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Editorial

Coronavirus disease: Challenges and implications for anesthesiologists of developing countries

Apurb Sharma

Nepal Medicti Hospital, Sainbu, Bhaisepati, 44700, Lalitpur, Nepal

Corresponding Author:

Apurb Sharma, MD

 ORCID iD <http://orcid.org/0000-0002-1655-5997>

Executive Editor, JSAN

Head, Department of Anaesthesia and Pain Management

Nepal Medicti Hospital, Sainbu, Bhaisepati, 44700, Lalitpur, Nepal

Email: apurbsharma1976@gmail.com

Abstract

The coronavirus disease is a rapidly evolving pandemic. It has already taken many lives all over the world. Anesthesiologists of developing countries are at the forefront of the management of infected patients. The possibility of a surge of coronavirus disease cases and shortage of protective personnel equipment (PPE) including N-95 masks are few of the many challenges that anesthesiologists are facing in a developing country like Nepal. The disease and management problems will likely be with us for months or even years. This article discusses the possible scenario of coronavirus disease after the pandemic surge and the possibility of the return of similar epidemics in the future. The article also discusses a few possible measures that we can take to protect ourselves and our patients during the pandemic and from similar epidemics/pandemics in the future.

Keywords: Anesthesia; COVID-19; Developing Country

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Introduction

The Coronavirus disease (COVID-19) is caused by a coronavirus and use RNA as their genetic material. They are covered in spikes or “coronas” on the surface and they use those

spikes to attach to the cells. COVID-19 is known as a novel coronavirus, the 7th of known Coronaviruses causing infections to human. Four coronaviruses namely 229E, OC43, NL63, and HKU1 are prevalent in our community and typically cause common cold symptoms. Severe

acute respiratory syndrome (SARS) and the Middle East respiratory syndrome (MERS) are the other two coronaviruses associated with major outbreaks in the past.¹ COVID-19 causes a range of upper and in some cases lower respiratory symptoms that range from dry cough, and fever to severe viral pneumonia leading to death.²

Anesthesiologists are at high risk for exposure to the coronavirus infection. Specific procedures like bag-mask ventilation, endotracheal intubation, suctioning, extubation of trachea are all considered to be aerosol-generating procedures, high risk for making the virus airborne. The anxiety among anesthesiologists is high. The anxiety is related not only to the current pandemic state but also regarding the post-COVID era. The specific question that comes is how long are we going to go through these difficult times and will this disease come back again?

Will Coronavirus disease come back again?

This is one of the questions that we, anesthesiologists, ask ourselves every day as we fear getting infected by the droplets generated by common procedures like endotracheal intubation, suctioning, extubation etc and how the return of COVID-19 and similar illnesses are going to change our practice.

Coronaviruses are zoonotic, which means they are transmitted from animals to humans. Some coronaviruses, like COVID-19, also transmit person to person and consequently, they travel farther and faster. It is difficult to eliminate zoonotic illnesses because they have animal reservoirs. One example is avian influenza, which we can abolish in our poultry but it returns from the animal reservoir, the wild birds. There will always be a possibility of a resurgence of sporadic cases even after the end of this major outbreak for some years. With climate change and ever-increasing encroachment of the wild

animal habitat, it is highly likely that similar kind of illnesses will re-emerge in a not very distant future.²

Weaknesses in health systems identified by the COVID-19 outbreak:

Few countries with good infrastructure and healthcare systems have tried fighting COVID-19 by identifying outbreaks early and containing infections locally. However, not all the countries have infrastructure and health systems that can identify outbreaks early, respond to the disease, mobilize resources to contain the outbreak. COVID-19 has shown that most of the nations cannot. There are inevitable limitations in production and supply of emergency drugs and equipment in cases of such global outbreak. We need to identify areas to plan for surge response. Such planning should be included as a component of the supply chain. Lean methodology and just-in-time production should mean anticipation and vigilance rather than inventories.

Anaesthesia and critical care services are those disciplines where we work at almost a hundred per cent capacity even during the "normal times". This is especially true for developing countries and surge capacity is what we lack. At the time of writing this text, we, here in Nepal are seeing not only cases of human transmission from people who have travelled from the countries with large numbers of infected cases but also local community spread. The preparation for a possible surge of patients seems to be incomplete. The major hospital-level weaknesses are lack of sufficient ICU beds, limited and less trained human resource including nursing staff and technological resources like ventilators.

What should we do in the future?

Pandemics start slowly and grow exponentially. We are still in the early stages of the pandemic. The lockdown and social distancing measures have possibly flattened the curve and we have some more time for preparation. Disaster

planning and preparation has to continue during this period. The planning should focus on improving health care services, including anaesthesia and critical care services in the cities and the remote districts. We have to invest in health infrastructure, especially intensive care beds and services, and in disease surveillance. This should also be embedded in the national long term policy.

