Acute stroke triage supported by telemedicine

Getting the right information there before the patient

17 September 2026

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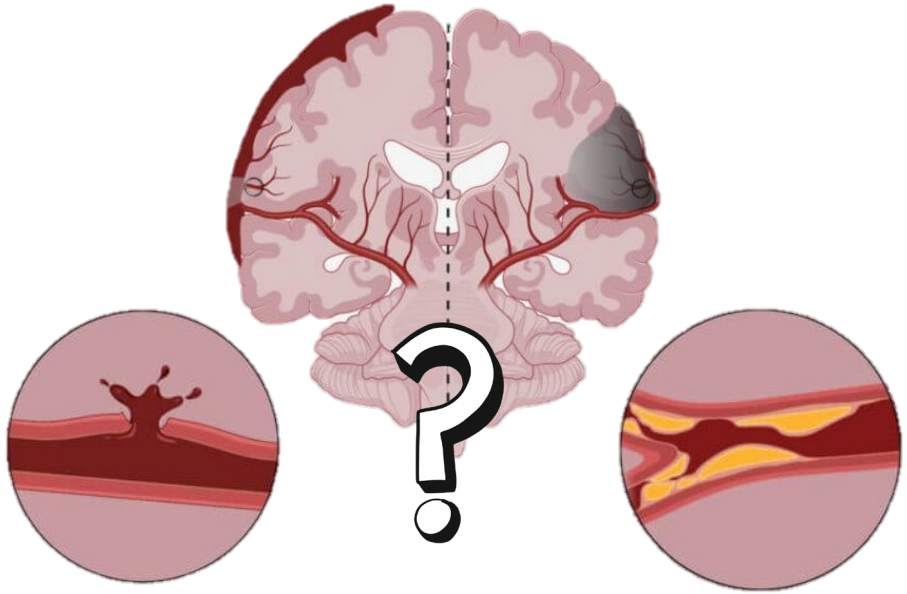
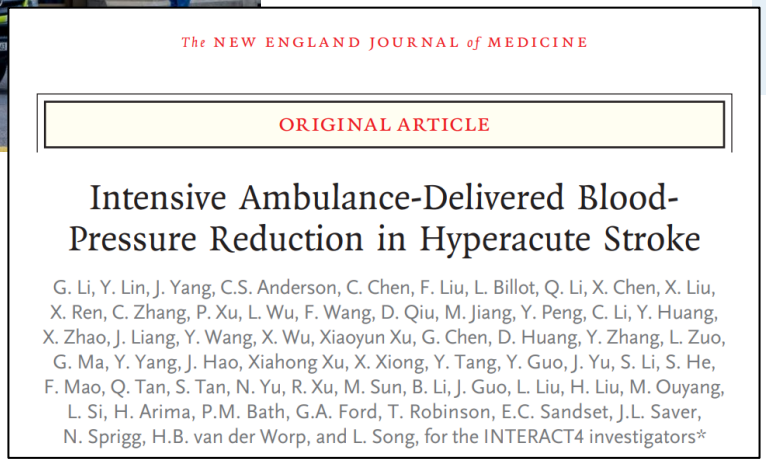
The prehospital information gap

