Präklinisches Management akuter Schlaganfallpatienten in Hessen

Christian Claudi

9. Schlaganfall-Symposium 26.11.2025

Verantwortlich auf dem **Rettungswagen** ist ein **Notfallsanitäter**

Notfallsanitäter durchlaufen eine 3-jährige Ausbildung

mehr als **90%** aller **Transporte** in die Klinik werden **ohne Notarzt** durchgeführt

Lück, I. and C. Dodt (2022). "Entwicklung der innerklinischen Notfallmedizin – ein Rückblick und Ausblick." Notfall + Rettungsmedizin **25**(3): 164-166.

SGB

BGB

StGB

Auflistung nicht vollständig !

Funk

Polizei, Feuerwehr, HiOrg

med. Geräte

PsychKG

HRDG

HBKG

NotSanG

RettDGV HE

Gerät zur techn. Rettung

...

MANV

...

digitale Doku

FW-DV

Angehörige

Schlaganfall

Zeit

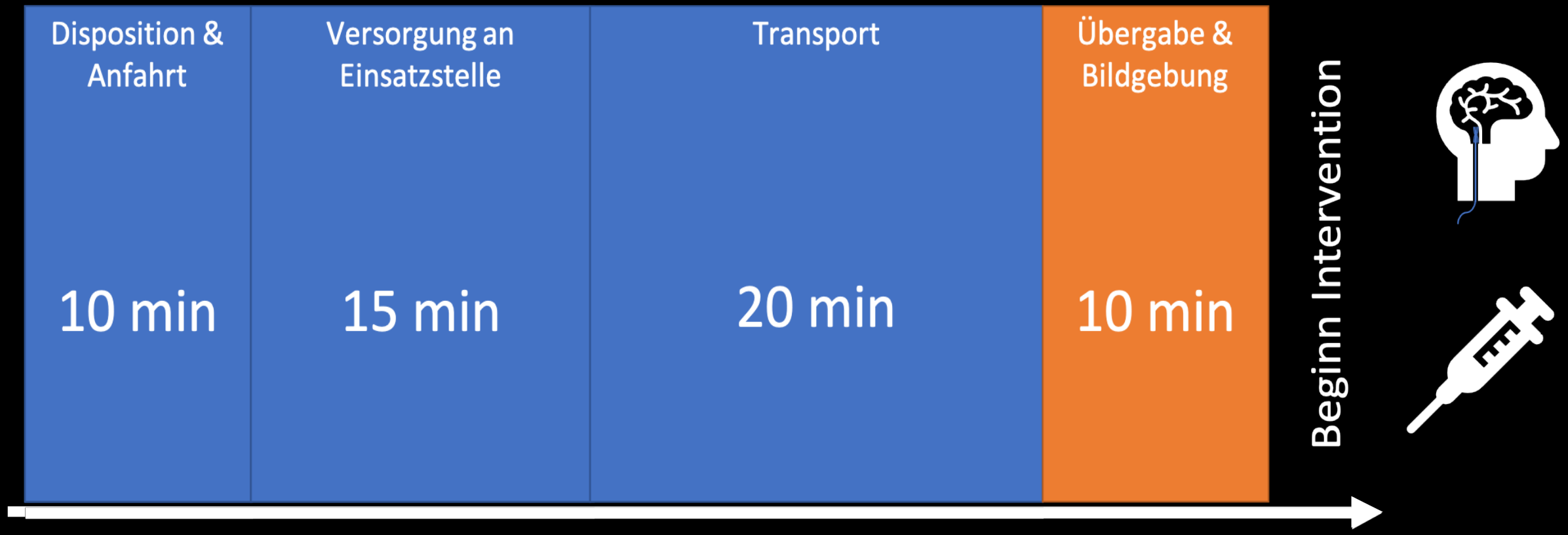
jede Minute

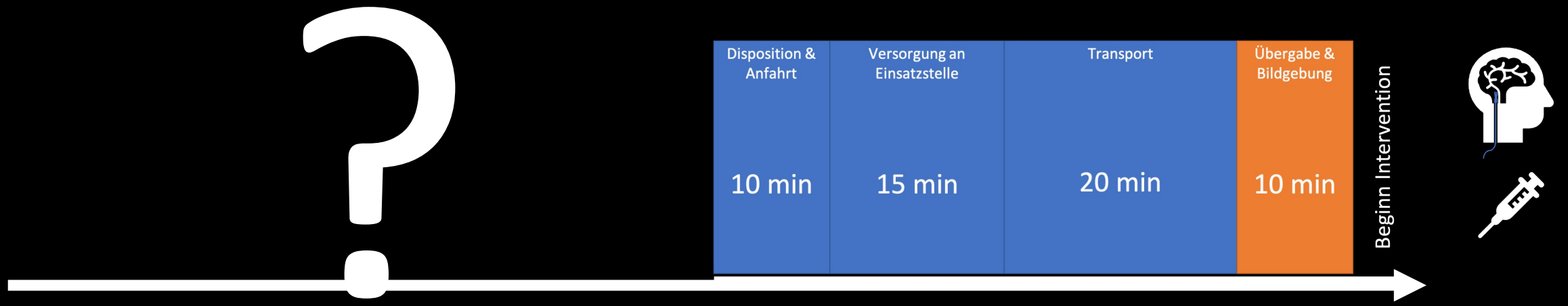
1,9 Mio. **Neurone**

14 Mrd. **Synapsen**

12 km **Fasern**

Time is Brain


Disposition & Anfahrt
10 min
Versorgung an Einsatzstelle
15 min
Transport
20 min
Übergabe & Bildgebung
10 min
Beginn Intervention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Disposition & Anfahrt
10 min
Versorgung an Einsatzstelle
15 min
Transport
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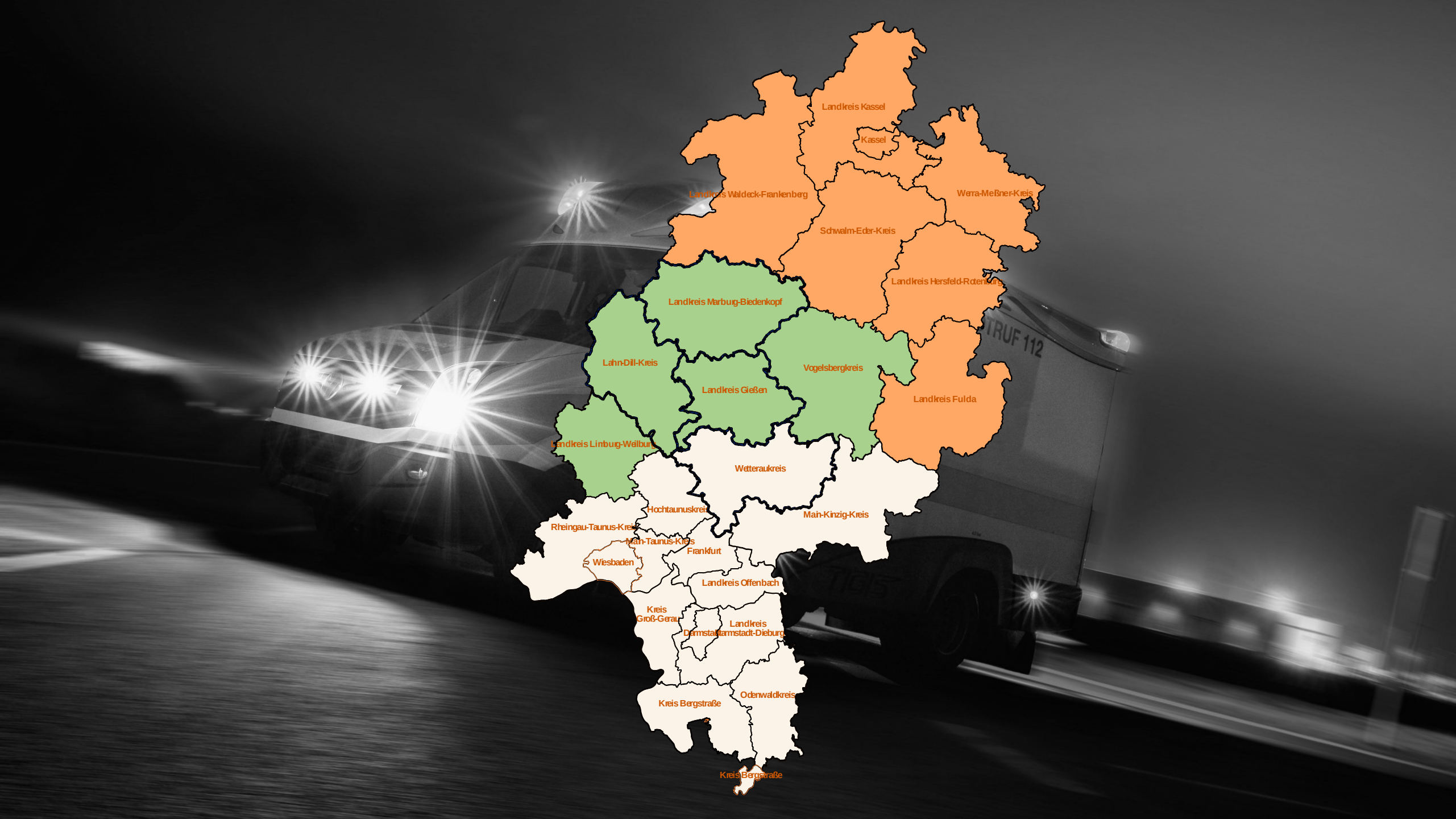
Übergabe & Bildgebung
10 min
Beginn Intervention