We should look at strengthening our supply chains so that we are ready for emergencies. Understanding the economics of preparedness and the impact of the disease is important. Rationalization of resources should be the principle for functioning. Screening of patients early when they present with symptoms, contact with COVID-19 positive case and history of travel from stage three transmission (community transmission) area is essential for rationalization. The resources should be utilized in high-risk patients and areas of care. For example, N-95 masks can be given to staff managing high-risk patients and performing aerosol-generating procedures rather than distributing it to all the staff. The Nepal medical council has published guidelines to help in this regard.³

The goals of care and ethical standards might be different during a crisis. The ethical principles that guide us during a surge of the critically ill patient in a pandemic or other disaster are to provide care to the maximum number of patients.⁴ We have to allocate resources judiciously, taking population-centric rather than a patient-centric approach. Anesthesiologists and intensivists will have to take critical life and death decisions and communications which may challenge existing moral and ethical standards, for example, withdrawing treatment from some patients to ensure treatment of patients with higher survival probability. One strategy would be to have the situational awareness regarding the resources and the possible clinical deterioration of the patient and discuss the possibility with the family members in advance.

Documentation of such discussions is essential. Anesthesiologists are in the best position among all healthcare providers to perceive the environmental elements and events with respect to time or space, comprehend their meaning, and project the future status.

Planning is one of the most important aspects of the management of disasters. Anesthesiologists have taken leadership roles for management of disasters in the past, for instance, in the 2015 April earthquake.⁵ The hospital command centre and disaster preparedness team is essential in the planning phase and during the disaster. The incident command system should have a commander and should include the clinical expert, operations manager, logistics manager, public affairs personnel and a manager of finances. In the current scenario of COVID-19, anesthesiologists are playing central roles as commanders and clinical experts.

Providing psychological support and ensuring the well-being of staff is also very important. Thus, keeping the workforce safe and healthy should be one of the primary goals during the pandemic. The work-life balance of the staffs may present as a challenge. There is already huge anxiety among healthcare professionals associated with a limited supply of personal protective equipment in addition to protecting their family and dependents. Country-wide lockdown and school closure had led to numbers of staffs being off work to care for their children, while some may be pregnant and breastfeeding as well. Identification of vulnerable groups, careful management of rota, and posting the vulnerable groups to look after the non-COVID patients might be one of the strategies to address the issue. As anesthesiologists and anesthesia staffs cannot be replaced by other hospital staff, it is important to have a backup of staff. Again, rota plays a pivotal role in this regard.

We have to focus on education: simple steps and moments of hand hygiene, universal precautions, principles of infection prevention,

and quality of care. As anesthesiologists, the trivial discussion on whether to wear masks in the theatres should end and we should understand that we will be facing similar desperate situations in future, the “rituals” of wearing masks and hand hygiene should be undisputed. Moreover, integrated education on PPEs, "donning and doffing", techniques of decontamination, peer support and maintaining a healthy lifestyle is crucial. Few important policies and processes of care have to be reconsidered in these times. Visitors might be the carriers and may transmit disease through contact with the healthcare personnel. The visitors flow through the hospital has to be thought of early. Similarly, hand hygiene policy for visitors and patients has to take complete effect to bend the curve downwards.

There are already some positive messages we can take from this pandemic. Most of the times change is difficult, but few changes have happened so rapidly like wearing masks in the operating rooms, hand hygiene, and virtual visits. Few innovative things have happened like telehealth for inpatients, for example, dietician's discussion with a patient through the web, 3-d printed accessories for healthcare providers in a developing country, smartphone apps that can rapidly screen patients coming to the hospitals are just a few of them. Preoperative patient screening and pre-anesthetic checkup via videoconferencing, video-assisted intubation devices have been described in the past and now such practices are rapidly being incorporated in the anesthetic practice in the developing world.^{6,7}

Conversion of theatres into ICU beds is a possibility. Anesthesia machine, viral filters and the workflow of using anesthesia machine for

ventilating COVID ICU patients, the decontamination process, the possibility of infection transmission later, are still in a primitive phase in terms of knowledge and implementation. Few hospitals in the developing countries have modular operating theatres. The discussions are going on about reversing the positive pressure operating rooms to negative pressure to manage COVID patients. However, usefulness and harmlessness of such changes are unknown. Given the paucity of such modular operating rooms in the developing countries, such technical issues may not make sense for us. We should rather focus on workflow management planning. If multiple entrances to the operating area are possible, then, the flow of positive patients should be through a different corridor so that COVID positive and negative patients do not come into contact. But some anesthesiologists consider these strategies difficult to implement in a developing country from a staffing, logistics, infrastructure and technology point of view.

The COVID-19 pandemic has brought anesthesiologists and intensivists of developing countries to a situation where there are shortages in the supply of essential goods and equipment. At the same time, in this fast-paced and ever-changing challenging situation, anesthesiologists have emerged as leaders not just in the medical management of the patients but also in managing the whole problem and its consequences. Some solutions to the problems may be simple ones and others may be complex. We need to focus on preparedness, continuous education, rationalization of resources, and few simple habits. These are the challenging times and it is an immense privilege of anesthesiologists and intensivists to provide care and support to mankind.

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