

Supplementary Material

COVID-19 Pandemic impact on Care for Stroke in Australia: emerging evidence from the Australian Stroke Clinical Registry

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1 Supplementary Information

1.1 Methods for the design of the COVID-19 impact survey of hospitals involved in the Australian Stroke Clinical Registry

In total there were 23 questions included in the survey: clinician details (name, hospital and role), impact on role and ability to enter data into the registry, impacts on patient characteristics (number and type of presentations and time to presentation), and impact on stroke service delivery (e.g. time to brain scan or treatment, transfer protocols, changes in stroke unit size or staffing, length of stay and discharge destination). Most questions were optional with yes/no response options and free text boxes to provide further details. Free text boxes were also provided to allow respondents to detail changes not captured elsewhere and changes that had the greatest impact on stroke service delivery. The survey was designed to be completed electronically using Qualtrics software (version May 2020, Provo, Utah, United States of America, <https://www.qualtrics.com>).

The survey was distributed to the AuSCR Hospital mailing list and via an electronic Newsletter on the first of May 2020 and was left open until the 31st of May 2020. More than one response from each participating hospital was acceptable. Participation was voluntary.

1.2 Australian Stroke Clinical Registry (AuSCR) COVID-19 Impact Questionnaire for clinicians

1. Name: Optional		
2. Hospital		
3. State		
4. Hospital role / position (e.g. stroke coordinator):		
AuSCR processes		
5. Has your hospital's capacity to enter AuSCR data been impacted?	Yes	No
<i>(if Yes): Briefly describe how your capacity to enter AuSCR data has changed</i>	Open text box	
6. Has your role at the hospital changed?	Yes	No
<i>(if Yes): Briefly describe how your role has changed</i>	Open text box	

Patient Characteristics			
Please indicate any impacts you have noted on the following:			
7. Total number of stroke presentations	Lower	Same	Higher
8. Number of TIAs and minor strokes	Lower	Same	Higher
9. Time from stroke onset to hospital presentation	Shorter	Same	Longer
Stroke Service Delivery			
Please indicate if any of the following aspects of stroke service delivery have <u>changed</u> at your hospital as a result of <i>COVID-19</i>			
10. Time to brain scan	Yes		No
<i>(If Yes) Briefly describe the change</i>	Open text box		
11. Access to reperfusion therapies	Yes		No
<i>(If Yes) Briefly describe the change in access and if there has been an impact on stroke care</i>	Open text box		
12. Time to reperfusion therapy	Yes		
<i>(If Yes) Briefly describe the change</i>	Open text box		
13. Transfer protocols between hospitals	Yes		No
<i>(If Yes) Briefly describe the change in access and if there has been an impact on stroke care</i>	Open text box		
14. Other changes to patient flow/management in the Emergency Department.	Yes		No
<i>For example: processes relating to triage, diagnosis and contacting the stroke team or accessing Stroke Unit beds</i>			
<i>(If Yes) Briefly describe the changes to patient flow</i>	Open text box		

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15. Stroke unit location	Yes	No
<i>(If Yes) Briefly describe the location change. Is the new location geographically close to/co-located with the previous location?</i>	Open text box	
16. Stroke unit size	Yes	No
<i>(If Yes) Briefly describe the change in stroke unit capacity</i>	Open text box	
17. Re-deployment of stroke staff to other duties (who, when and for what purpose)	Yes	No
<i>(If Yes) Briefly describe the staff re-deployment</i>	Open text box	
18. Length of acute care stay	Yes	No
<i>(If Yes) Briefly describe the change</i>	Open text box	
19. Discharge destination	Yes	No
<i>(If Yes) Briefly describe the change</i>	Open text box	
20. Please describe any other aspects of stroke service delivery that have been impacted.	Open text box	
21. Which of the changes in your stroke service at your hospital do you feel has had the greatest impact on the quality of stroke care?	Open text box	
Collection of COVID-19 impacts on individual patients		
22. Do you plan to, or are you currently, documenting delays in treatment or guideline adherence, due to hospital COVID-19 procedures for individual patients, (including those who are COVID-negative).	Yes	No
23. Are you interested in documenting the impacts on stroke care which may have occurred for individual COVID-19 positive patients in the AuSCR open text 'comments' box?	Yes	No

2 Supplementary Figures and Tables

2.1 Supplementary Tables

Supplementary Table 1. Number of COVID-19 cases and stroke cases by State and Territory for the 61 hospitals contributing data in both periods

	Pandemic period		Control period
	Number of confirmed COVID-19 cases in Australia*	Number of stroke episodes registered in the AuSCR January-June 2020	Number of stroke episodes registered in the AuSCR January-June 2019
New South Wales	3378	682	1080
Victoria	2159	4244	4141
Queensland	1067	2910	2850
South Australia	443	786	846
Western Australia	599	0	0
Tasmania	228	370	391
Northern Territory	29	0	0
Australian Capital Territory	108	0	0