Suspected stroke
Severe neurological deficit
BP 210/100



Hemorrhage

Ischemia



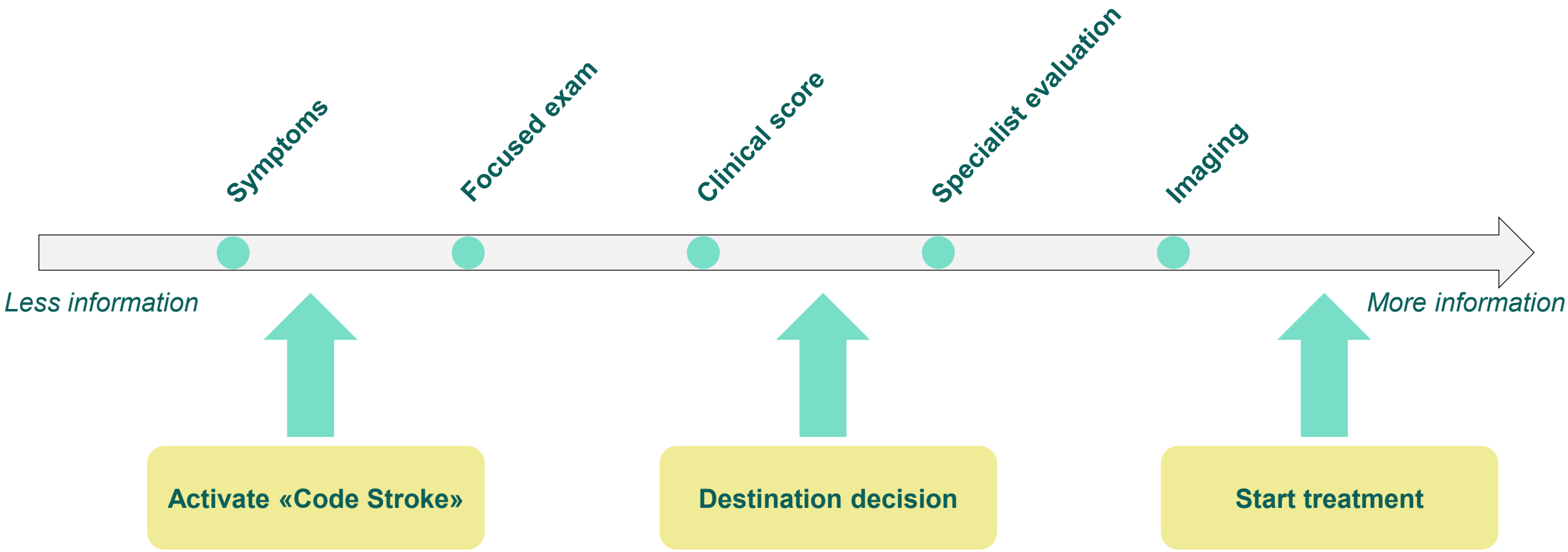
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Intensive Ambulance-Delivered Blood-Pressure Reduction in Hyperacute Stroke

G. Li, Y. Lin, J. Yang, C.S. Anderson, C. Chen, F. Liu, L. Billot, Q. Li, X. Chen, X. Liu, X. Ren, C. Zhang, P. Xu, L. Wu, F. Wang, D. Qiu, M. Jiang, Y. Peng, C. Li, Y. Huang, X. Zhao, J. Liang, Y. Wang, X. Wu, Xiaoyun Xu, G. Chen, D. Huang, Y. Zhang, L. Zuo, G. Ma, Y. Yang, J. Hao, Xiahong Xu, X. Xiong, Y. Tang, Y. Guo, J. Yu, S. Li, S. He, F. Mao, Q. Tan, S. Tan, N. Yu, R. Xu, M. Sun, B. Li, J. Guo, L. Liu, H. Liu, M. Ouyang, L. Si, H. Arima, P.M. Bath, G.A. Ford, T. Robinson, E.C. Sandset, J.L. Saver, N. Sprigg, H.B. van der Worp, and L. Song, for the INTERACT4 investigators*

How much information is enough to act?



From phenotype to probability

Phenotype

Clinical score

Triage estimate

Gaze

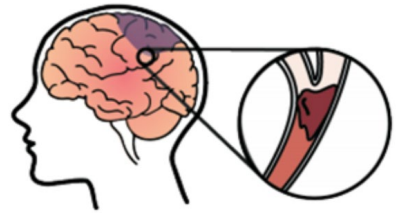
Arm/Leg weakness

Facial palsy

Speech

for example:

