



MEDIZINISCHE
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INNSBRUCK



Vor und nach dem Schlaganfall

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Univ. Klinik für Neurologie
Medizinische Universität Innsbruck

Innsbruck, 18. März 2021



- Bedeutung des Schlaganfalls
- Schlaganfall erkennen und richtig handeln
- Therapie des Schlaganfalls
- Der Tiroler Schlaganfallpfad
- Vorbeugen – wie halte ich meine Gefäße jung
- Neues zum Schlaganfall

- **Bedeutung des Schlaganfalls**
- Schlaganfall erkennen und richtig handeln
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ORIGINAL ARTICLE

Global, Regional, and Country-Specific Lifetime Risks of Stroke, 1990 and 2016

The GBD 2016 Lifetime Risk of Stroke Collaborators

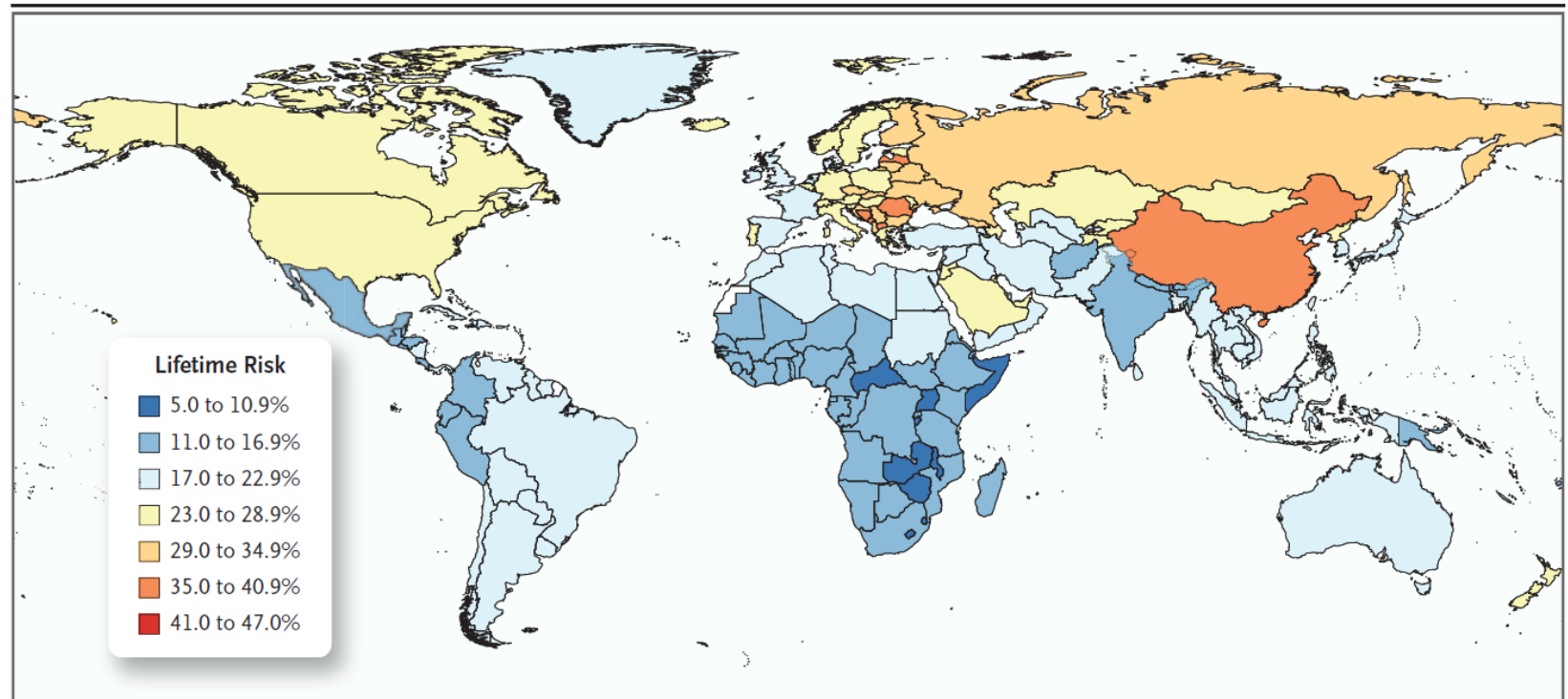
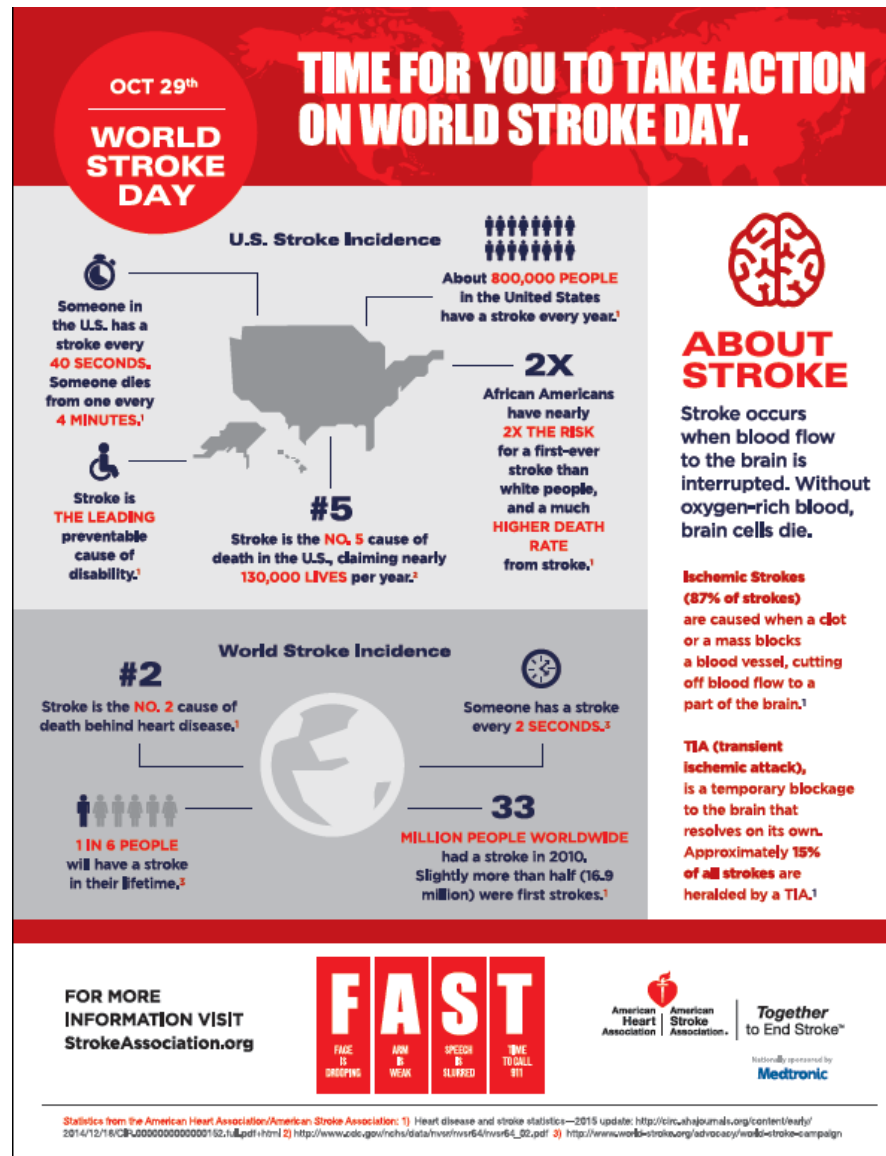
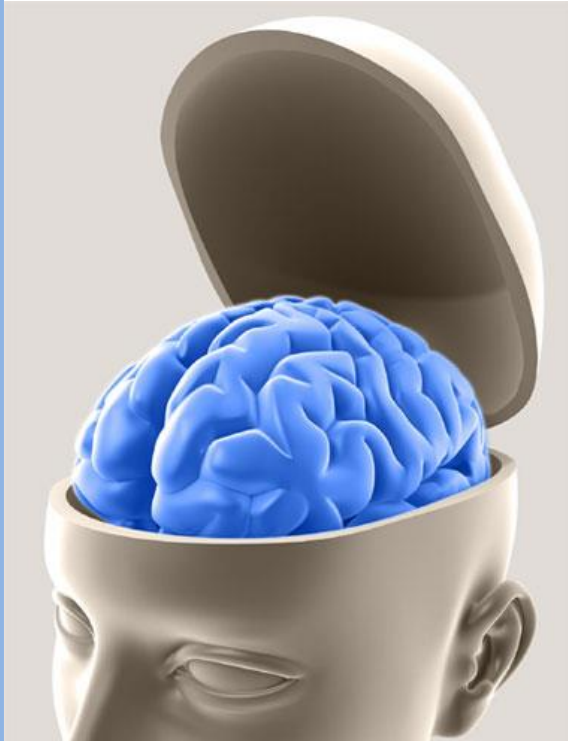


Figure 1. Global Lifetime Risk of Stroke in Both Sexes Combined, 2016.

Bedeutung des Schlaganfalls

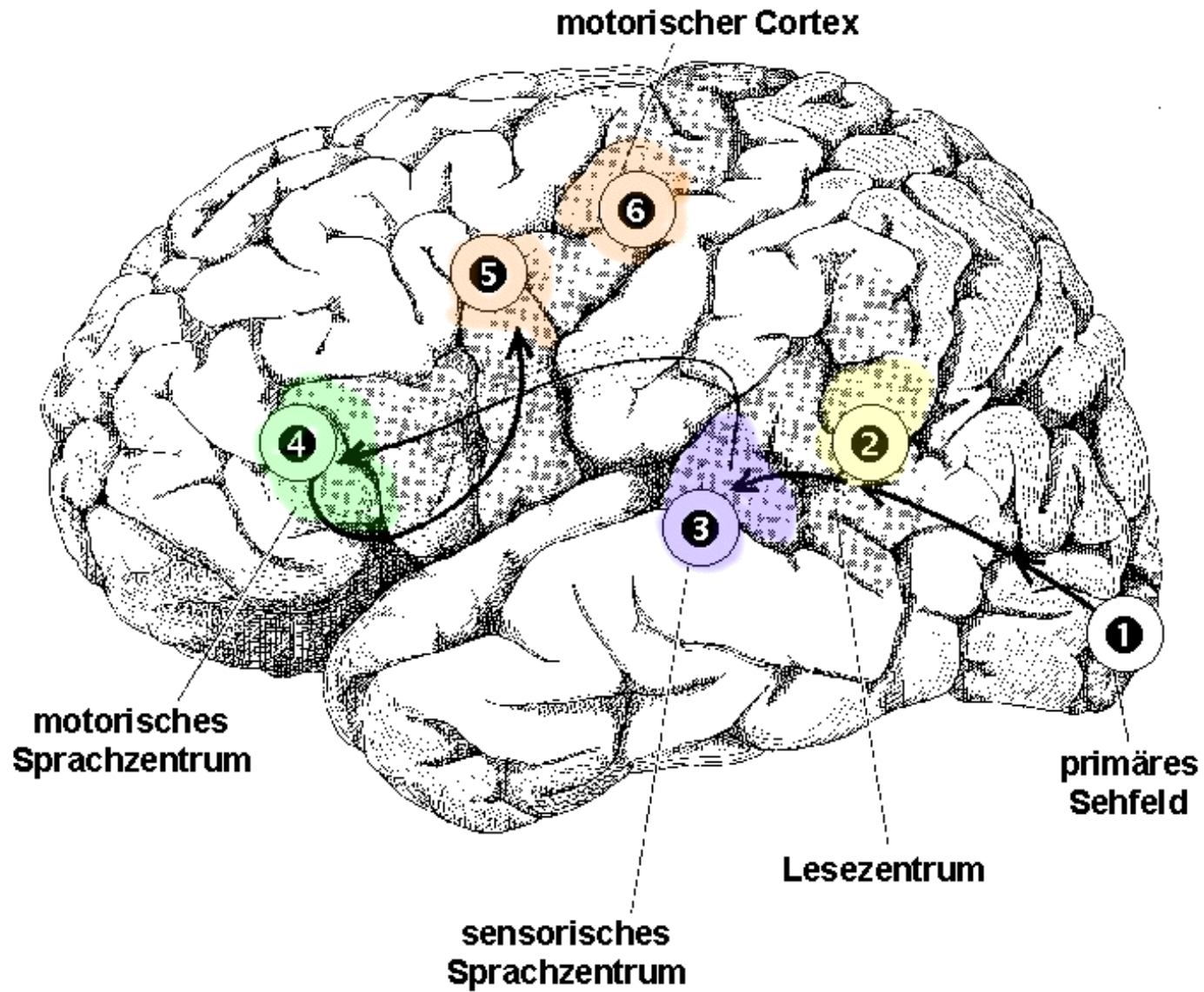




- 10 Mrd. Nervenzellen
- Hoher Sauerstoffbedarf
- Gewicht: ca. 1300g (ca. 2 % des KG)
- 15 % des Herzminutenvolumens

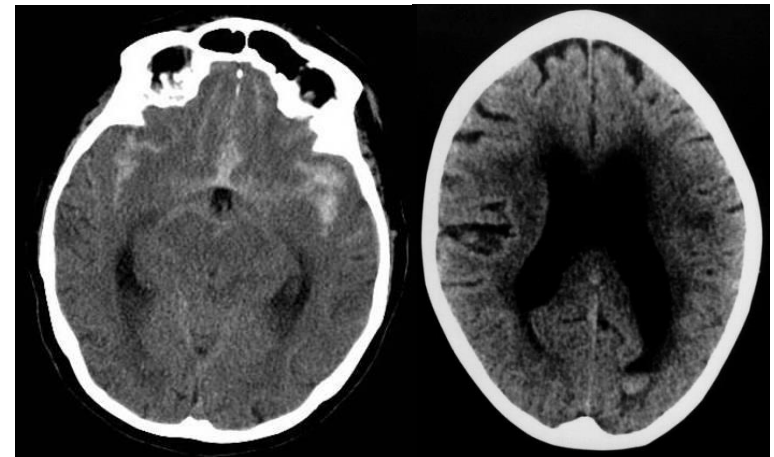
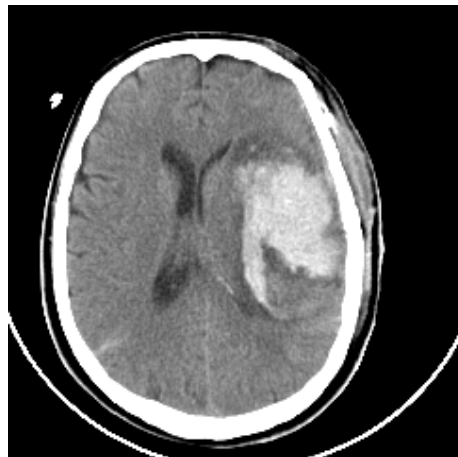