NOTRUF 112


Landkreis Kassel
Kassel
Landkreis Waldeck-Frankenberg
Werra-Meßner-Kreis
Schwalm-Eder-Kreis
Landkreis Hersfeld-Rotenburg
Landkreis Marburg-Biedenkopf
Lahn-Dill-Kreis
Vogelsbergkreis
Landkreis Gießen
Landkreis Fulda
Landkreis Limburg-Weilburg
Wetteraukreis
Hochtaunuskreis
Main-Kinzig-Kreis
Rheingau-Taunus-Kreis
Main-Taunus-Kreis
Frankfurt
Wiesbaden
Landkreis Offenbach
Kreis Groß-Gerau
Landkreis Darmstadt-Dieburg
Odenwaldkreis
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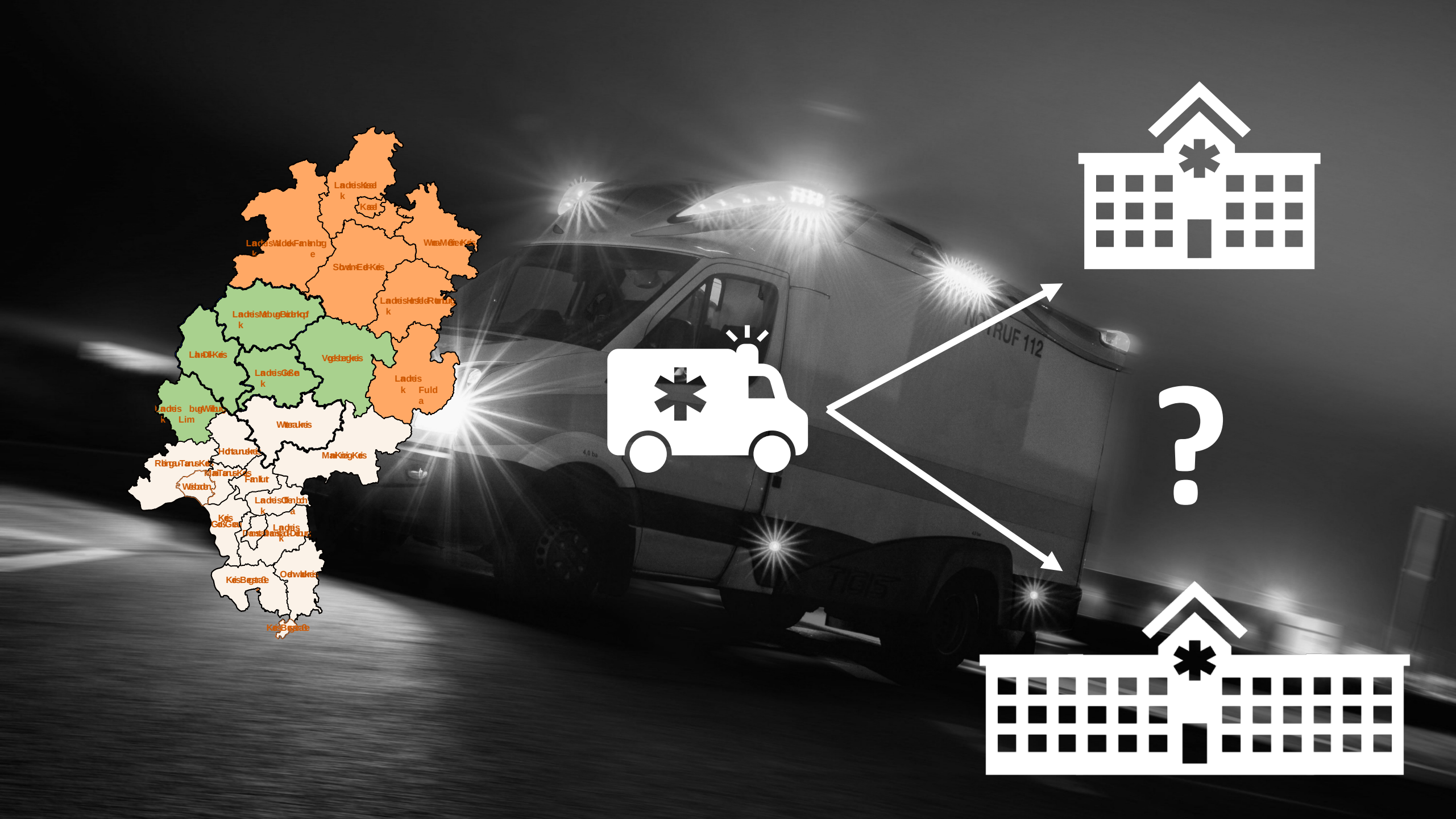
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JoS
JOURNAL OF STROKE

Journal of Stroke 2020;22(3):317-323
https://doi.org/10.5853/jos.2020.01767

Review

Mothership versus Drip-and-Ship Model for Mechanical Thrombectomy in Acute Stroke: A Systematic Review and Meta-Analysis for Clinical and Radiological Outcomes

Michele Romoli,[a,b] Maurizio Paciaroni,[c] Georgios Tsivgoulis,[d,e] Elio Clemente Agostoni,[f] Simone Vidale[a]

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[b]Neurology Clinic, Santa Maria della Misericordia Hospital, University of Perugia, Perugia, Italy
[c]Stroke Unit and Division of Cardiovascular Medicine, Santa Maria della Misericordia Hospital, University of Perugia, Perugia, Italy
[d]Second Department of Neurology, "Attikon" Hospital School of Medicine, National and Kapodistrian University of Athens, Athens, Greece
[e]Department of Neurology, University of Tennessee Health Science Center, Memphis, TN, USA
[f]Department of Neurology, Niguarda Ca' Granda Hospital, Milan, Italy

Background and Purpose Substantial uncertainty exists on the benefit of organizational paradigms in stroke networks. Here we systematically reviewed and meta-analyzed data from studies comparing functional outcome between the mothership (MS) and the drip and ship (DS) models.

Methods The meta-analysis protocol was registered international prospective register of systematic reviews (PROSPERO) and followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PubMed, EMBASE, and Cochrane Central databases were searched for randomized-controlled clinical trials (RCTs), retrospective and prospective studies comparing MS versus DS. Primary endpoints were functional independence at 90 days (modified Rankin Scale <3) and successful recanalization (Thrombolysis in Cerebral Infarction Scale [TICI] >2a); secondary endpoints were 3-month mortality and symptomatic intracranial haemorrhage (sICH). Odds ratios for endpoints were pooled using the random effects model and were compared between the two organizational models.

Results Overall, 18 studies (n=7,017) were included in quantitative synthesis. MS paradigm was superior to DS model for functional independence (odds ratio, 1.34; 95% confidence interval, 1.16 to 1.55; I^2=30%). Meta-regression analysis revealed association between onset-to-needle time and good functional outcome, with longer onset-to-needle time being detrimental. Similar rates of recanalization, sICH and mortality at 90 days were documented between MS and DS.

Conclusions Patients with acute ischemic stroke eligible for reperfusion strategies might benefit more from MS paradigm as compared to DS. RCTs are needed to further refine best management taking into account logistics, facilities and resources.

Keywords Stroke; Mothership; Drip and ship; Thrombectomy; Endovascular procedures

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Review

Table 2. Differences between groups

Variable	Mothership (n=4,338)	Drip & Ship (n=2,808)	*P*
Male sex (%)	56	55	0.406
Age (yr)	69.6±11.0	69.1±11.0	0.065
NIHSS score at admission	15.7±5.0	15.6±5.0	0.409
ONT (min)	120±27	132±27	0.006
OGT (min)	179±49	276±124	<0.001
IVT rate (%)	3,356 (89)	1,999 (87)	0.462
Recanalization rate (%)	1,574 (79)	1,774 (79)	0.705

Values are presented as mean±standard deviation or number (%).
NIHSS, National Institutes of Health Stroke Scale; ONT, onset-to-needle time; OGT, onset-to-groin time; IVT, intravenous thrombolysis.

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Review

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[f]Department of Neurology, Niguarda Ca' Granda Hospital, Milan, Italy

Mothership wenn Transport < 45 Min

Background and Purpose Substantial uncertainty exists on the benefit of organizational paradigms in stroke networks. Here we systematically reviewed and meta-analyzed data from studies comparing mothership (MS) and drip-and-ship (DS) models.

Methods We registered the protocol a priori and conducted a prospective update of systematic reviews (PROSPERO) and followed Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. PubMed, EMBASE, and Cochrane Central databases were searched for randomized-controlled clinical trials (RCTs), retrospective and prospective studies comparing MS versus DS. Primary endpoints were functional independence at 90 days (modified Rankin Scale <3) and successful recanalization (Thrombolysis in Cerebral Infarction Scale [TICI] >2a); secondary endpoints were 3-month mortality and symptomatic intracranial haemorrhage (sICH). Odds ratios for endpoints were pooled using the random effects model and were compared between the two organizational models.

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Strategies to reduce delays in delivering mechanical thrombectomy for acute ischaemic stroke – an umbrella review

D. Ameen[1]*, H. M. Dewey[2] and H. Khalil[3]

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Background: Mechanical thrombectomy is a time-sensitive treatment, with rapid initiation and reduced delays being associated with better patient outcomes. Several systematic reviews reported on various interventions to address delays. Hence, we performed an umbrella review of systematic reviews to summarise the current evidence.