- RACE
- LAMS
- G-FAST
- FAST-ED



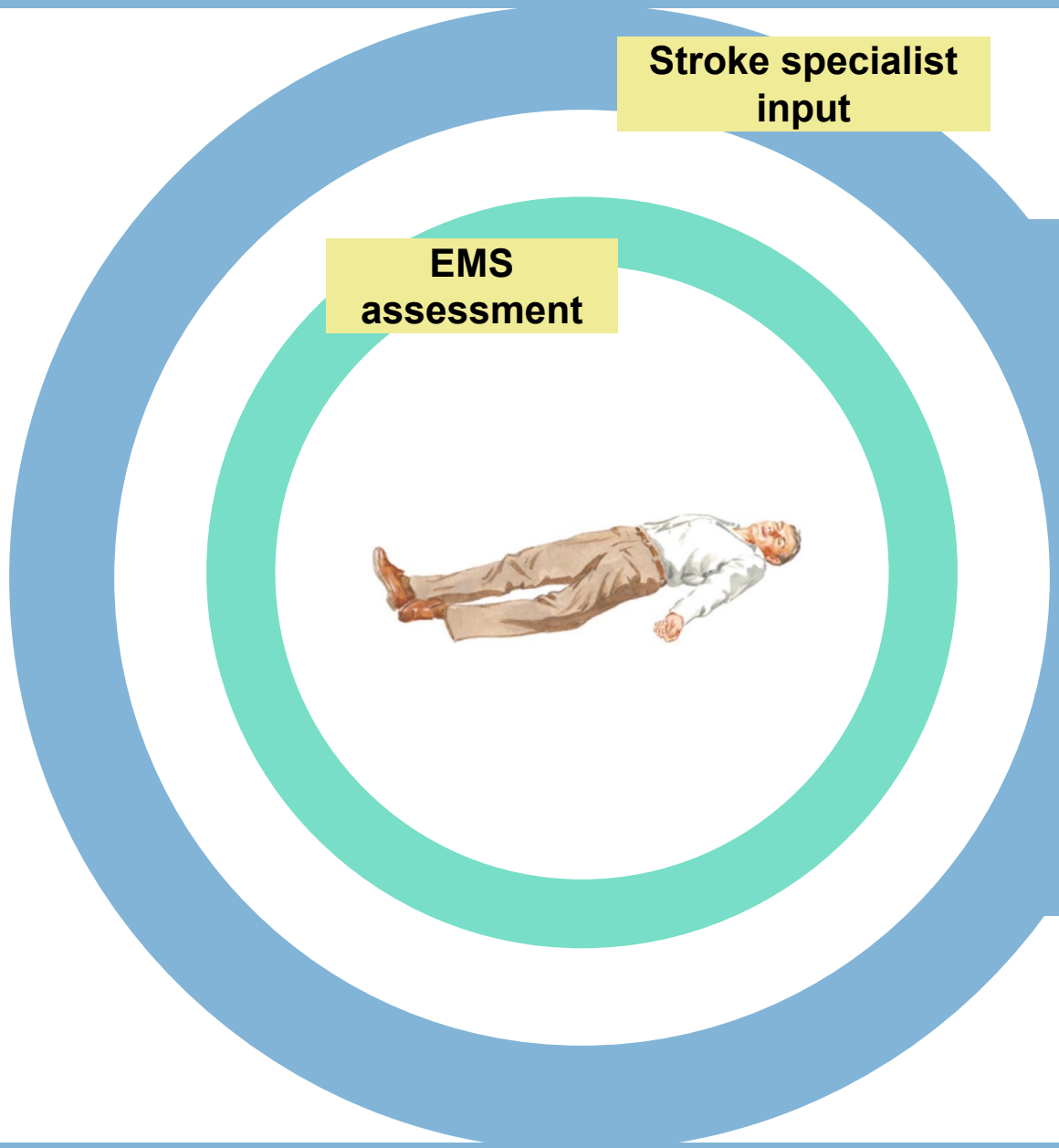
e.g. LVO probability

low *high*

Specialist neurological interpretation

EMS assessment

- Neurological deficit
- Severity
- Vital signs
- Onset/scene information
- Structured LVO score



Pattern
Syndrome coherence?

Alternatives
Mimics / posterior circulation

Context
Onset; baseline; history

Treatment relevance
Reperfusion potential; uncertainty

A connected prehospital stroke pathway

EMS / Prehospital team

Stroke team

Voice *telephone / radio*

Structured data *score, vitals, onset, ETA*

Live video *direct patient observation*

Shared clinical picture

Evidence on prehospital stroke-specialist input

Telephone consultation

PreSS + stroke neurologist by phone

Stroke/TIA

- Specificity 23% → 65%
- AUC 0.69 → 0.80

LVO

- AUC 0.84 → 0.86

Overall stroke classification refined

Gude et al. 2022

Live video assessment

Stroke physician by video vs paramedic PASTA score

Treatment prediction accuracy
→ 80% vs 60%

EVT → 89% vs 56%

Treatment-relevant classification improved

Scott et al. 2022

Structured EMS assessment

NIHSS training + NIHSS app + standardized communication vs usual care

Stroke PPV → 48% vs 46%

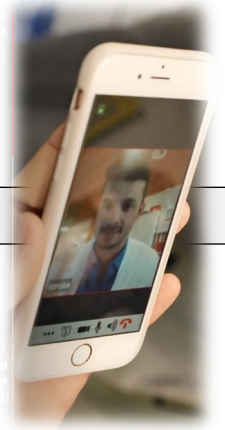
On-scene time → + 5 min

Primary endpoint <u>not</u> improved by more detail

Guterud et al. 2023 (ParaNASPP)

