

# PACman Paramedic Angiographic Correlates: Utility of the Los Angeles Motor Score (LAMS) in Predicting Large Vessel Occlusions

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# Introduction

- ▶ Endovascular therapy significantly improves patient outcomes with Large Vessel Occlusions (LVO)
- ▶ Not all primary stroke centers can deliver endovascular care
- ▶ Emergency medical services are now tasked with routing large vessel occlusions to endovascular capable facilities
- ▶ We sought to describe the utility of the Los Angeles Motor Score (LAMS) and of other physical findings for predicting the presence of a large vessel occlusion in a population of stroke code patients examined by paramedics and EMTs.

# Methodology

- ▶ Stony Brook Medicine- tertiary care center ED
  - ▶ Convenience sample of stroke code patients
- ▶ Hospital-based paramedics examined patients in the ED
  - ▶ Included the history elements of LAMS
  - ▶ Assessed for elements of the RACE score
    - ▶ leg weakness, visual disturbances, altered level of consciousness, and language abnormalities
- ▶ Calculated sensitivity and specificity of LAMS at various levels and similarly for elements of the RACE score


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**Paramedic Angiographic Correlates**

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MRNA: \_\_\_\_\_ Paramedic Completing \_\_\_\_\_ Referred to for follow up \_\_\_\_\_

Patient Name: \_\_\_\_\_

Or place Bar Code Sticker \_\_\_\_\_

**Patient Demographics**

Age: \_\_\_\_\_ Sex: Male / Female

Medical History: HTN / HLD / DM / CAD / A-Fib (Anticoagulated Y / N ) / Previous CVA/TIA / Seizures \_\_\_\_\_

Other: \_\_\_\_\_

Triage Vital Signs: HR \_\_\_\_\_ BP \_\_\_\_\_ Temperature \_\_\_\_\_ RR \_\_\_\_\_

Circle appropriate response

Exam performed Date/Time	Facial Droop Absent = 0 Present = 1	Arm Drift Absent = 0 Drifts Down = 1 Falls Rapidly = 2	Grip Strength Normal = 0 Weak Grip = 1 No Grip = 2
____/____/____	0 - 1	0 - 1 - 2	0 - 1 - 2