* <https://www.covid19data.com.au/> accessed 21 September 2020, AuSCR: Australian Stroke Clinical Registry (data as downloaded 17 September 2020)

Supplementary Table 2. Comparison of patient characteristics and arrival information for the historical control and national pandemic period

	Control period	Pandemic period	
	January to June 2019	January to June 2020	
Number of episodes	9,308	8,992	
Number of patients	9,116	8,729	
	n (%)*	n (%)*	p-value
Median age (IQR)	75 (64 - 83)	75 (65 - 83)	0.737
Male	5102 (56)	4953 (56)	0.999
Stroke type			0.533
Intracerebral hemorrhage	1124 (12)	1007 (12)	
Ischemic stroke	6393 (69)	5905 (69)	
Transient ischemic attack	1521 (16)	1475 (17)	
Undetermined stroke type	201 (2)	184 (2)	
Ability to walk on admission	3772 (43)	3159 (42)	0.167
Arrival by ambulance	6802 (77)	6127 (79)	<0.001
Median minutes from onset to arrival (IQR)	337 (100 - 1127)	348 (102 - 1096)	0.948

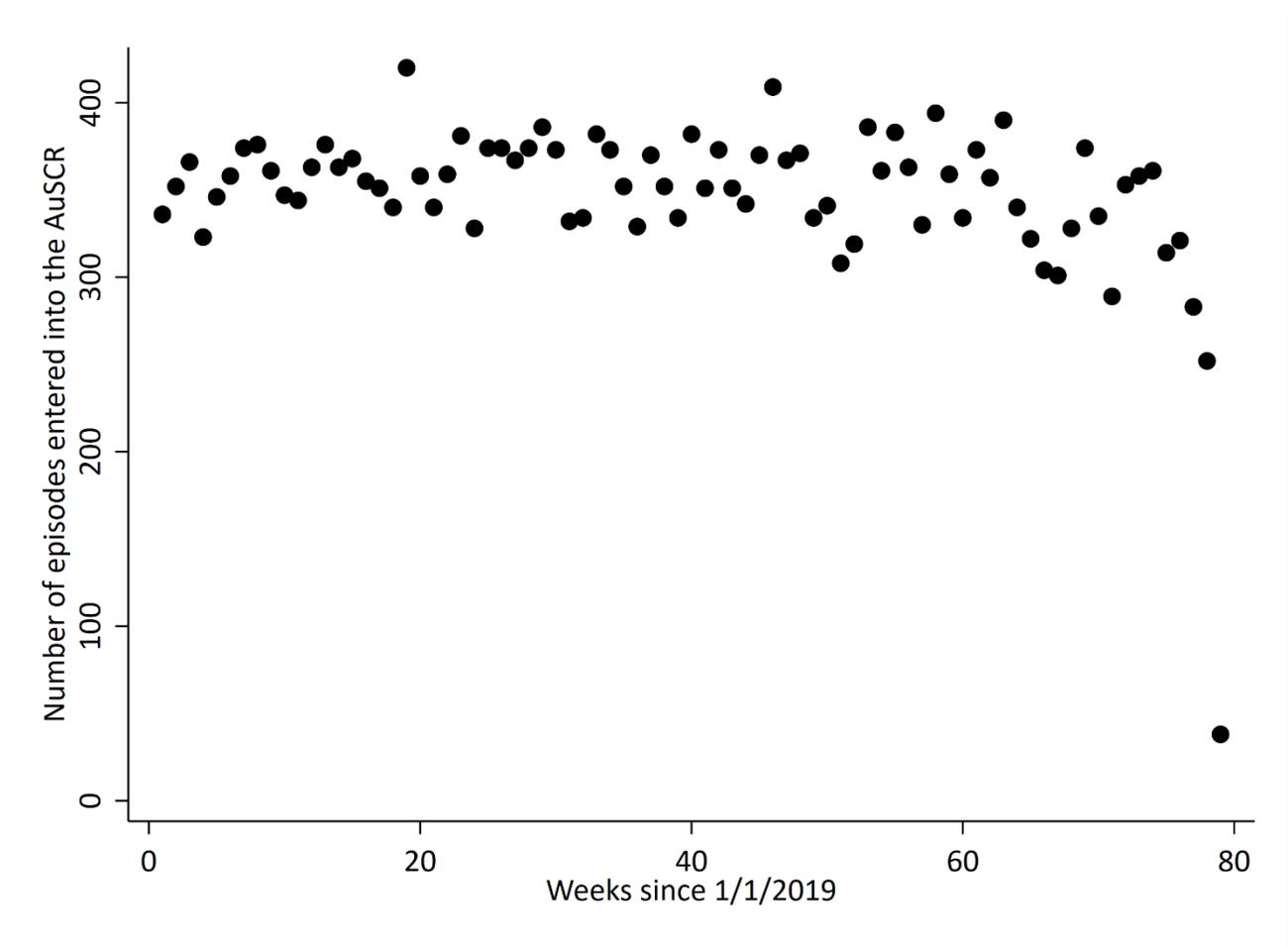
IQR: interquartile range; *number and proportion of the number of episodes unless otherwise specified

