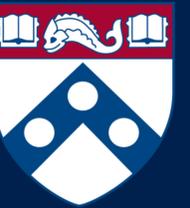


Delays In the Identification and Assessment of In-Hospital Stroke



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Introduction

- In-hospital stroke is associated with fewer interventions and worse outcomes compared to patients with community-acquired stroke.
- We assessed factors associated with delays in stroke symptom identification and stroke team alerting
- We also assessed presence of large vessel occlusion on vascular imaging and how many patients received interventions for in-hospital strokes.

Methods

- We performed a retrospective analysis of the local Get With The Guidelines Stroke database and the Stroke Team call log to identify patients with stroke occurring in our tertiary care hospital over a 26-month period ending 10/2019.
- The National Institutes of Health Stroke Scale (NIHSS) was abstracted from the chart, or retrospectively calculated if not documented.
- The patient's time of last known normal, symptom identification, and stroke alert were also abstracted, as well as any stroke interventions, and discharge disposition.

Results

- Overall, 97 patients with IHS were identified.
- Strokes were more common on surgery services (70%), were predominantly ischemic (83%), and were moderate-to-severe (median NIHSS 16; interquartile range [IQR] 6-24).

Clinical and demographic factors, dichotomized by early detection, <median time from LKN to SxID, or late, >median time from LKN to SxID

	Total cohort N=97	Early Detection N=48	Late Detection N=49	P-value
Age (years), Mean ± SD	65±14	63	66	0.22
Female sex	47%	40%	55%	0.13
Non-white race	39%	41%	36%	0.61
Surgical Service	71%	63%	80%	0.06
Stroke in ICU	51%	35%	65%	0.003
Stroke while intubated	40%	19%	61%	<0.001
Ischemic Stroke	82%	75%	90%	0.06
First NIHSS, median (IQR)	15 (6-24)	11 (4-18)	20 (11-29)	<0.001

- **There was a median 5.1 hours, interquartile range (IQR) 1.0 – 19.7 hours from last known normal (LKN) to stroke symptom identification (SxID)**
- **There was a median 2.1 hours, IQR 0.5 – 9.9 hours from SxID to stroke alert.**
- Acute stroke interventions were given to 14 patients (14%), including 3 (3%) who received IV tPA and 11 (11%) who underwent IA thrombectomy.
 - Patients who received stroke interventions had shorter time from LKN to SxID (median 0.7 vs 8.2 hours, p=0.002) and from SxID to stroke alert (median 0.2 vs 3.4 hours, p=0.006).
- **Urgent vascular imaging occurred in 67/97 (69%) of patients and 22/67 (33%) had a large vessel occlusion (LVO), 23% of the entire cohort.**
 - Among patients with LVO, acute intervention was strongly associated with shorter time from LKN to stroke alert, median 2.5 hours vs 20.1 hours, p=0.01.
- In multivariable linear regression only **intubation** remained independently associated with delays in detection of symptoms and alerting the stroke team.

Limitations

- This was a retrospective analysis of data from a single tertiary referral center with a high volume of high risk cardiovascular procedures.
- The size of the cohort limits the power to detect clinically important associations

Conclusions

- **For patients with stroke in the hospital, there are long delays in symptom identification and in alerting the stroke team.**
- **Intubated patients are at highest risk of delay.**
- Only a small minority of patients with in-hospital stroke received an acute intervention, which was associated with earlier stroke identification and alerting.
- Many patients with LVO did not receive thrombectomy, suggesting that additional patients may be eligible for treatments if identified faster.
- Additional efforts should be made to identify stroke symptoms and alert the stroke team more rapidly.