INTERNATIONAL STROKE CONFERENCE 2021 POSTER ABSTRACTS
SESSION TITLE: HEALTH SERVICES, QUALITY IMPROVEMENT, AND PATIENT-CENTERED OUTCOMES POSTERS

Abstract P266: The Implementation of Artificial Intelligence Significantly Reduces Door-In Door-Out Times in Primary Care Center Prior to Transfer

Ameer E Hassan, **Victor M Ringheanu**, **Laurie Preston**,**WONDWOSSEN TEKLE**
Originally published11 Mar 2021https://doi.org/10.1161/str.52.suppl_1.P266Stroke. 2021;52:AP266

Abstract

Introduction: Viz.ai artificial intelligence (AI) software utilizes AI powered large vessel occlusion (LVO) detection technology which automatically identifies suspected LVO through CT angiogram (CTA) imaging and alerts on-call stroke teams. We performed this analysis to determine if utilization of AI software can reduce the door-in door-out (DIDO) time interval within the primary care center (PSC) prior to transfer to the comprehensive care center (CSC).

Methods: We compared the time interval between door-in and door-out for all LVO transfer patients from a single spoke PSC to our CSC prior to (Feb. 2017 to Nov. 2018) and after (Nov. 2018 to June 2020) incorporating Viz.ai. Using a prospectively collected stroke database at a CSC, demographics, DIDO time at PSC, modified Rankin Scale at discharge (mRS dc), mortality rate at discharge, length of stay (LOS) in hospital and neurological ICU, and intracranial hemorrhage rates were examined.

Results: There were a total of 63 patients during the study period (average age 69.99 ± 13.72, 55.56% women). We analyzed 28 patients from the pre-AI (average age 71.64 ± 12.28, 46.4%), and 35 patients from the post-AI (average age 68.67 ± 14.88, 62.9% women); see Table 1 for comparison of baseline characteristics and outcomes. Following the implementation of the AI software, the mean DIDO time interval within the PSC significantly improved by 102.3 minutes (226.7 versus 124.4 minutes; p=0.0374); significant reductions were not noted in mRS at discharge, rates of hemorrhage, or mortality.

Conclusion: The incorporation of the AI software was associated with a significant improvement in DIDO times within the PSC and may lead to significant improvements in functional outcome and mortality in transfer patients. More extensive studies are warranted to expand on the ability of AI technology to improve transfer times and outcomes for LVO patients.

Table 1. Baseline demographics, clinical characteristics, and outcomes of ischemic stroke patients who underwent thrombectomy prior to and after the implementation of AI software.

Characteristics	Outcomes		P value
	Pre-AI Software (N=86)	Post-AI Software (N=102)	
Age (mean ± SD)	68.53 ± 13.13	69.87 ± 15.75	0.525
Gender			0.736
Men	51 (59.3%)	58 (56.9%)	
Women	35 (40.7%)	44 (43.1%)	
Race/Ethnicity			0.391
White	16 (18.6%)	26 (25.5%)	
Hispanic	68 (79.1%)	78 (76.5%)	
African American	1 (1.2%)	0 (0.0%)	
Asian	1 (1.2%)	0 (0.0%)	
NIHSS upon admission	16.13 ± 8.33	15.91 ± 7.10	0.847
IV tPA Use at Spoke	31 (36.0%)	35 (34.3%)	0.804
Co-Morbid Conditions			
Diabetes mellitus	45 (52.3%)	51 (50.0%)	0.751
Hypertension	69 (80.2%)	81 (79.4%)	0.889
Atrial fibrillation	19 (22.1%)	21 (20.6%)	0.801
History of Stroke/TIA	23 (26.7%)	24 (23.5%)	0.612
Coronary Artery Disease	17 (19.8%)	31 (30.4%)	0.096
Cigarette smoking	7 (8.1%)	9 (8.8%)	0.867
Time Intervals, Mean ± SD			
Door-in to Groin, minutes	206.6 ± 169.1	119.9 ± 83.0	< 0.0001
Thrombolysis in Cerebral Infarction			
Good (post TICI 2B-3)	73 (84.9%)	96 (94.1%)	0.0364
Poor (post TICI 0-2A)	13 (15.1%)	6 (5.9%)	0.0364
In-hospital complication			
Symptomatic intracerebral hemorrhage	7 (8.1%)	6 (5.9%)	0.543
Asymptomatic intracerebral hemorrhage	2 (2.3%)	5 (4.9%)	0.353
Hemorrhagic Transformation	6 (7.0%)	13 (12.7%)	0.191
Mass Effect	12 (14.0%)	5 (4.9%)	0.0311
Outcome			
Good (mRS dc score 0-2)	24 (27.9%)	26 (25.5%)	0.709
Poor (mRS dc score 3-6)	62 (72.1%)	76 (74.5%)	0.709
Length of Stay, Median [IQR]			
Admission to Discharge	7 [4-11]	7.5 [4-12]	0.103
Mortality at Discharge	18 (20.9%)	23 (22.5%)	0.789

Abbreviations: SD, standard deviation; NIHSS, NIH Stroke Scale; TICI, thrombolysis in cerebral infarction; mRS, modified Rankin Scale; TIA, trans ischemic attack; Significance Level: 0.05