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Introduction

- In the time-critical setting of acute ischemic stroke, AI offers tools to rapidly evaluate and extract specific predictions about clinical progression of disease and outcomes of therapy via automated provisions such as the CE-marked e-ASPECTS, a stroke severity scoring system which provides predictions of tissue and long-term functional outcomes to guide physicians' decisions on emergent therapy.
- University Hospitals Sussex NHS Trust integrated such a solution into its stroke pathway and this service evaluation aims to assess the impact of this AI solution one year after and assess the level of clinician engagement with outputs.

Research Method

- A secondary database analysis was performed. Data was extracted from the picture archiving and imaging reporting portals using relevant key words over the stipulated period (April 2020 to April 2022) and also from the servers for user engagement assessment - a proxy for a critically important point for how software results are perceived by users.
- The project was a single centre study of the impact of the integration of an AI solution on treatment times of large vessel occlusion (LVO) strokes.
- The initial descriptive statistics were followed by a comparison of the times to thrombectomy in the pre-AI solution cohort to post-AI solution cohort.

Investigation and Analysis

Patient Characteristics

Total number included.	N=68
Median age	73.50 (37-90)
Mean age	70.29
Gender	
Male	68%
Stroke type (MCA territory)	61 (89.70%)
Referral source	
A&E	17 (38.6%)
Ward	31 (71.1%)

	Pre -AI Cohort	Post-AI Cohort
Total number included.	N=21	N=47
Median age	68.00 (37-86)	76.50 (48-90)
Mean age	66.14	74.29
Gender		
Male	68%	49%

Table 1: Analysis of Participants' demographic characteristics

Analysis and Interpretation

Time to clinician review of automated report

	7 Apr - 6 Jul, 2021	7 Apr - 6 Jul, 2022	7 Apr - 6 Jul, 2023	7 Jan - 6 Apr 2022	7 Jan - 6 Apr 2023
Median	1:34:24	14:05:51	0:55:48	1:15:12	0:55:48
Min	0:00:10	0:00:34	0:00:47	0:00:16	0:00:47
Max	22:12:55	8:25:51	23:05:15	21:38:45	23:05:15
% Viewed within the hour	40.48%	22.03%	60%	45.19%	60%

Table 2: Analysis of clinicians' engagement

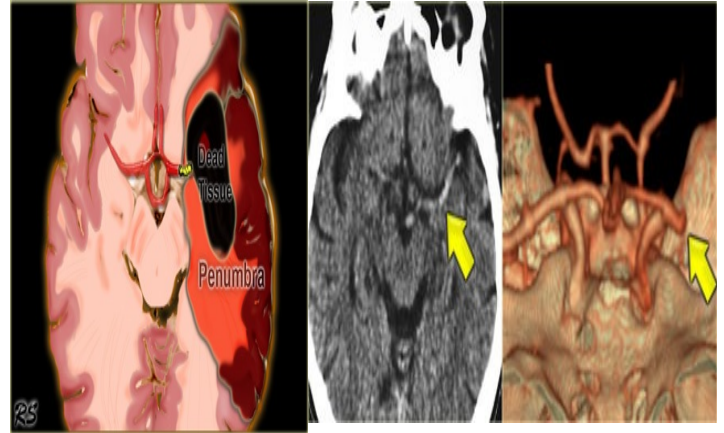


Figure 1. Large vessel occlusion ischemic stroke

Time to mechanical thrombectomy

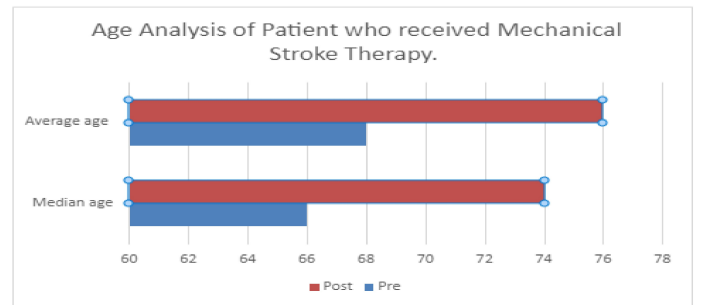
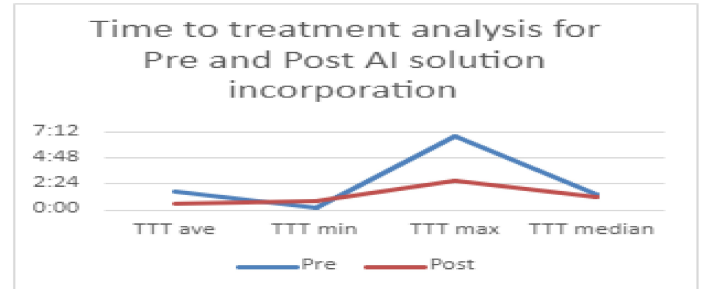


Figure 2. Time to mechanical thrombectomy

Conclusion

Summary of Study

The incorporation of the AI solution into the stroke pathway was associated with improvement in time to mechanical stroke therapy. However, further larger studies, with confounding factors controlled, is required to expand on the ability of AI solutions to improve stroke care for patients with LVO strokes.

User engagement is a critically important point for how software results are perceived by users within the stroke pathway, and should be assessed with such further studies qualitatively and quantitatively where possible.

Acknowledgment

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