

The Professional and Personal Impact of the Global Pandemic on US NeuroInterventional Practices: A Nationwide Survey

1. What is your training background?

- a. Radiology
- b. Neurology
- c. Neurosurgery

2. What is your gender?

- a. Male
- b. Female

3. Years of independent practice (after fellowship):

- a. Less than 5 years
- b. 5-9 years
- c. 10-19 years
- d. 20 years or more

4. What is your current practice setting:

- a. Academic Hospital with resident or fellow assistance
- b. Academic Hospital without resident/fellow assistance
- c. Private Practice

5. Hospital location (city and immediate surrounding area):

- a. Metropolitan area (>1 million people)
- b. Large city (population 500,000 to 1 million)
- c. Small-medium city (population 50,000 to 500,000)
- d. Rural or community setting (population <50,000)

6. Is your hospital located in a recognized COVID epicenter?

- a. No
- b. Yes

7. Was a pandemic-related lock-down (school closures, stay at home orders, etc) implemented in your region?

- a. My region was never locked down
- b. My region was locked down and continues to be at this time
- c. My region was temporarily locked down but has since re-opened

8. Did your hospital open additional ICU capacity in anticipation of a COVID-19 surge?

- a. Yes
- b. No, existing capacity was protected by elective case cancellation
- c. No, there were no additional adjustments made for COVID-19 admissions

9. Did you serve on any institutional or regional committees planning for an appropriate pandemic response?

- a. No
- b. Yes

10. Have you continued to perform NON-URGENT procedures (those that can be safely delayed >30 days without consequence) during the pandemic?

- a. No
- b. Yes: Rarely (a few exceptional patients)
- c. Yes: Commonly (a portion or many of my patients)

11. Compared to pre-pandemic, the VOLUME of emergent MECHANICAL THROMBECTOMY PROCEDURES DURING THE PANDEMIC is:

- a. Greatly decreased (volume less than 50% of pre-pandemic)
- b. Slightly decreased (volume 25-50% less than pre-pandemic)
- c. Not changed (volume roughly 25% less or 25% higher than pre-pandemic)
- d. Slightly increased (volume 25-50% higher than pre-pandemic)
- e. Greatly increased (volume greater than 50% higher compared to pre-pandemic)

12. Compared to pre-pandemic, the number of urgent/emergent NON-THROMBECTOMY PROCEDURES (ruptured aneurysm embolizations, carotid stenting for symptomatic stenosis, hemorrhagic head/neck masses, etc.) DURING THE PANDEMIC is:

- a. Greatly decreased (volume less than 50% of pre-pandemic)
- b. Slightly decreased (volume 25-50% less than pre-pandemic)
- c. Not changed (volume roughly 25% less or 25% higher than pre-pandemic)
- d. Slightly increased (volume 25-50% higher compared to pre-pandemic)
- e. Greatly increased (volume greater than 50% higher compared to pre-pandemic)

13. Compared to pre-pandemic, my OVERALL neurointerventional case (or RVU) volume DURING THE PANDEMIC is:

- a. Greatly decreased (volume less than 50% of pre-pandemic)
- b. Slightly decreased (volume 25-50% less than pre-pandemic)
- c. Not changed (volume roughly 25% less or 25% higher than pre-pandemic)
- d. Slightly increased (volume 25-50% higher than pre-pandemic)
- e. Greatly increased (volume greater than 50% higher compared to pre-pandemic)

14. Compared to pre-pandemic, have you noticed DELAYS in DOOR-TO-PUNCTURE TIMES DURING THE PANDEMIC?

- a. No
- b. Yes; Mild delays (average of less than 10 minutes longer compared to pre-pandemic)
- c. Yes; Moderate delays (average of 10-30 minutes longer compared to pre-pandemic)
- d. Yes; Severe delays (average of 30 minutes or more longer compared to pre-pandemic)

15. Compared to pre-pandemic, has YOUR AGGRESSIVENESS in SELECTING PATIENTS for EMERGENT PROCEDURES (for example, marginal thrombectomy candidates) changed DURING the pandemic?

- a. I am more aggressive in patient selection for procedures during the pandemic
- b. I have NOT CHANGED my aggressiveness in patient selection for procedures
- c. Yes: I am SLIGHTLY LESS aggressive in selecting patients for procedures during the pandemic
- d. Yes: I am MUCH LESS aggressive in selecting patients for procedures during the pandemic

16. What are your reasons for being less aggressive in patient selection for procedures during the pandemic, if applicable (check all that apply):

- a. N/A: more aggressive or unchanged aggressiveness
- b. To protect your STAFF from COVID exposure
- c. To protect YOU or YOUR FAMILY from COVID exposure
- d. Insufficient PPE to perform procedures safely
- e. To preserve scarce hospital resources
- f. Encouraged by institutional/departmental leadership
- g. Other (please specify)

17. Has your method of ANESTHESIA FOR THROMBECTOMY CASES CHANGED DURING THE PANDEMIC?

- a. No: I predominantly used general anesthesia pre-pandemic and continue to do so during the pandemic
- b. No: I predominantly used conscious sedation pre-pandemic and continue to do so during the pandemic
- c. Yes: I used to use predominantly conscious sedation but have switched to general anesthesia during the pandemic
- d. Yes: I used to use predominantly general anesthesia but have switched to conscious sedation during the pandemic

18. Have YOU examined or performed neurointerventional procedures on COVID-POSITIVE PATIENTS (either known at the time or tested positive afterwards)?

