The Adjustment of Neurosurgery Practices during COVID-19 “Adapting to New Habits” Era in East Nusa Tenggara of Indonesia

The COVID-19 pandemic has infected plenty of countries since the first positive case recorded in Wuhan, China. The virus had spread to almost all the countries in the world even Indonesia, where the first positive patient was recorded on March 2nd, 2020. In Indonesia, the number of confirmed patients is constantly growing each day with a total of 118,753 positive cases recorded on August 6th, 2020. On July 9th, 2020, Indonesia records the highest daily COVID-19 cases with 2,657 new positive patients which caused Indonesia ranks low among the safest countries in the world and positioned to the top 10 as the country of most positive cases in Asia according to world meters. Indonesia is ranked in the top 14 for the recovery rate and on the top 6 for the mortality rate. Until the time this article was written, the highest coronavirus transmission was found in East Java province with a total of 24,115 positive patients and an average of 552 positive cases per day.

In East Nusa Tenggara, the first positive case of COVID-19 reported on March 22nd, 2020 and until August 6th, 2020 there are 152 COVID-19 patients recorded, followed by West Manggarai and West Sumba as the most transmitted area. To address the issues, the government established a new policy known as PSBB (Pembatasan Sosial Berskala Besar) or Large-Scale Social Restriction which is specifically applied in certain regions. The Large-Scale Social Restriction or PSBB also called a "partial lockdown" and the term is quite different from the actual lockdown, in Large-Scale Social Restriction the local governments and the Ministry of Health limiting the citizen activities in all sectors including closing public places, restricting public transport, and limiting travel to and from the restricting regions. The citizens are still allowed to do certain activities outside their house but only to meet the primary needs such as food and urgent conditions like an illness that requires hospital treatment. Large-Scale Social Restriction has covered 2 provinces and 16 regencies or cities in Indonesia. Each area has a different time table of the "partial lockdown" or Large-Scale Social Restriction. In some cities such as Jakarta, the Large-Scale Social Restriction has "changed" into the 'transitional period' since the end of June, in other cities such as Tangerang the restriction still extended, this happened depending on the level of risk in each region. Whereas in East Nusa Tenggara where we do neurosurgery practices, the limitation of travel through all transportation lanes is applied from April 25th, 2020 until June 15th, 2020.

At the end of Large-Scale Social Restriction and travel limitation policies, the government created another new term called "New Normal". Generally, the "New Normal" era in COVID-19 refers to the changes in human behavior during or after the pandemic. It is a condition of a new way of living where new orders about life activities such as work and interactions with people are formed to adapt to the COVID-19 pandemic. The new habits such as wearing face masks all day during activities outside the home, hand washing routine before and after touching things, avoiding touching eyes, nose, and mouth, and limiting person-to-person contact are becoming part of our “new normality”. Even though the Large-Scale Social Restriction and travel limitation policies are no longer enforced, these new ways of living
should be done correctly to coexist with the COVID-19 pandemic term “New Normal” is applied to recover economic growth while still maintaining the existing COVID-19 protocols to prevent further virus transmission.

Although the "New Normal" policy has been going for approximately one month, there are still many pros and cons to its application in the community. One of the disadvantages is that there is still a lot of citizens who do not fully understand the definition of "New Normal", especially those who are less literate. They are unfamiliar with the term "New Normal" as the "new way of living". As a result, the word "normal" is often misinterpreted as if the pandemic is over and the conditions have stabilized to the point where they can move as usual without having to stick to the health protocols. This is proven by the massively increasing number of positive cases per day after "New Normal" is applied. Indonesian government faced the situation by revising the term "New Normal" to "Adapting to New Habits", where the application and principles are the same as "New Normal". By changing the term or words into "Adapting to New Habits" the government expects the public to have a better understanding and awareness of the situation and as a result that there will be no more misconception and the health protocols can be implemented by the public.

When the term of Large-Scale Social Restriction or PSBB was applied by the regional government, the number of neurosurgical patients in East Nusa Tenggara has decreased significantly especially patients with traumatic brain injury (TBI). There were only 3 to 5 neurosurgical patients treated every month when the PSBB took place. Before the COVID-19 pandemic hits, there are at least 1 or 2 patients who came with head injury or spinal trauma every day. This decrease is considered reasonable because during the Large-Scale Social Restriction the government was limiting the public to leave their house which reduced road accidents. However, only 2 weeks after the "New Normal" or "Adapting to New Habits" policy has occurred, traumatic patients increased dramatically to at least 3 to 8 patients per day. This is caused due to boredom and the desire in individuals to go out after PSBB which causing the accident rate to increase again.

