


# DATA QUALITY REPORT 2021



**AUSCR**  
Australian Stroke Clinical Registry

This report was produced on behalf of the Australian Stroke Clinical Registry (AuSCR) Consortium partners and was approved by the AuSCR Management Committee.

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## **INTRODUCTION**

The Australian Stroke Clinical Registry (AuSCR) was established in 2009 to provide national data on the processes of care and outcomes for patients admitted to hospital with acute stroke or transient ischaemic attack (TIA). The quality of the data in the Registry is critical to its purpose, which is to provide reliable and representative data to improve the quality of stroke care, nationally.

Accountability for the accuracy and completeness of hospital data is the responsibility of the participating hospitals. However, it is the role of the AuSCR office to support hospitals to collect high quality data via education, training and feedback. Therefore, the combined efforts of hospitals and the AuSCR office ensures the most complete data for each annual reporting period. Hospitals participating in the AuSCR are encouraged to use this report alongside site-specific feedback provided throughout the calendar year to improve data quality.

This annual Data Quality Report covers data collected for patients admitted to participating hospitals between 1 January 2021 and 31 December 2021. It is supplementary to, and should be read in conjunction with, the Australian Stroke Clinical Registry 2021 Annual Report (<https://auscr.com.au/about/annual-reports/>).

## **METHODS FOR ENSURING DATA QUALITY**

Data quality is supported by ongoing training and education processes for all contributors of data to the AuSCR. In addition, the AuSCR office undertakes a range of regular data checking and quality assurance procedures to support improved data quality.

## **DATA PLATFORM DATA QUALITY FEATURES**

Since July 2016, the collection of AuSCR data by staff at participating hospitals has been facilitated by the Australian Stroke Data Tool (AuSDaT, <https://australianstrokecoalition.org.au/projects/ausdat/>).<sup>1</sup> The AuSDaT contains in-built functions to auto-check the logic of manually entered data to minimise the potential for inaccurate or discrepant data during data entry. In AuSDaT there is also the function to search for incomplete records and records with data errors.

## **DATA CHECKS BEFORE IMPORT**

Where data exports from hospital systems are supplied in separate files via secure cloud data sharing (CloudStor) for import into the AuSDaT these are reviewed by AuSCR Data Managers prior to upload. This centralised process is used to ensure the data are in the correct format and provide an opportunity for any inconsistent or erroneous data to be corrected prior to performing the import. Hospital staff who import their own data into the AuSDaT can also request the AuSCR Data Managers check for errors prior to import into the live tool.

## **CASE ASCERTAINMENT**

Case ascertainment is an essential process for ensuring that the data recorded in the AuSCR are representative of the patient population with stroke admitted to each participating hospital. It is a requirement for all clinical registries to collect and report this information. Case ascertainment results provide an indication of the representativeness of data and whether there are any potential selection biases in the patient sample.

To simplify this process, in 2021 only episodes where the stroke ICD-10 code was the primary discharge diagnosis code was included. Patients diagnosed with TIA and those admitted and discharged on the same day were excluded from the case ascertainment calculation. Case ascertainment for ED presentations recorded prior to hospital transfer was also not undertaken.

For the AuSCR 2021 case ascertainment reports, non-Victorian hospitals were asked to provide a list of all admissions based on eligible ICD-10 stroke codes for comparison and matching with episodes recorded in the AuSCR. Following matching hospitals are provided with a list of episodes, per period, that are not in the AuSCR to assist with improving overall ascertainment.

In Victoria, the Victorian Agency for Health Information facilitated data linkage with the government-held admitted episodes dataset to provide case ascertainment results for all Victorian hospitals centrally to AuSCR office.

The overall proportion of completeness for case ascertainment was estimated using the formula  $(A+B)/(A+C)$ , where: 'A' was the number of eligible episodes that were registered in the AuSCR, 'B' was the number of episodes that were opted out of the registry and unmatched, and 'C' was the number of episodes included in the hospital's list of eligible episodes that were missing from the AuSCR database.

