Quality of Stroke Unit Care in Germany 2010-2012: the German Stroke Registers Study Group (ADSR)

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Background: Evaluations of the quality of stroke unit (SU) care in Germany are scarce. We investigated characteristics of patients admitted to a SU as well as adherence to evidence-based quality indicators among hospitals providing SU care between 2010-2012.

Methods: Data were derived from the German Stroke Registers Study Group (ADSR), a network of 9 regional registers for monitoring quality of acute stroke care in Germany. Analyses were restricted to hospitals with a certified SU according to the criteria of the German Stroke Society, the German Stroke Foundation or to regional criteria with available information on SU admission. Adherence of these hospitals to a set of 11 evidence-based quality indicators (QIs) including aspects of early prevention, management, rehabilitation and diagnosis with predefined target ranges for good quality of acute stroke care was calculated. Multivariate logistic regression analyses were performed.

Results: Between 2010 and 2012 more than 490,000 patients were treated in 259 hospitals providing SU care; of those 76.8% were admitted on a SU. Patients younger than 85y (p<.0001), with a symptom admission time of less than 24 hours (p<.0001), without disturbances of consciousness (p<.0001), and with an ischemic stroke or TIA (p<.0001) were more likely to be admitted directly to a SU. Overall, in hospitals providing SU care and with admission on a SU a median of 9 (inter-quartile range 7-10) out of a maximum of 11 QIs was found to be within or above the defined target ranges.

Table 1 Demographical and Clinical Characteristics

	Hospitals with SU*	Admission on a SU	Admission other ward
No of patients, n	494,332	379,773	114,559
Age, y			
Mean (SD)	71.9 (13.4)	72.0 (13.2)	71.6 (13.8)
Median (IQR)	74 (64-82)	74 (64-82)	74 (63-82)
Stroke subtype, %			
IS	66.4	67.7	62.4
ICB	6.4	5.0	11.3
TIA	25.6	26.2	23.3
other (unclassified, SAB)	1.6	1.2	2.9
Sex, women, %	49.1	48.8	50.2
Comorbidities, %			
Atrial fibrillation	25.4	26.0	23.6
Diabetes mellitus	26.8	27.3	25.4
Hypertension	82.1	83.2	78.6
Previous stroke	24.6	25.2	22.8
Hyperlipidemia	50.3	52.4	43.1
Thrombolysis after IS, %	13.7	14.5	10.6
Neurological signs within 24h after admission, %			
Paresis	56.2	57.1	53.1
Aphasia	28.2	28.0	29.0
Dysarthria	35.0	36.0	31.6
Disturbed level of consciousness, %	9.2	7.3	15.7
NIHSS on admission			
Median (IQR)	3 (1-7)	3 (1-7)	3 (1-9)
NIHSS on admission, categories, %			
≤3	54.2	54.3	53.9
4-15	35.8	37.2	31.1
>15	9.9	8.5	15.0
Length of stay, days			
Mean (SD)	8.9 (7.3)	8.8 (6.9)	9.3 (8.5)
Median (IQR)	7 (4-11)	7 (5-11)	7 (4-12)

*information on admission available

Table 2 Multivariate Analysis probability of admission on a Stroke Unit

	Admission on a SU
Age, y	
<65	1
65-74	1.01 (0.99-1.03)
75-84	1.00 (0.98-1.02)
≥85	0.92 (0.90-0.95)
Stroke subtype	
IS	1
ICB	0.49 (0.48-0.51)
TIA	1.01 (0.99-1.03)
other (unclassified, SAB)	0.55 (0.52-0.59)
Sex	
Men	1
Women	0.98 (0.96-0.99)
Comorbidities	
Atrial fibrillation	1.08 (1.06-1.10)
Diabetes mellitus	0.98 (0.97-1.00)
Hypertension	1.09 (1.07-1.12)
Previous stroke	1.00 (0.98-1.02)
Hyperlipidemia	1.17 (1.15-1.19)
Interval onset admission, hours	
≤2	1
>2-3	0.95 (0.92-0.97)
>3-6	0.91 (0.88-0.93)
>6-24	0.92 (0.90-0.94)
>24-48	0.67 (0.64-0.69)
>48	0.25 (0.24-0.26)
unknown	0.61 (0.60-0.63)
Neurological signs within 24h after admission	
Paresis	1.21 (1.19-1.23)
Aphasia	1.03 (1.01-1.05)
Dysarthria	1.16 (1.14-1.18)
Disturbed level of consciousness	0.32 (0.31-0.33)
Year of admission	
2010	1
2011	3.40 (3.34-3.47)
2012	3.18 (3.12-3.24)

Conclusions: Differences in demographical and clinical characteristics of the participating stroke patients regarding the admission on a SU or not were observed. Data indicate high quality of SU care in Germany.

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