

“COVID -19 PANDEMIC: LESSONS LEARNT AND THE NEW NORMAL AS I SEE IT”

Change is inevitable, change is constant said Benjamin Desreili, the former British Prime Minister and a novelist. Till December 2019 the world was going at an enormous speed and suddenly a tiny virus derailed both, the global pace and peace as well. The life changed. The life suddenly came to a standstill. As the Newtons first law of motion states, it was difficult for the entire world to come to terms with the changed scenario, the world in motion just tumbled.

December 2019 witnessed case reports from Wuhan regarding the outbreak of COVID19. The new year 2020 dawned with the virus spreading its wings all across the globe and set the cascade of events in motion. The sequel was unimaginable, unthinkable and unprecedented for human race. The world has seen pandemics before in the last century. The scenario was different now. We are technologically advanced, have better understanding of the disease process and the human biological response to it, but still we found ourselves helpless. The quest to know more about this tiny particle forced the scientific minds burn the midnight lamp and spend sleepless nights. The process of learning, unlearning and relearning began.

The main underlying problem with COVID 19 is that, its a completely new antigen to human genome. The human body, which is a phenomenal biochemical factory in itself, is trying to conduct experiments on this new antigen and is mounting varied responses to control its replication in the body. This response varies from asymptomatic carriers to mild respiratory symptoms to fully blown ARDS to formation of micro thrombi in the body. The most dreaded complication, the cause of morbidity and mortality in COVID 19 infection, is cytokine storm. We still don't have any tool or test to identify potential candidates who would mount cytokine storm or any universally accepted regimen to control this cytokine storm.

The host defense system and the virus both seemed to be confused. It will take some time to form a symbiotic relationship. Various regimens have been tried, antivirals, antibiotics, steroids, antimalarials, immune therapy, but still there is no conclusive evidence for a particular successful therapy. The mode of transmission is also a concern. It spreads through aerosol. The virus lodges itself in the respiratory tract and uses the respiratory secretions as mode of transport to the other host. Hence the need to form a barrier between two individual arose. This barrier could be a distance of six feet or if proximity is inevitable, as in case of healthcare workers, it is the use of Personal Protection Equipments.

The healthcare system was overburdened to the extent of collapsing in this pandemic due to varied reasons. The demand for high flow oxygen and ventilators was overwhelming. The hotels , the stadiums, other open spaces were converted into quarantine centers or make shift clinics. The high risk healthcare workers including those with diabetes, hypertension, immunosuppressed and age above sixty were automatically excluded from serving the COVID 19 patients. In addition those who were infected had to be quarantined. The active working force was dwindling day by day. The enormous demand for infrastructure and human resources by the very pandemic was a formidable task to meet with.

These very facts led us to define the new normal. What is the new normal? Repeated hand wash, maintaining social distancing, wearing a mask became a norm. Though difficult, these restricting social norms can be observed for some time but for a healthcare professional, there were countless questions. No stethoscope? No proximity to the patient? How should an anaesthesiologist examine the airway? How should one intubate in emergency situation? Whether CPR first or PPE first? Is vaccine a possibility? Should every person entering the hospital for surgery be tested for COVID19? Aren't these questions daunting? Is it not going to lead to a new normal?

PPEs form the core of COVID era and is going to be the new normal in post COVID era. The most daunting task is to don and doff PPEs and work continuously with PPEs on. It is technically challenging to carry out invasive procedures including intubation and extubation. We are not

accustomed with working with such heavy gears on, which restrict our normal movements. Our PPEs are no less to space suits, including the shoe covers, the leg guards, gown, gloves, goggles, face shield and an N95 mask or respirator. Healthcare workers suffer from dehydration, exhaustion and headaches and side effects of rebreathing in PPEs. Doffing is most crucial and important step when one is supposed to take adequate precaution not to touch anywhere and sanitize at every step, very exhausting but that's new normal.

Another important aspect is communication with the PPE on. It is difficult to communicate verbally with the N95 and face shield on, as our own sound echoes and we can't hear what the others are trying to communicate verbally. It is important to develop a sign language and keep one assistant just outside the operating room in case we need anything in emergency.

We can be on guard when we know that the patient is positive but what about asymptomatic patients or non investigated patients? Here we ask ourselves two questions, do we consider every patient to be potential carrier of COVID and take precautions or should we test every patient entering the hospital? These questions are difficult to answer as yes or no. The entire scientific community around the globe is trying to find out answers to such questions. The guidelines are being laid out, revisited again and again with changing scenario everyday and with added experiential knowledge and research. Emergency cases need to be handled very carefully as the battery of investigations or COVID19 profile may not be at handy. In such situations it is prudent to take all the necessary precautions.

The early reports say that the maximum casualties were seen in anaesthesiologists who were the frontline health care professionals in managing airway. We as anaesthesiologists did not think of aerosol generation in the past so seriously while performing intubation or during extubation. We previously preoxygenated the patient, with high flow oxygen, but now it is not advised as it generates aerosols which can pollute the Operating room. Hence the new normal is to preoxygenate with low flow oxygen where the patient breathes normally or with the help of closed circuit with a tight seal watching the end tidal CO₂ for a perfect graph to avoid leak. Smooth induction and intubation without in between mask ventilation or low tidal volume mask ventilation is the key to avoid aerosol generation. I am sure there will be search for newer agents especially neuromuscular blocking agents with rapid onset of action and peak effect. Though today we have good agents like Rocuronium there will be need for newer agents to reduce the apnoea time. The age-old agent, suxamethonium which was reserved for anticipated difficult intubation has also surfaced itself for reducing apnoea time and complete reversible relaxation. As a trainee or even in practice we loved the very view of the glottis. It was a ritual to visualize the cords using direct laryngoscopy and insert the endotracheal tube gently through the vocal cords. The new normal advises us to use novel devices such as intubation boxes, though there are conflicting evidences in literature regarding the safety of such devices. The performer needs to be at an arms distance from the patient and to optimize this ergonomics video laryngoscopes have replaced the conventional laryngoscopes. Thanks to the new normal.