## **DATA QUALITY REPORTS**

Data quality reports are used to provide hospitals with a list of AuSCR episodes containing missing data and/or data discrepancies (e.g. a discharge date prior to an admission date). These reports are designed to assist hospitals to quickly identify and update, where appropriate, individual AuSCR episodes. The dissemination of these reports is bi-annual and provides hospitals with the opportunity to action any updates to their data prior to closure of a calendar year. Data closure occurs annually in July prior to extraction for formal reporting or secondary research.

## **MEDICAL RECORD AUDITS**

In 2021, hospital audit visits were limited due to the COVID-19 pandemic and only three hospitals were able to have had medical record audits for 20 episodes of care and no major variable discrepancies were identified. The AuSCR office conducts audits of randomly selected medical records at participating hospitals to assess the accuracy of data in the registry compared to information documented in the local medical record. These audits assist in verifying that data quality for the AuSCR and information on areas to improve standardised collection of variables. The process is useful for the identification of data collection training that may be required for staff at participating hospitals. Medical record audits are scheduled to occur for a newly participating hospital following entry of the first 50 episodes of stroke/TIA and every two years thereafter.

## **DATA CLEANING**

The cleaning of AuSCR data is completed monthly. Duplicate data are identified and removed by the AuSCR Senior Data Manager using registrant identifiers (name, date of birth, Medicare number and/or hospital medical record number) in addition to date of stroke onset, date of hospital arrival and dates of admission and discharge. Additional checks are undertaken following the closure of data entry for the year and prior to undertaking analysis for the AuSCR Annual Report. These data are subsequently de-identified and extracted for analysis. Additional data cleaning processes are then undertaken by Monash University epidemiologists prior to undertaking data analyses.

## DATA COMPLETENESS

For 2021, 19,753 episodes of stroke and TIA care were provided by 62 hospitals. The proportion of data completeness for individual variables is presented only for eligible episodes, since not all variables are relevant to every patient. Variables that are only captured in state-specific programs data collection programs are also not included in this report.

Individual variables ranged in completeness from 28% for medical complication ICD-10 codes, which do not occur in every episode, to 100% for a range of variables, with similar overall results to the 2020 dataset (n=21,469 episodes from 68 hospitals, Table 1).

Four variables had  $\geq 5\%$  improvement in completeness in contrast to 2020 data, including: Medicare number (increase from 84% to 90%), patient phone number (increase from 90% to 96%), emergency contact phone number (increase from 83% to 88%) and method of mobilisation (increase from 87% to 96%).

Overall, six variables had reduced completion by more than 5% in 2021, including: address of emergency contact (decrease from 73% to 63%), type of adverse event for thrombolysis (decrease from 100% to 89%), NIHSS before ECR (decrease from 88% to 78%), time of swallow assessment (decrease from 99% to 93%), was the swallow screen or assessment performed before the patient was given oral medication (decrease from 88% to 83%) oral fluids (decrease from 86% to 77%)

In addition to missing data, some variables such as the National Institutes of Health Stroke Scale (NIHSS) score have a large proportion of responses recorded as unknown (Table 2). In 2021, the combination of missing data plus the entry of unknown values meant that there were no valid data for: 35% of NIHSS at baseline; 5% of pre-ECR NIHSS; and 40% of post-ECR NIHSS. A second 'pre-ECR' NIHSS may not always be clinically warranted, and where this is not recorded, the baseline NIHSS is used for calculations. This approach helps to reduce the amount of missing or unknown values for pre-ECR NIHSS scores from 33% to only 5%.