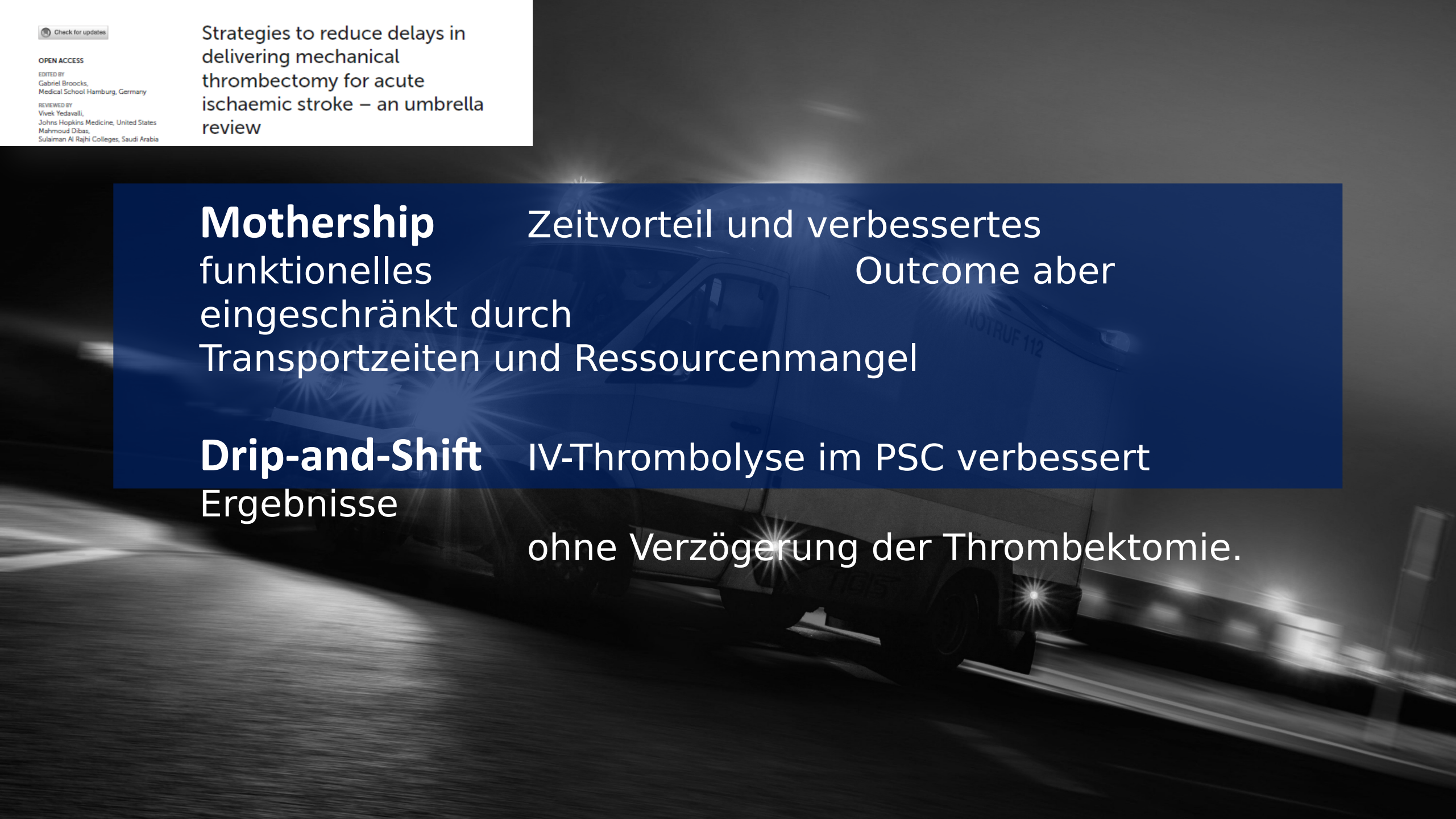
Methods: Medline, Embase, Cochrane Library and JBI were searched for published systematic reviews. Systematic Reviews that detailed outcomes related to time-to-thrombectomy or functional independence were included. Methodological quality was assessed using the JBI critical appraisal tool by two independent reviewers.

Results: A total of 17 systematic reviews were included in the review. These were all assessed as high-quality reviews. A total of 13 reviews reported on functional outcomes, and 12 reviews reported on time-to-thrombectomy outcomes. Various interventions were identified as beneficial. The most frequently reported beneficial interventions that improved functional and time-related outcomes included: direct-to-angio-suite and using a mothership model (compared to drip-and-ship). Only a few studies investigated other strategies including other pre-hospital and teamwork strategies.

Conclusion: Overall, there were various strategies that can be used to reduce delays in the delivery of mechanical thrombectomy with different effectiveness. The mothership model appears to be superior to the drip-and-ship model in reducing delays and improving functional outcomes. Additionally, the direct-to-angiosuite approach appears to be beneficial, but further research is required for broader implementation of this approach and to determine which groups of patients would benefit the most.

KEYWORDS

stroke, mechanical thrombectomy, reducing delays, workflow, delay to treatment



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Strategies to reduce delays in delivering mechanical thrombectomy for acute ischaemic stroke – an umbrella review

Mothership Zeitvorteil und verbessertes funktionelles Outcome aber eingeschränkt durch Transportzeiten und Ressourcenmangel

Drip-and-Shift IV-Thrombolyse im PSC verbessert Ergebnisse ohne Verzögerung der Thrombektomie.


CPSS
SAVE
RACE
CG-FAST
G-FAST
eNIHSS
LAMS
PASS
?
3ISS
NPE
FAST-ED
C-STAT
APSS
CPSSS
NIHSS
VAN
FAST-Plus
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Original Article

INR INTERVENTIONAL NEURORADIOLOGY

Interventional Neuroradiology
1–9

DOI: 10.1177/15910199231203266
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Large vessel occlusion prediction scale thresholds that are sensitive for DAWN Trial patients

Kevin J Keenan[1], Wade S Smith[2], Ashutosh P Jadhav[3], Diogo C Haussen[4], Ronald F Budzik[5], Alain Bonafé[6], Parita Bhuva[7], Dileep R Yavagal[8], Marc Ribò[9,10], Christophe Cognard[11], Ricardo A Hanel[12], Ameer E Hassan[13], Cathy A Sila[14], Jeffrey L Saver[15], David S Liebeskind[15], Tudor G Jovin[16] and Raul G Nogueira[17]

Abstract

Background: Large vessel occlusion (LVO) prediction scales are used to triage prehospital suspected stroke patients with a high probability of LVO stroke to endovascular therapy centers. The sensitivities of these scales in the 6-to-24-h time window are unknown. Higher scale score thresholds are typically less sensitive and more specific. Knowing the highest scale score thresholds that remain sensitive could inform threshold selection for clinical use. Sensitivities may also vary between left and right-sided LVOs.

Methods: LVO prediction scale scores were retrospectively calculated using the National Institutes of Health Stroke Scale (NIHSS) scores of patients enrolled in the DAWN Trial. All patients had last known well times between 6 and 24 h, NIHSS scores ≥ 10, intracranial internal carotid artery or proximal middle cerebral artery occlusions, and mismatches between their clinical severities and infarct core volumes. Scale thresholds with sensitivities ≥ 85% were identified, along with scores ≥ 5% more sensitive for left or right-sided LVOs. Specificities could not be calculated because all patients had LVOs.

Results: A total of 201 out of 206 patients had the required NIHSS subitem scores. CPSS = 3, C-STAT ≥ 2, FAST-ED ≥ 4, G-FAST ≥ 3, RACE ≥ 5, and SAVE ≥ 3 were the highest thresholds that were still 85% sensitive for DAWN Trial LVO stroke patients. RACE ≥ 5 was the only typically used score threshold more sensitive for right-sided LVOs, though similar small differences were seen for other scales at higher thresholds.

Conclusions: Our findings likely represent the maximum sensitivities of the LVO prediction scales tested for ideal thrombectomy candidates in the 6-to-24-h time window because NIHSS scores were documented in hospitals during a clinical trial rather than in the prehospital setting. Patients with NIHSS scores < 10 or more distal LVOs would lower sensitivities further. Selecting even higher scale thresholds for LVO triage would lead to many missed LVO strokes.