2026 AHA/ASA: Telemedicine should <u>complement</u> paramedic assessment

Basel prehospital telestroke feasibility study



EMS assessment + RACE Score

Stroke physician joins by live video

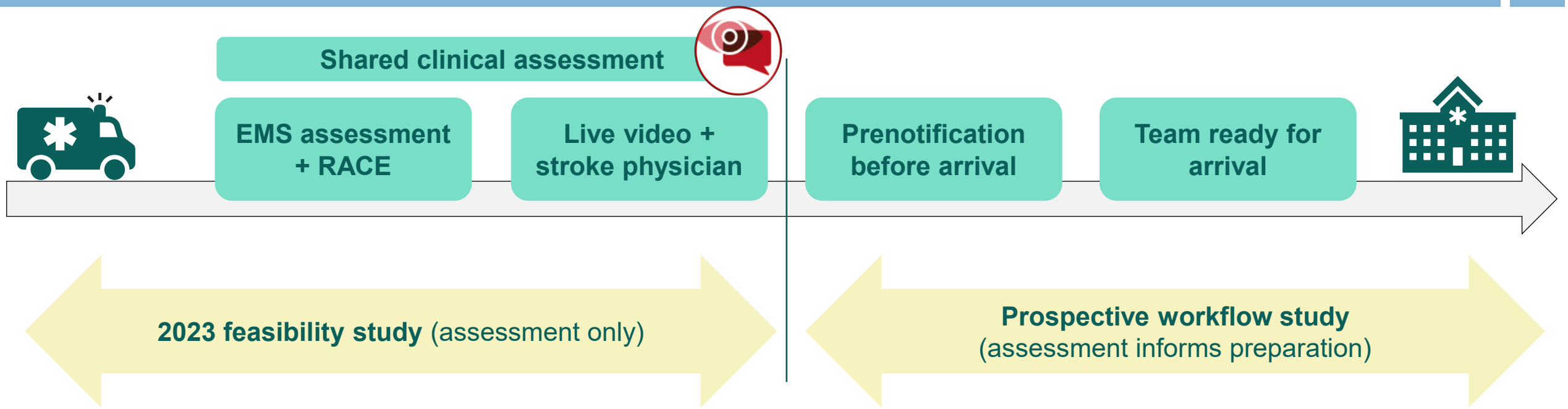
REC

3 independent raters

Results

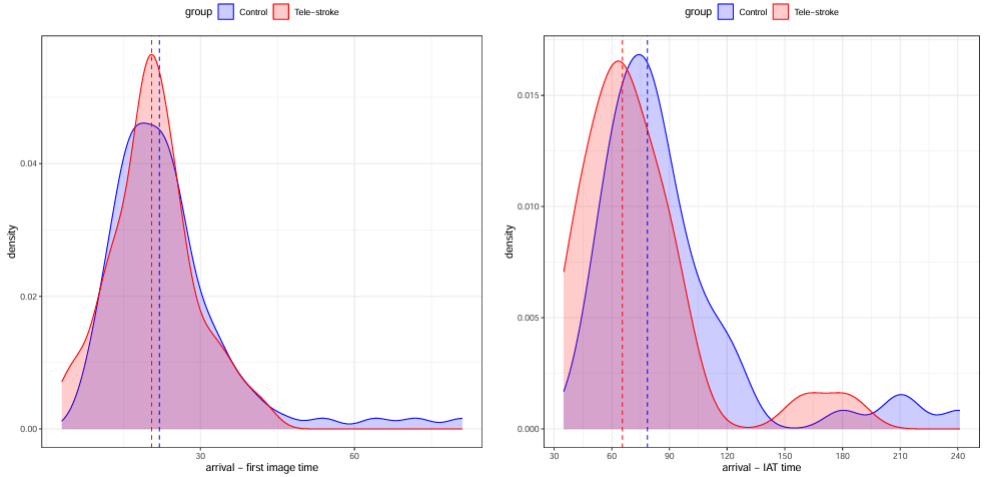
- **97 patients**
- **Intraclass Correlation Coefficient 0.82** for remote RACE
- **LVO: 69% sensitivity / 84% specificity**

Prospective telestroke study: design & preliminary results



Results

- **Door-to-imaging time: ↔**
- **Door-to-groin time: ↓**
- **On-scene time: ↑**



Information can arrive before the patient

Transport time

Patient

Arrival

- **Clinical assessment**
- **RACE**
- **Specialist interpretation**

Internal communication

Stroke physician on call

80y/o male
Onset 9:30 AM
RACE 7
Pre-stroke mRS 1
ETA 10 min
Prepare for EVT

Angio suite team

Getting ready…

Interventional team ready

Beyond the clinical phenotype

Phenotype	Biology	Electro-physiology	Hemodynamics	Anatomy
Teleneurology clinical scores	GFAP other biomarkers	EEG portable headset	TCD optical flow	Mobile CT Portable MRI
Syndrome interpretation	Tissue pathology	Cerebral function	Cerebral flow	Direct structural information