**Table 1: Completeness of variables in the Australian Stroke Clinical Registry, by year**

<b>Variable</b> <b>N=19,753 episodes in 2021</b>	<b>2020</b> <b>% complete</b> <b>N hospitals=68**</b>	<b>2021</b> <b>% complete</b> <b>N hospitals=62**</b>
<b>Patient details</b>		
Title	95	97
First name	98	98
Surname	98	98
Date of birth	98	98
Medicare number (optional)#	<b>84</b>	90
Hospital Medical Record Number (MRN)	97	97
Gender	98	98
Country of birth	98	99
Language spoken	<b>86</b>	<b>87</b>
Interpreter needed	<b>86</b>	<b>87</b>
Aboriginal and Torres Strait Islander status	<b>90</b>	91
Patient phone number	<b>90</b>	96
Complete address (street address, suburb, state)	94	97
Emergency contact		
Emergency contact first name	<b>88</b>	<b>90</b>
Emergency contact last name	<b>86</b>	<b>89</b>
Address for emergency contact	<b>73</b>	<b>63</b>
Emergency contact phone number	<b>83</b>	<b>88</b>
<b>Arrival and admission data</b>		
Date of stroke onset	95	95
Time of stroke onset	<b>79</b>	<b>79</b>
Stroke occurred while in hospital	99	98
Date of arrival to ED	97	97
Time of arrival to ED	97	96
Arrival by ambulance	94	94
Transfer from another hospital	99	98
Date of admission	100	100
Time of admission	98	99
Treated in a stroke unit	100	100
<b>History of known risk factors</b>		
Documented evidence of a previous stroke	98	96
<b>Acute clinical data</b>		
NIHSS at baseline (including 'unknown')	98	99
Brain scan after this stroke	100	100
Date of first brain scan	93	<b>89</b>
Time of first brain scan	<b>89</b>	<b>86</b>
Date of subsequent brain scan	100	100
Time of subsequent brain scan	99	99
Type of stroke	99	99
Cause of stroke	98	97
Acute occlusion site	100	100
<b>Telemedicine and reperfusion</b>		
Stroke telemedicine consultation conducted	99	99
Receipt of thrombolysis	100	97
Date of delivery	100	96
Time of delivery	99	99
Adverse event related to thrombolysis	98	99
Type of adverse event	100	<b>89</b>
Other reperfusion (ECR)	100	100
Treatment date for ECR	100	100
NIHSS before ECR	<b>88</b>	<b>78</b>
Time groin puncture	98	99
Time of completing	97	97
Final eTICI	<b>82</b>	<b>79</b>

**Table 1: Completeness of variables in the Australian Stroke Clinical Registry, by year (continued)**

Variable N=19,753 episodes in 2021	2020 % complete N hospitals=68**	2021 % complete N hospitals=62**
<b>24 hour data</b>		
24 hour NIHSS	99	96
Haemorrhage within the infarct on follow up imaging	99	95
Details	94	91
<b>Swallowing</b>		
Swallowing screen	<b>90</b>	<b>90</b>
Date of swallowing screen	99	96
Time of swallow screen	97	93
Did the patient pass the screening	100	97
Swallowing assessment	<b>89</b>	<b>90</b>
Date of swallow assessment	100	96
Time of swallow assessment	99	93
Oral medications	<b>88</b>	<b>83</b>
Oral food or fluids	<b>86</b>	<b>77</b>
<b>Mobilisation</b>		
Ability to walk independently on admission	94	93
Mobilised during the admission	<b>87</b>	<b>85</b>
Date of mobilisation	99	99
Method of mobilisation	<b>87</b>	96
<b>Antithrombotic therapy</b>		
Antithrombotic given as hyperacute therapy	<b>90</b>	<b>89</b>
Date of administration	100	99
Time of administration	95	95
<b>Secondary prevention</b>		
Discharge antithrombotics	98	97
Discharge antihypertensives	98	97
Discharge lipid lowering	98	97
<b>Discharge information</b>		
Patient died during hospital stay	99	99
Date of death (for episodes deceased during hospital stay)	100	100
Date of discharge if not deceased while in hospital	98	99
Discharge diagnosis ICD-10 code(s)	86	85
Medical condition ICD-10 code(s)*	<b>71</b>	<b>75</b>
Medical complication ICD-10 code(s)*	<b>31</b>	<b>28</b>
Medical procedure ICD-10 code(s)*	<b>71</b>	<b>72</b>
Discharge destination if not deceased while in hospital	98	98
Evidence of care plan on discharge if discharged to the community	98	97

Bold numbers indicate  $\geq 10\%$  missing or discrepant data.