The transition from travel limitation to “Adapting to New Habits” caused changes in the hospital service system. Our neurosurgery department also adapts and adjusts to existing changes. Until now, there has been an official appeal from the Indonesian Neurosurgical Society (INS) regarding the practice of neurosurgery in the COVID-19 era and we followed the appeal by adding some modifications according to each case and conditions in our service. There have not been many significant differences in neurosurgery services since “Adapting to New Habits” is occurred. Still, there are few things that we have added to our services so that we can handle the increasing number of patients in our hospital since we stand as the main center of neurosurgery services and main COVID-19 referral hospital in East Nusa Tenggara. Therefore, we would like to share our ways of coping with the neurosurgical patients in our hospital especially in the emergency room, outpatient room, operating room, and the policies towards practical medical students and interns.

**Emergency Room Service for Neurosurgical Patients**

Every single emergency patient who comes through the emergency room has done some screenings that lead to suspicion of COVID-19 infection, this is done to avoid accidental or unwanted transmission. Screenings such as temperature taking, questions about medical record and travel history, previous contact with an individual who is infected with COVID-19, also complaints of coughing, snoring disorder (anosmia), eye disorders, new skin rash or disorder, followed by a complete blood test, x-ray or CT scan of the thorax, and at least a rapid test or swab test to determine whether the patient is categorized as close contact, suspect, or positive cases with or without symptoms. The patient is categorized as positive for COVID-19 after proven by the results of the swab - RT PCR test (reverse transcription-polymerase chain reaction), with or without symptoms. Patients who have been confirmed positive for COVID-19 and require immediate emergency surgical treatment can continue to receive treatment while still applying the COVID-19 protocol with high alertness and patients must be treated in an isolation room. The patient is suspected of having COVID-19 if there is one of the following: 1). Suffering from an upper respiratory tract infection (URTI) and having a travel history (or living) within the last 14 days before symptoms appeared in a country or territory of Indonesia that reported to have local transmission; 2). A person with symptoms of acute respiratory infection which in the last 14 days before symptoms develop had a history of contact with confirmed or probable cases of COVID-19; 3). People with severe URTI or pneumonia which require hospitalization with no other cause that is based on a convincing clinical picture.

Patients can be categorized to be in close contact if they have a history of contact with an individual who is suspected or infected with COVID-19, specifically: 1). Patients had a face to face contact with an individual who is suspected or infected with COVID-19 within...
a radius of 1 meter in 15 minutes or more; 2). Direct physical touch with a person who is suspected or infected with COVID-19; 3). Medical personnel who provide immediate care for a patient who is suspected or infected with COVID-19 without wearing standard adequate personal protective equipment (PPE); 4). Any other situation that indicates contact with the person who is suspected or infected with COVID-19.

Patients that categorized as close contact and suspected of having COVID-19 are required to check their status with the rapid test where the outcomes will be available for approximately 1 hour. If the result is negative and the patient's clinical picture does not indicate COVID-19, then the patient does not need further examination. However, if the result is positive (or negative with a clinical picture leading to COVID-19 infection), the patient will immediately be directed to do a swab test where there will be accessible results in 24 hours.

Patients who need immediate emergency surgical treatment for life-threatening conditions must carry out a rapid test first. If the result is positive (or negative with a clinical picture leading to COVID-19 infection), the patient will still receive emergency surgical treatment while still prioritizing the COVID-19 protocol and must stay in an isolation room until the result of the swab test come out. If the result of the swab - RT PCR test is positive, the patient will be still treated in the isolation room and be bound to undergo more specific examinations, but if the result is negative then the patient can be treated in the ICU room or the normal inpatient room.

The patient's guardian or family who comes with the patient is limited to one person. The visit time is also limited to 5 minutes every 3 hours. Those who came with the patients or are in close contact with patients who have been confirmed positive for COVID-19 must be examined with a rapid test. Either the rapid test results are positive or negative (but the patient's guardian shows clinical symptoms that lead to COVID-19 infection), then a swab – RT PCR test is required for further examination. If the first swab test result is positive, we suggest them to do self-isolation in their house for at least 2 weeks while waiting for the next swab – RT PCR test gives a negative result. Neurosurgical patients who are positive with COVID-19 and required to have a head CT scan examination will be moved into the CT scan facility room using a different shortcut than regular patients to reduce the risk of exposure. Neurosurgeons only hold face-to-face or physical meetings with patients after they are in the inpatient room. Telephone or online consultation is done for patients who are still in the emergency room. The neurosurgeon on-duty schedule is set to an exchange shift once every 2 weeks. During the weeks, the neurosurgeon is in charge to look after the emergency room, consultation room, and operating room.