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[6]Department of Neuroradiology, University Hospital of Montpellier, Hop Gui de Chauliac, Montpellier, France
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[12]Baptist Medical Center Jacksonville/Lyerly Neurosurgery, Jacksonville, FL, USA
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Original Article

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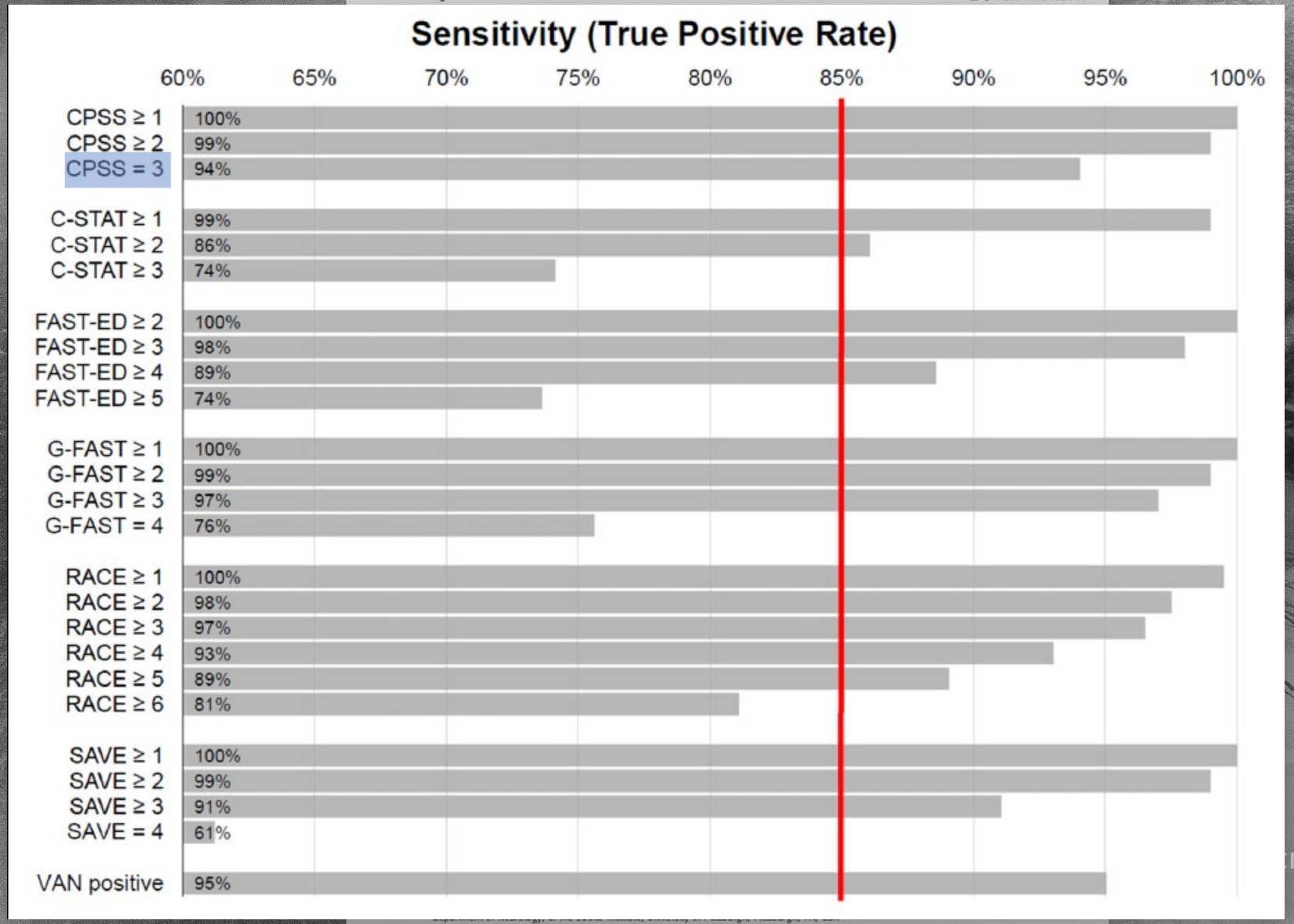

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Kothari, S. A., et al. (2024). "Comparing validated stroke screening scales for identifying large and medium vessel occlusions: a prospective observational cohort study." J Neurointerv Surg.

Cincinnati Prehospital Stroke Scale Implementation of an Urban County Severity-Based Stroke Triage Protocol: Impact and Outcomes on a Comprehensive Stroke Center

Ghada A. Mohamed, MD, MSc,[a,1] Fahad Marmarchi, MS,[a] Yombe Fonkeu, MS,[a] Qasem Alshaer, MD,[a] Srikant Rangaraju, MD,[a] Michael Carr, MD,[b] Andrew Jones, MD,[c] Matthew Peczka, BS,[d] Israel Contreras,[d] Lori Bahdsalvi,[e] Cynthia Brasher,[a] and Fadi Nahab, MD[e]

Background and purpose: Screening scales are recommended to assist field-based triage of acute stroke patients to designated stroke centers. Cincinnati prehospital stroke scale (CPSS) is a commonly used prehospital stroke screening tool and has been validated to identify large vessel occlusion (LVO). This study addresses the impact of county-based CPSS implementation to triage suspected LVO patients to a comprehensive stroke center (CSC). *Materials and methods:* Dekalb County in Atlanta, Georgia, implemented CPSS-based protocol with score of 3 and last seen normal time < 24 h mandating transfer to the nearest CSC if the added bypass time was <15 min. Frequency of stroke codes, LVO, IV-tPA use, and thrombectomy treatment were compared six months before and after protocol change (November 1, 2020). *Results:* During the study period, 907 stroke patients presented to the CSC by EMS, including 289 (32%) with CPSS score 3. There was an increase in monthly ischemic stroke volume (pre-16 ± 2 vs.19 ± 3 $p = 0.03$), LVO (pre-4.3 ± 1.7 vs. post-7.0 ± 2.4; $p = 0.03$), EVT (pre-15% vs. post-30%; $p = 0.001$), without significant increase in stroke mimic volume or delay in mean time from last seen normal to IV-tPA (pre-165 ± 66, post-158 ± 49 min; $p = 0.35$). CPSS score 3 was associated with increased likelihood of LVO diagnosis (OR 8.5, 95% CI 5.0-14.4; $p = 0.001$) and decreased the likelihood of stroke mimics (OR 0.66, 95% CI 0.50-0.88; $p = 0.004$). *Conclusion:* CPSS is a quick, easy to implement, and reliable prehospital severity scale for EMS to triage LVO to CSC without delaying IV-tPA treatment or significantly increasing stroke mimics.

Keywords: Ischemic stroke—Pre-hospital stroke assessment—CPSS—EMS—Large vessel occlusio

Abbreviations: LVO, Large vessel occlusion; CPSS, Cincinnati Prehospital Stroke Scale; EMS, Emergency Medical Sevice; IVT, Intravenous thrombolysis; PSC, Primary Stroke Center; CSC, Comprehensive Stroke Center

From the [a]Department of Neurology, Emory School of Medicine, Atlanta, GA, USA; [b]Department of Emergency Medicine, Emory School of Medicine, American Medical Response (AMR) DeKalb County, Atlanta, GA, USA; [c]Department of Emergency Medicine, Emory School of Medicine, Atlanta, GA, USA; [d]Global Medical Response Southeast, Lewisville, TX, USA; and [e]Department of Neurology, Emory University School of Medicine, USA.

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1052-3057/$ - see front matter

https://doi.org/10.1016/j.jstrokecerebrovasdis.2022.106575

Cincinnati Prehospital Stroke Scale Implementation of an Urban County Severity-Based Stroke Triage Protocol: Impact and

Table 4. *Prehospital assessment and LVO prediction using multivariable regression analysis.*

Variable	Odds ratio	Confidence interval	*P* value
Age	0.98	0.97–1.02	0.16
Gender (Male)	1.24	0.65–2.3	0.51
Race			
White	0.59	0.29–1.21	0.14
African American	1.02	0.15–6.93	0.98
History of Atrial Fibrillation	1.4	0.38–5.1	0.63
Coronary Artery Disease	1	0.35–2.94	0.99
Diabetes	0.6	0.29–1.22	0.16
Hyperlipidemia	1.3	0.63–2.52	0.52
Congestive Heart Failure			0.84
Hypertension			0.85
History of prior stroke			0.17
CPSS score of 3	7.8	3.6–17.1	<0.001

CPSS = Cincinnati prehospital stroke scale

Sensitivität 76%, Spezifität 72%

Abbreviations: LVO, Large vessel occlusion; CPSS, Cincinnati Prehospital Stroke Scale; EMS, Emergency Medical Sevice; IVT, Intravenous thrombolysis; PSC, Primary Stroke Center; CSC, Comprehensive Stroke Center

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Mohamed, G. A., et al. (2022). "Cincinnati Prehospital Stroke Scale Implementation of an Urban County Severity-Based Stroke Triage Protocol: Impact and Outcomes on a Comprehensive Stroke Center."