\* Denominator includes some patients with no other medical condition, complication or procedure codes.

\*\*Includes data from paediatric hospitals.

NIHSS: National Institutes of Health Stroke Scale.

ECR: Endovascular Clot Retrieval.

eTICI: Expanded Thrombolysis In Cerebral Infarction.

ICD: International Classification of Diseases.



**Table 2: Completeness of National Institutes of Health Stroke Scale Scores in the Australian Stroke Clinical Registry**

<b>Variable</b> <b>N=19,753 episodes in 2021</b>	<b>2020</b> <b>% missing or</b> <b>unknown</b>	<b>2021</b> <b>% missing or</b> <b>unknown</b>
National Institutes of Health Stroke Scale (NIHSS)		
Baseline	41	35
Pre-ECR*	8	5
24 hours post-ECR	42	40

\*Note: where Pre-ECR NIHSS was not captured, baseline NIHSS is used in this calculation.

NIHSS: National Institutes of Health Stroke Scale.

ECR: Endovascular Clot Retrieval.

## **EMERGENCY DEPARTMENT DATASET**

The Emergency Department (ED) dataset is an optional program that went live on 1 July 2019. This dataset enables the collection of data for stroke/TIA patients who presented to an ED and prior to transfer to another hospital for ongoing acute stroke care. The ED dataset includes 85 variables. There were 22 hospitals that contributed 258 episodes during 2021 (16 in Victoria, 5 in QLD and 1 in NSW), five fewer than in 2020. The completeness of ED variables ranged from 88% (for swallow screen variables) to 100% for a range of variables and were overall similar to 2020.

Emergency Department dataset variables were included in the data quality report provided to participating hospitals for the full 2021 year in May 2022.

**Table 3: Completeness of Emergency Department dataset variables in the Australian Stroke Clinical Registry**

<b>Variable N=258 episodes in 2021</b>	<b>2020 % complete N hospitals=27</b>	<b>2021 % complete N hospitals=22</b>
Stroke onset and arrival data		
Stroke onset date	99	98
Stroke onset time	90	93
Date of arrival to emergency department	100	100
Time of arrival to emergency department	100	99
Did the patient arrive by ambulance?	100	100
Pre-hospital notification by paramedics	99	100
<b>Acute clinical data</b>		
Functional status prior to stroke (mRS)	99	99
Triage category	100	100
NIHSS at baseline	99	100
Brain scan after this stroke	100	100
Date of first brain scan	98	96
Time of first brain scan	96	89
Advanced imaging	100	100
Type of stroke	99	100
Telemedicine consultation	100	100
Receipt of thrombolysis	100	99
Date of delivery	100	100
Time of delivery	100	100
Drug used	100	100
Type of adverse event	100	100
Swallow screen	87	94
Was the swallow screen or swallow assessment performed before the patient was given:		
Oral medications	87	94
Oral food or fluids	87	94
Walk on admission	91	88
<b>Transfer</b>		
Date of transfer	96	98
Time of transfer	92	90
Reason for transfer	100	100
<b>Discharge Information</b>		
What is the discharge destination	99	100

NIHSS: National Institutes of Health Stroke Scale.

mRS: Modified Rankin Scale.

## FEVER SUGAR SWALLOW DATASET

The optional Fever Sugar Swallow (FeSS) dataset went live on 1 July 2019. The FeSS dataset includes a total of six variables in addition to the swallow variables collected in the admitted datasets. Hospitals chose to complete these variables for all admitted episodes entered in the AuSCR, or for only a subset of the admitted cohort of patients. There were 15 hospitals that contributed to the FeSS dataset in 2021, seven fewer than in 2020, which was mainly explained by fewer hospitals in New South Wales participating in 2021. A total of 2,353 FeSS episodes were recorded (Table 4) and were generally well completed.