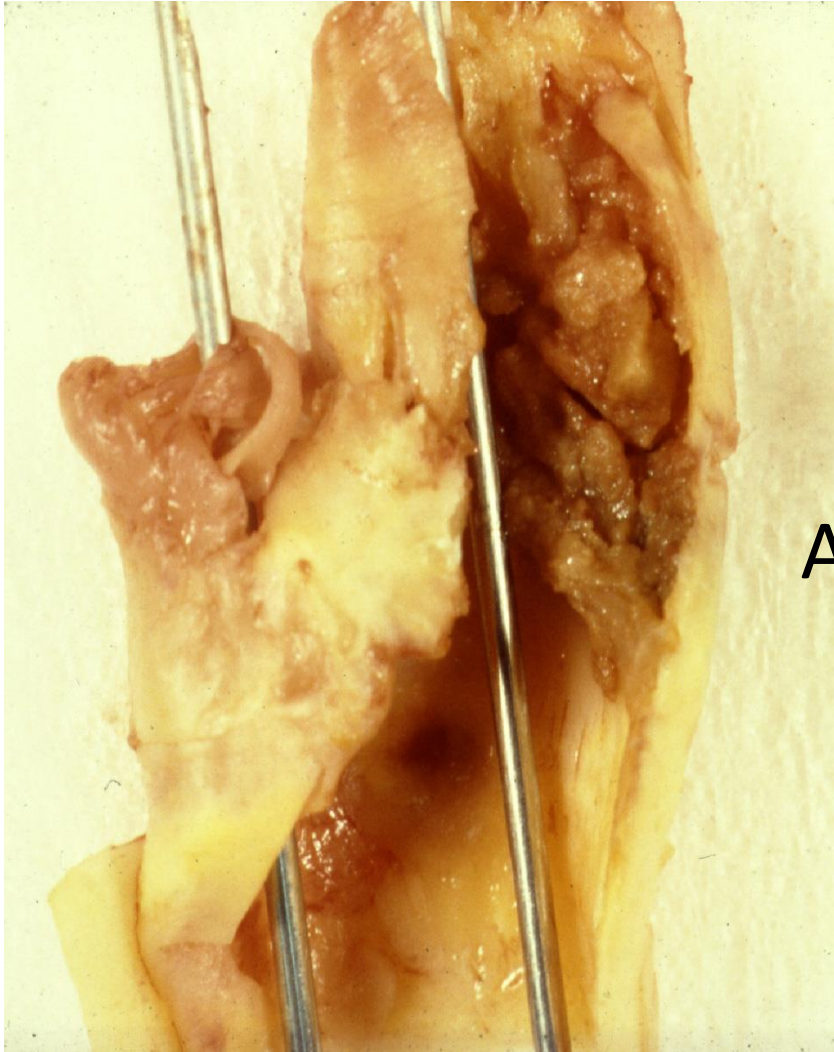
Bedeutung des Schlaganfalls



Bedeutung des Schlaganfalls

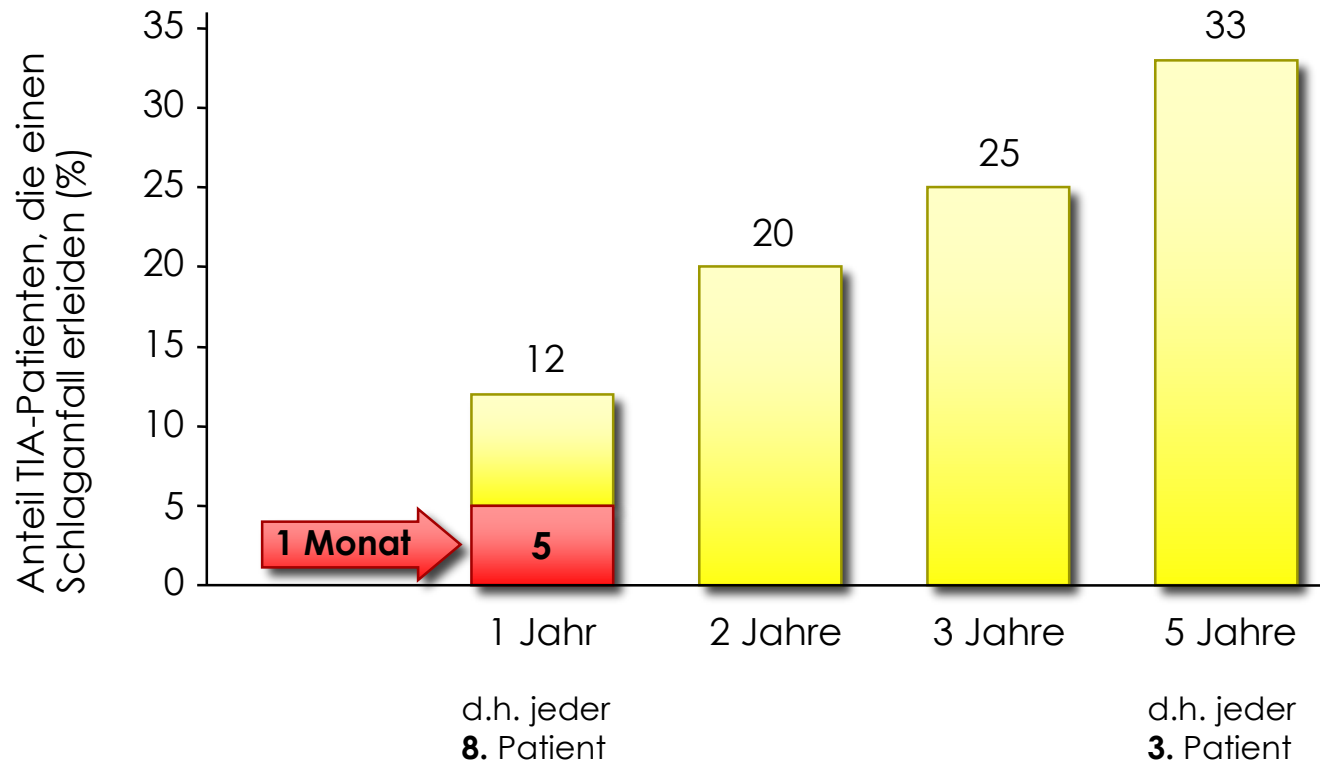
- Durchblutungsstörung (Infarkt) 85%
- Gehirnblutung 10%
- Subarachnoidalblutung (SAB) 5%





Arteriosklerose

Bedeutung des Schlaganfalls - TIA



- Bedeutung des Schlaganfalls
- Schlaganfall erkennen und richtig handeln
- Therapie des Schlaganfalls
- Der Tiroler Schlaganfallpfad
- Vorbeugen – wie halte ich meine Gefäße jung

Schlaganfall ist Notfall

Jede Minute zählt!



Schlaganfall Symptome

Plötzliches Auftreten von:



Sehstörungen



Lähmung auf einer
Körperseite



Sprachschwierigkeiten



plötzlicher heftiger
Kopfschmerzen



hängender
Mundwinkel



Schwindel

Bei derartigen Symptomen umgehend den Notruf 144 wählen!

Sie werden durch die Mitarbeiter der Notrufzentrale in den Erste-Hilfe-Maßnahmen angeleitet!
Auch bei rascher Rückbildung der Beschwerden, suchen Sie umgehend einen Arzt auf!

www.schlaganfall-tirol.info

www.schlaganfall-tirol.at

Schlaganfall Symptome

Plötzliches Auftreten von:



Sehstörungen



Lähmung auf einer Körperseite



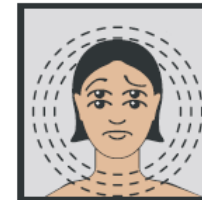
Sprachschwierigkeiten



plötzlicher heftiger
Kopfschmerzen



hängender
Mundwinkel



Schwindel

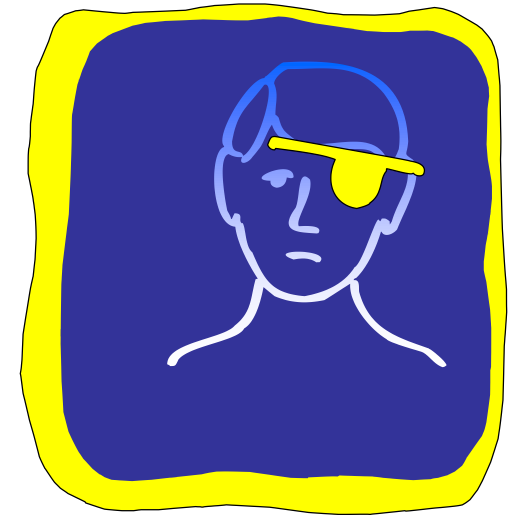
**Bei derartigen Symptomen umgehend den
Notruf 144 wählen!**

Sie werden durch die Mitarbeiter der Notrufzentrale in den Erste-Hilfe-Maßnahmen angeleitet!

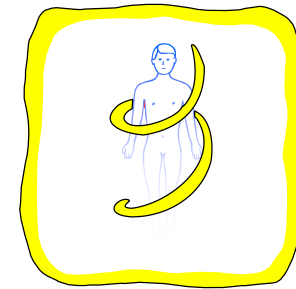
Auch bei rascher Rückbildung der Beschwerden, suchen Sie umgehend einen Arzt auf!



Ausfall des Gesichtsfeldes



Erblindung eines Auges



Gleichgewichtsstörung
Drehschwindel, Doppelbilder



Schlaganfall = Notfall

Zeit = Hirn !!

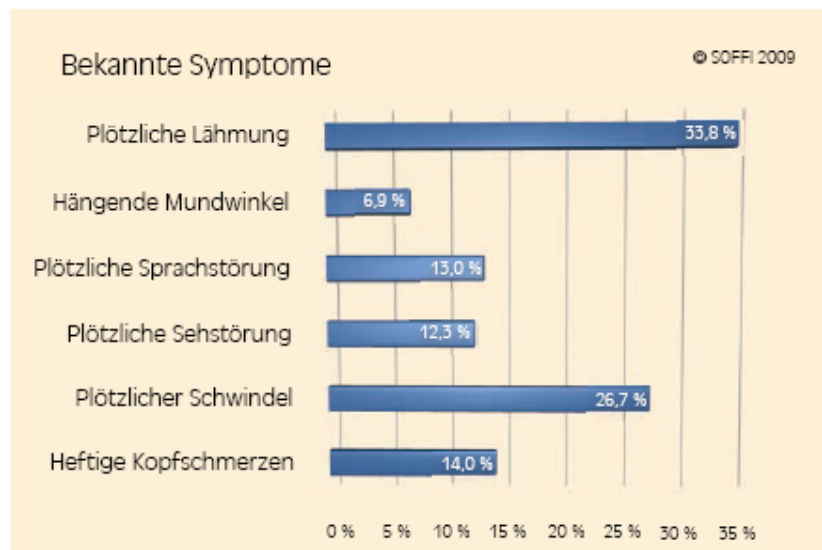
**Notruf
144**

Schlaganfall kein Notfall?

Schlaganfall erkennen und richtig handeln



Schlaganfall erkennen und richtig handeln

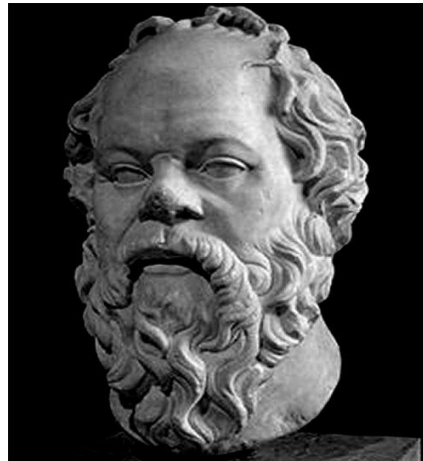


Bekannte Symptome	18-34	35-49	50-64	65-79	>80	Gesamt
Plötzliche Lähmung	38,39%	35,77%	39,08%	19,05%	21,74%	33,82%
Hängende Mundwinkel	9,82%	4,88%	10,34%	3,17%	0,00%	6,86%
Plötzliche Sprachstörung	13,39%	13,82%	12,64%	12,70%	8,70%	12,99%
Plötzliche Sehstörung	9,82%	16,26%	12,64%	11,11%	4,35%	12,25%
Plötzlicher Schwindel	16,96%	29,27%	31,03%	34,92%	21,74%	26,72%
Heftige Kopfschmerzen	17,86%	12,20%	16,09%	11,11%	4,35%	13,97%

Bekannte Symptome	männlich	weiblich	Gesamt
Plötzliche Lähmung	35,57%	32,24%	33,82%
Hängende Mundwinkel	5,15%	8,41%	6,86%
Plötzliche Sprachstörung	13,40%	12,62%	12,99%
Plötzliche Sehstörung	13,40%	11,21%	12,25%
Plötzlicher Schwindel	22,16%	30,84%	26,72%
Heftige Kopfschmerzen	11,34%	16,36%	13,97%

- Bedeutung des Schlaganfalls
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„Ein schwerer Schlaganfall ist nicht, ein leichter Schlaganfall ist schwer zu behandeln“.



SOKRATES

Intravenöse Thrombolyse

Endovaskuläre Schlaganfalltherapie

Stroke Unit & Co

Frühe Sekundärprävention

Frühe Mobilisierung und frühe Rehabilitation

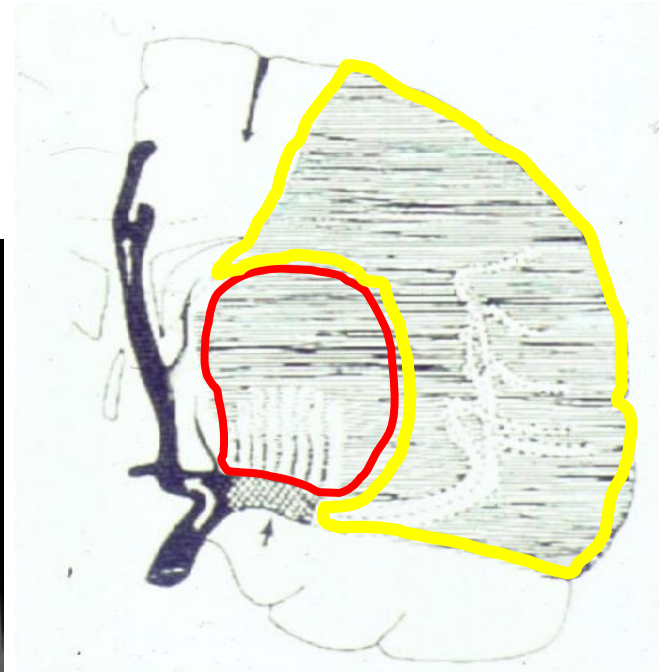
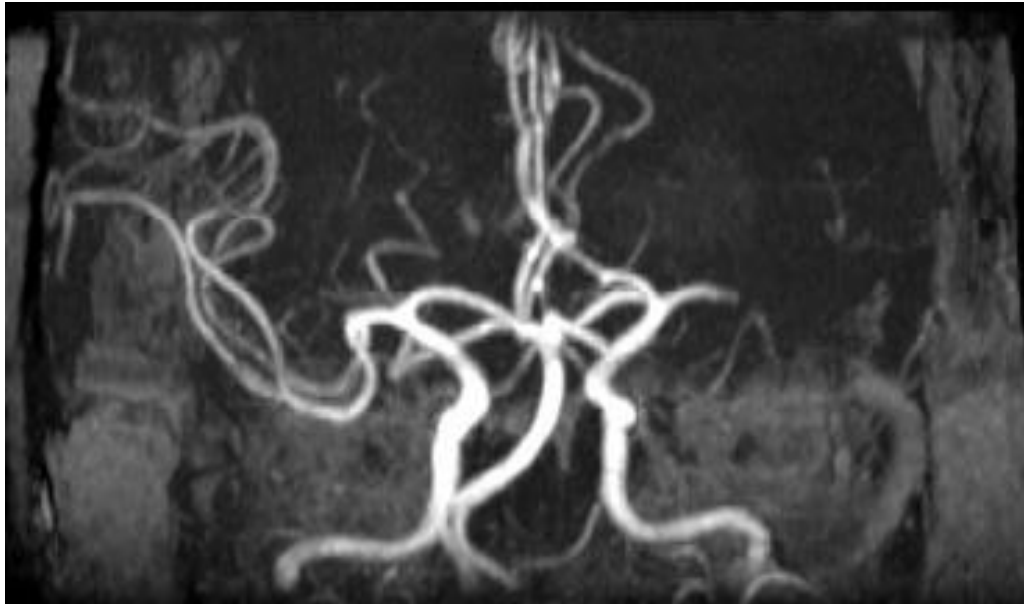
Vermeidung von Sekundärkomplikationen

Netzwerke

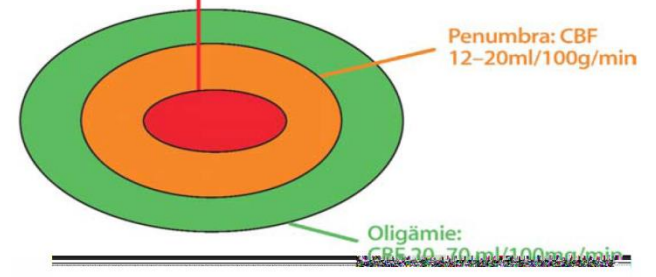
Qualitätskontrolle und Outcome Erhebung

Rehabilitation und Disease Management

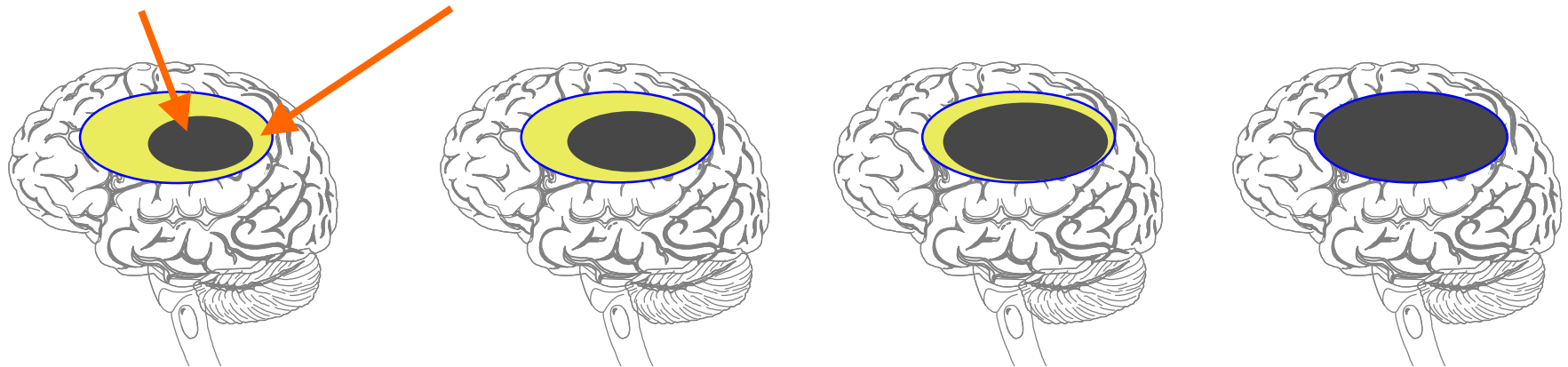




Infarktkern: CBF < 12 ml/100g/min



Infarkt Kern Penumbra = **gefährdetes Gehirngewebe** („tissue at risk“)



