

## SUPPLEMENTARY DATA

### Korean Nation-wide Survey (%)

1. Please provide the name and location of the hospital where you work. (Hospital name/Hospital location)
2. What type of hospital are you working for?
  - a. Tertiary medical institution: 72.6%
  - b. Secondary medical institution: 27.4%
  - c. Primary medical institution: 0%

### Practice

1. Does your hospital perform COVID-19 tests on all patients when hospitalized through outpatient clinics for patients who need neurointervention or examination?
  - a. Conducted for all patients: 54.8%
  - b. Selectively performed for patients with symptoms: 43.5%
  - c. Do not carry out: 1.6%
2. Does your hospital perform COVID-19 tests on all patients needing neurointervention or testing when hospitalized through the emergency room?
  - a. Conducted for all patients: 54.8%
  - b. Selectively performed for patients with symptoms: 45.2%
  - c. Do not carry out: 0%
3. Does your hospital have a dedicated route for transferring suspected or confirmed COVID-19 patients from the emergency room to the cerebral angiography room?
  - a. Yes: 17.7%
  - b. No: 82.3%
4. Which of followings do you use for patients with suspected or confirmed COVID-19 in the cerebrovascular angiography room?
  - a. Surgical (dental) mask: 88.7%
  - b. N95 mask: 6.5%
  - c. Powered air-purifying respirator (PAPR): 4.8%
5. How many masks are supplied by the hospital per person per day?
  - a. 1: 59.7%
  - b. 2: 25.8%
  - c. 3: 9.7%
  - d. 4 or more: 4.8%
6. In the cerebrovascular angiography room, do you put a mask on the patient during the procedure if the patient is a suspected or confirmed COVID-19 patient?
  - a. Yes: 96.8%
  - b. No: 3.2%

7. Is there a dedicated treatment room for patients with suspected or confirmed COVID-19 in the cerebrovascular angiography room?
  - a. Yes: 91.9%
  - b. No: 8.1%
8. Is there a negative pressure device in the cerebrovascular angiography room?
  - a. Yes: 83.9%
  - b. No: 16.1%
9. When the PCR test result of a suspected COVID-19 patient does not come out until the end of treatment, what does the medical staff do?
  - a. Immediately do other tasks (operation, image interpretation, outpatient, etc.): 40.3%
  - b. Wait in quarantine until the results of the test are available: 41.9%
  - c. Even if it is not until results are obtained, a certain amount of time is taken before other tasks: 17.7%
10. Do you have two or more teams of medical treatment staff (doctors, nurses, radiologists) in preparation for the possibility that patients who has undergone treatment will test positive for COVID-19?
  - a. Divided: 12.9%
  - b. It cannot be divided by manpower or hospital circumstances: 72.6%
  - c. Depending on the situation: 14.5%
11. Where is the intubation performed at your hospital when general anesthesia is required for emergency procedures for suspected or confirmed COVID-19 patients?
  - a. In the cerebrovascular angiography room: 49.2%
  - b. In a separate place with a negative pressure device: 24.6%
  - c. In a separate place without negative pressure devices: 26.2%
12. After treatment of a suspected or confirmed patient of COVID-19, do you close the door of the cerebral angiography room and ventilate or disinfect before the next patient's procedure?
  - a. Yes: 93.5%
  - b. No: 6.5%
13. How long is the time for ventilation and disinfection after treatment of suspected or confirmed COVID-19 patients?
  - a. No ventilation or disinfection is performed: 6.6%
  - b. 30 minutes: 23%
  - c. 1 hour: 23%
  - d. 1 hour 30 minutes or more: 47.5%