**Outpatient Room Service**

Just like the patients in the emergency room, patients who enter the hospital through the outpatient room also have to go through the same screening procedures to determine one's risk status of COVID-19. Our hospital adjusts a system where we reduce the number of outpatients by 25% of the total patients available to minimize contact and time exposure as much as possible. Only patients who are in post-surgery treatment and have special cases which require immediate help allowed to have outpatient control. There are one-meter tall glass dividers installed on the table in doctor consultation rooms to protect the patient and doctor from possible droplets. Further physical examination is only given to patients when it is needed. All patients are required to wear at least a cotton mask while in the hospital area. As we already know, the doctors have to use complete adequate PPE (Personal Protective Equipment) when in the hospital, but due to lack of funds and distribution, we decided to make our protection. We wear 2 layers of a surgical mask, face shield, hair cap, and scrub suit covered with a raincoat and boots. Any disposable PPE like surgical masks and hair caps are thrown in a distinctive container after we used it. Reusable PPE such as face shield, scrub suit, and boots are washed and soaked for at least one hour in a detergent solution for sanitary purposes.

Since the “Adapting to New Habits” era applied, we have implemented different outpatient service systems in our hospital. Outpatient services that were initially held 6 times a week were reduced to 2 times a week. For now, we are accepting patients from 2 different hospitals: a regional hospital and a private hospital, both hospitals are the main neurosurgery centers in East Nusa Tenggara. With the approval of both hospital management, we decided to only practice in one main hospital. We collected and moved the patients from the private hospital into the regional hospital to minimize contact and time effectiveness.

**Operating Room Services**

As we have mentioned before, according to our hospital standards every neurosurgical patient who is planned for receiving surgery must undergo COVID-19 tests. We divided the patients into 2
main groups: emergency patients and elective patients. In emergency cases, we subdivide them into 5 etiological groups: traumatic, vascular abnormalities, malignancy, hydrocephalus, and infection. For traumatic cases we include head injuries and spinal injuries that require immediate evacuation or decompression, vascular abnormality includes hemorrhagic strokes or bleeding strokes caused by hypertension, malignancy includes a worsening condition of increased tumor progression due to edema and intratumoral bleeding, hydrocephalus that developed acutely, and on the case of infection such as infected VP shunt hardware and abscess with associated edema. Patients in emergency cases must be immediately treated based on the underlying cause.6

In elective cases that are not emergencies, surgery will still be planned with a maximum limit of 2 operations per week. Patients with a higher risk of worsening such as brain tumor cases will be prioritized. All plans or cases of elective surgery will be evaluated every week to determine its priorities.7 Consultation and communication between physicians and hospital management are done through online media. We only use one specific surgery room in the hospital where the medical personnel who entered the operating room are limited to 4 personnel consisting of one neurosurgeon, one anesthesiologist, and two surgical assistants. The medical personnel who participate in the operating room are required to use level 3 PPE to protect themselves. Patients who are planned for surgery are treated as COVID-19 positive patients until they are proven to be negative with a rapid test or swab - RT PCR test. All performed operations should be completed within 2 hours and the use of a bone drill is reduced to prevent aerosolized.7-9

Because the space in the ICU is fairly limited and out of balance with the number of patients that have increased, we also screen patients that will be placed in the ICU. For now, the ICU only provides 7 beds and one isolation room inside. We prioritize patients with good predict outcomes after the surgery to be placed in the ICU for 2 days at the maximum before moved into the regular room. For patients with worst predict outcomes, we suggest they be placed in the ICU room only if there is enough bed and for 1 day at the most before moved into the regular room. Patients categorized in good predict outcomes group are those who are: under 60 years old with GCS >8, bleeding due to trauma or stroke which can allow total evacuation, the time from incident to operation is under 12 hours, and patients without a severe medical history of illness such as heart failure and chronic kidney disease. Those with the worst predict outcomes are the opposite of the criteria for patients with good predict outcomes. All surgical inpatients will be discharged as soon as possible when the condition has improved.

