**eTable 1** List of hospital participated and the reported case numbers

|  |  |  |  |
| --- | --- | --- | --- |
| Jurisdiction | City | Number of patients | Hospitals |
| Hubei | Wuhan | 286 | Renmin Hospital of Wuhan Univeristy, Hubei General Hospital,East brach(West China Ward) |
| Sichuan | Chengdu | 95 | The Public health clinical center of Chengdu |
| 12 | West China School of Medicine/West China Hospital of Sichuan University |
| 3 | The People's Hospital of Jianyang City |
| 16 | Pidu district People's Hospital, Chengdu |
| 5 | Sichuan Province People's Hospital Qionglai Hospital（Medical Center Hospital Of Qionglai Hospital） |
| 10 | Jintang First People's Hospital（West China Hospital Sichuan University Jintang Hospital） |
| Deyang | 17 | People's Hospital of Deyang City |
| Zigong | 9 | Zigong First People's Hospital |
| Mianyang | 16 | Sichuan Mianyang 404 Hospital |
| 2 | Santai County People's Hospital |
| Guangyuan | 1 | The Third People's Hospital of Guangyuan( Infectious Disease Hospital of Guangyuan) |
| Panzhihua | 6 | The Fourth People's Hospital of Panzhihua |
| Suining | 16 | Suining Central Hospital |
| Luzhou | 18 | Luzhou Infectious Disease Hospital |
| Neijiang | 24 | The First People's Hospital of Neijiang |
| 3 | The Second People's Hospital of Neijiang |
| 12 | The People's Hospital of Weiyuan |
| 1 | Zizhong People's Hospital |
| Leshan | 1 | The People's Hospital of Leshan |
| Yibin | 5 | The Second People's Hospital of Yibin |
| Nanchong | 3 | Affiliated hospital of north Sichuan medical college |
| 10 | Nanchong Central Hospital |
| 6 | Pengan County People's Hospital |
| 17 | The People's Hospital of Langzhong |
| 4 | Nanbu County People's Hospital |
| 5 | The Fifth People's Hospital of Nanchong |
| 2 | People's Hospital of Yilong County |
| 1 | Yingshan County People's Hospital |
| 2 | Xichong County People's Hospital |
| Guangan | 1 | The People's Hospital of Yuechi |
| 1 | West China-Guang'an Hospital Sichuan University |
| 2 | Huaying People's Hospital |
| Dazhou | 3 | Dazhou Central Hospital |
| 18 | Quxian County People's Hospital |
| 2 | Xuanhan County People's Hospital |
| 34 | Dazhu County People's Hospital |
| 3 | The People's Hospital of Kaijiang |
| Bazhong | 1 | Bazhong Central Hospital |
| 3 | The People's Hospital of Pingchang |
| 1 | The People's Hospital of Tongjiang |
| Ya'an | 20 | Ya'an People's Hospital |
| Meishan | 3 | Renshou County People's Hospital |
| Ziyang | 1 | The First People's Hospital of Ziyang (West China Hospital Sichuan University-Ziyang Hospital） |
| Liangshan | 7 | The First People's Hospital of Liangshan Yi Autonomous Prefecture |
| Ganzi | 7 | Ganzi Tibetan Autonomous Prefecture People's Hospital |
| 4 | Daofu County People's Hospital of Ganzi Prefecture |
| Chongqing | Chongqing | 6 | Chongqing Three Gorges Central Hospital, Chongqing, China |