The positioning of a patient under general anaesthesia is equally important but one has to avoid or minimize disconnections during the process. This is of paramount importance as every person in the operating room and his safety is crucial. Extubation is the most aerosol generating event in the operating room or in the ICU. The patient needs to be extubated deep and under cover of mask and then covered with transparent impermeable material, till he is awake and not coughing. Intravenous Lidocaine is helpful in some cases to reduce cough as per reports. Nebulization has taken a back seat in this COVID era and it is really difficult to think of an alternative approach in demanding situations.

Anticipated difficult intubation is a real challenge for any anaesthesiologist and the adrenal rush is immense. The gold standard for such cases is awake fiberoptic intubation which is aerosol generating procedure as well. Adequate local anaesthesia is of immense importance while performing such high demanding procedure. With the gears on it adds to the challenge but we have to adapt ourselves to this new normal.

Laryngeal mask airways are life savers. We have used it and thanked the inventor profusely all these years. In this present Pandemic it made us think to improvise further on these amazing devices as air leak is a major concern now.

We as anaesthesiologists were quite comfortable with inhalation induction in paediatric patients. Paediatric patients are rarely affected adversely by COVID 19, as the research says the ACE receptors are absent in paediatric population, a blessing in disguise. Although they can be potential carriers. Anaesthetizing these little angels avoiding aerosols who are bound to cry once they are separated from the parents is a real challenge. Premedicating these patients in pre operative room in the presence of parents and intravenous induction is practiced in many paediatric centers. There is a need to develop and follow protocols at other centers as well.

Spacing between the cases is crucial as the operating room is cleared off the aerosols depending upon the air exchanges per hour. More the air exchanges per hours lesser time is taken to clear the air. This pandemic has led to emergence of new concept of negative pressure operating rooms. The feasibility of such negative pressure operating rooms is at present seems remote but maybe it could be the new normal in future. This also underlines the importance of installing scavenging system for our anaesthesia machines.

Regional anaesthesia may rescue us in many situations where we can avoid general anaesthesia and exposure to the aerosols altogether. The advent of Ultrasound and detailed cadaveric dissections of the nerve plexuses keeping in mind the anaesthesiologists perspective will lead the way. Fascial plane blocks, advanced nerve plexus blocks which have borne out of explosive development in the Ultrasound technology and its application in anaesthesiology will be the new normal. This pandemic would provide the necessary impetus to dig deep and explore the new methods of effective nerve plexus blocks. This will also support the day care surgical services to avoid excessive exposure to hospital environment.

Elderly, diabetics, hypertensives, immunocompromised are vulnerable more than ever before. There are prophylactic measures suggested by scientific bodies and even non scientific bodies. As panic spreads like fire, many individuals are trying these "magic formulae" without much of scientific backup. Hence as anaesthesiologists we are going to receive patients for elective as well as emergency surgeries with history of consuming lot of such medications or remedies. Some may have deleterious effects on heart or kidney or liver or the coagulation profile. Pre-operative assessment will be crucial. Patients may have altered biochemistry or changes in ECG courtesy these medications. Airway assessment, the integral part of the assessment needs to be done carefully taking due precautions. I think Ultrasound measurements of the airway will provide significant information and further research might put it at par with the clinical assessment. Patients arrive in the hospital with their masks on and this may continue in future for a while, hence one needs to remember to ask the patient to pull down the mask and assess the airway. This is especially true in emergency situations when we are preoccupied with many tasks in the present scenario.

The effect of COVID19 pandemic is not restricted to medical challenges. The lockdowns which followed had a tremendous psychological impact on many minds. The world is shaken. There is certain amount of uncertainty. The financial equations have changed and the global economy has taken a hit. Social distancing for a social animal like man is itself a psychological burden. As medical professionals we will have to deal patients' problems with wholistic approach.

During this COVID 19 pandemic everyone was trying to find out remedies to protect the fellow human beings from this deadly attack. Protective equipments were suggested and are being used all over the world. Once this pandemic settles down, the peak is flattened we will have to seriously think about the amount of non-biodegradable waste created and its harmful effects on the ecosystem. We will have to come out with biodegradable protective materials in future which could be the new normal.

The real learning lesson is how do we prepare ourselves from here on for such unforgettable unforeseen unimaginable situation. Today it is COVID19, tomorrow it could be some other microorganism. We have been through flu pandemics, plague, cholera in the past. HIV and HBsAg still pose a challenge to us. Cohesiveness of the research, implementation, proper record keeping, interdepartmental cooperation, health education of the health workers and the masses, strict adherence to protocols and safeguarding others and self will lead us to a bright and safe future.

Will there be a search for a new agent or device? Will robotic anaesthesia be the new normal? Will AI (Artificial intelligence) and machines take over?

Robotic intubation and remote anaesthesia management could be the future in a big way. We have already graduated from direct laryngoscopy to video laryngoscopy. The new normal is to develop hand eye coordination and train one's brain accordingly.

The world has transformed into a virtual world. We have started communicating in the virtual world and it has become a reality and it is going to stay. We had webinars which were considered a novelty or very high tech way of learning but now it has become a norm to the extent that prestigious international conclaves are also conducted online and I feel it will benefit the anaesthesiologists all over the globe and disperse the knowledge more effectively.

Charls Darwin, the proposer of theory of human evolution states, "it is not the strongest species that survive, nor the most intelligent, but the most responsive to change." We have evolved from such calamities in the past and we will rise again adapting to the new normal.