14. Have you experience of treating a patient diagnosed with COVID-19 including a patient confirmed with COVID-19 after treatment?
- Yes: 1.6%
  - No: 98.4%
15. Has there been a case of a medical staff (e.g., doctor, nurse, and radiologist) infected with COVID-19 due to a patient after surgery in the cerebrovascular angiography room?
- Yes: 0%
  - No: 100%
16. How long does it takes for COVID-19 test in the emergency room?
- <1 hour: 1.6%
  - 1–2 hours: 8.1%
  - 2–24 hours: 85.5%
  - >24 hours: 4.8%
17. For emergency patients who need neurointervention, is chest CT performed at the same time when brain CT is taken?
- This is done for all patients: 11.3%
  - It is administered to patients suspected as having COVID-19, such as fever and respiratory symptoms: 74.2%
  - Do not enforce: 14.5%
18. Do you perform chest X-ray for emergency patients who need neurointervention?
- It is performed for all patients: 83.9%
  - It is administered to patients with suspected COVID-19, such as fever and respiratory symptoms: 14.5%
  - Do not enforce: 1.6%
19. Do you think that you are wearing appropriate protective equipment when performing the procedure for a suspected or confirmed patient of COVID-19?
- Yes: 61.3%
  - No: 38.7%
- Impact of COVID-19 (13 questions)**
20. What is the scope of the procedure currently being performed in your hospital?
- All procedures: elective, urgent, emergent cases: 100%
  - Some procedures: urgent and emergent cases: 0%
  - Emergency procedures only: 0%
21. Are there any ongoing studies of prospective design?
- Yes: 41%
  - No: 59% → Go to # 26
22. What kind of prospective studies are in progress?
- Stroke, Randomized Clinical Trial (RCT): 45.8%
  - Stroke, Single arm: 45.8%
  - Aneurysm, Randomized Clinical Trial (RCT): 0%
  - Aneurysm, Single arm: 12.5%
23. Have there been any obstacles to continuing prospective design research due to COVID-19?
- Yes: 26.9%
  - No: 73.1% → Go to # 26
24. If there are any problems with the research, what kind of problems are there? (Multiple selection possible)
- Patient recruitment: 100%
  - Follow up imaging: 0%
  - Outpatient follow up: 14.3%
  - Protocol deviation: 14.3%
25. Patient recruitment is
- Ongoing without delay: 44.4%
  - Partially delayed: 55.6%
  - On hold: 0%
- 26–32. This is a questionnaire on the changes between the first half of 2019 and the first half of 2020 related to emergency procedures.
26. The number of mechanical thrombectomy for ischemic strokes
- Increased by more than 25%: 5.1%
  - Showed no change (<25%): 64.4%
  - Decreased by more than 25%: 30.5%
27. The number of neurointervention for hemorrhagic strokes
- Increased by more than 25%: 5%
  - Showed no change (<25%): 68.3%
  - Decreased by more than 25%: 26.7%
28. The total number of emergency neurointerventions
- Increased by more than 25%: 4.8%
  - Showed no change (<25%): 61.3%
  - Decreased by more than 25%: 33.9%
29. Do you perform mechanical thrombectomy under general anesthesia?
- It is carried out for all patients: 93.5%
  - Rarely but depending on the patient's condition: 3.2%
  - It is not performed: 3.2% → Go to #31
30. If you perform mechanical thrombectomy under general anesthesia, the incidence of general anesthesia due to COVID-19
- Increased by more than 25%: 0%
  - Showed no change (<25%): 100%
  - Decreased by more than 25%: 0%

31. If there is a decrease in the total number of neurointerventions due to COVID-19, when do you expect to re-commence to full capacity with non-emergency procedures?

- a. Already recovered (or never decreased): 43.5%
- b. Within 6 months: 22.6%
- c. 6 months to 1 year: 12.9%
- d. Over 1 year: 11.3%
- e. No idea: 9.7%

32. Do you have any mental or psychological symptoms during treatment in the era of COVID-19? (Multiple answers available)

- a. None: 51.6%
- b. Depression: 32.3%
- c. Insomnia: 3.2%
- d. Anxiety: 27.4%
- e. Others: 0%