**Table 4: Completeness of Fever, Sugar, Swallow dataset variables in the Australian Stroke Clinical Registry**

<b>Variable</b> <b>N= 2,353 episodes in 2021</b>	<b>2020</b> <b>% complete</b> <b>N hospitals=22</b>	<b>2021</b> <b>% complete</b> <b>N hospitals=15</b>
Temperature recorded at least four times on day one of admission	90	100
Fever development in the first 72 hours following admission	100	100
Paracetamol for the first elevated temperature administered within 1 hour	96	97
Finger-prick blood glucose level recorded at least four times on day one of admission	90	100
Elevated glucose in the first 48 hours following admission	100	100
Insulin administered within 1 hour if elevated glucose	98	100

## **CASE ASCERTAINMENT**

For 2021 admissions, the AuSCR office conducted three rounds of case ascertainment reviews. The first two rounds provide feedback to hospitals on episodes potentially missing in the AuSCR, the third round is completed once the dataset is closed and hospitals have had the opportunity to enter any additional episodes and feedback on ineligible episodes to the AuSCR Office. The first was for the period 1 January to 30 June 2021, the second and third included the full 2021 calendar year.

Episode matching for case ascertainment may be affected by data entry errors, in those variables used to match episodes between the datasets (e.g. patient names, hospital medical record number). However, following assessment of the resultant cases using automated and manual matching processes conducted by the AuSCR office, these matching errors made up a relatively small proportion of the overall total.

Of the 62 hospitals that contributed data in 2021, 57 (92%) provided data for case ascertainment, an increase of 4% compared to 2020 participation. Two hospitals that did not provide data for case ascertainment were not active for the full year.

Of the 57 hospitals that provided data, the overall case ascertainment estimates ranged from 9% (for a hospital that did not participate for the full year) to 100% (for ten hospitals). The median case ascertainment result was 88% in 2021, an improvement from the median of 84% recorded in 2020. These results may not be directly comparable as the case ascertainment process changed in 2021 where episodes of TIA were excluded from case ascertainment and only the first principal diagnosis was used, rather than the first three used in previous years.

**Table 5: Hospital case ascertainment results for 2021 data compared to the 2020 dataset**

Hospital ID	Episodes in the AuSCR 2021 (n)	Episodes in hospital records not in the AuSCR 2021 (n)	Case ascertainment 2021 (%) N=62 hospitals	Case ascertainment 2020 (%) N= 68 hospitals
3	456	100	83%	89%
5	581	76	89%	89%
11	15	9	25%	60%
13	152	18	83%	100%
14	573	68	85%	82%
15*	84	40	9%	85%
20	487	26	94%	84%
22	326	6	98%	58%
23	192	1	99%	98%
24	852	94	87%	79%
25	157	2	98%	77%
26	347	31	84%	Not provided
27	293	27	100%	89%
28	33	-	Not provided	Not provided
29	149	27	72%	NA
30	324	2	100%	78%
31*	358	54	71%	79%
32	229	21	91%	91%
33	221	5	98%	82%
34	315	30	89%	89%
35	268	3	100%	100%
36	205	61	76%	54%
37	413	2	100%	91%
38	208	53	70%	74%
39	340	43	84%	98%
40	754	52	92%	84%
41	224	1	100%	Not provided
42	36	4	86%	69%
43	252	2	100%	100%
44	187	59	69%	Not provided
45	300	17	94%	69%
46	954	125	87%	80%
47	223	18	89%	88%
48	84	16	79%	89%
49	53	7	79%	57%
50	313	27	90%	85%
51	106	24	73%	84%
52	436	117	76%	74%
53	687	52	90%	80%
56*	18	10	10%	79%
57	302	51	79%	79%
58	1599	54	96%	87%
61	183	-	Not provided	Not provided
62	63	1	100%	79%
63	169	0	100%	100%
64	101	3	98%	100%
65	637	-	Not provided	Not provided
66	487	102	79%	65%
67	68	3	100%	100%

**Table 5: Hospital case ascertainment results for 2021 data compared to the 2020 dataset (continued)**

Hospital ID	Episodes in the AuSCR 2021 (n)	Episodes in hospital records not in the AuSCR 2021 (n)	Case ascertainment 2021 (%)	Case ascertainment 2020 (%)
68	81	15	72%	74%
69	1142	5	100%	99%
70	429	3	99%	99%
71	463	11	97%	99%
78	420	244	62%	87%
80	84	30	60%	64%
88 <sup>^</sup>	91	-	Not provided	44%
89	61	36	43%	67%
90	8	8	33%	Not provided
91	528	43	95%	88%
92	302	17	94%	67%
93	14	4	75%	Not provided
94 <sup>^</sup>	70	-	Not provided	Not provided