Aspiration
SGB
Erfrierun
BGB
StGB
Oberschenkelhalsfraktur
Verkehrsunfall eingeklemmt
Epileptischer Anfa
Funk
Ertrinkungsunfall
Polizei, Feuerwehr, Hi
Akutes Koronarsyndrom
akuten Harn
med. Geräte
PsychKG
Aortendissektion
pädiatrischen Fieberkrampf
...
RDG
Schlaganfall
Reanimation
BKG
exazerbierte COPD
drohender Suizid
Epistaxis
Gallenkolik
Psychose
NotSanG
RettDGV
Gerät zur techn. Rettung
gynäkologische Notfälle
Amputation
MANV
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Verätzung
Geburt
pädiatrische Polytrauma
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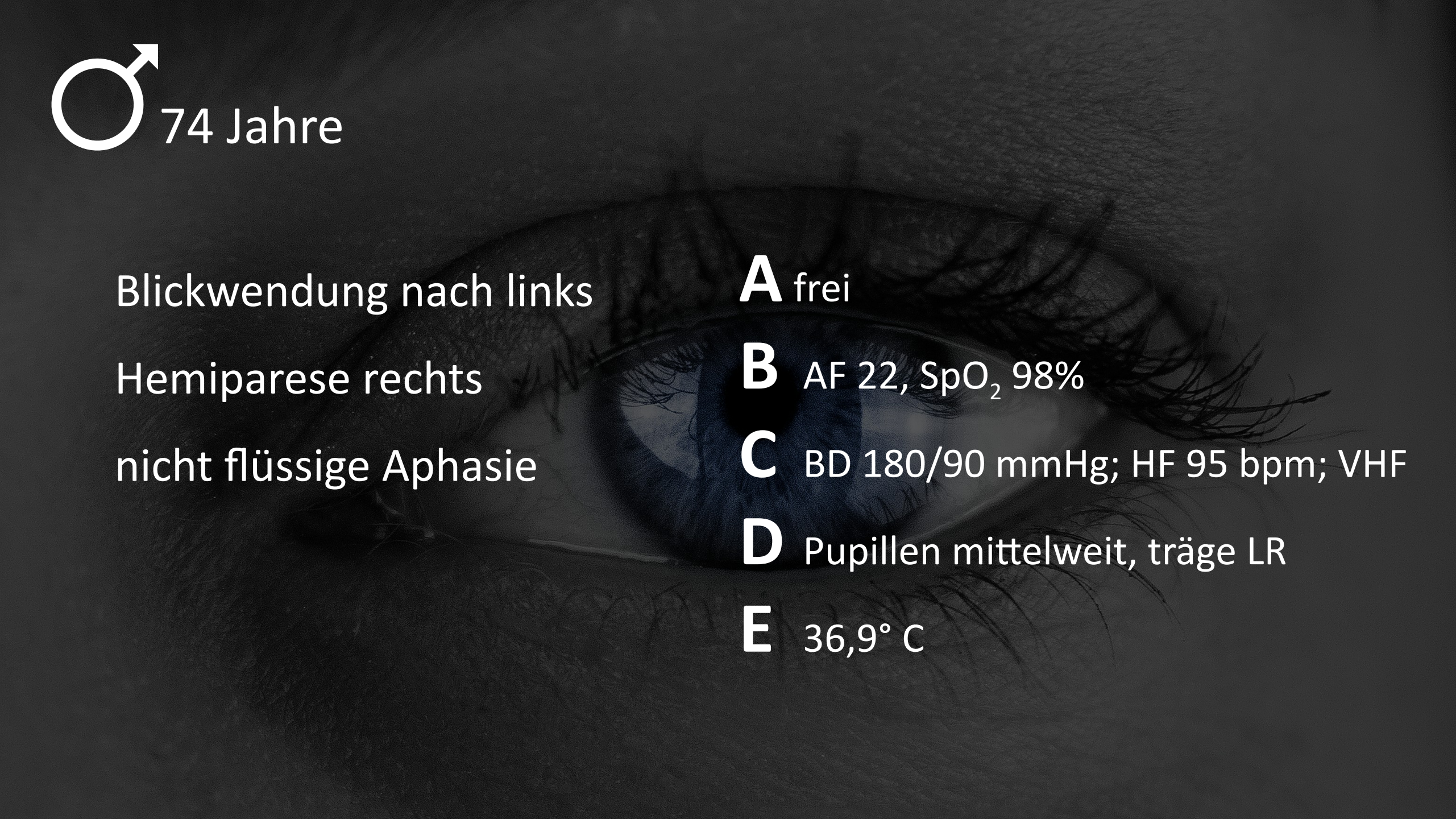
Verbrennung
Angehörige
Fremdkörper im Auge
Auflistung nicht vollständig !



♂ 74 Jahre

Blickwendung nach links

Hemiparese rechts

nicht flüssige Aphasie

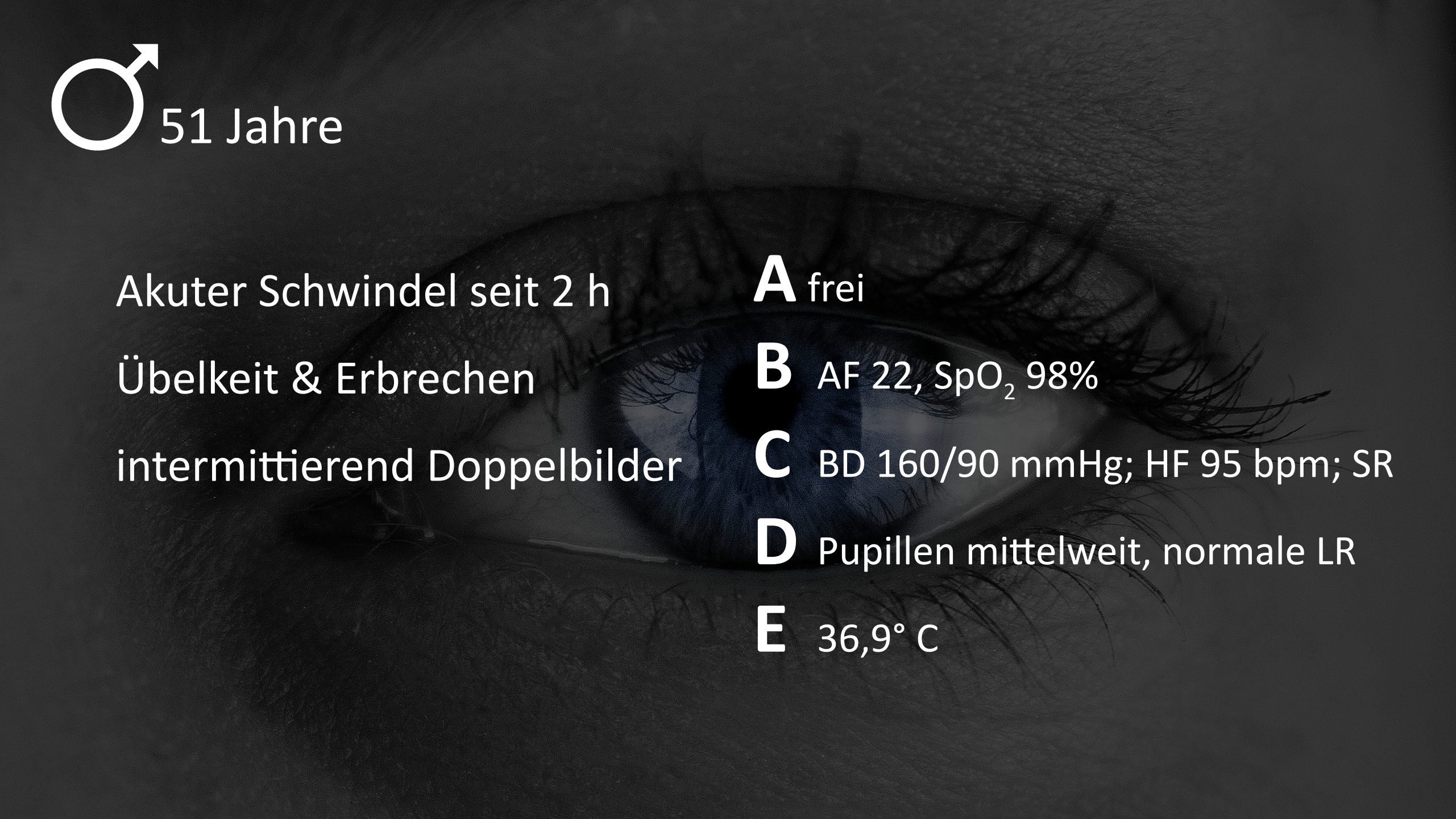
A frei

B AF 22, SpO_2 98%

C BD 180/90 mmHg; HF 95 bpm; VHF

D Pupillen mittelweit, träge LR

E 36,9° C



♂ 51 Jahre

Akuter Schwindel seit 2 h

Übelkeit & Erbrechen

intermittierend Doppelbilder

A frei

B AF 22, SpO_2 98%

C BD 160/90 mmHg; HF 95 bpm; SR

D Pupillen mittelweit, normale LR

E 36,9° C

Face

Arm

Speech

Time to call

25% **keine** FAST-Symptome

Jones, S. P., et al. (2021)

