BRIEF RESEARCH COMMUNICATION

# Ten Practice Changes in COVID-19 Intensive Care Unit of a Tertiary Care Teaching Hospital in India during the Peak of Pandemic: Adapt and Improve

Lipika Soni[1], Neha Pangasa[2], Dalim K Baidya[3], Rajeshwari Subramaniam[4]

## Abstract

During the peak of the coronavirus disease-2019 (COVID-19) pandemic, 10 practice-changing decisions were adopted which led to an improved standard of clinical care in the face of overwhelming burden to the healthcare setup. Formation of a control unit with the piggyback team, briefing before donning, replacement of personal protective equipment (PPE) with impermeable surgical gowns, a dedicated prone team and the prone bundle of care, weaning-extubation and tracheostomy protocol, online audiovisual family-patient meet, daily rounds by hospital infection control committee member, each one clean one policy, focused onsite training of healthcare support staff and discharge policy with post-discharge follow-up were the 10 important changes adopted.

**Keywords:** COVID-19, COVID-19 pandemic, Intensive care unit.

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The coronavirus disease-2019 (COVID-19) pandemic has evolved as a global health crisis leading to unprecedented rise in intensive care unit admission and death.[1] In a 28-bedded COVID-19 ICU of a tertiary care institute, most of the patients were either on noninvasive or invasive mechanical ventilation and in prone position or in high-flow oxygen therapy devices. However, during the peak of pandemic in April–May 2021, we had to quickly enforce few practice-changing decisions to cater to the increased demand and challenge faced by the healthcare setup.

- Team composition and work allocation—Five residents were posted during each shift of six hours followed by 24 hours off due to workload management. The team consisted of three SRs and two JRs. Among them, one SR and one JR of Anesthesiology and Critical Care and one JR/SR of Medicine were there in each team. Rest of the members was obtained from other clinical departments (surgical and medical super-specialty or subspecialty). After 15 days of clinical posting, one week of cooling-off period was provided to the residents. At the start of each shift, the clinical team would consult the control unit and proper job allocation was done among the five residents and goals of care were set up. For example, the senior critical care trainee was allocated to cater to most sick patients on mechanical ventilator whereas the junior-most residents were entrusted with checking ventilator and intravenous connections, ensuring adequate drugs and infusions are prepared in advance, etc. At the end of shift, the clinical team again would update the control unit about follow-up patient care.
- Control unit and piggyback team—Apart from the regular team of doctors working in shifts to manage patients, we set up a separate core team of round the clock doctors working as a control unit which used to do following work: longitudinal follow-up and record keeping, communication with relatives, telephonic consultation with other departments, transporting patients to CT scan suite, etc. The team consisted of senior and junior residents (SR and JR) of Anesthesiology and Medicine headed by a chief SR and supervised by faculty Anesthesiology. These team members were not posted for clinical duty inside ICU. Residents from nonclinical departments were trained to assist them in record-keeping work.
- Replacement of personal protective equipment (PPE)—For ease of work and comfort and better communication, coverall PPEs were replaced with a combination of impermeable surgical gown, shoe cover, gloves, N-95 mask, and face shield.
- Prone team, prone bundle of care, and extended prone sessions—In view of overwhelming number of patients on mechanical ventilation requiring prone position, we set up a separate prone team, made a prone bundle of care and checklist, and in some circumstances allowed extended prone sessions lasting >24 hours to improve lung mechanics, oxygenation, and simultaneously reduce the burden on healthcare providers (HCP) from repeated position change of huge number of critically ill patients in each shift.[2,3]
- Weaning, extubation, and tracheostomy protocol—Most of the extubations were done over high-flow nasal cannula oxygen protocol. A percutaneous dilatational tracheostomy (PDT) protocol was used consisting of following: consider PDT from

[1–4]Department of Anaesthesiology, Pain Medicine and Critical Care, AIIMS, New Delhi, India

**Corresponding Author:** Dalim K Baidya, Department of Anaesthesiology, Pain Medicine and Critical Care, AIIMS, New Delhi, India, e-mail: dalimkumar.ab8@gmail.com

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day 7 of ventilation, a dedicated experienced team to perform all PDTs, minimize leak, and use apnea protocol.[4]

- Audiovisual family-patient meet—Since family members could not be allowed inside ICU, daily communication and interaction of conscious patients with family members were done via video call made by nurses.[5]
- Infection control—During rapid surge of critically ill patients and overworked HCPs, strict adherence to infection control practices could go down. Institution of chlorhexidine hand rubs along each bed, daily visit by hospital infection control committee team member inside ICU to ensure proper hand hygiene, and other infection control practices were adopted.
- Each one clean one policy—In the morning hours, body bath and personal hygiene care were provided to every patient. Therefore, more number of HCPs were required during morning shift and due to movement of most of the patients' oxygen requirement increased leading to desaturation alarms of various patients simultaneously.[6] Therefore, timing of personal care was distributed throughout the day and each staff was instructed to provide care to one patient only during his/her shift (Each One Clean One policy) to avoid simultaneous deterioration of many patients. Moreover, support staff for providing food was made different from the cleaning staff to ensure better patient acceptance.
- Focused onsite training—Due to demand–supply mismatch of HCPs, inadequately trained HCPs from non-ICU areas had to be posted in ICU. Therefore, proper training was of paramount importance. Teaching module was created and onsite training for nursing staff was initiated. Special emphasis was provided on drug dosage, infection prevention bundles, closed in line suction, care of prone patient, identification of ventilator alarms, etc. The residents of clinical departments other than anesthesiology and medicine were trained about ICU care before posting and residents of nonclinical departments were utilized in other supportive work (record keeping, communication, etc.).
- Timely discharge on oxygen and post-discharge follow-up helpline—Patients were discharged following a specific protocol (maintaining $SpO_2$ >95% without oxygen for three consecutive days).[7] However, due to increased demand of ICU beds, some patients requiring low flow oxygen had to be discharged on oxygen concentrator. Post-discharge telephonic follow-up was done for all the patients.

The increased requirement of manpower in the peak of pandemic could be met due to discontinuation of elective surgeries and routine out-patient services and decision by the institute to extend the period of residency. Addition of control and piggyback unit reduced the burden of clinical team, ensured smooth clinical functioning and timely communication with the relatives. Provision of cooling-off period was instrumental in maintaining physical and mental health of HCPs. Implementation of prone team, prone bundle of care, and infection control policies improved patient care. Implementation of extubation and PDT protocol and discharge policy ensured ICU bed availability in the peak of pandemic. Each one clean one policy and daily audio-visual family meet increased patient comfort and discontinuation of coverall PPE improved comfort of the HCPs. With the adoption of the aforesaid practice changes from routine critical care, we believe that we could provide improved standard of care to all patients at the time of crisis.

## Orcid

*Lipika Soni* https://orcid.org/0000-0002-7665-1112
*Neha Pangasa* https://orcid.org/0000-0003-1131-3478
*Dalim K Baidya* https://orcid.org/0000-0001-7811-7039
*Rajeshwari Subramaniam* https://orcid.org/0000-0002-3830-5278

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