**Practical Medical Students (Clerkships) and Interns**

In our neurosurgery center, we routinely hold the entrance of clerkships and internship doctors every year. Before the COVID-19 pandemic hits, we usually accept two clerkships and two internship doctors with a service period of 1 year. Currently in this "Adapting to New Habits" era we only accept one clerkship and one internship doctor at the most. Clerkships and internships should wear hair caps, face shields, surgical masks, scrub suits, boots, and raincoats as their daily PPE. Currently, clerkships are not allowed to enter the operating room and only internships are permitted, this is done to minimize the risk of exposure. Both clerkships and internships are not permitted to do a follow up on outpatients with COVID-19 risk, they were only allowed to follow up on patients with negative COVID-19 rapid test results. We changed the maximum working hours of clerkships and internships from 8 and 10 hours a day to 5 and 7 hours a day respectively.

In dealing with the "Adapting to New Habits" era we should still follow the developing COVID-19 guidance and protocols when carrying out practices and services in hospitals. After describing all the actions and adjustments we have implemented in the services at our hospital, especially in the neurosurgery department, we can say that the most important and effective way to reduce the number of COVID-19 positive cases is to adhere to the basic principles of COVID-19 health protocol such as physical distancing, and always wearing complete PPE whenever we are out meeting other people both fellow medical personnel and patients. We must have a high awareness of our surroundings and skeptical towards everyone we meet in the hospital. Even though our facilities are still limited compared to other regions especially when it comes to personal protective equipment, by applying these methods and adjustments we can confirm that until now there is no medical personnel at our hospital who have been confirmed to have COVID-19 (based on the screening results that carried out every 2 weeks in the hospital).

By sharing the changes and modifications to the services in our hospital, we are hopeful that the ideas we have done can be useful and applied in other hospitals or neurosurgery centers during the “Adapting to New Habits” era. Although we are still at battle with the COVID-19 pandemic and the number of positive patients keeps
increasing every day, we will continue to serve the patients sincerely and optimally especially in neurosurgery centers so that every patient’s life expectancy can be fully achieved.

Donny Argie¹, Christopher Lauren¹, Angel Iskandar², Elric B. Malelak¹, Samuel E. Suranta¹, Reza Mawardy¹, Vito M. Junaidy¹, Yohanes Firmansyah¹

¹Department of Neurosurgery, Prof. Dr. W. Z. Johannes Kupang Regional General Hospital, Kupang, East Nusa Tenggara, Indonesia; ²Faculty of English Literature, Buddhi Dharma University, Banten, Indonesia

Corresponding author:
Christopher Lauren
Department of Neurosurgery, Prof. Dr. W. Z. Johannes Kupang Regional General Hospital
Jl. Prof Dr. W Z Johannes No. 14, Oebobo, Kupang, Nusa Tenggara
chrislauren11@gmail.com

References

1. Worldometer. Indonesia. Available from: https://www.worldometers.info/coronavirus/country/indonesia/

2. Perhimpunan Spesialis Bedah Saraf Indonesia. Rekomendasi pelaksanaan pelayanan bedah saraf dalam masa pandemi COVID-19 di Indonesia. Available from: http://www.ins.or.id/assets/uploads/news/d67aa-final_perspebsi-covid_21.04.2020.pdf

3. Germanò A, Raffa G, Angileri FF, et al. Coronavirus Disease 2019 (COVID-19) and Neurosurgery: Literature and Neurosurgical Societies Recommendations Update. World Neurosurg. 2020;139:e812-e817. DOI:10.1016/j.wneu.2020.04.181

4. Spina A, Boari N, Gagliardi F, et al. Letter to the Editor Management of Neurosurgical Patients During the COVID-19 Pandemic. World Neurosurg. 2020;139:715-717. DOI:10.1016/j.wneu.2020.04.161

5. World Health Organization. Personal protective equipment. Available from: https://www.who.int/medical_devices/meddev_ppe/en/

6. Muhammad S, Tanikawa R, Lawton MT, et al. Letter: Safety Instructions for Neurosurgeons During COVID-19 Pandemic Based on Recent Knowledge and Experience. Neurosurgery. 2020; 87(2): E220-E221. DOI: 10.1093/neuros/nyaa184

7. Jean WC, Ironside NT, Sack KD, et al. The impact of COVID-19 on neurosurgeons and the strategy for triaging non-emergent operations: a global neurosurgery study. Acta Neurochir (Wien). 2020;162(6):1229-1240. DOI:10.1007/s00701-020-04342-5

8. Ozoner B, Gungor A, Hasanov T, et al. Neurosurgical Practice During Coronavirus Disease 2019 (COVID-19) Pandemic. World Neurosurg. 2020; 140: 198-207. DOI: 10.1016/j.wneu.2020.05.195

9. Mahadewa TGB. Neurosurgery safety management during Covid-19 pandemic. Neurologico Spinale Medico Chirurgico. 2020; 3(1): 24-25. DOI: 10.36444/nsmc.v3i1