Supplementary Table 3. Interrupted times series analysis with comparison of trends in care access in Victoria and Queensland

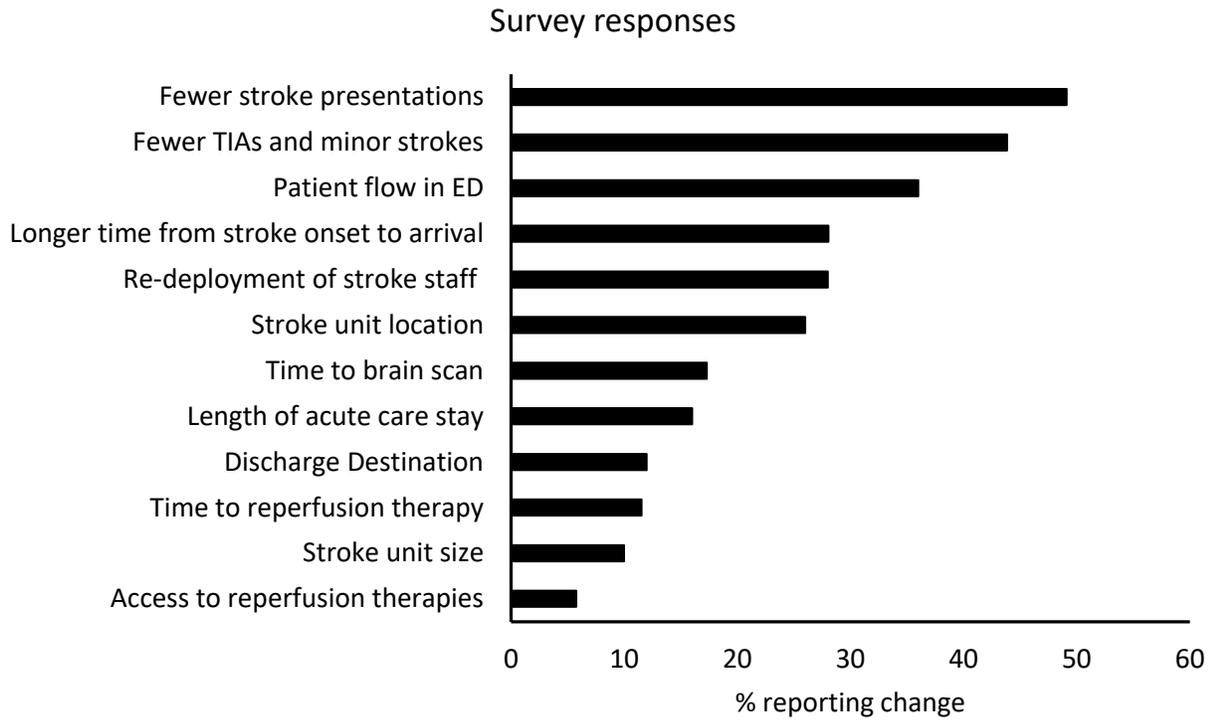
Victoria	Trend before 1/3/2020	Change during the week of 1/3/2020 (interruption week)*	Trend from 1/3/2020
Proportion provided thrombolysis if an ischemic stroke	-0.07 (-0.09, -0.05)	1.90 (-0.09, 3.88)	-0.28 (-0.50, -0.06)
Median door to needle time (within 60 minutes)	0.24 (0.09, 0.40)	10.15 (4.85, 15.45)	-2.28 (-2.78, -1.79)
Proportion treated in a stroke unit	0.03 (-0.05, 0.10)	-5.63 (-8.84, -2.42)	-0.06 (-0.47, 0.35)
Queensland			
Proportion provided thrombolysis if an ischemic stroke	0.02 (-0.04, 0.08)	1.78 (-0.24, 3.80)	-0.26 (-0.32, -0.20)
Median door to needle time (within 60 minutes)	0.29 (0.13, 0.44)	6.50 (1.42, 11.57)	-1.96 (-2.46, -1.46)
Proportion treated in a stroke unit	-0.08 (-0.11, -0.05)	4.04 (2.70, 5.37)	-0.09 (-0.18, 0.003)

*represents week 61 of the interrupted time-series model with trends compared before and after this date, which coincides with the first COVID-19 related death

Supplementary Figure 1. Number of episodes entered into the Australian Stroke Clinical Registry per week



Supplementary Figure 2. Changes to hospitals as a result of COVID-19 reported by clinicians



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