Face

Arm

Speech

Time to call

Diplopic images

Deficit in field of vision

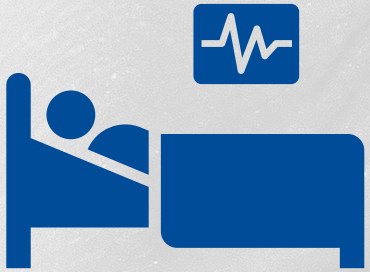
Dizziness/ vertigo

Dysmetria/ ataxia


FAST4D

FAST4D

2019 – 2021



1.469
eingeschlossen

1.035 (70%)
Schlaganfall

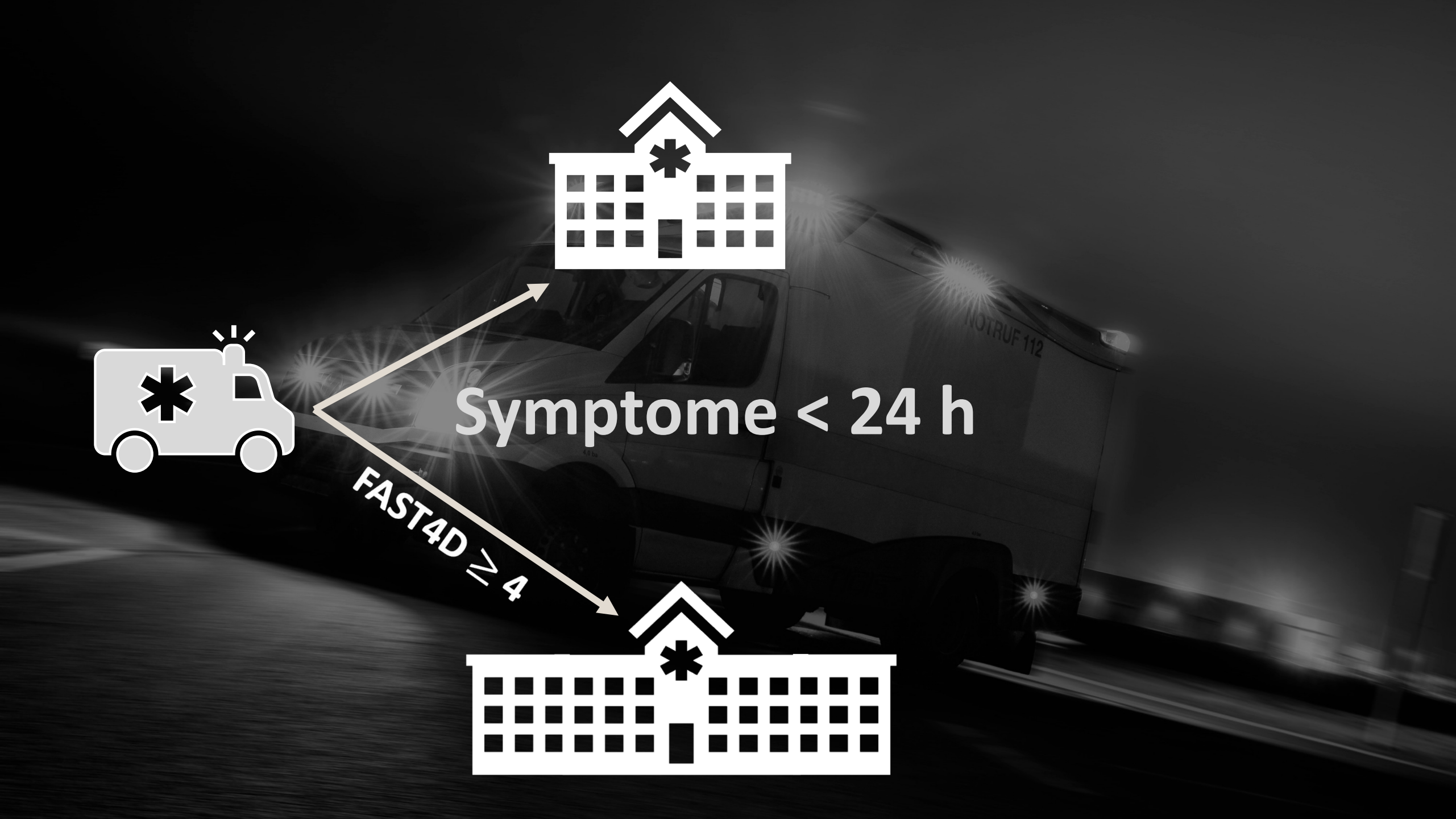
FAST4D detektierte 93%

15%

FAST detektierte 78%

Claudi, C., et al. (2024). "FAST4D—A New Score to Reduce Missed Strokes in Emergency Medical Service: A Prospective, Multicentric Observational Proof-of-Concept Trial." Journal of Clinical

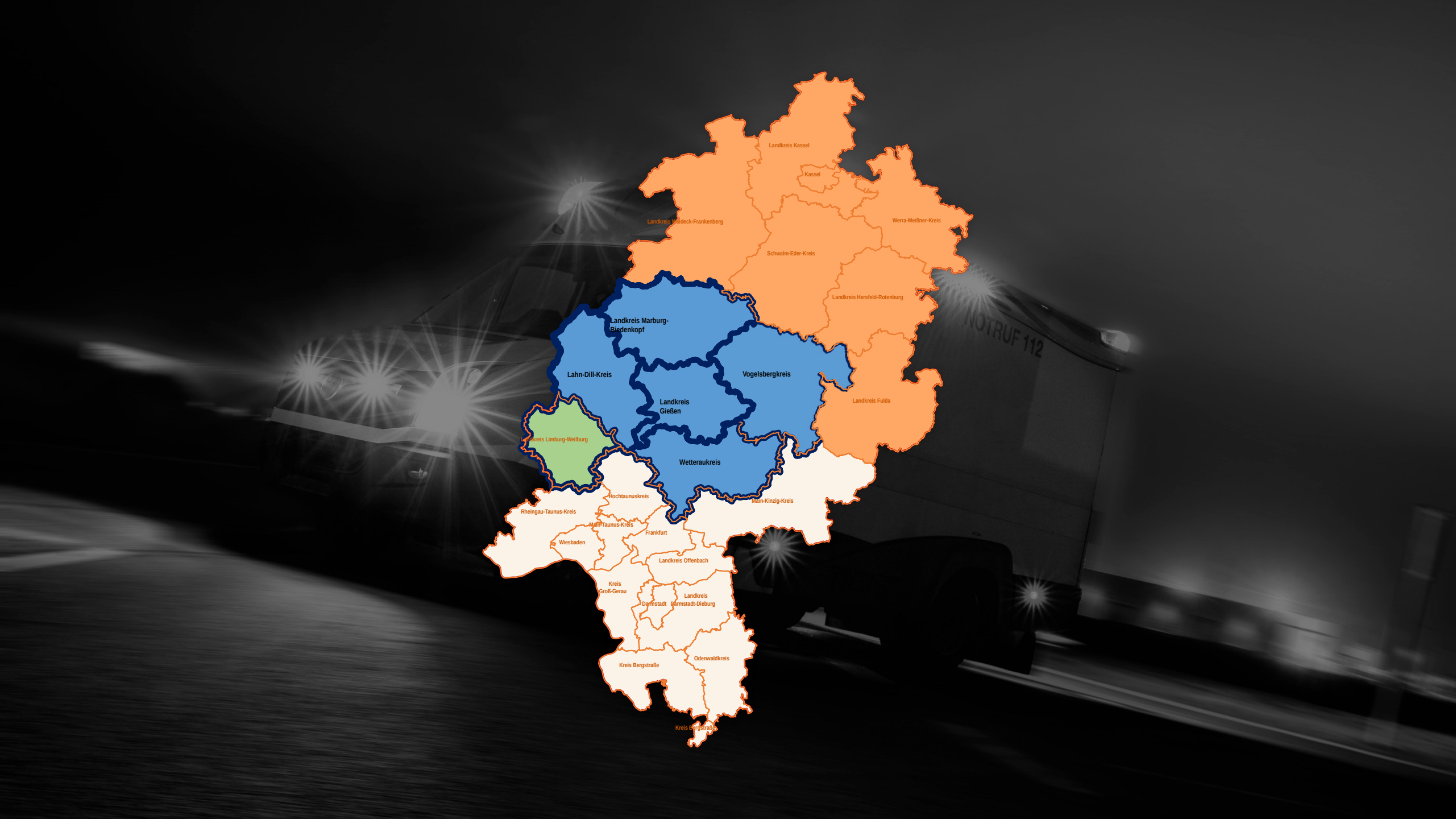

NOTRUF 112


Symptome < 24 h
FAST4D ≥ 4


Januar 2024
Landkreis Hersfeld-Rotenburg
Landkreis Marburg-Biedenkopf
Lahn-Dill-Kreis
Vogelsbergkreis
Landkreis Gießen
Landkreis Fulda
ndkreis Limburg-Weilburg
Wetteraukreis
Hochtaunuskreis
Main-Kinzig-Kreis
heingau-Taunus-Kreis
Main-Taunus-Kreis


NETZWERK


Januar 2024
Landkreis Hersfeld-Rotenburg
Landkreis Marburg-Biedenkopf
Lahn-Dill-Kreis
Vogelsbergkreis
Landkreis Gießen
Landkreis Fulda
ndkreis Limburg-Weilburg
Wetteraukreis
Hochtaunuskreis
Main-Kinzig-Kreis
heingau-Taunus-Kreis
Main-Taunus-Kreis


Landkreis Kassel
Kassel
Landkreis Waldeck-Frankenberg
Werra-Meißner-Kreis
Schwalm-Eder-Kreis
Landkreis Hersfeld-Rotenburg
Landkreis Marburg-Biedenkopf
Lahn-Dill-Kreis
Vogelsbergkreis
Landkreis Gießen
Landkreis Fulda
Landkreis Limburg-Weilburg
Wetteraukreis
Hochtaunuskreis
Main-Kinzig-Kreis
Rheingau-Taunus-Kreis
Main-Taunus-Kreis
Frankfurt
Wiesbaden
Landkreis Offenbach
Kreis Groß-Gerau
Darmstadt
Landkreis Darmstadt-Dieburg
Odenwaldkreis
Kreis Bergstraße
Kreis Bergstraße
NOTRUF 112

Präklinisches Management akuter Schlaganfallpatienten in Hessen

Konsentiertes Konzept der Ärztlichen Leiter Rettungsdienst sowie der Stroke Units in Hessen.

