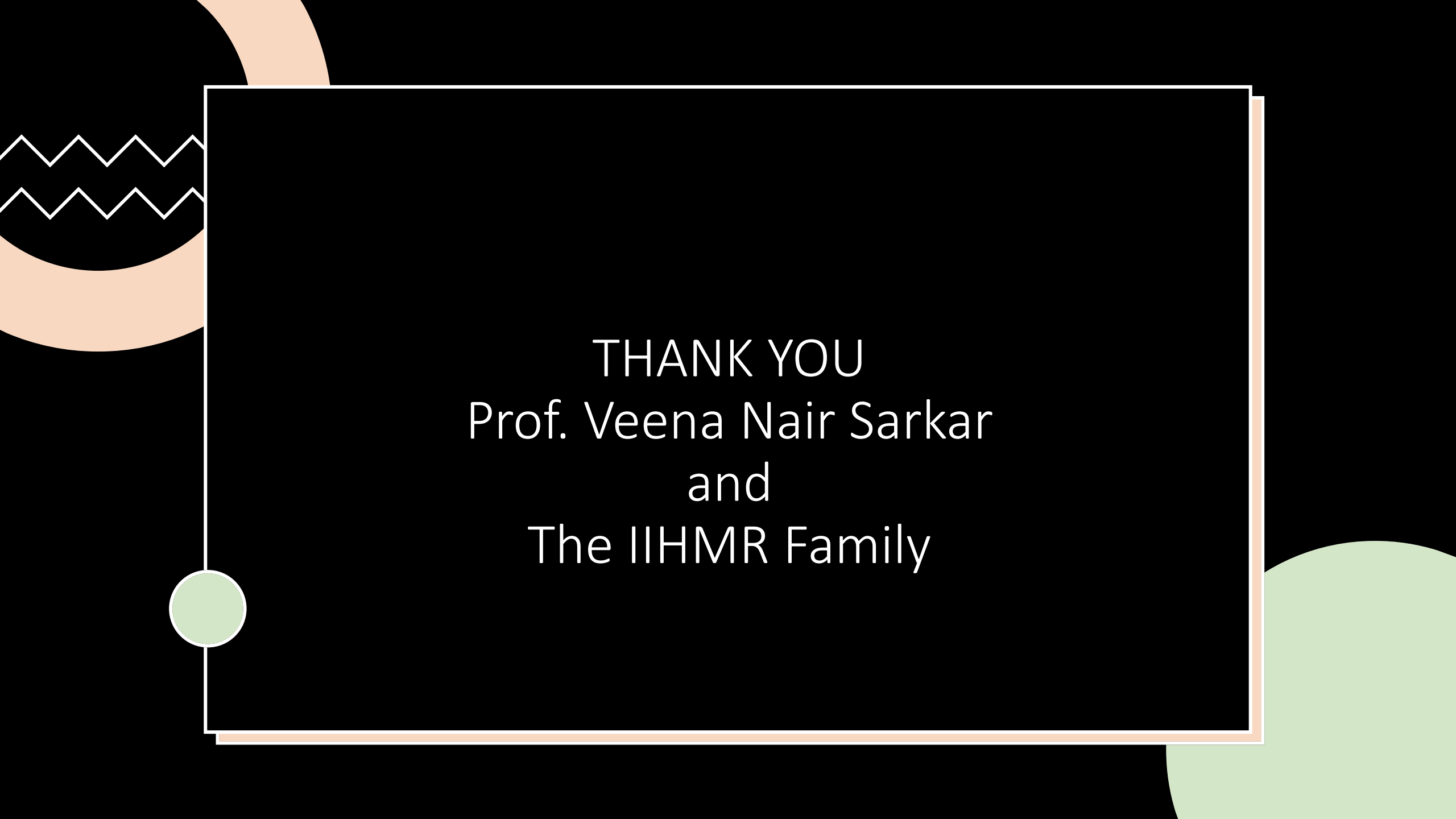
- The most important weapon for any country at the moment to fight this deadly disease off is its Healthcare workers. so, it is imperative to protect them at all costs.
- Governments, hospital administration and other regulatory bodies including the Doctors association, Nursing association, etc should assume responsibility of teaching and preaching the importance of proper Donning and Doffing of PPE kits and if not followed, then imposing heavy fines.
- Improving adherence to recommended protocols for PPE use should involve HCP education, training, demonstrations of competency, monitoring, and creating a patient care environment that facilitates the appropriate use of PPE.
- HCW should be educated about the importance of transmission in healthcare settings, the role of HCW contamination in transmission events, and methods for reducing that risk.
- Furthermore, schools for healthcare providers (eg, medical and nursing schools) should should indulge in early career engagement and instruction in transmission dynamics and the importance and use of PPE for creating a safe work environment.

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