\*Hospital had data pause and did not collect data for the full 2021 year

<sup>^</sup>Hospital did not contribute data to the AuSCR for full 2021 calendar year

## TIME TO RECORD CREATION

The median time from admission to record creation in the AuSCR was 87 days (interquartile range: 46 to 130 days), slightly less than the median in 2020 of 89 days. Only 58% of AuSCR hospitals had a median time to record creation below 90 days. The shortest hospital-level median time to record creation was one day, and the longest was 210 days.

## OPT-OUT REQUESTS AND REFUSAL TO COMPLETE FOLLOW-UP SURVEY

Since 2016, approval from National Human Research Ethics Committees (HREC) for the AuSCR to retain anonymous clinical data independently of personal data opt-outs has been in place. Though registrants are provided with the opportunity to opt-out *both* their personal and clinical data upon request.

A total of 458 opt-out requests (2.3% of all episodes) were received from patients or their nominated contact person for 2021 admissions (Table 6). These data are consistent with the opt-out rate recorded in 2020 of 2.1%. The request for removal of both clinical and personal data has remained very low each year, at less than 0.1%. The number of patients refusing follow-up participation prior to 90 days post-admission remained low at 0.3%.

**Table 6: Opt-out requests and refusal to complete follow-up survey data**

Year	Total episodes	Total opt-out episodes	Complete clinical and personal data to be removed	Personal data only to be removed	Refused to complete follow-up survey prior to 90 days
2020	21,234	447 (2.1 %)	13 (<0.1 %)	434 (2.0%)	276 (1.3%)
2021	19,753	458 (2.3%)	4 (<0.05%)	454 (2.2%)	58 (0.3%)

## COMPARISON OF CLINICAL STROKE DIAGNOSIS AND CODED DISCHARGE DIAGNOSIS

The AuSCR office reviews the clinical designation of stroke type within the registry against the International Classification of Diseases 10<sup>th</sup> Revision (ICD-10) discharge coding undertaken by hospital administrative staff. The ICD-10 discharge diagnosis code was compared to the documented clinical stroke type. Stroke and TIA discharge diagnosis codes were either recorded as the principal diagnosis, or in the medical complication or medical condition fields available in the AuSCR dataset. Where more than one eligible stroke or TIA code was recorded for an individual episode, it was included in both clinical diagnosis categories.

For episodes recorded clinically as an ischaemic stroke, 78% of these episodes had an I63 discharge diagnosis code (ICD-10 codes for cerebral infarction: I63.0 to I63.9), and 4% were coded as I64 (stroke, not specified; Table 7). For episodes recorded as a TIA by the clinician, 84% of episodes had a TIA ICD-10 code (ICD-10 code for TIA: G45.9). Eighty-one percent of episodes recorded as an intracerebral haemorrhage by the clinician were coded as an intracerebral haemorrhage (ICH) code (ICD-10 code range: I61.0 to I61.9 and I62.9). Undetermined stroke type was recorded in 2.3% of episodes, an increase from 1% in 2020.

**Table 7: Comparison of clinical stroke diagnosis and ICD-10 diagnosis codes**

Principal, medical or complication code	Clinical diagnosis (N=19,224)			
	ICH N=2,340 (%)	Ischaemic N=13,184 (%)	TIA N=3,257 (%)	Undetermined N=443 (%)
ICH ICD-10 codes (I61.x and I62.9)	<b>81%</b>	1%	<1%	4%
Ischaemic ICD-10 codes (I63.x)	3%	<b>78%</b>	4%	35%
TIA ICD-10 code (G45.9)	<1%	1%	<b>84%</b>	22%
Unspecified stroke ICD-10 code (I64)	<1%	4%	3%	<b>31%</b>
Multiple stroke/TIA ICD-10 codes	3%	3%	1%	1%
Missing or non-stroke/TIA ICD-10 codes	12%	12%	9%	7%

Bold numbers indicate a match between clinical diagnosis recorded by the clinician and ICD-10 codes. Excludes ED episodes and 269 episodes with missing data for clinical diagnosis recorded by the clinician. ICH: intracerebral haemorrhage; TIA: transient ischaemic attack.