Schlaganfallkonzept Hessen VXX			
Erstellt: Claudi, Huttner, Schramm	Geprüft: Adler, Blau, Bohmann, Büttner, Gerstner, Jünemann, Kerstien, Misselwitz, Naujoks, Roth, Steiner, Schwark, Timmermann	Freigegeben:	Gültig bis:
Datum:	Datum:	Datum:	Datum:

Schlaganfallversorgung in Hessen: Neue konsentierte Empfehlungen

Hintergrund und Zielsetzung

Der akute Schlaganfall ist ein medizinischer Notfall, bei dem jede Minute zählt („Time is Brain") [1]. Eine schnelle präklinische Einordnung der Symptome und eine gezielte Einweisung in die Klinik sind entscheidend, um das funktionelle Outcome der Patienten durch systemische Thrombolyse und/oder mechanische Thrombektomie zu verbessern.

Das vorliegende Konzept wurde entwickelt, um die präklinische Schlaganfallversorgung in Hessen gezielt zu optimieren und bestehende Strukturen zu unterstützen. Es basiert auf den aktuellen wissenschaftlichen Erkenntnissen und wurde in enger Abstimmung mit den Ärztlichen Leitern Rettungsdienst (ÄLRD), Vertretern der Thrombektomiezentren und Stroke Units erarbeitet. Ziel ist es, eine möglichst einheitliche Zuweisungsstrategie zu etablieren, um eine flächendeckende standardisierte Versorgung zu gewährleisten und regionale Unterschiede zu reduzieren.

Das Konzept richtet sich an alle, die in der präklinischen und akut-klinischen Versorgung von Patienten mit Verdacht auf einen Schlaganfall beteiligt sind.

Die konzeptionelle Entwicklung sowie die Koordination der Abstimmungsprozesse erfolgten über die Klinik für Neurologie des Universitätsklinikums Gießen und Marburg, Standort Gießen, die als koordinierendes Zentrum fungierte.

Herausforderungen und bisherige Unterschiede

Bislang bestanden in Hessen Unterschiede in der Schlaganfallerkennung durch die Verwendung unterschiedlicher prähospitaler Scores sowie ein sehr heterogenes Vorgehen hinsichtlich der Patienten, die möglicherweise von einer mechanischen Thrombektomie profitieren könnten und somit direkt einem Zentrum zugewiesen werden sollten. Es gab nicht nur Unterschiede in der prähospitalen Zuweisung von Patienten mit Verdacht auf einen Verschluss eines großen hirnversorgenden Gefäßes (Large Vessel Occlusion [LVO]), sondern auch in der generellen Schlaganfallerkennung. Die Zuweisungskriterien in Bezug auf Behandlungsfenster, Dringlichkeit und Zielklinik waren regional unterschiedlich.

Die neuen konsentierten Empfehlungen schaffen eine einheitliche Vorgehensweise, um die Versorgung aller Schlaganfallpatienten zu verbessern. Durch die enge Zusammenarbeit von Rettungsdiensten, Stroke Units und Thrombektomiezentren wird sichergestellt, dass die Versorgung künftig unabhängig von Landkreisgrenzen nach klar definierten Kriterien erfolgt. Kernpunkte sind die Anwendung eines einheitlichen Schlaganfallscores, klare Zuweisungsstrategien und Regelungen zur Verlegung in ein Zentrum.

FAST4D – einheitlicher Standard für die Schlaganfallerkennung

Zur verbesserten prähospitalen Diagnostik wird hessenweit der FAST4D-Score eingeführt. Dieser erweitert den etablierten FAST-Score (siehe Abb. 1) um vier zusätzliche neurologische Zeichen, die insbesondere zur Identifikation vertebrobasilärer Schlaganfälle beitragen [2]:

- **D**iplopic images (Doppelbilder)
- **D**eficit in the field of view (Gesichtsfelddefekt)
- **D**izziness/Vertigo (Schwindel/Vertigo)
- **D**ysmetria/Ataxia (Dysmetrie/Ataxie)

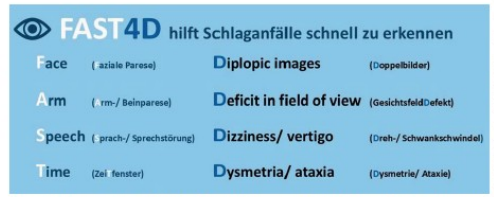
Jedes klinische Zeichen im FAST4D-Score wird mit einem Punkt bewertet. Das „T" für Time wird nicht gezählt, sodass der maximale Score sieben Punkte beträgt.

Der FAST4D-Score wurde primär für die allgemeine Schlaganfallerkennung entwickelt. Erste Analysen zeigen, dass eine höhere Punktzahl mit einer erhöhten Wahrscheinlichkeit für das Vorliegen einer Large Vessel Occlusion (LVO) assoziiert sein kann, vgl. [3]. Die Nutzung von FAST4D in der prähospitalen Entscheidungsfindung basiert auf diesem Zusammenhang und soll als Orientierungshilfe für die Zuweisung dienen.

Strukturierte Zuweisung

Die neuen Zuweisungskriterien ermöglichen eine standardisierte Patientensteuerung auf Basis klinischer Parameter wie FAST4D-Score und Symptombeginn. Der gestufte Algorithmus soll dazu beitragen, dass Patienten zielgerichtet der optimalen Klinik zugewiesen werden können und die Entscheidung zur Zuweisung erleichtert wird:

- **FAST4D < 4 Punkte und Symptombeginn ≤ 24 Stunden**: Transport zur nächstgelegenen Stroke Unit zur primären bildgebenden Diagnostik und möglichen systemischen Thrombolyse.
- **FAST4D ≥ 4 Punkte und Symptombeginn ≤ 24 Stunden**: Direkte Zuweisung in ein Thrombektomiezentrum, sofern



Grafik: Christian Claudi, 2024, mit freundlicher Genehmigung

Abb 1: FAST4D-Score zur prähospitalen Schlaganfallerkennung. Der FAST-Score (Face, Arm, Speech, Time) ist ein etabliertes Screening-Verfahren zur Identifikation von Schlaganfällen. FAST4D erweitert diesen um vier zusätzliche klinische Zeichen (Diplopic images, Deficit in the field of view, Dizziness/Vertigo, Dysmetria/Ataxia), um eine differenziertere Einschätzung neurologischer Defizite zu ermöglichen.

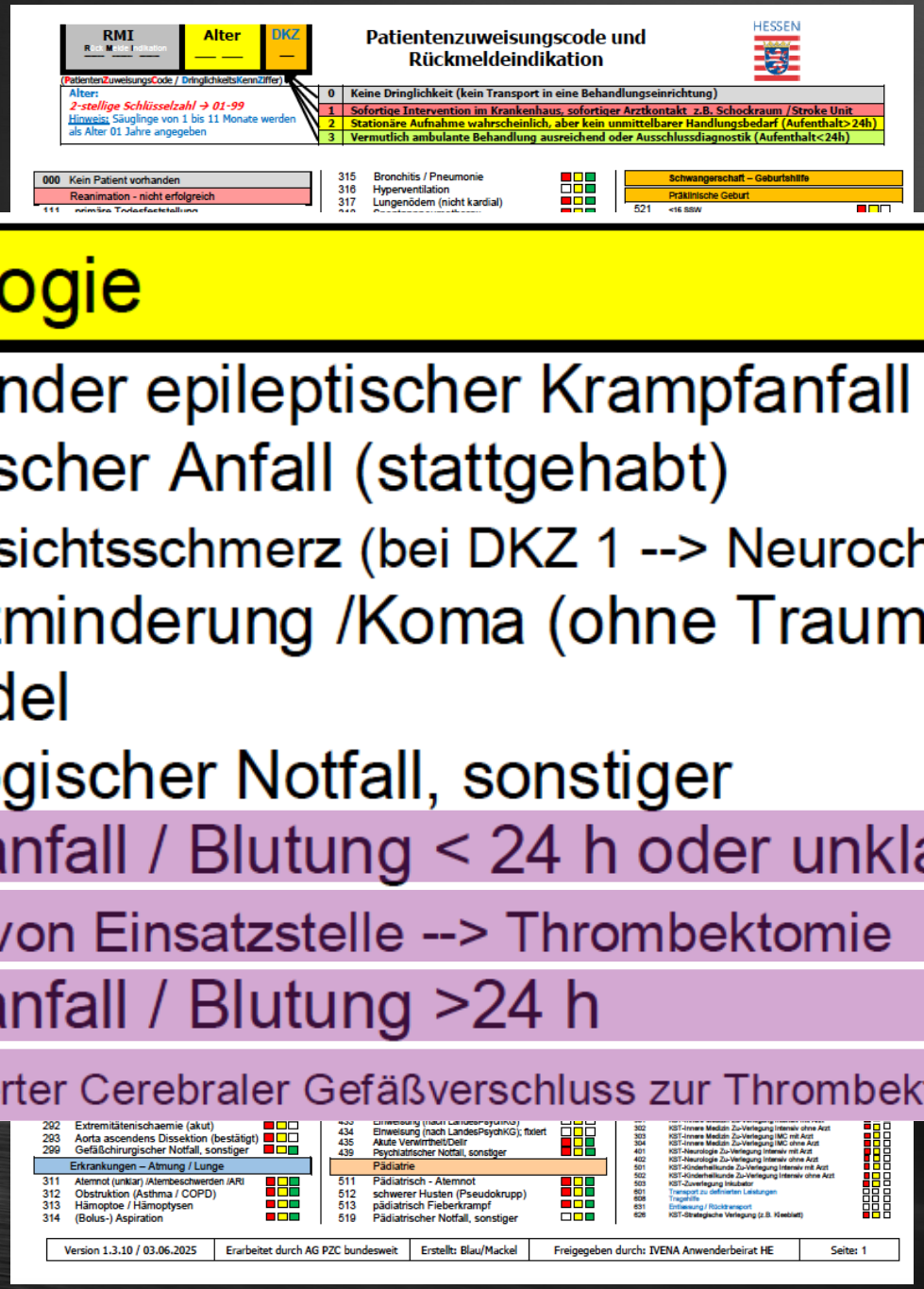
HESSEN

Hessisches Ministerium für Familie, Senioren, Sport, Gesundheit und Pflege

Algorithmen zur Notfallversorgung

Lehrmeinung
für die Notfallsanitäter-Ausbildung
an den hessischen Rettungsdienstschulen