EEG

Ultrasound

Examples of additional information

Biology

e.g. GFAP

DETECT-LVO 2026

353 supected strokes; 101 LVO, 76 ICH

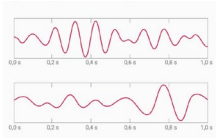
LVO prediction

- AUC 0.845 → 0.892
  RACE alone vs RACE + GFAP

LVO classification refined with GFAP

Kalra et al. 2026

Physiology



Portable EEG

ELEKTRA-EEG 2023

311 patients; EEG usable in 68%

LVO prediction

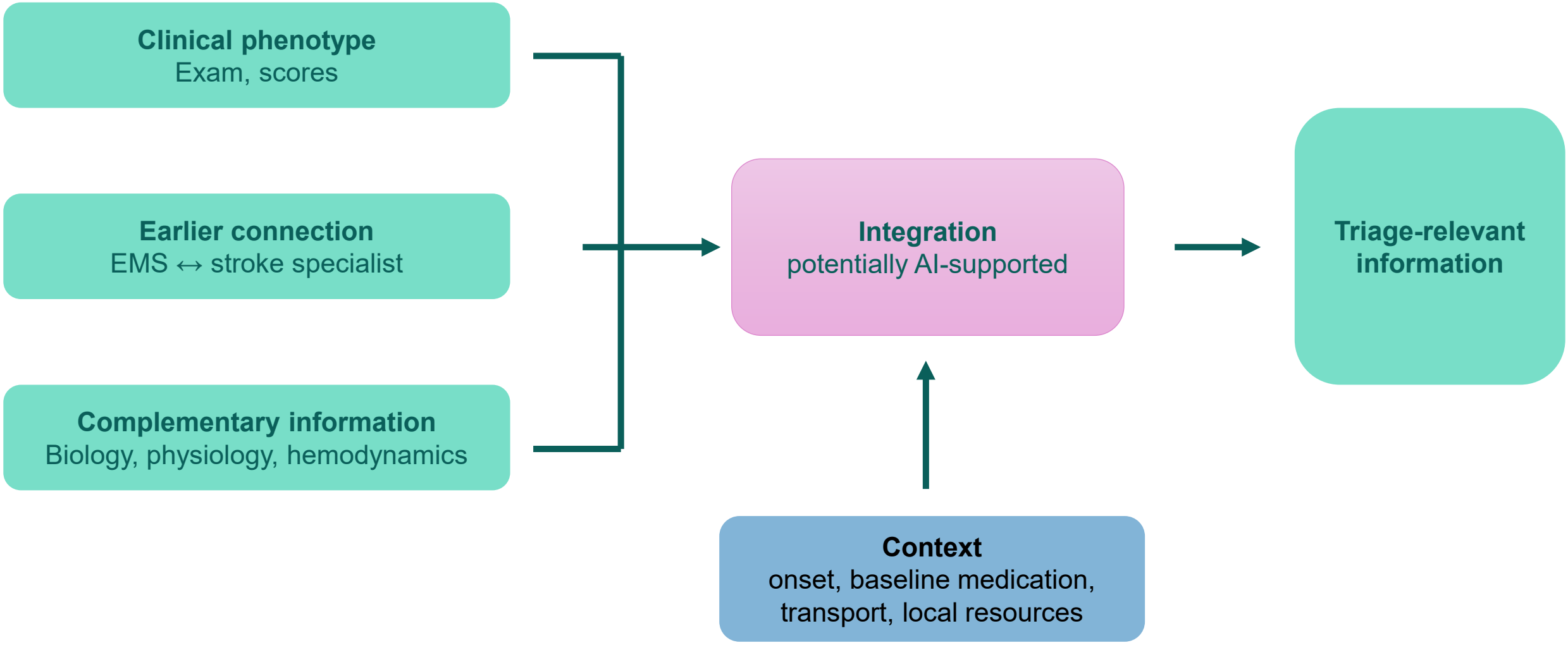
- AUC 0.80
  using theta/alpha frequency ratio

LVO classification refined with EEG
CAVE: only 6 analyzable LVOs

van Stigt et al. 2023

CROSSROADS-EEG - ongoing

Multimodal triage



Conclusion

Prehospital triage is not about certainty.
It is about having enough confidence to act.

Thank you

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