**eTable 2 Clinical details of cases with cerebrovascular accidents**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Patient n** | **Sex and Age, yr** | **Neurological presentation** | **Cerebrovascular accident** | **Comorbidities** | **Brain CT findings** | **Complications** | **Outcome** | **Clinical implications** |
| #1 | Male, 70s | Delirium, multifocal ischemic stroke | Incidental findings on day 25 after onset of pneumonia, delirium onset 7 days before scan. | none | Multifocal ischemic stroke in both hemispheres, subsequent intraventricular bleeding (repeated brain CT on 10th and 18th day) | hypoproteinemia,  thrombocytopenia,  type II respiratory failure,  transient atrial fibrillation,  DVT  PTE confirmed by CT pulmonary angiogram | Hospitalized, RASS-2 | MDT review, emboli and hypoperfusion suspected, norepinephrine given to elevate sltgly blood pressure, LMWH prescribed and continued despite moderate intraventricular bleeding. Sedatives later slowly withdrawn but still in coma (GCS 3-T-4), not attributable to cerebrovascular accident. CNS infection and encephalopathy suspected, but LP unremarkable and negative for SARS-CoV-2. |
| #2 | Male, 60s | multifocal ischemic stroke | Incidental findings on day 45 | None | multifocal cerebral watershed infarction | UGB, type II respiratory failure, atrial flutter,  Hypoproteinemia | Hospitalized, RASS-2 | MDT review. LMWH not prescribed as had UGB. Repeat CT scan scheduled. |
| #3 | Female, 70s | large hemispheric infarction | Incidental findings on day 27. | HT | Bilateral multifocal stroke with large hemispheric infarction on left side and hemorrhagic lesions. Lesion remained stable 10 days after first scan | thrombocytopenia,  cardiac shock,  atrial fibrillation,  DVT,  PTE | Died: lactic acidosis? | MDT meeting, cardiogenic emboli  suspected. Given diuretics to prevent herniation. LMWH not prescribed due to severe thrombocytopenia (platelets around 20.00 ×109/L) |
| #4 | Female, 80s | Drowsiness+ stroke | Drowsiness on day 48, pupils 1.5 mm, reacted poorly to light. Seven hours later, sudden drop of blood pressure, right pupil 5.5 mm, left pupil 4.5 mm, no light reflex or tendon reflection. | None | Brain atrophy and multiple lacunar infarction 2 days before deterioration of consciousness and stroke | hypokalemia, abnormal liver function,  hypoproteinemia | Died | Given absence of risk factors for the cerebrovascular accident other than age, suspection that drowsiness indicating onset of fatal stroke, requiring immediate CT. |
| #5 | Male, 90s | Delirium+ stroke | Pneumonia controlled, had many complications including delirium onset on day 23 and given sedatives. Consciousness deteriored rapididly (2-2-4) on day 25. Had anisocoria and no light reflex. | T2 DM  HT,  oronary artery bypass graft | None | acute myocardial infarction,  respiratory failure,  hypovolemic shock,  hypernatraemia,  hyperchloremia | Death | Several risk factors of CVA. |
| #6 | Female, 80s | Ischemic stroke, delirium | Sudden onset of aphasia, right sided weakness, drooling from right corner of mouth. Tested as close contact of a confirmed case. Fever and cough present 2 days after stroke. Delirium noticed 1 day later. | AD | Patchy, low-density lesion in the brainstem | None | Discharged  mRS 2 | Thrombolysis not performed due to age and history of dementia. Aspirin and statin prescribed. |
| #7 | Male, 60s | Haemorrhagic stroke | On day 6, sudden, unexplained short breath and left side weakness. Slipped into coma (GCS 10). HT well controlled before stroke. | HT | High-density lesions in right temporal, parietal and occipital lobes (before surgery) | none | Discharged  mRS 3 | Emergency craniotomy surgery performed. |
| #8 | Male, 60s | Ischemic stroke | On day 31 complaint of weakness of the left lower body. Strength normal except grade 4 in the left lower limb. | T2DM | Low-density lesions of right temporal occipital junction, para hippocampal gyrus and thalamus | abnormal liver function,  hypoproteinemia | Discharged  mRS 1 | No thrombolysis, given antiplatelet and statin. |
| #9 | Female, 70s | New Subdural hematoma | Hematoma found 2 days after the LMWH started due to DVT (day 1), which was absent in the CT 4 days before starting LMWH. No neurological complaints | HT,  history of haemorrhagic stroke | new subdural hematoma | DVT  heart failure  hypokalemia | Hospitalized, RASS-4 | MDT review. LMWH continued with brain CT follow-up, growing hematoma on day 11 and 16 after first scan. No signs or symptoms of herniation or focal insults, but LMWH stopped. |
| #10 | Male, 50s | TIA | On day 28 complained of dizziness and couldn’t walk straight stumbling to the right but resolved after one hour. Neurological examination unremarkable. | Diabetes, HT | Lacunar infarcts in left basal ganglia | None | Discharged | Given clopidogrel and statin. No further neurological complaints. |

DVT: deep vein thrombosis; PTE: pulmonary thromboembolism; RASS: the Richmond agitation and sedation scale; MDT: multidisciplinary team LMWH: low-molecular-weight heparin; GCS: Glasgow Coma Scale; T: tracheostomy; LP: lumbar puncture; UGB: upper gastrointestinal bleeding; HT: hypertension; mRS: modified Rankin Scale; AD: Alzheimer's disease. T2DM: type 2 diabetes mellitus

**eMethods: C**ase report form of neurological impairment in COVID-19

**\***This survey is applicable to patients diagnosed with Covid-19 according to criteria in the Sixth Edition of COVID-19 published by the National Health Commission.