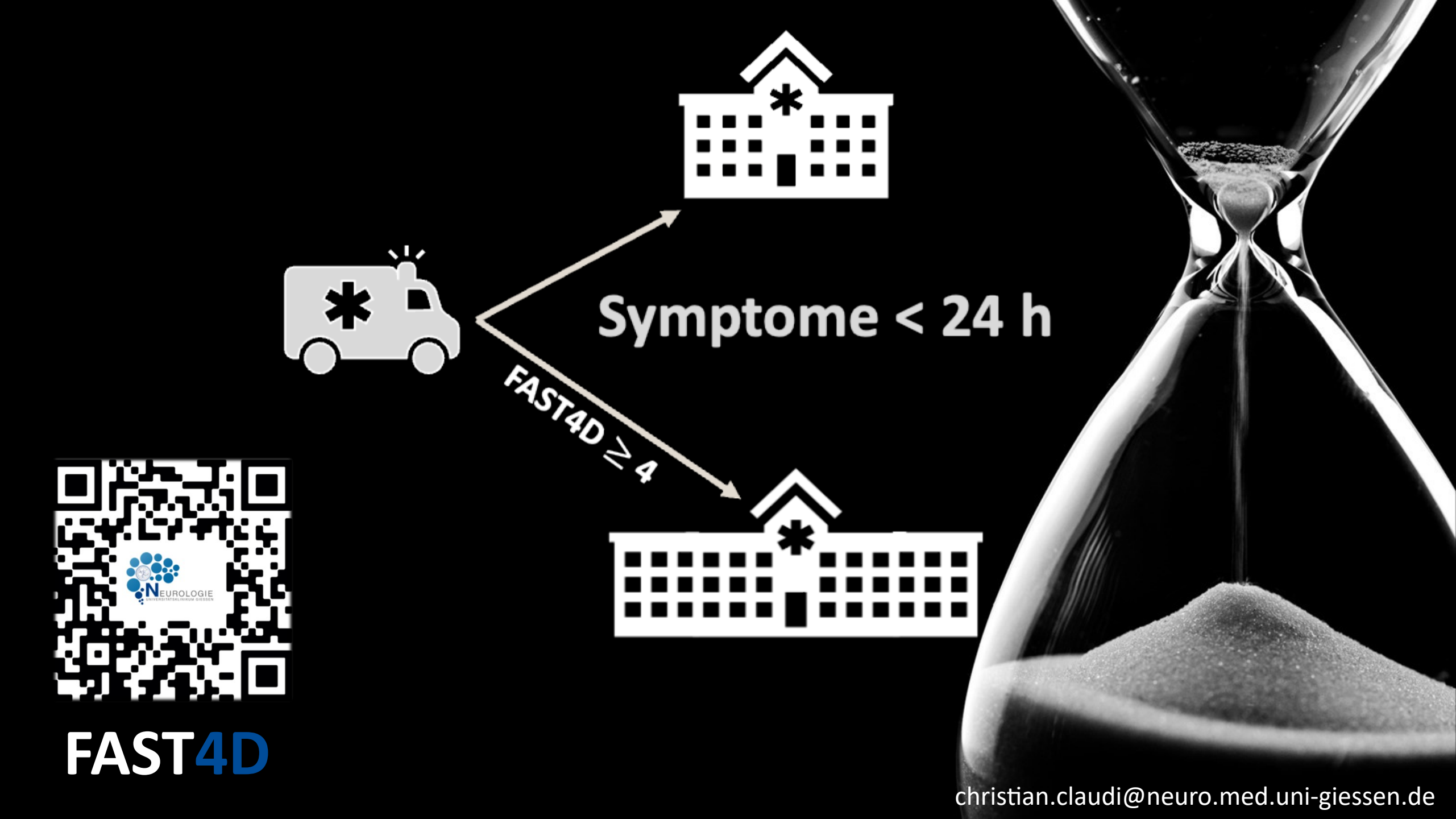
Im Auftrag und mit freundlicher Unterstützung des
Hessischen Ministeriums für Familie, Senioren, Sport, Gesundheit und Pflege



Neurologie

411	Anhaltender epileptischer Krampfanfall
412	Epileptischer Anfall (stattgehabt)
413	Kopf-/Gesichtsschmerz (bei DKZ 1 --> Neurochirurgie)
414	Vigilanzminderung /Koma (ohne Trauma)
415	Schwindel
419	Neurologischer Notfall, sonstiger
421	Schlaganfall / Blutung < 24 h oder unklar
422	Wie 421 von Einsatzstelle --> Thrombektomie
423	Schlaganfall / Blutung >24 h
425	diagnostizierter Cerebraler Gefäßverschluss zur Thrombektomie


Teamwork



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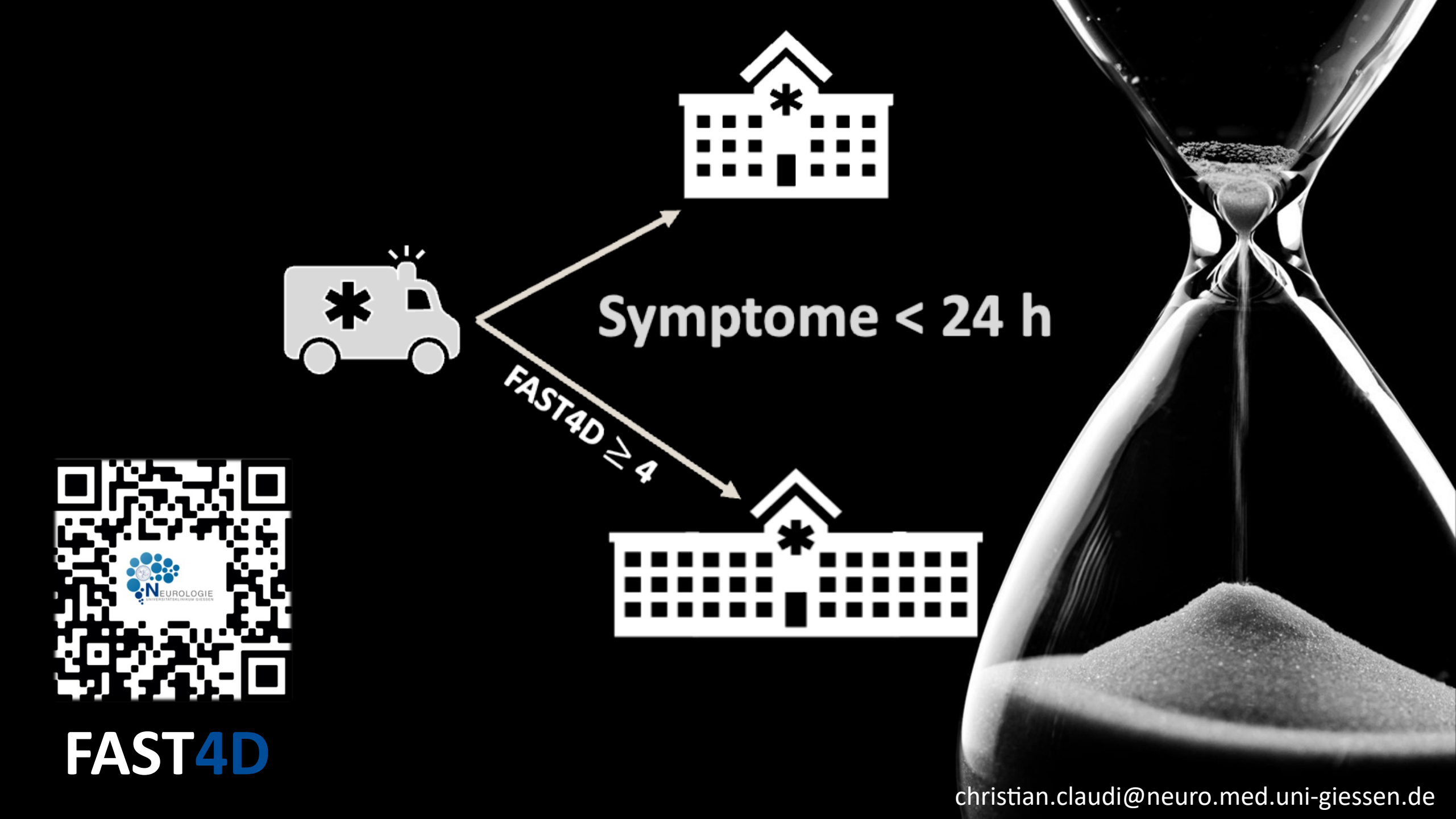

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