0 h

1 h

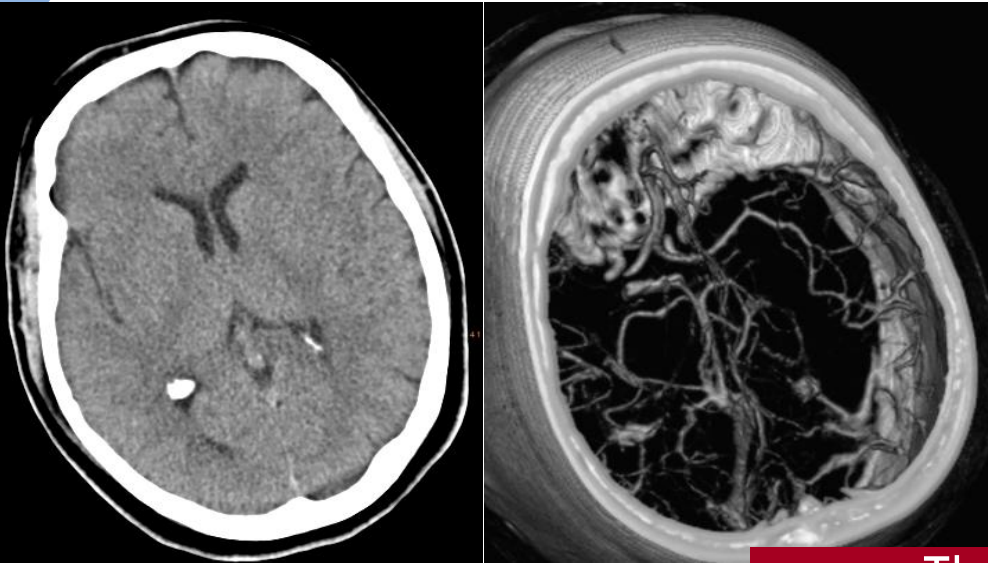
8 h

8-12 h

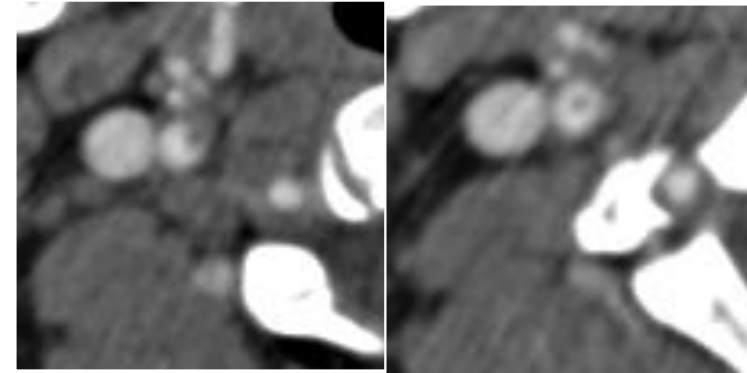


Prähospitales
Management

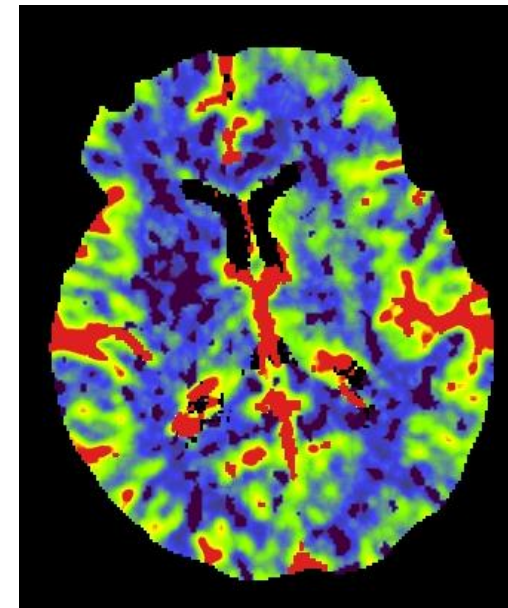
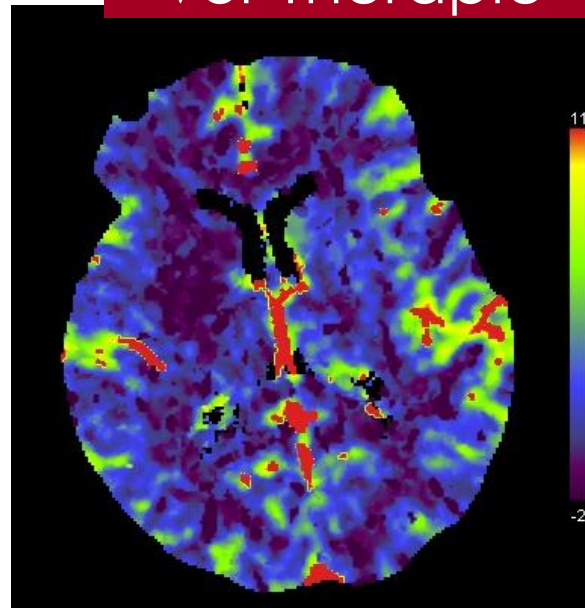
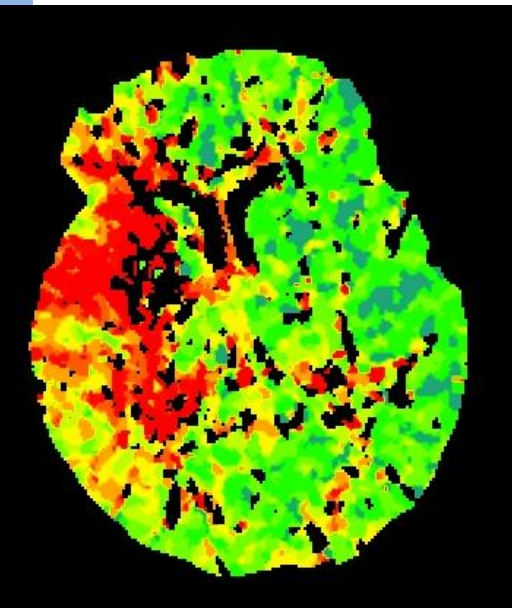
Akut-Therapie

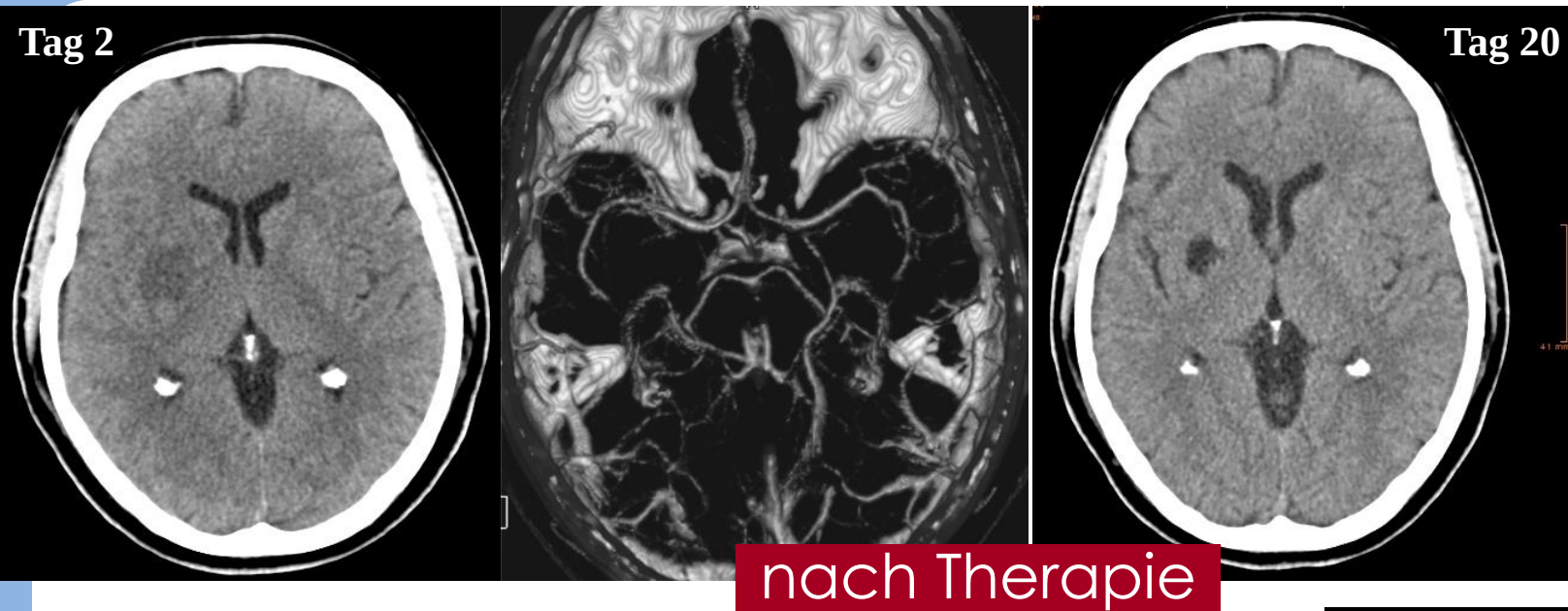


Tag 1: NIH-Punkte 18 (0-42)
Rankin 4 (0-6), Barthel (10/100)

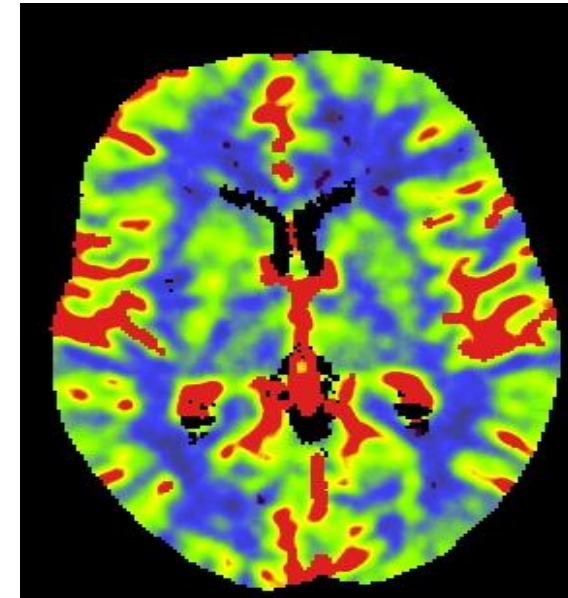
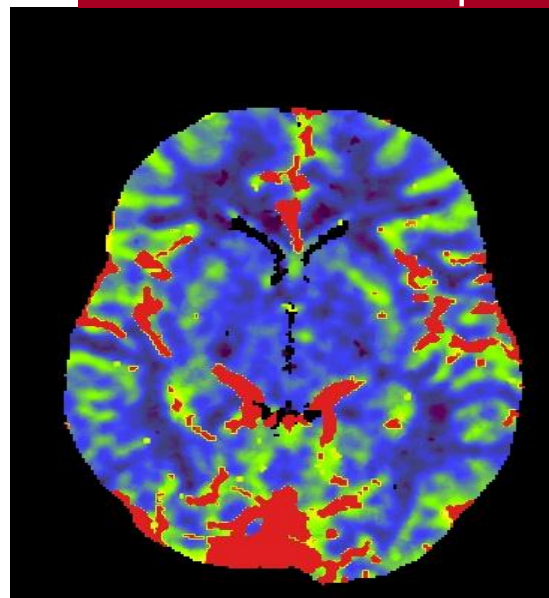
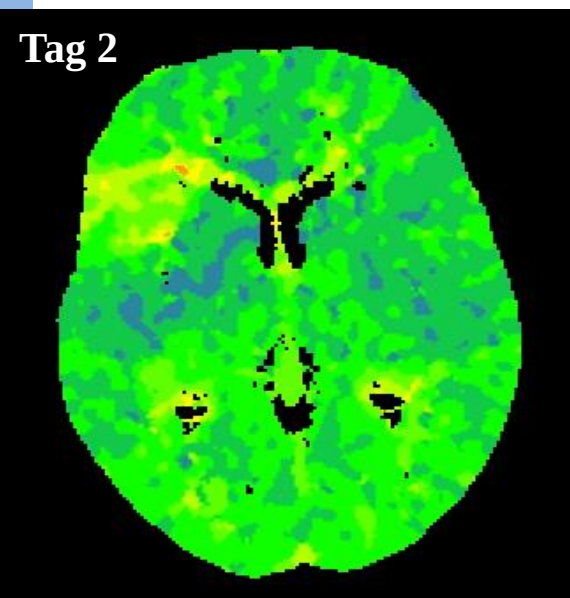


vor Therapie

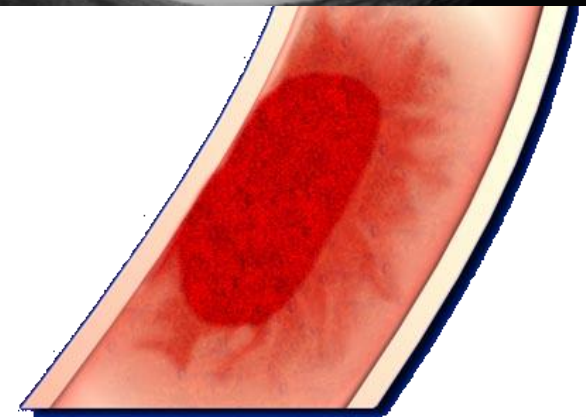
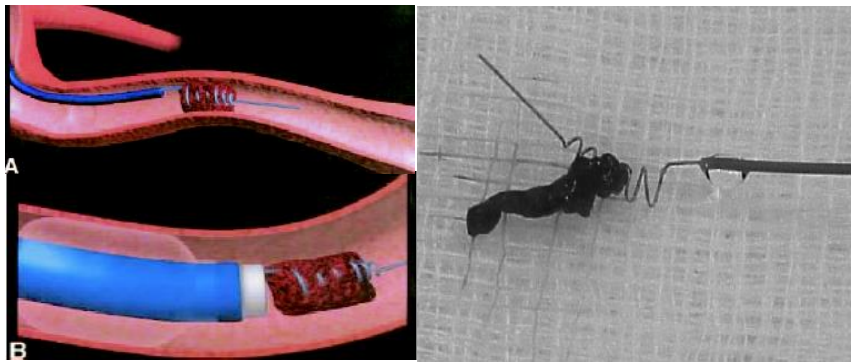
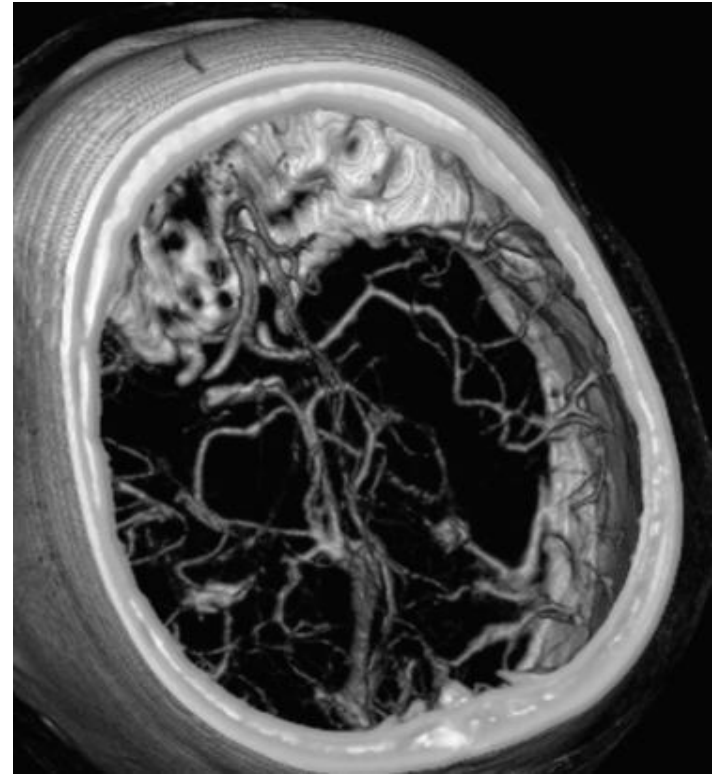




