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Background

- Prehospital large vessel occlusion (LVO) stroke identification expedites treatment by direct transfer to comprehensive stroke centers (CSC) with endovascular capabilities.
- The Cincinnati Prehospital Stroke Scale (CPSS) is currently used by Emergency Medical Services (EMS) for prehospital stroke identification.
- We assessed whether a **CPSS score of 3/3 reliably detects LVO stroke** and **the impacts of CPSS-based EMS redirection of suspected stroke to CSC.**

Methods

- We performed a retrospective analysis of all patients transferred by EMS for suspected stroke to a high-volume CSC over two 8-months periods, before and after implementation of redirection of CPSS 3/3 patients to CSC.
- Charts and neuroimaging were reviewed to determine final diagnosis and presence of LVO.

Results

- 376 patients were evaluated (n=105 before versus n=271 after implementation).
- EMS diversion of CPSS 3/3 substantially **increased acute stroke evaluations**, with **stable rates of LVO** stroke patients undergoing EVT (Table 1).
- **Transfers for EVT** from the three centers affected by redirection protocol **decreased** from 37 to 26 (p<0.05).
- CPSS 3/3 had a **29% PPV and 94% NPV for LVO** (Table 2).

	Before (n=105)	After (n=271)	P-value
LVO (%)	24 (23)	49 (18)	0.29
Non-LVO (%)	44 (42)	104 (38)	0.53
ICH (%)	8 (8)	36 (13)	0.13
TIA (%)	5 (4)	15 (6)	0.76
Mimic (%)	24 (23)	67 (25)	0.70
Thrombolysis (%)	39 (37)	91 (34)	0.51
EVT (%)	21 (20)	45 (17)	0.44
0/3 (%)	7 (7)	15 (5)	0.67
1/3 (%)	26 (25)	40 (15)	0.02
2/3 (%)	30 (28)	35 (13)	< 0.01
3/3 (%)	42 (40)	181 (67)	< 0.01

Table 1- Acute stroke populations before and after implementation

Discussion/Conclusion

- A high (3/3) CPSS score is an **accurate tool** for prehospital LVO detection. Nevertheless, EMS diversion of CPSS 3/3 to CSC substantially **increases patient volume**. Further studies are warranted to weigh the simplicity of CPSS 3/3 against **more specific yet potentially more complex** prehospital LVO detection scales.

CPSS score	LVO stroke (%)	Non-LVO ischemic stroke (%)	TIA (%)	ICH (%)	Stroke mimic (%)	Total
3 (n, row %)	64 (29)	88 (39)	7 (3)	35 (16)	29 (13)	223 (100)
2	6 (9)	29 (45)	4 (6)	3 (5)	23 (35)	65 (100)
1	3 (5)	24 (36)	6 (9)	3 (5)	30 (45)	66 (100)
0	0	7 (32)	4 (18)	2 (9)	9 (41)	22 (100)
Total	73 (20)	148 (39)	20 (5)	44 (12)	91 (24)	376 (100)

Table 2- CPSS accuracy for LVO detection