LAPSS additional elements from Chart

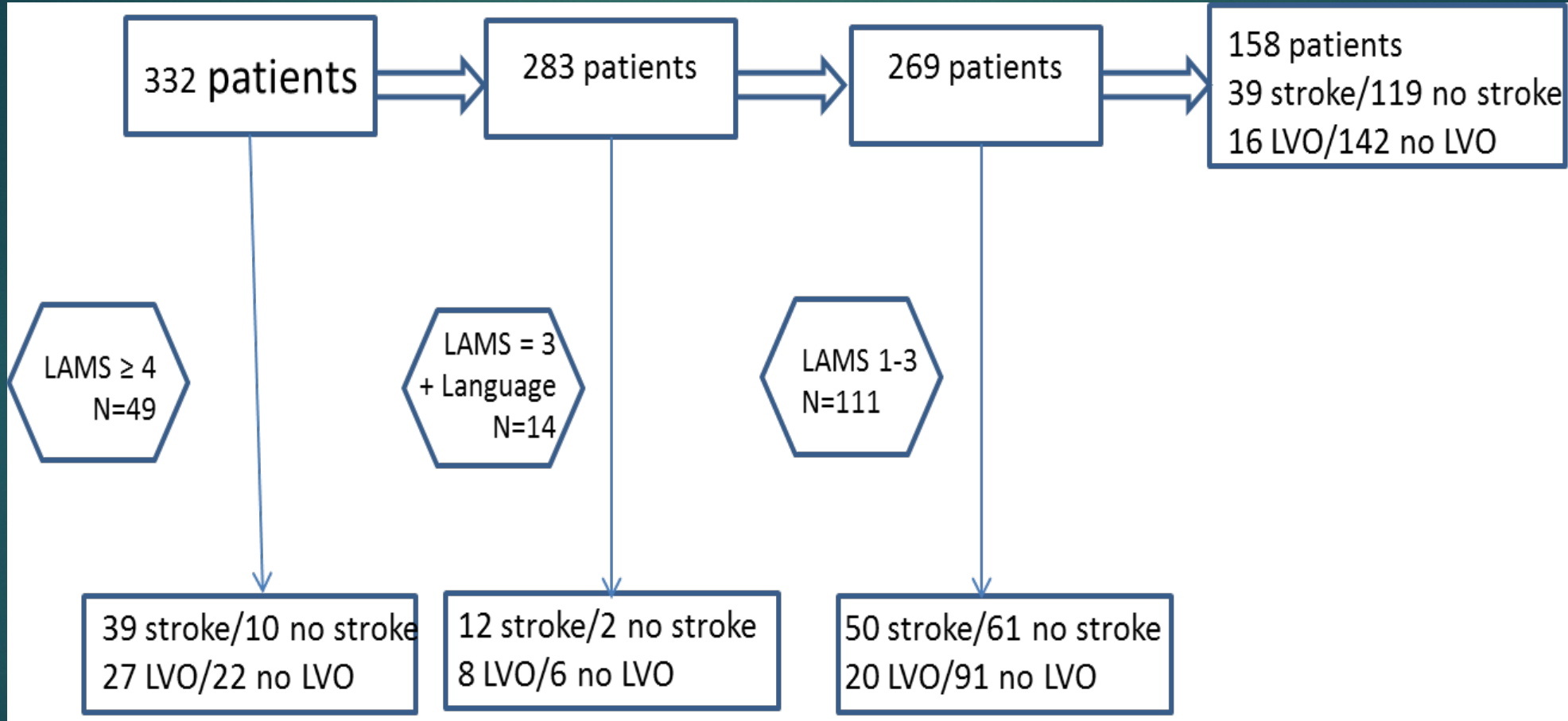
Last Known Well Time Date/Time	Hx of Seizures or epilepsy	Symptoms less than 24 hours?	Blood Glucose	Wheelchair or Bedridden at Baseline?
____/____/____	Y/N	Y/N	____mg/dl	Y/N

Additional elements

Gaze Deviation	Leg Weakness	Language Abnormality	Decreased Level of Alertness
Y/N	Y/N	Y/N	Y/N

# Results

TOTAL PATIENTS = 332, 140 STROKE (42%)



# ROC characteristics for detecting acute stroke

RULE	SENSITIVITY	SPECIFICITY	PPV	NPV
LAMS $\geq 4$	28 (39/140)	95 (182/192)	80 (39/49)	64 (182/283)
LAMS $\geq 4$ OR LAMS = 3 + LANGUAGE	36 (51/140)	94 (180/192)	81 (51/63)	67 (180/269)
LAMS $\geq 4$ OR LAMS = 3 + LANGUAGE OR LAMS $\geq 1$	72 (101/140)	62 (119/192)	58 (101/174)	75 (119/158)

# ROC characteristics for detecting LVO

RULE	SENSITIVITY	SPECIFICITY	PPV	NPV
LAMS $\geq 4$	38 (27/71)	92 (239/261)	55 (27/49)	84 (239/283)
LAMS $\geq 4$ OR LAMS = 3 + LANGUAGE	49 (35/71)	89 (233/261)	56 (35/63)	87 (233/269)
LAMS $\geq 4$ OR LAMS = 3 + LANGUAGE OR LAMS $\geq 1$	77 (55/71)	54 (142/261)	32 (55/174)	90 (142/158)



# Conclusions

- ▶ When performed by paramedics and EMTs in an enriched stroke code population, the LAMS score can be used to identify Large Vessel Occlusions with high specificity.
- ▶ The addition of aphasia identified cases missed by LAMS score alone while improving positive predictive value. More data are required to identify the utility of other findings in the prediction of large vessel occlusion.
- ▶ The overall poor sensitivity of all stroke scales for stroke in general is unlikely to change.