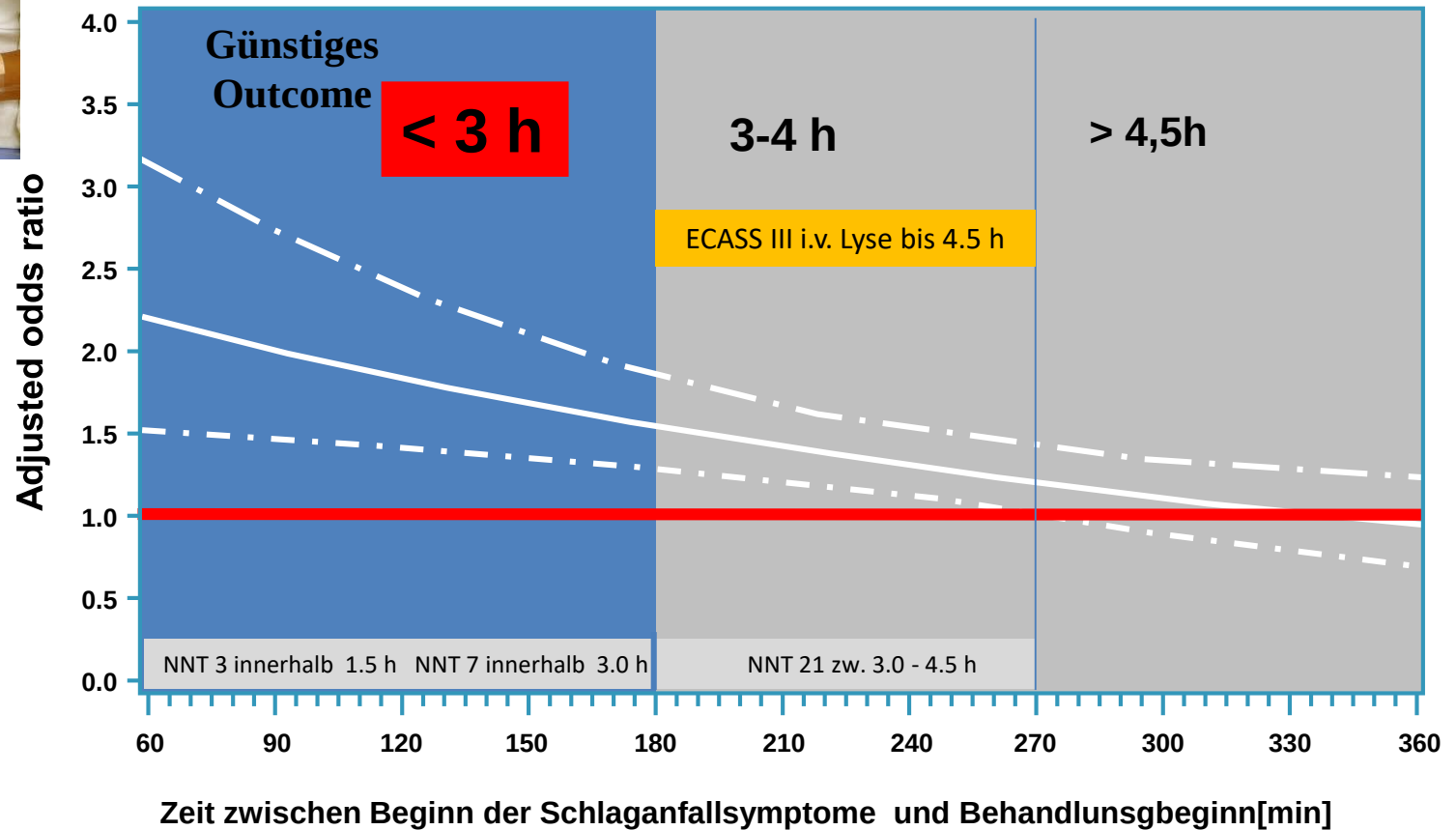
NIH Score: 0
Rankin: 0
Barthel: 100



- Gerinnselauflösung durch Medikamente
- Kathetergesteuerte Gerinnselektfernung,



i.v. Thrombolyse Zeitfenster

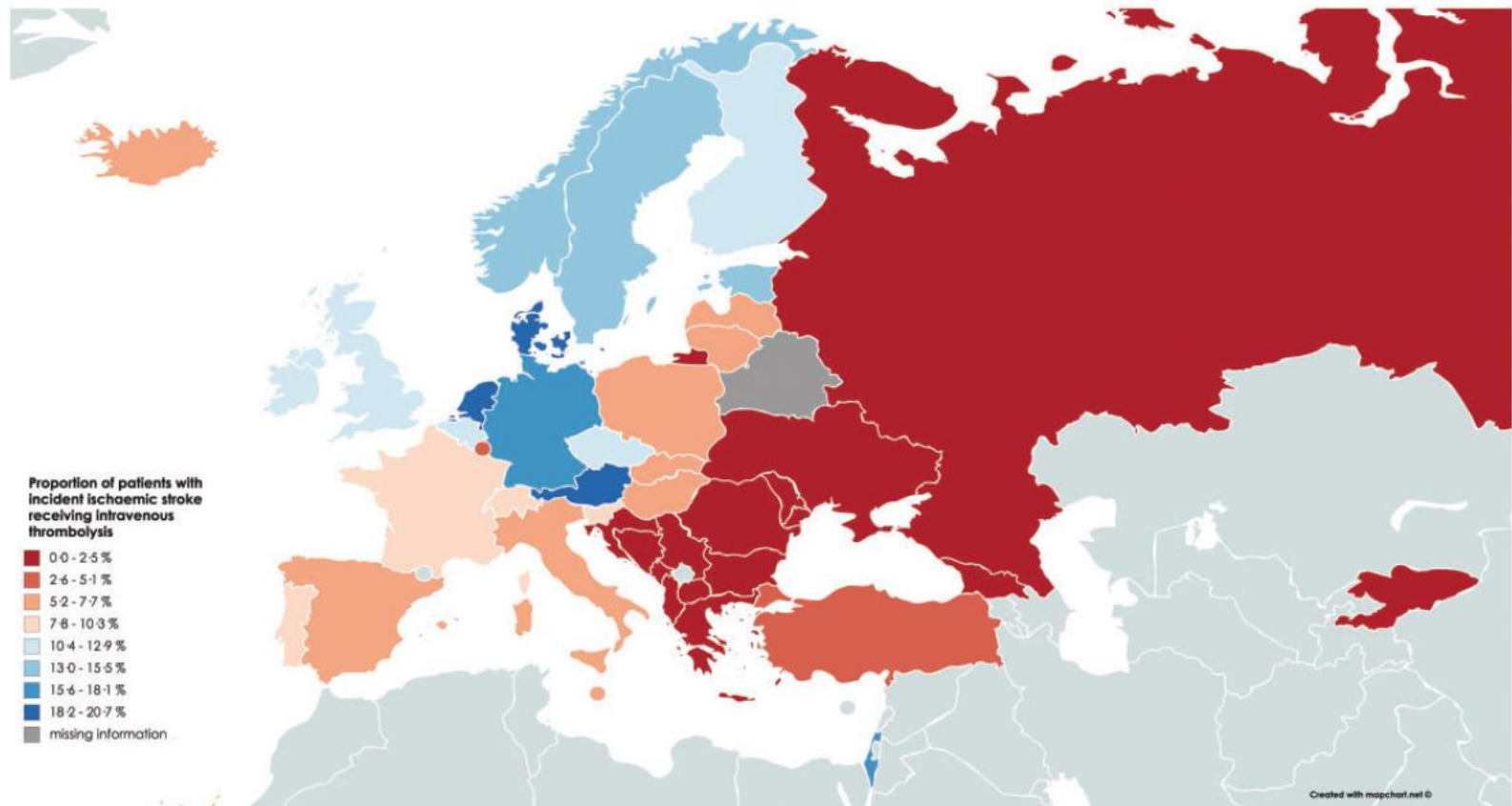


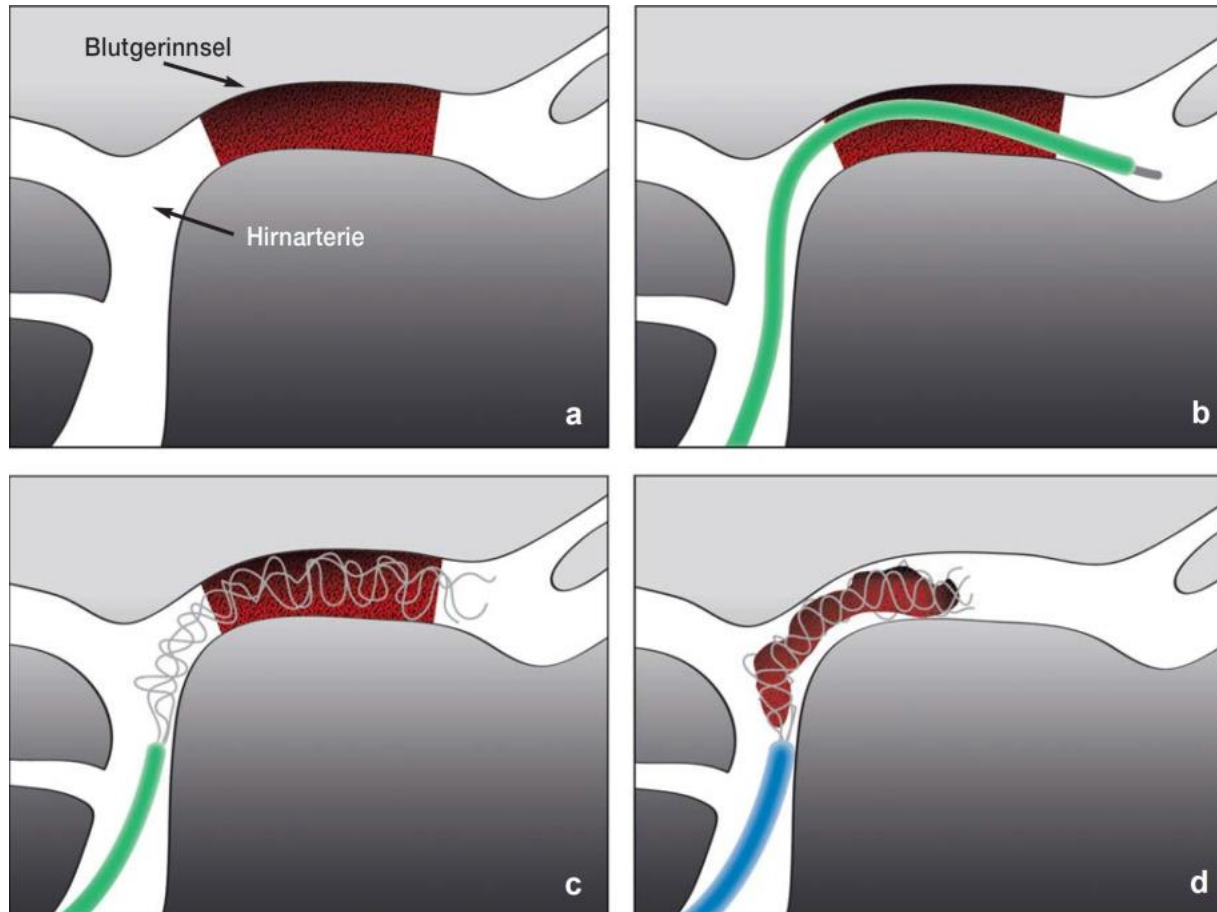
Access to and delivery of acute ischaemic stroke treatments: A survey of national scientific societies and stroke experts in 44 European countries

European Stroke Journal
0(0) 1–16
© European Stroke Organisation
2018

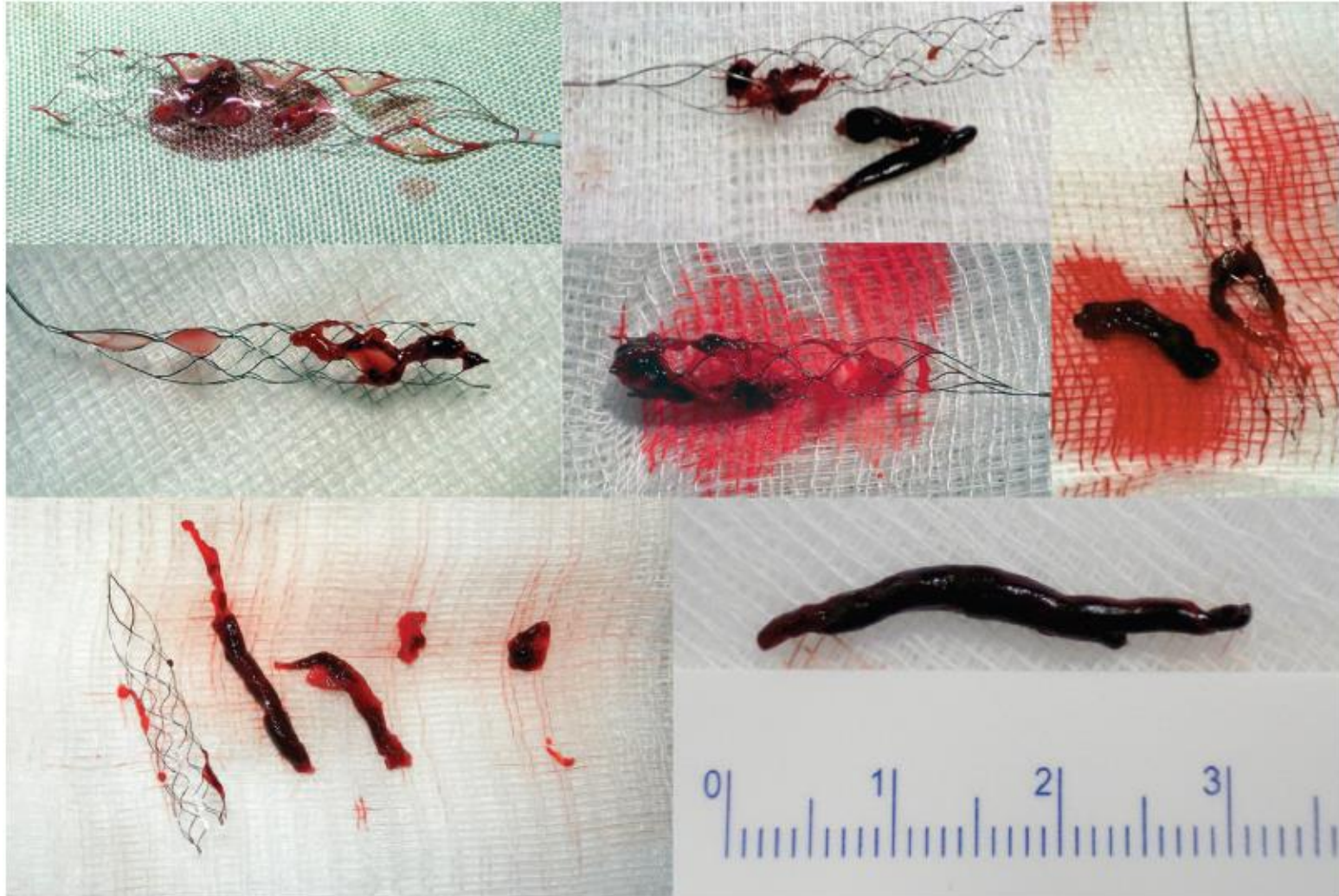


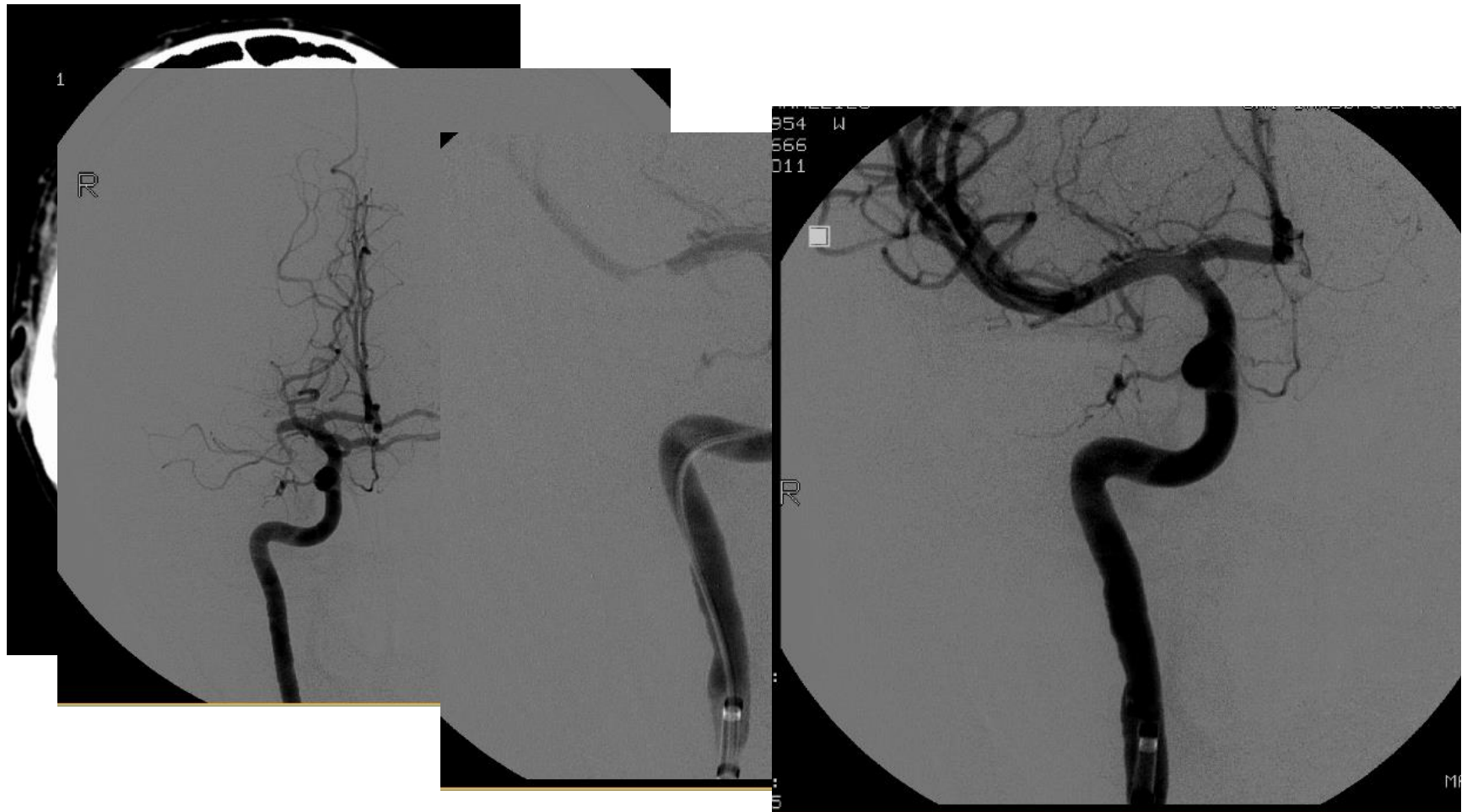
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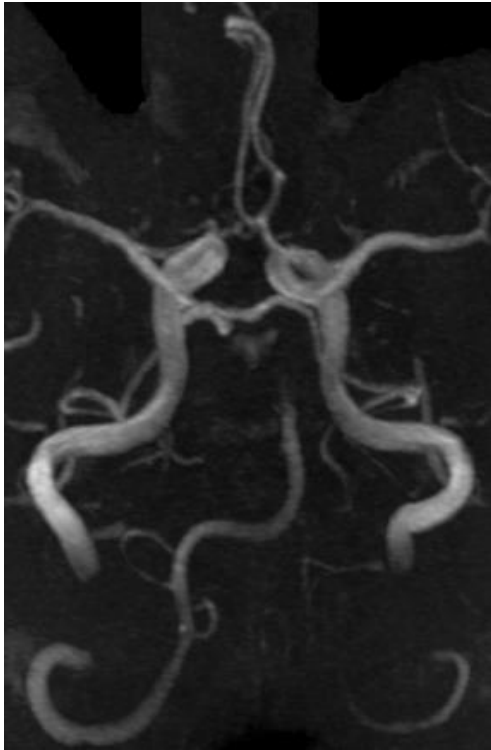