- a. No
- b. Yes: 1 or 2 patients
- c. Yes: 3-9 patients
- d. Yes: 10 or more patients

19. Do you believe the QUALITY OF CARE provided to STROKE PATIENTS WITH LARGE VESSEL OCCLUSIONS at your institution has WORSENERD DURING THE PANDEMIC?

- a. No
- b. Yes: marginally worsened
- c. Yes: moderately worsened
- d. Yes: severely worsened

20. Have you been deployed into a role OUTSIDE OF YOUR ROUTINE PRACTICE (ICU or ER, for example) during the pandemic due to physician shortages?

- a. No
- b. Yes

21. Have your nursing staff or technologists been deployed in a role OUT OF THEIR ROUTINE PRACTICE during the pandemic due to staffing shortages?

- a. No
- b. Yes

22. Did you have to TAKE ADDITIONAL NEUROINTERVENTIONAL CALL DURING THE PANDEMIC due to disruptions related to COVID-19 (e.g. neurointerventional colleagues testing positive for COVID or having suspected infection, etc)?

- a. No
- b. Yes: due to colleague(s) with known or suspected infection
- c. Yes: due to colleague(s) refusing to participate in call

23. Have YOU needed to SELF-QUARANTINE or be HOSPITALIZED due to confirmed (positive test) or highly suspected COVID infection?

- a. No
- b. Yes: I did not get tested but quarantined based on symptoms
- b. Yes: I was quarantined while being tested but tested negative
- c. Yes: I tested positive and quarantined but did not require hospitalization
- d. Yes: I tested positive and illness required hospitalization

24. Has anyone from YOUR NEUROINTERVENTIONAL TEAM (physicians/nurses/technologists) required ICU ADMISSION or DIED due to COVID infection?

- a. No
- b. Yes: at least one team member has required ICU admission but no deaths among team members
- c. Yes: at least one team member has died due to COVID infection

25. Has there been a REDUCTION IN YOUR COMPENSATION (current or scheduled in the near future)?

- a. No: compensation and benefits are unchanged
- b. No: compensation and/or benefits increased
- c. Yes: minor reduction (compensation or benefits reduced by 25% or less of normal)
- d. Yes: major reduction (compensation or benefits reduced by >25% of normal)

26. If YOUR COMPENSATION HAS CHANGED, do you consider that change FAIR and JUSTIFIED?

- a. No
- b. Yes
- c. N/A: my compensation has not changed

27. Has YOUR employment POSITION BEEN TERMINATED OR FURLOUGHED, or is likely to be in the near future?

- a. No
- b. Yes: my position has been terminated or furloughed

c. Yes: my position is likely to be terminated or furloughed in the future

28. Did the pandemic disrupt planned CONFERENCE OR ACADEMIC ACTIVITY (speaker, organizer, attendee) for you in calendar year 2020?

- a. No
- b. Yes

29. How often was availability of personal protective equipment (PPE) ADEQUATE for the SAFETY OF YOU AND YOUR TEAM?

- a. Always
- b. Most of the time (more than half but not all the time)
- c. Sometimes (less than half of the time)
- d. Never

30. During the pandemic, were you ever CONCERNED ABOUT THE SAFETY OF YOUR FAMILY OR THOSE WHO SHARE YOUR HOME due to LACK of PPE during your cases?

- a. Yes
- b. No

31. Did you have your CHILDREN at home during the pandemic with extra demands for home schooling?

- a. No
- b. Yes

32. Did anyone in your IMMEDIATE FAMILY (spouse, children, parents) test positive for COVID-19?

- a. No
- b. Yes

33. Did you have to spend TIME LIVING AWAY FROM YOUR FAMILY due to your clinical exposure during the pandemic?

- a. No
- b. Yes: less than a week a month
- c. Yes: more than a week a month

34. Do you feel a greater sense of CAREER BURNOUT now than you did before the pandemic?

- a. No: I feel less burnout from work now compared to pre-pandemic
- b. No: I feel unchanged
- c. Yes: I feel slightly increased burnout from work now compared to pre-pandemic
- d. Yes: I feel greatly increased burnout from work now compared to pre-pandemic

35. Compared to pre-pandemic, the OVERALL STRESS related to MY CAREER DURING THE PANDEMIC has:

- a. Greatly decreased
- b. Slightly decreased
- c. Not changed
- d. Slightly increased

e. Greatly increased

36. Compared to pre-pandemic, the OVERALL STRESS related to PERSONAL/FAMILY LIFE DURING THE PANDEMIC has:

- a. Greatly decreased
- b. Slightly decreased
- c. Not changed
- d. Slightly increased
- e. Greatly increased

37. Do YOU expect your career to return to NORMAL (case volumes, compensation, academic travel, meetings) in the future, and if so, when?

- a. Yes: in 3 months or less
- b. Yes: in 3-6 months
- c. Yes: in 6 months-1 year
- d. Yes: in 1-2 years
- e. No: things will never return to normal