## SUMMARY

The AuSCR office continues to actively monitor and provide feedback on various aspects of data quality to all participating hospitals and work actively with hospital staff to facilitate improvements to the quality and representativeness of their data within the registry.

The overall quality of the data in the AuSCR in 2021 remained high and was comparable to that reported in 2020. Completeness of variables was similar to 2020, with the variables with the lowest completion (ICD-10 complication and procedure codes) not relevant for all episodes. Some hospitals have chosen not to complete all variables and this will partly explain the lower completeness of swallow and mobilisation variables.

The capture of valid data for NIHSS scores has again improved in 2021, however there is still room for improvement with 35% of episodes overall having missing or unknown scores. Baseline NIHSS is an important prognostic indicator of stroke severity, alongside the ability to walk independently on admission. These variables are important for conducting fair comparisons of patient outcomes between hospitals as they are used in case-mix adjusted analyses. The AuSCR office will continue to work with staff from participating hospitals to improve the capture of baseline NIHSS scores, to ensure future completion rates for these variables improve. Completion of variables in the option FeSS and ED datasets was generally high, and comparable to 2020.

The capture of all eligible stroke episodes at participating hospitals is important to ensure that AuSCR data is unbiased and is a nationally representative sample. The opt-out rate for the AuSCR remains very low at 2%. In 2021 we simplified the case ascertainment process to include only stroke episodes (excluding TIA) where stroke was the principal diagnosis code. This resulted in a median case ascertainment from participating hospitals of 88%. Overall, case ascertainment was able to be calculated from 92% of participating hospitals, with centralised case ascertainment in Victoria assisting to capture all sites in this stage and reduce the burden on hospital staff to provide this information. We will seek to set-up this process for additional states in future years.

The time from hospital admission to creating an AuSCR record is important for follow-up processes, which begin at 90 days post-admission until approximately 180 days post-admission. Registrants will receive the full follow-up cycle (two mail-outs and a phone call) only if their data is included prior to 90 days post-admission. In 2021 the median time to record creation was 87 days, similar to 2020 (89 days). We are aware that competing demands due to the COVID-19 pandemic may have impacted timeliness of data entry into the registry in 2021.

There was generally agreement between the clinical diagnosis and ICD-10 codes assigned by hospital coders. There was an increase in the proportion of episodes recoded as undetermined stroke type (2.3% of episodes, vs 1% in 2020). These episodes are often coded as a stroke or TIA (61%) rather than an undetermined stroke type. The AuSCR office flags these episodes in data quality reports and suggested this be reviewed if the proportion was over 5% and will continue to work with hospitals where high rates of undetermined stroke types are recorded.

Only a small number of medical record audits could be undertaken in 2021 due to restrictions associated with the COVID-19 pandemic, and we look forward to restarting these again in 2022.

In the era of COVID-19 pandemic, we continued to provide support to staff at participating hospitals to ensure the quality of data recorded in the registry. These support options included: ongoing communication via phone and email, training via videoconference, hosting regular webinars, developing fact sheets, disseminating monthly newsletters and updates to the AuSCR Data Dictionary help notes. In 2022, the AuSCR office will continue to support staff from



participating hospitals in using various mechanisms to ensure the optimal accuracy and representativeness of the data recorded within the registry.

## REFERENCES

1. Ryan O, Ghuliani J, Grabsch B, et al. Development, implementation, and evaluation of the Australian Stroke Data Tool (AuSDaT): Comprehensive data capturing for multiple uses. *Health Information Management Journal*. 2022;0(0). doi:[10.1177/18333583221117184](https://doi.org/10.1177/18333583221117184)

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