Schlaganfalltherapie heute - Endovaskuläre Therapie





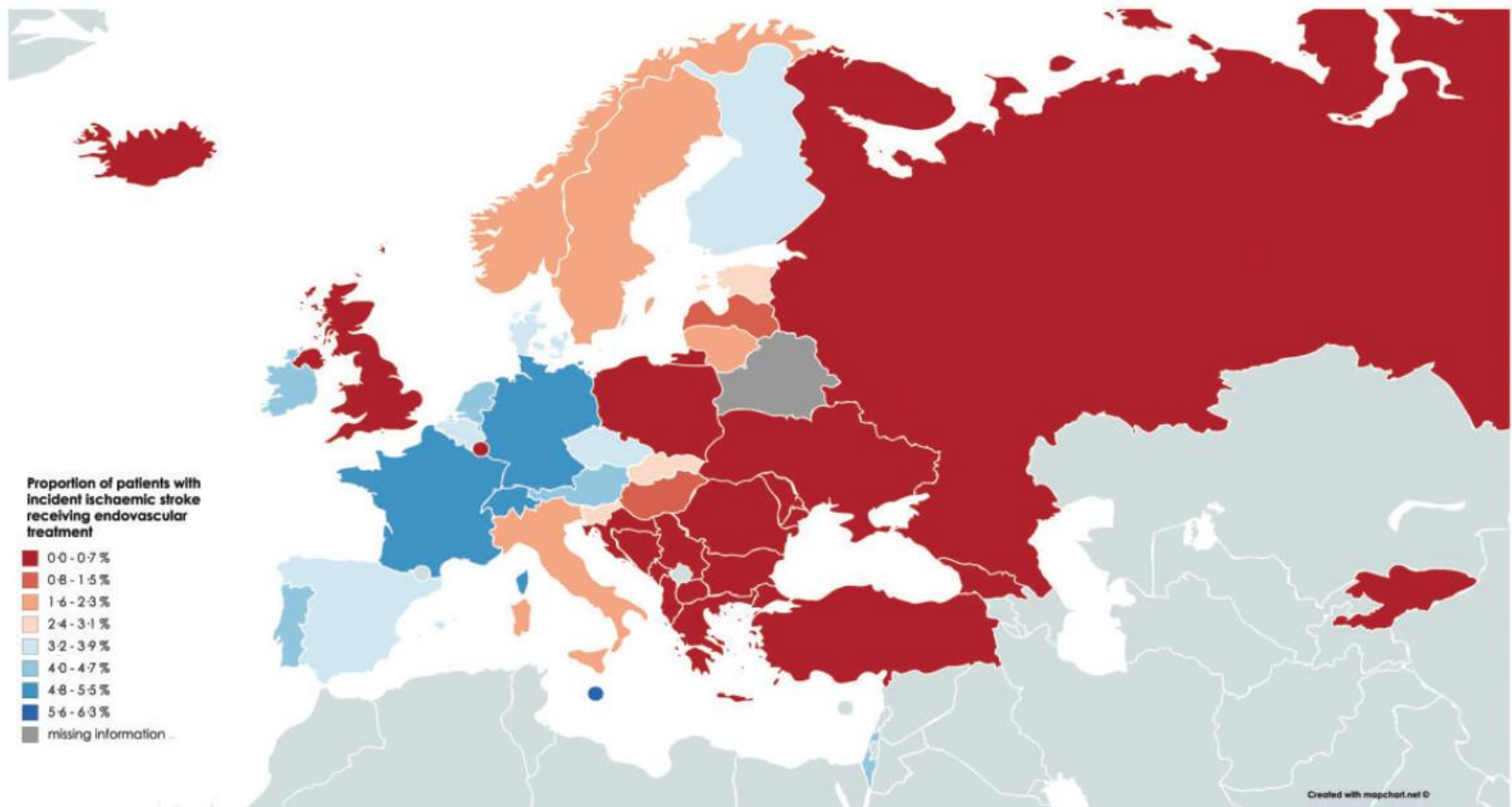


Access to and delivery of acute ischaemic stroke treatments: A survey of national scientific societies and stroke experts in 44 European countries

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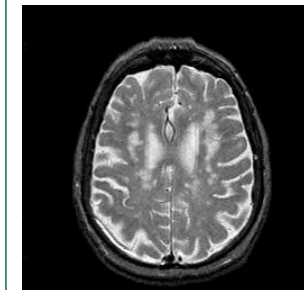
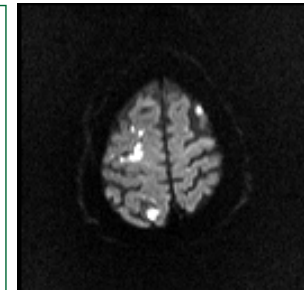
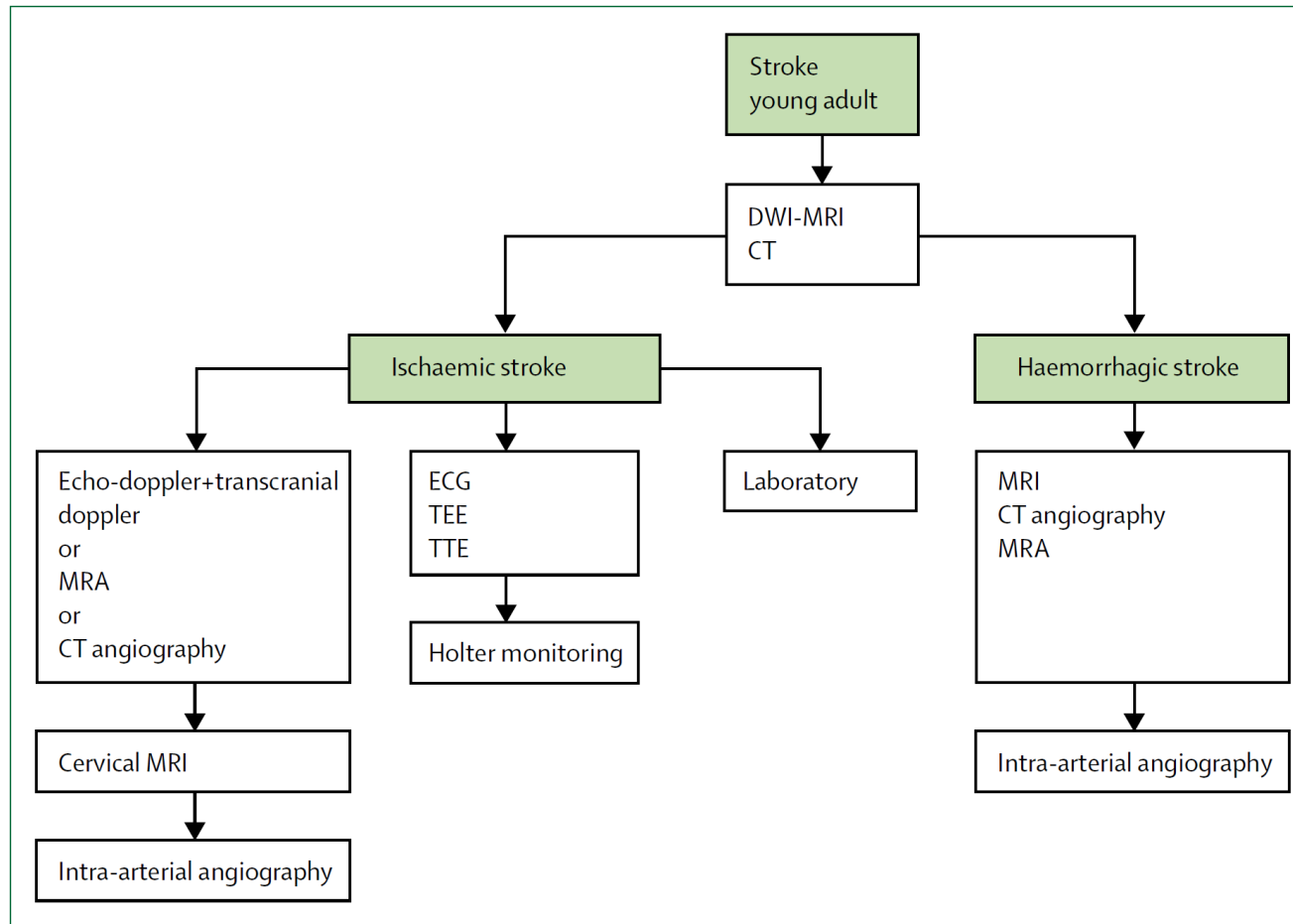
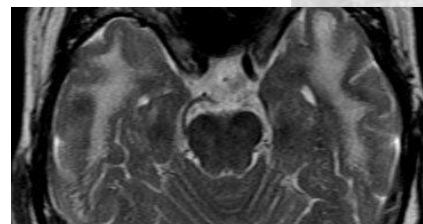
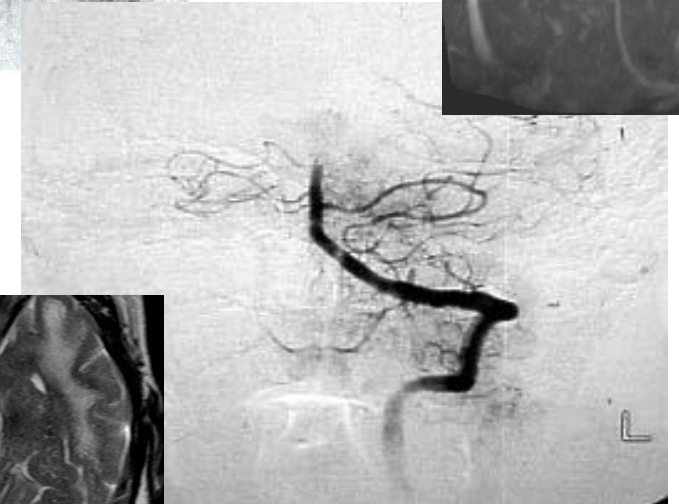
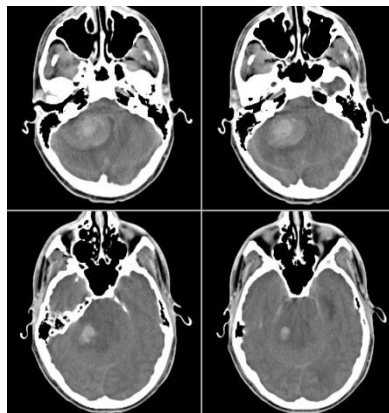
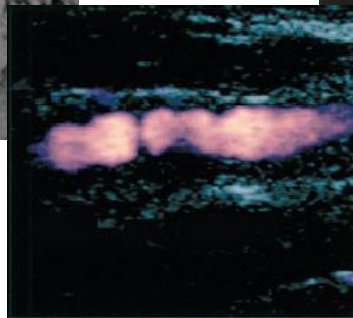
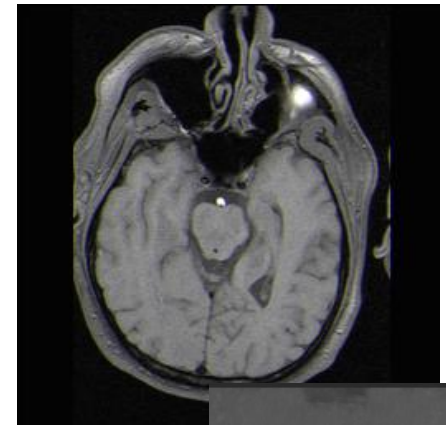
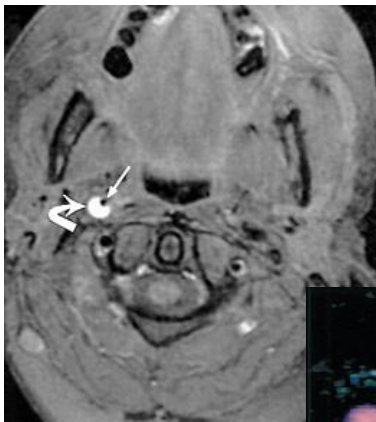
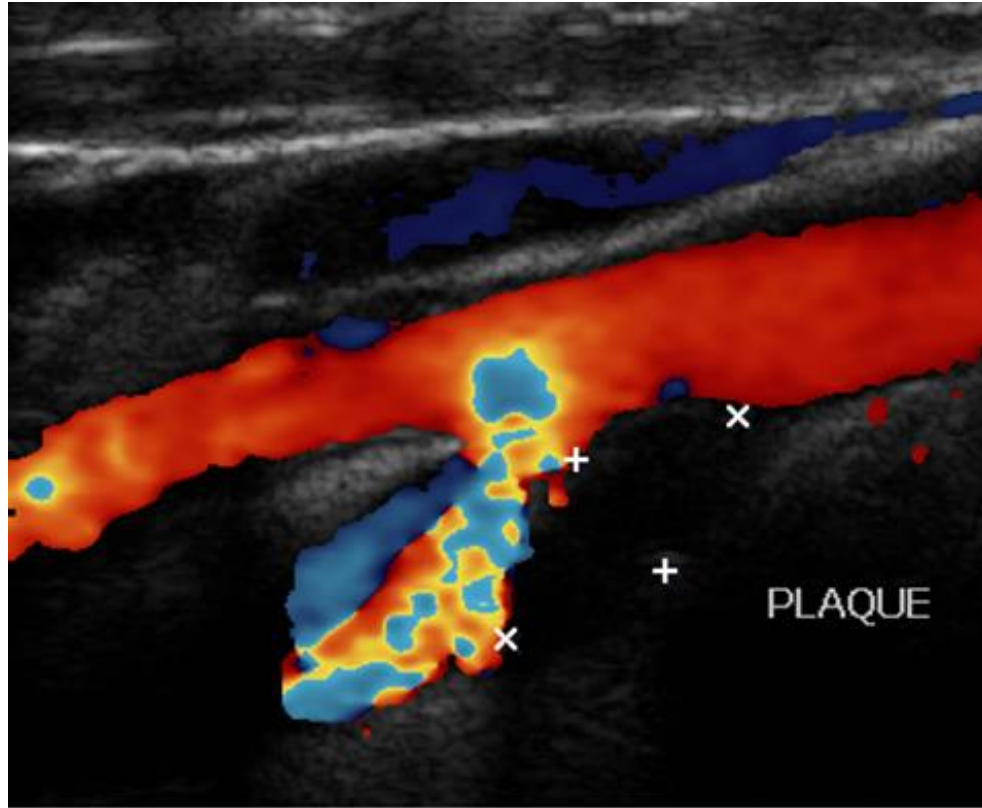
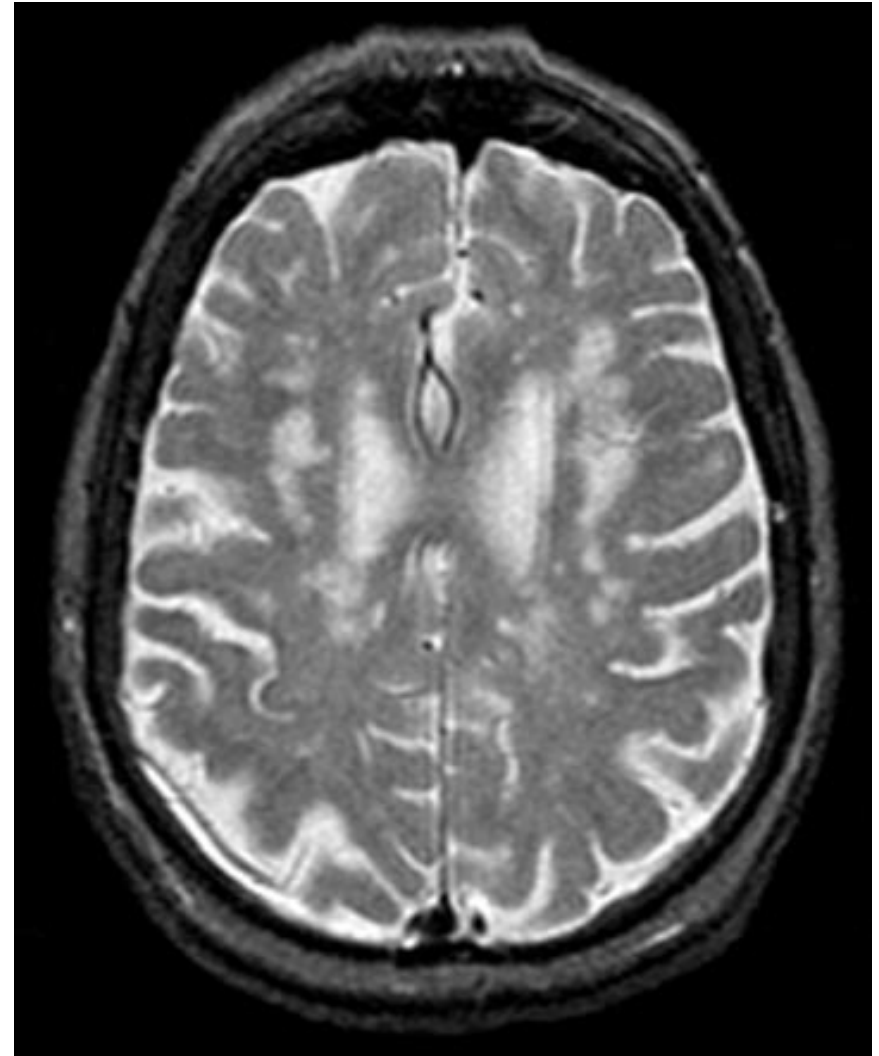


Figure 1: Flow chart for the diagnosis of ischaemic stroke to identify arterial and cardiac causes





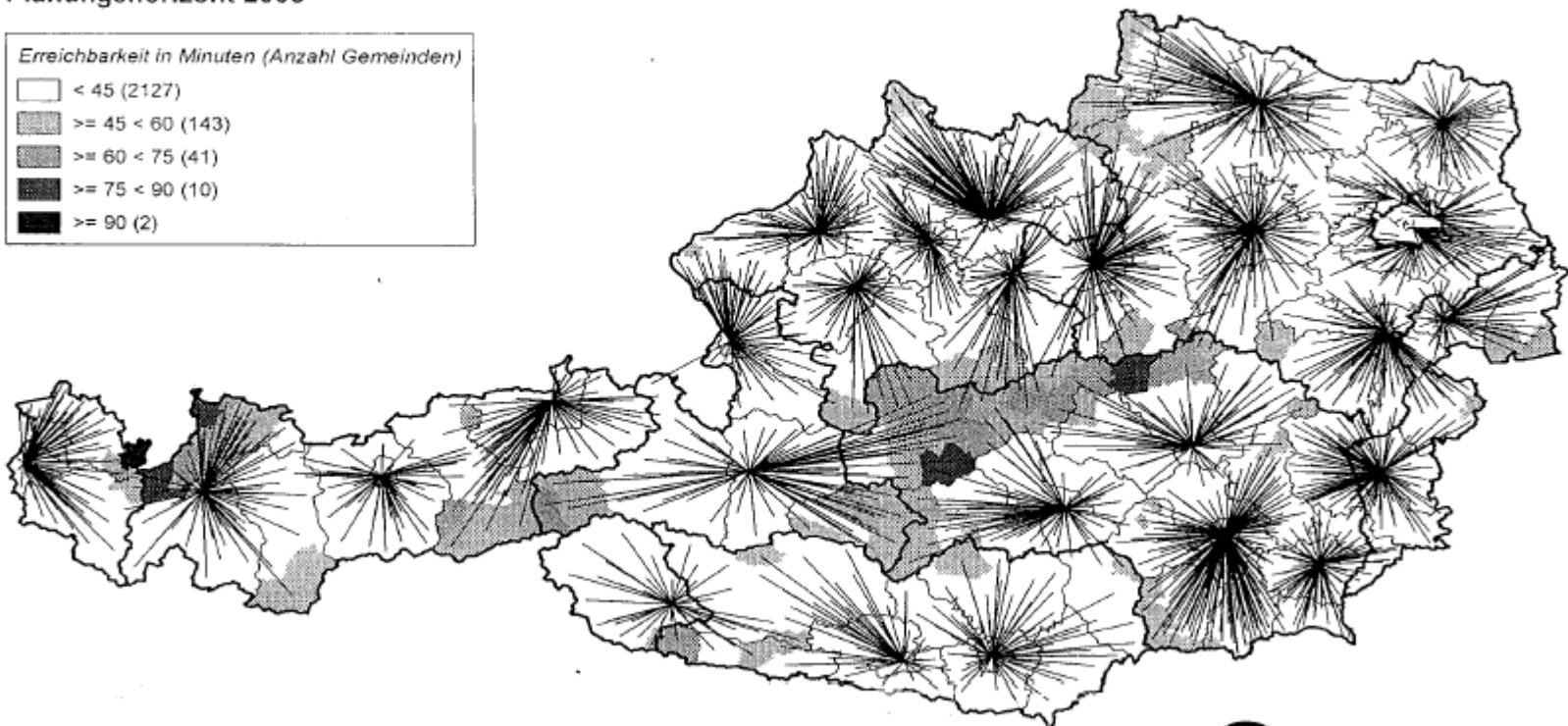
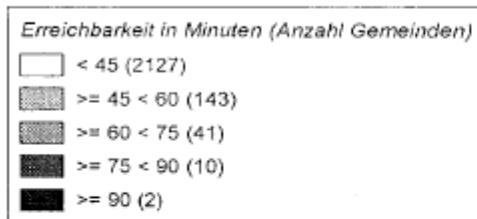