1. Name of the reporting neurologist [fill in] \*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Phone number of patient or the guardian [fill in] \*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. Patient's gender [single choice question] \*

|  |
| --- |
| ○ Male |
| ○ Female |

4. Age [fill in numbers] \*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. Medical record number [fill in] \*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6. Severity classification according to the guideline [single choice question ] \*

|  |
| --- |
| ○ Mild |
| ○ Moderate |
| ○ Severe |
| ○ Critical |

7. Does chest CT compatible with diagnosis (patchy shadows or ground glass-like shadows on both sides [single choice question] \*

|  |
| --- |
| ○ Yes |
| ○ No |

8. APACHE score [multiple choice questions] \*

|  |
| --- |
| □ No |
| □ Yes, APACHE II score is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Yes, APACHE III score \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

9. Nucleic acid test of SARS-CoV-2 (if multiple tests had been done, choose Positive if at least one test were positive) [single choice question] \*

|  |
| --- |
| ○ Positive |
| ○ Negative |

10. Cormobidities [multiple choice questions] \*

|  |
| --- |
| □ None |
| □ Hypertension |
| □ Diabetes |
| □ Cardiovascular disease |
| □ Chronic obstructive pulmonary disease |
| □ Malignant tumors involving organs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Chronic liver disease |
| □ Chronic kidney disease |
| □ Cerebrovascular disease |
| □ Autoimmune disorders |
| □ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

11. New-onset non-neurological complication during the COVID-19 [multiple choice questions] \*

|  |
| --- |
| □ None |
| □ Type I respiratory failure |
| □ Type II respiratory failure |
| □ renal failure |
| □ Liver failure |
| □ Heart failure |
| □ Multiple Organ Dysfunction Syndrome |
| □ Acute Respiratory Distress Syndrome |
| □ Ventilation-associated pneumonia |
| □ Acute liver injury |
| □ Septic shock |
| □ Cardiogenic shock |
| □ Shock, others\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Acute kidney injury |
| □ Gastrointestinal bleeding |
| □ Acute cerebrovascular event |
| □ Acute heart injury |
| □ Cognitive Dysfunction |
| □ Immune dysfunction |
| □ Electrolyte disorders |
| □ Hypoxemia |
| □ Cerebroedema |
| □ Arrhythmia |
| □ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \* |

12. History of smoking [single choice question] \*

|  |
| --- |
| ○ Yes |
| ○ No |
| ○ Previous smoker |

13. Non-Nervous System Complaint [multiple choice questions] \*

|  |
| --- |
| □ fever |
| □ cough |
| □ shortness of breath / dyspnea |
| □ expectorant |
| □ diarrhea |
| □ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

14. Treatment [multiple choice questions] \*

|  |
| --- |
| □ Face masks  □ Noninvasive ventilation |
| □ Invasive ventilation |
| □ Continuous Renal Replacement Therapies |
| □ Extracorporeal membrane oxygenation |
| □ Antibacterial treatment, please specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Antifungal drug treatment, please specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Antiviral therapy, please specify \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Corticosteroid treatment |
| □ Intravenous infusion of gamma globulin  □ Symptomatic treatment |
| □ Traditional Chinese Medicine |

15. consciousness impairment during the course of the disease [single choice question] \*

|  |
| --- |
| ○ Yes |
| ○ No (skip to question 18) |

16. Is patient on sedatives? If so, does the sedatives fully explain declined consciousness? [single choice question] \*

|  |
| --- |
| ○ Yes, and could be fully explained by the sedatives (skip to question 18) |
| ○ Yes, but the consciousness could not be explained by the sedatives  ○ No |

17. Levels of Consciousness impairment [Single-choice question] \*

|  |
| --- |
| ○ Drowsiness |
| ○ Lethargy |
| ○ Coma, Glasgow score\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \* |
| ○ Delirium |

18. Psychiatric symptoms [multiple choice] \*

|  |
| --- |
| ○ Yes |
| ○ No (skip to question 20) |

19. Psychiatric symptoms during the course [multiple choice questions] \*

|  |
| --- |
| □ Anxiety |
| □ Panic attack |
| □ Depression |
| □ Suicidal tendencies |
| □ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