Schlaganfalltherapie heute - Schlaganfalleinheiten



Standorte für Einheiten zur akuten Schlaganfallbehandlung (Stroke Unit) und Erreichbarkeiten

Planungshorizont 2005



Körperliche Rehabilitation

Physiotherapie (Krankengymnastik)

Ergotherapie (Beschäftigungstherapie)

Logopädie (Sprachtherapie)

Psychische Rehabilitation

Selbstständigkeit wiedergewinnen

Teilnahme an einer Selbsthilfegruppe



Intravenöse Thrombolyse

Endovaskuläre Schlaganfalltherapie

Stroke Unit & Co

Frühe Sekundärprävention

Frühe Mobilisierung und frühe Rehabilitation

Vermeidung von Sekundärkomplikationen

Netzwerke

Qualitätskontrolle und Outcome Erhebung

Rehabilitation und Disease Management

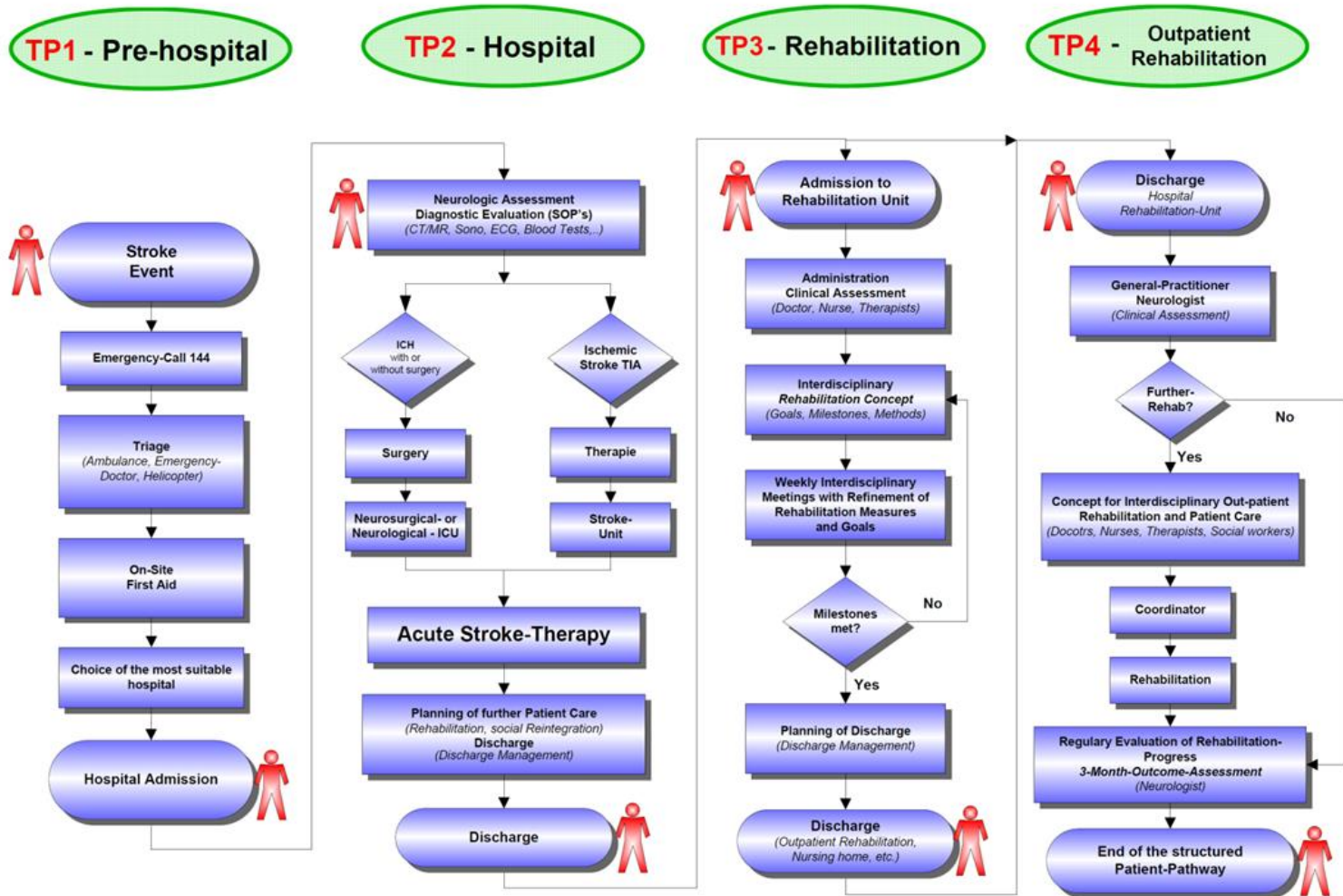


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Der Tiroler Schlaganfallpfad



Der Tiroler Schlaganfallpfad



Der Tiroler Schlagenfallpfad



Helicopter Transport of Stroke Patients and Its Influence on Thrombolysis Rates

Data From the Austrian Stroke Unit Registry

Veronika Reiner-Deitemyer, MD; Yvonne Teuschl, PhD; Karl Matz, MD; Martina Reiter, MD; Raoul Eckhardt, MD; Leonhard Seyfang, MSc; Claudia Tatschl, MD; Michael Brainin, MD; for the Austrian Stroke Unit Registry Collaborators

Background and Purpose—Acute stroke management requires minimization of prehospital time. This study addresses the value of helicopter transport compared with other means of transportation to a stroke unit and compares their rates of thrombolysis on a nationwide basis.

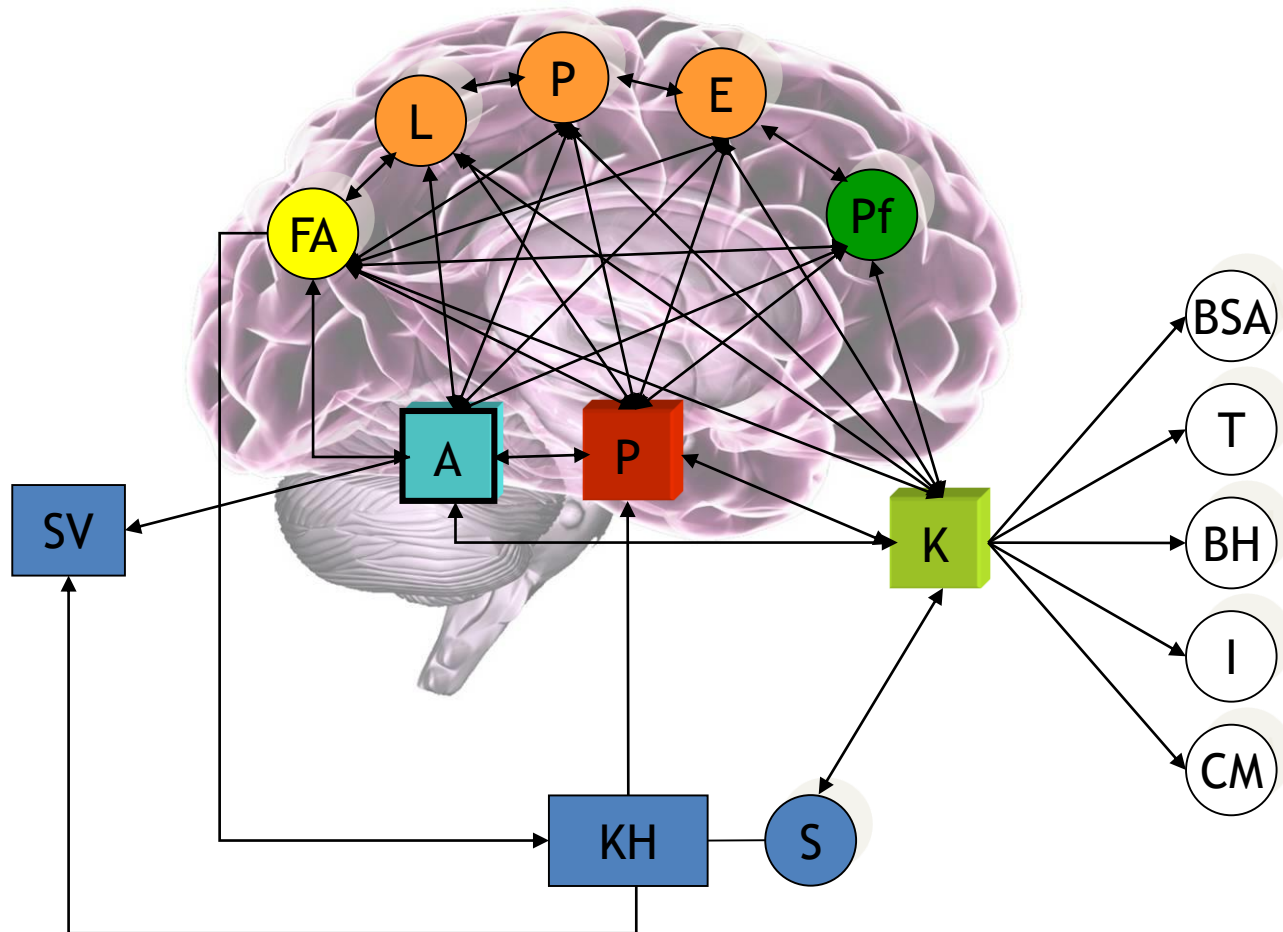
Methods—Prospective data collection and prespecified evaluation of data from 32 stroke units between 2003 and 2009 were used. We distinguished between patients transported either directly to a stroke unit or transferred indirectly via a peripheral hospital. Thus, there were 6 transport groups: helicopter emergency service (HEMS) direct and indirect, ambulance accompanied by an emergency physician direct and indirect, and ambulance without physician direct and indirect. Demographic and clinical factors, time delays, and rates of thrombolysis of patients transported by helicopter were compared with factors of patients transported otherwise.

Results—Of 21 712 ischemic stroke patients, 905 patients (4.1%) were transported by helicopter. Of these, 752 patients (3.4%) were transported by direct HEMS, and 153 patients (0.7%) were transported by indirect HEMS. Thrombolysis rates were highest for HEMS (24% direct, 29% indirect) transport, followed by ambulance accompanied by an emergency physician (18% direct, 15% indirect). The probability of receiving thrombolysis was highest for indirect HEMS transport (OR 3.6, 2.2–6.0), followed by indirect ambulance accompanied by an emergency physician transport (OR 1.5, 1.1–1.9). The shortest times, 90 minutes or less from stroke onset to hospital arrival, were achieved with direct AMBP and direct HEMS transport.

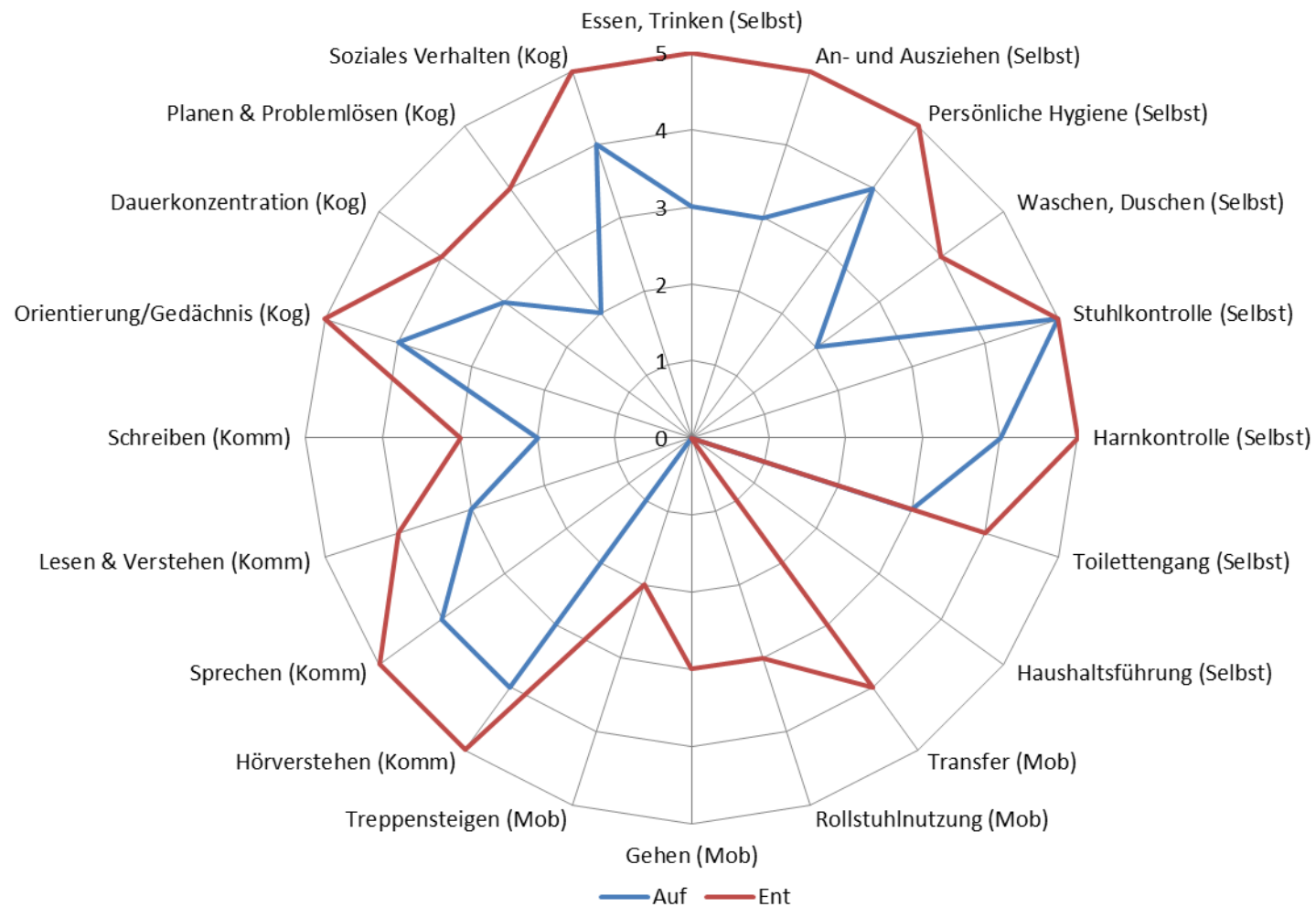
Conclusions—The shortest hospital arrival times and highest thrombolysis rates were seen in ischemic stroke patients transported by helicopter. (*Stroke*. 2011;42:1295-1300.)