20. Non- specific symptoms of the nervous system during the course [multiple choice questions] \*

|  |
| --- |
| □ No non-specific symptoms related to the nervous system |
| □ headache |
| □ Insomnia |
| □ Myalgia |
| □ Fatigue |
| □ Vertigo |
| □ Dizziness |
| □ Vomiting |
| □ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

21. Nervous system- specific symptoms during the course [multiple choice questions] \*

|  |
| --- |
| □ No specific symptoms related to the nervous system |
| □ Vision loss |
| □ Double vision |
| □ Phantosmia |
| □ Hypogeusia |
| □ Limbs or facial weakness |
| □ Difficulty in swallowing/choking |
| □ Diaphragm |
| □ Aphasia |
| □ Focus / multifocal numbness, sensory disorders |
| □ Tremor |
| □ Ataxia |
| □ Seizure |
| □ Headache(unexpected and unexplained) |
| □ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \* |

22. Days of the neurological specific symptoms onset of the course

|  |
| --- |
| □ No specific nervous system symptoms |
| □ Vision loss\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Double vision\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Phantosmia\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Hypogeusia\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Limbs or facial weakness\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Difficulty in swallowing/choking\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Diaphragm\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Aphasia\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Focus / multifocal numbness, sensory disorders\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Tremor\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Ataxia\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Seizure\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Headache(unexpected and unexplained) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Other \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \* |
|  |

23. Was a thorough neurological examination carried out? [multiple choice questions] \*

|  |
| --- |
| ○ Yes |
| ○ No (skip to question 25) |

24. Results of the exam [Single Choice] \*

|  |
| --- |
| ○ No obvious abnormality |
| ○ Positive findings: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

25. Any investigations related to the nervous system [single choice question] \*

|  |
| --- |
| ○ Yes |
| ○ No (skip to question 29) |

26. The investigation: [multiple choice questions] \*

|  |
| --- |
| □ Cerebrospinal fluid related examination |
| □ Brain imaging |
| □ Electroencephalography |
| □ Electromyography |
| □ Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

27. Any abnormality found? (specific abnormalities can be described in the field) [multiple choice questions] \*

|  |  |
| --- | --- |
| □ Cerebrospinal fluid related examination: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | □ Cerebrospinal fluid related examination |
| □ Brain imaging: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | □ Brain imaging |
| □ Electroencephalography: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | □ Electroencephalography |
| □ Electromyography: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | □Electromyography |
| □ Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | □ Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

28. Please upload neurological reports and imaging (optional) [upload file title]

29. Please upload picture of arterial-blood gas (ABG) report (optional) [upload file title]

30. Please upload pictures of DIC related reports (not required) [upload file title]

31. You can upload pictures FBT reports (optional) [upload file title]

32. You can upload pictures U&E, LFT reports (not required) [upload file title]

33. Other reports can be uploaded 1 [File upload question]

34. Other reports can be uploaded 2 [File upload question]

35. Other reports can be uploaded 3 [File upload question]

36. Other reports can be uploaded 4 [upload file title]

37. Patient 's outcome [multiple choice questions] \*

|  |
| --- |
| ○ Recovered |
| ○ Death |
| ○ Still hospitalized |

38. Bood oxygen saturation was taken during [multiple choice]

|  |
| --- |
| □ At admission \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ When a disturbance of consciousness occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ At discharged (or died) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

39. Oxygenation index was taken during [multiple choice questions]

|  |
| --- |
| □ At admission \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ When a disturbance of consciousness occurs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ At discharged (or died) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

40. Infection-related findings (if report uploaded, the corresponding items can be omitted) [Multiple choice questions]

|  |
| --- |
| □ CRP \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ IL6 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ IL10 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ CD4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ CD8 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

41. Anyf following DIC related checks (if report uploaded, corresponding items can be omitted) [Multiple choice questions]

|  |
| --- |
| □ PT \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ APTT \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ PLT \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ D dimer \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ FDP \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ FIB \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

42. U&E and LFT (if report uploaded, corresponding items can be omitted) [Multiple choice questions]

|  |
| --- |
| □ Lactate dehydrogenase\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Alanine aminotransferase\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Aspartate aminotransferase\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Total bilirubin \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Blood urea nitrogen \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| □ Creatinine \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

43. Any myocardial markers reported (if report uploaded, mo need to fill)

[Multiple choice questions] \*

|  |
| --- |
| □ creatine kinase |
| □ creatine kinase isoenzyme MB |
| □ Supersensitive Troponin I |
| □ Procalcitonin |