Das Tiroler Konzept – ambulante REHA



SINGER Assessment MW



Thrombolysis and clinical outcome in patients with stroke after implementation of the Tyrol Stroke Pathway: a retrospective observational study



Johann Willeit, Theresa Geley, Johannes Schöch, Heinrich Rinner, Andreas Tür, Hans Kreuzer, Norbert Thiemann, Michael Knoflach, Thomas Toell, Raimund Pechlaner, Karin Willeit, Natalie Klingler, Silvia Praxmarer, Michael Baubin, Gertrud Beck, Klaus Berek, Christian Dengg, Klaus Engelhardt, Thomas Erlacher, Thomas Fluckinger, Wilhelm Grander, Josef Grossmann, Hermann Kathrein, Norbert Kaiser, Benjamin Matosevic, Heinrich Matzak, Markus Mayr, Robert Perfler, Werner Poewe, Alexandra Rauter, Gudrun Schoenherr, Hans-Robert Schoenherr, Adolf Schinnerl, Heinrich Spiss, Theresa Thurner, Gernot Vergeiner, Philipp Werner, Ewald Wöll, Peter Willeit, Stefan Kiechl

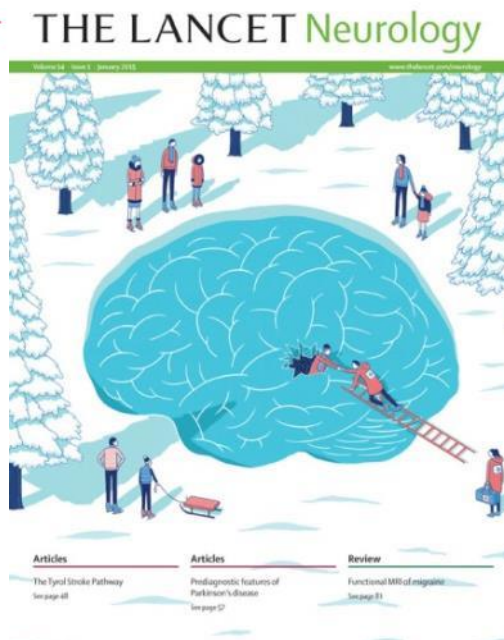
Thrombolysis and clinical outcome in patients with stroke after implementation of the Tyrol Stroke Pathway: a retrospective observational study

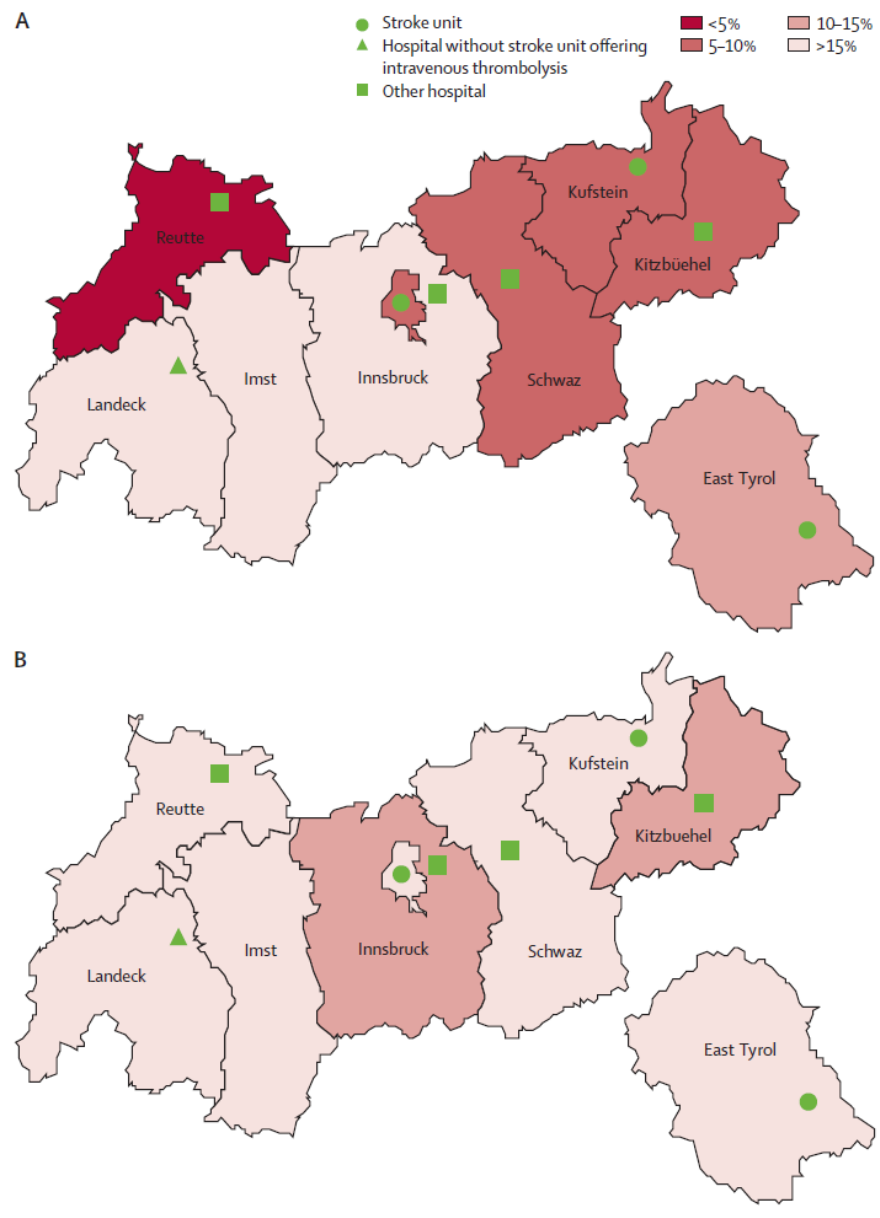
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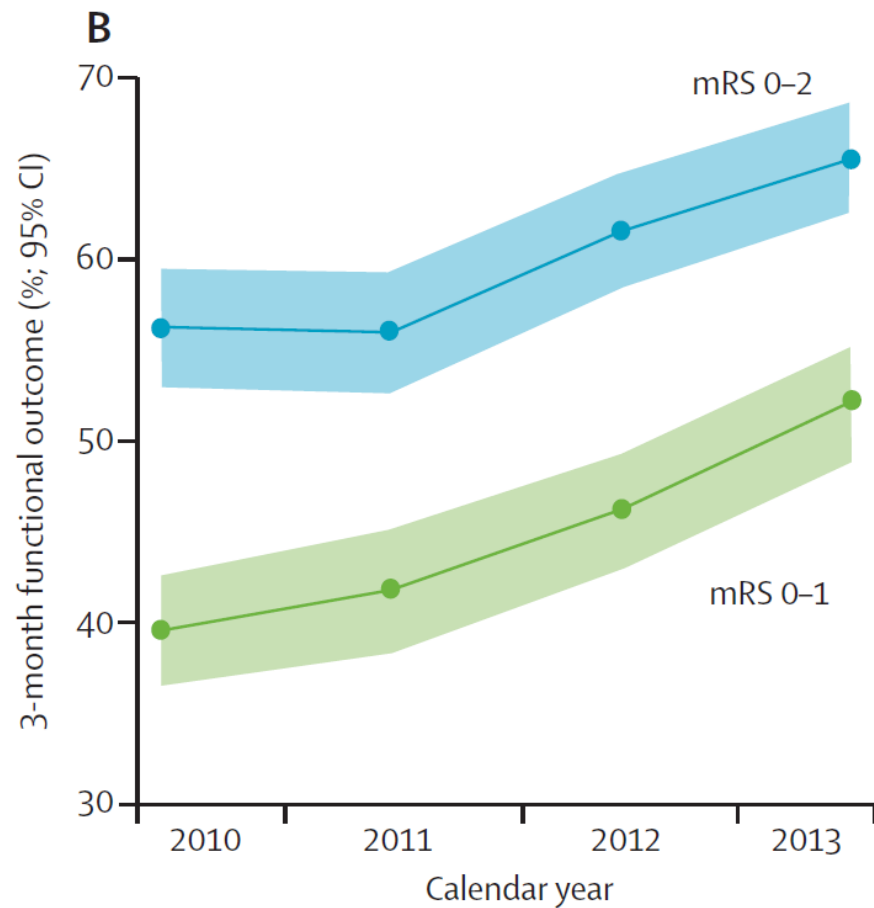
	Patients
Female sex	2301 (47%)
Age (years)	75 (66–83)
National Institutes of Health Stroke Scale (score)	4 (2–10)
Diabetes	940 (19%)
Previous stroke	1023 (21%)
Onset-to-door time of less than 3 h	1680 (34%)
CT or MRI within 1 h of admission to hospital	3464 (70%)
Trans thoracic or transoesophageal echocardiography	2238 (45%)
Ultrasound, CT angiography, or magnetic resonance angiography of carotid and vertebral arteries within 24 h*	3513 (82%)

Data are number (%) or median (IQR). Diabetes and previous stroke were coded as unknown in 51 (1%) and 192 (4%) of the patients, respectively, because they could not be reliably assessed. *Percentages refer to 4285 patients who underwent ultrasound, CT angiography, or magnetic resonance angiography of carotid and vertebral arteries.

Table 1: Characteristics of the 4947 patients with ischaemic stroke in Tyrol during 2010–13







9% absolute Zunahme
für gutes klinisches
Outcome
NNT ~ 11

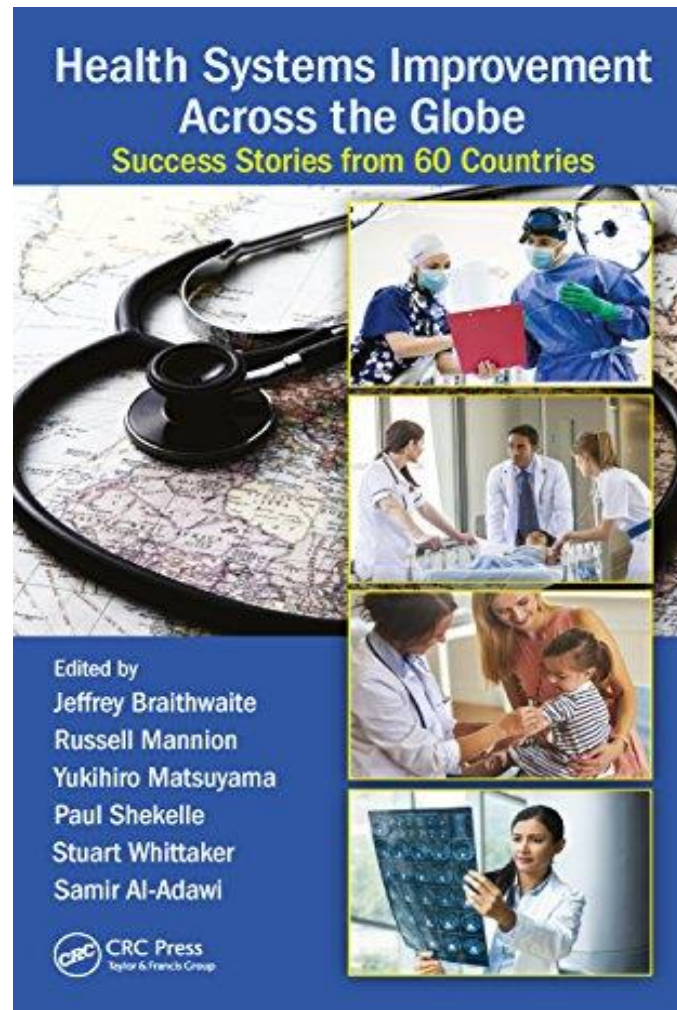
Der Tiroler Schlaganfallpfad

Project Teams during the planning and implementation phases 2008-2009

Steering committee: Johannes Schöech, Theresa Geley, Heinrich Rinner, Andreas Tür, Hans Kreuzer, Johann Willeit, and Stefan Kiechl.

Collaborators: Physicians: Michael Baubin, Gertrude Beck, Klaus Berek, Christian Dengg, Karl Eckhard, Gerhard Franz, Thomas Fluckinger, Thomas Frieden, Martin Furtner, Wilhelm Grander, Ivo Graziadei, Josef Grossmann, Hermann Kathrein, Norbert Kaiser, Alexandra Kofler, Christoph Krismer, Reinhard Kroess, Gerhard Luef, Heinrich Matzak, Markus Mayr, Peter Obrist, Philipp Plangger, Leopold Saltuari, Hans-Robert Schönherr, Adolf Andreas Schinnerl, Christoph Schmidauer, Erich Schmutzhard, Michael Spiegel, Heinrich Spiss, Herbert Tilg, Ewald Wöhl, Kai Wulf. **Stroke therapists:** Gabriele Buchhammer, Markus Hangl, Mariella Katzmayer, Nicola Kruckenhauser, Ellen Quirbach, Thomas Raggl-Schäuble, Gudrun Schönherr, Andrea Staudacher. **Stroke nurses and other professions:** Alexander Berger, Brigitte Brunner, Annegret Erhart, Silvia Franzelin, Peter Gohm, Susanne Glatzl, Julian Hadschieff, Christine Kerer, Anna Maria Klaunzer, Claudia Koch, Andrea Kofler, Helmut Kometer, Auguste Leimhofer, Elfriede Mair, Christiane Pellegrini, Marlen Resiger, Renate Scharler, Reinhard Scheiber, Sandra Turra, Ursula Venier, Gerda Walter, Gernot Vergeiner, Viktor Zolet, Ernst Alfred Zrost. **Tyrolean Health Care Fund, health insurance companies, and other public institutions:** Josef Danner, Walter Guggenberger, Gerlinde Haefele, Christine Haider, Heinz Hollaus, Michael Huber, Theresa Geley, Christine Kätzler, Marianne Mayr, Arno Melitopoulos, Markus Pale, Helmut Pflaume, Johannes Schöch, Theresia Schönherr, Michael Schreiber, Rudolf Siller, Norbert Thiemann, Bernhard Tilg, Andrea Wartlsteiner, Shaghayegh Waziri-Farahani, Erwin Webhofer.





Action Plan for Stroke in Europe 2018 – 2030

Overarching targets for 2030

For each domain of the 2018 to 2030 ESAP, specific targets are being set, as detailed in the following sections. Beyond these targets, four over-arching targets for 2030 have been identified:

1. to reduce the absolute number of strokes in Europe by 10%
2. to treat 90 % or more of all patients with stroke in Europe in a dedicated stroke unit as the first level of care
3. to have national plans for stroke encompassing the entire chain of care from primary prevention to life after stroke.
4. to fully implement national strategies for multisector public health interventions to promote and facilitate a healthy lifestyle, and reduce environmental (including air pollution), socioeconomic and educational factors that increase the risk of stroke.

- Bedeutung des Schlaganfalls
- Schlaganfall erkennen und richtig handeln
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- Neues zum Schlaganfall

TIA-Anamnese

Familiäre Belastung

Stress

Körperliche Inaktivität

Übergewicht

Alkoholabusus

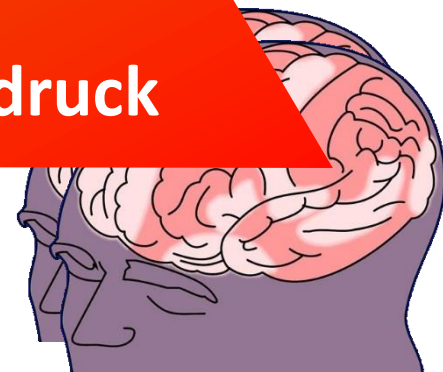
Diabetes mellitus

Hypercholesterinämie

Herzrhythmusstörungen

Rauchen

Hoher Blutdruck



Vorbeugen



Kontrollieren Sie Ihren **Blutdruck**. Bluthochdruck ist der wesentlichste Risikofaktor.



Regelmäßige Bewegung verbessert die körperliche Leistungsfähigkeit und verhindert eine Vielzahl von Erkrankungen.



Eine **ausgewogene Ernährung** mit einem hohen Anteil an Obst, Gemüse, fett- und zuckerarmer Kost senkt das Risiko. **Beschränken Sie Ihren Alkoholkonsum**. Alkohol führt zu einer direkten Schädigung mehrerer Organe.



Grundsätzlich sollte jeder Mensch sein **Normalgewicht anstreben**. Eine **Gewichtsabnahme** kann durch regelmäßige Bewegung und einer ausgewogenen Ernährung erreicht werden.



Nikotin bewirkt eine Verengung der Blutgefäße. Wenn Sie **aufhören zu rauchen**, sinkt das Risiko nach zwei Jahren auf das eines Nichtraucherers.



Vermeidung von Stress. Erfolgreich sind Stressbewältigungsstrategien, die an den zugrundeliegenden Problemen ansetzen und auch langfristig für emotionale Ausgeglichenheit sorgen.

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Normaler Druck $\geq 120 / 80$

Optimaler Druck $< 120 / 80$





Highlights

From the 2019 Cardiovascular Disease Primary Prevention Guideline

4. A diet emphasizing intake of vegetables, fruits, legumes, nuts, whole grains, and fish is recommended to decrease ASCVD risk factors. To reduce risk, the guidelines recommend replacement of saturated fat with dietary monounsaturated and polyunsaturated fats and a diet containing reduced amounts of cholesterol and sodium. As a part of a healthy diet, it is reasonable to minimize the intake of processed meats, refined carbohydrates, and sweetened beverages to reduce ASCVD risk. As a part of a healthy diet, the intake of *trans* fats should be avoided to reduce ASCVD risk.

5. Adults should engage in at least 150 minutes per week of accumulated moderate-intensity physical activity or 75 minutes per week of vigorous-intensity physical activity.

- **Ausgewogen und wenig Kalorien**
- Obst, Gemüse, Nüsse, Vollkorn, Fisch, Olivenöl
- Wenig Fleisch
- **Vermeide: Zucker und zuckerhaltige Getränke**
- **Reduziere: Kochsalz, trans-Fette und Cholesterin**
- Ersetze gesättigte Fettsäuren und Zucker mit ungesättigten Fettsäuren

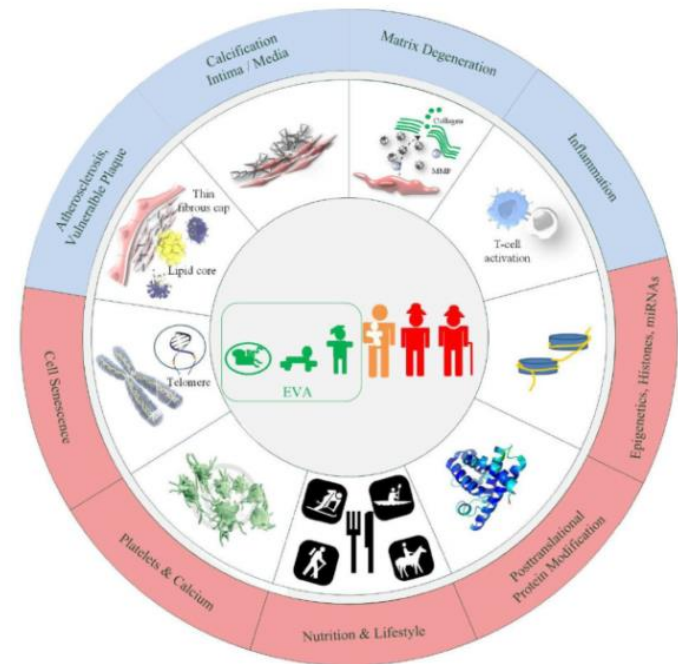
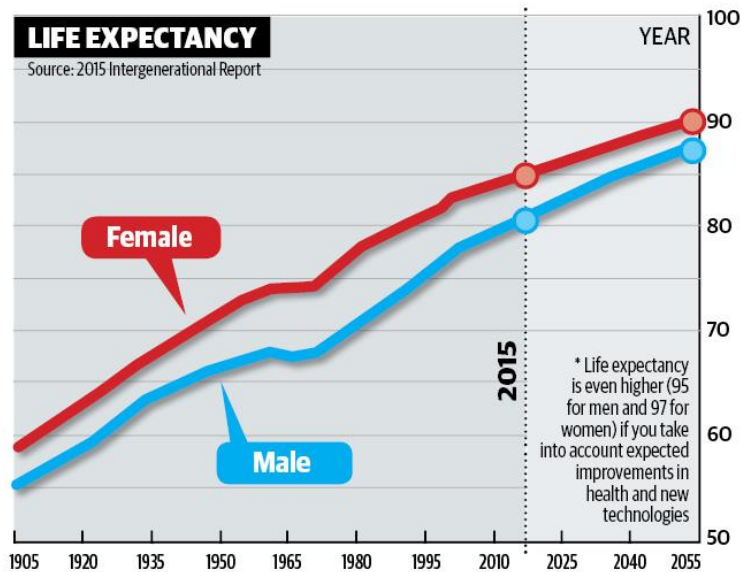




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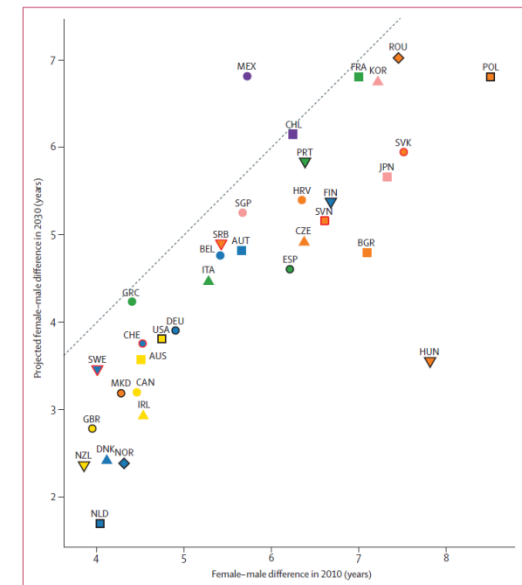
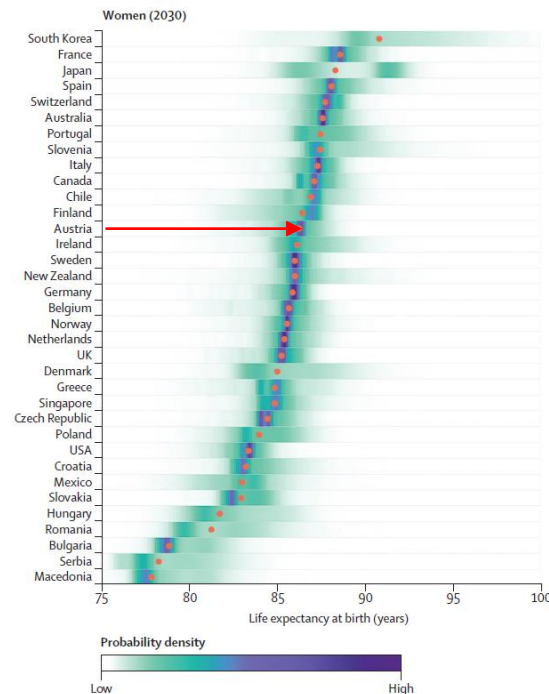
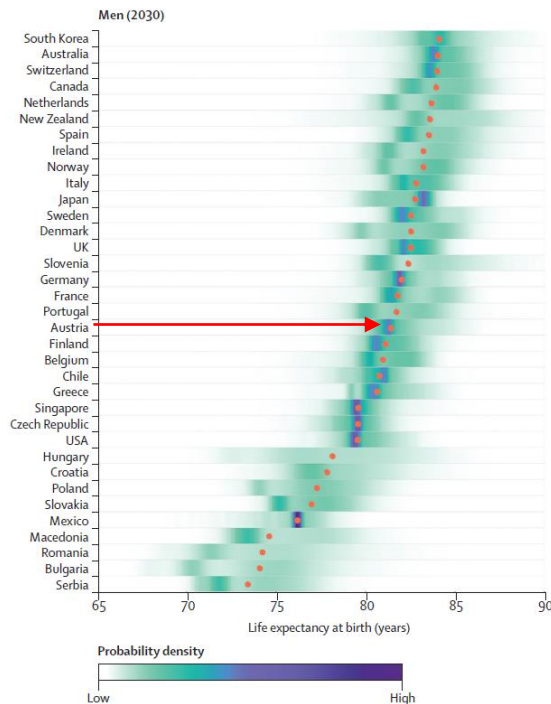


www.thelancet.com Published online February 21, 2017

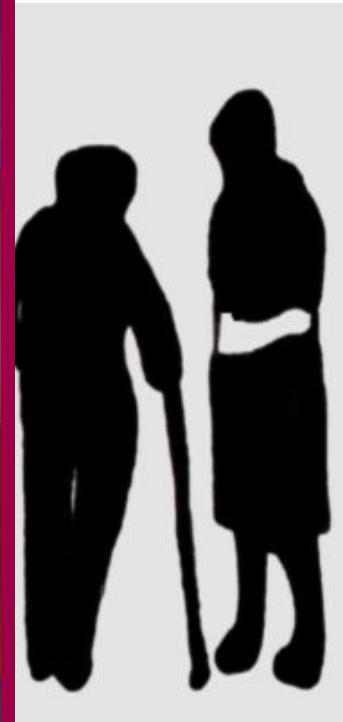
Future life expectancy in 35 industrialised countries: projections with a Bayesian model ensemble

Vasilis Kontis*, James E Bennett*, Colin D Mathers, Guangquan Li, Kyle Foreman, Majid Ezzati

Interpretation There is more than a 50% probability that by 2030, national female life expectancy will break the 90 year barrier, a level that was deemed unattainable by some at the turn of the 21st century. Our projections show continued increases in longevity, and the need for careful planning for health and social services and pensions.



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Probleme

- Häufige Rezidivschlaganfälle und Gefäßerkrankungen
- Risikofaktoreinstellungen
- Post-Stroke Komplikationen
- Bleibende Defizite – Rehabilitationsbedarf
- Zu wenig Support
- Belastung der Angehörigen
- Berufliche Wiedereingliederung

ARTICLE

The dimension of preventable stroke in a large representative patient cohort

Christian Boehme, MD, Thomas Toell, MD, Lukas Mayer, MD, Lena Domig, MD, Raimund Pechlaner, PhD, Karin Willeit, PhD, Lena Tschiderer, BSc, Lisa Seekircher, BSc, Peter Willeit, PhD, Andrea Griesmacher, MD, Michael Knoflach, MD, Johann Willeit, MD, and Stefan Kiechl, MD

Neurology® 2019;93:1-12. doi:10.1212/WNL.00000000000008573

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Abstract

Objective

To analyze the frequency of inadequately treated risk factors in a large representative cohort of patients with acute ischemic stroke or TIA and to estimate the proportion of events potentially avertable by guideline-compliant preventive therapy compared to the status quo.

Methods

A total of 1,730 patients from the Poststroke Disease Management STROKE-CARD trial (NCT02156778) were recruited between 2014 and 2017. We focused on 8 risk conditions amenable to drug therapy and 3 lifestyle risk behaviors and assessed pre-event risk factor control in retrospect.

Results

The proportion of patients with at least 1 inadequately treated risk condition was 79.5% (95% confidence interval [CI] 77.6%–81.4%) and increased to 95.1% (95% CI 94.1%–96.1%) upon consideration of the lifestyle risk behaviors. Risk factor control was worse in patients with recurrent vs first-ever events ($p < 0.001$), men vs women ($p = 0.003$), and patients <75 vs >75

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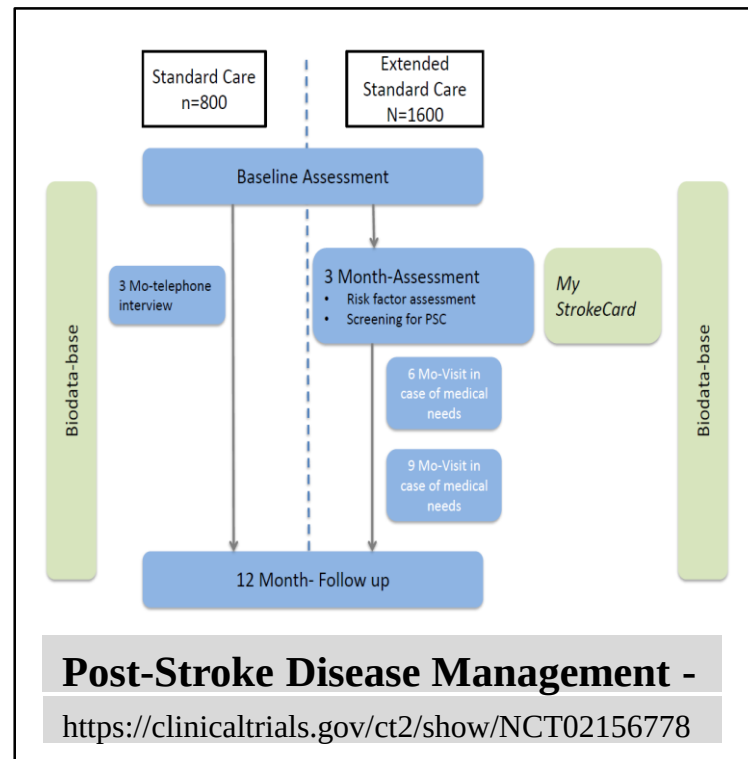
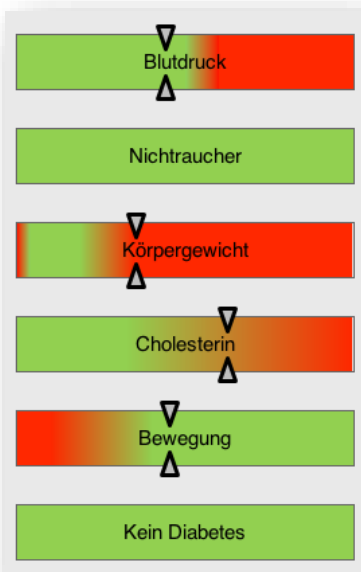
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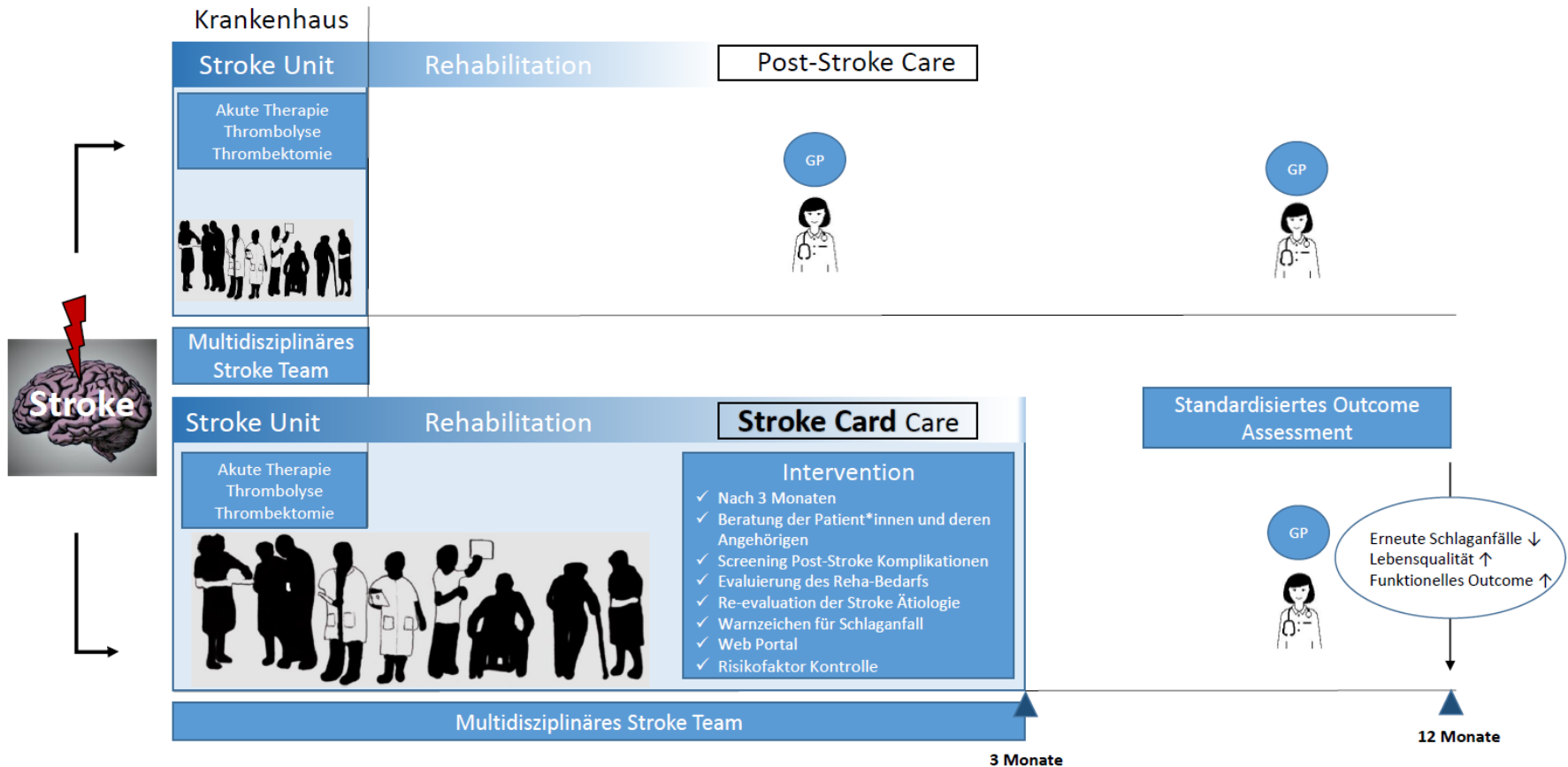


Pragmatic trial of multifaceted intervention (STROKE-CARD care) to reduce cardiovascular risk and improve quality-of-life after ischaemic stroke and transient ischaemic attack –study protocol

Thomas Toell¹, Christian Boehme¹, Lukas Mayer¹, Stefan Krebs², Clemens Lang², Karin Willeit^{1,3}, Barbara Prantl¹, Michael Knoflach¹, Gerhard Rumpold⁴, Gudrun Schoenherr¹, Andrea Griesmacher⁵, Peter Willeit¹, Julia Ferrari², Wilfried Lang^{2,6}, Stefan Kiechl^{1*} and Johann Willeit^{1*}



Neues zum Schlaganfall



VASCage

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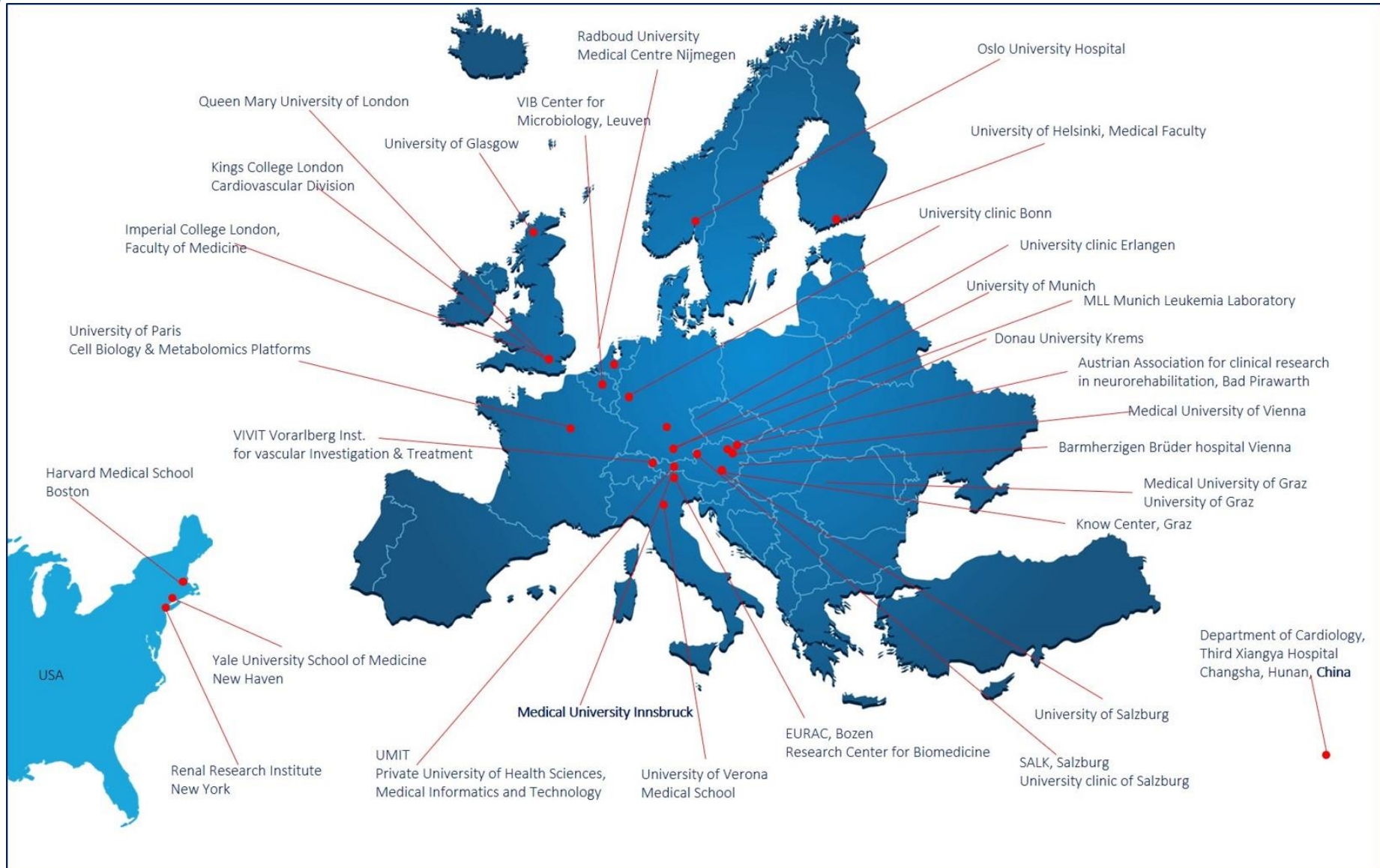
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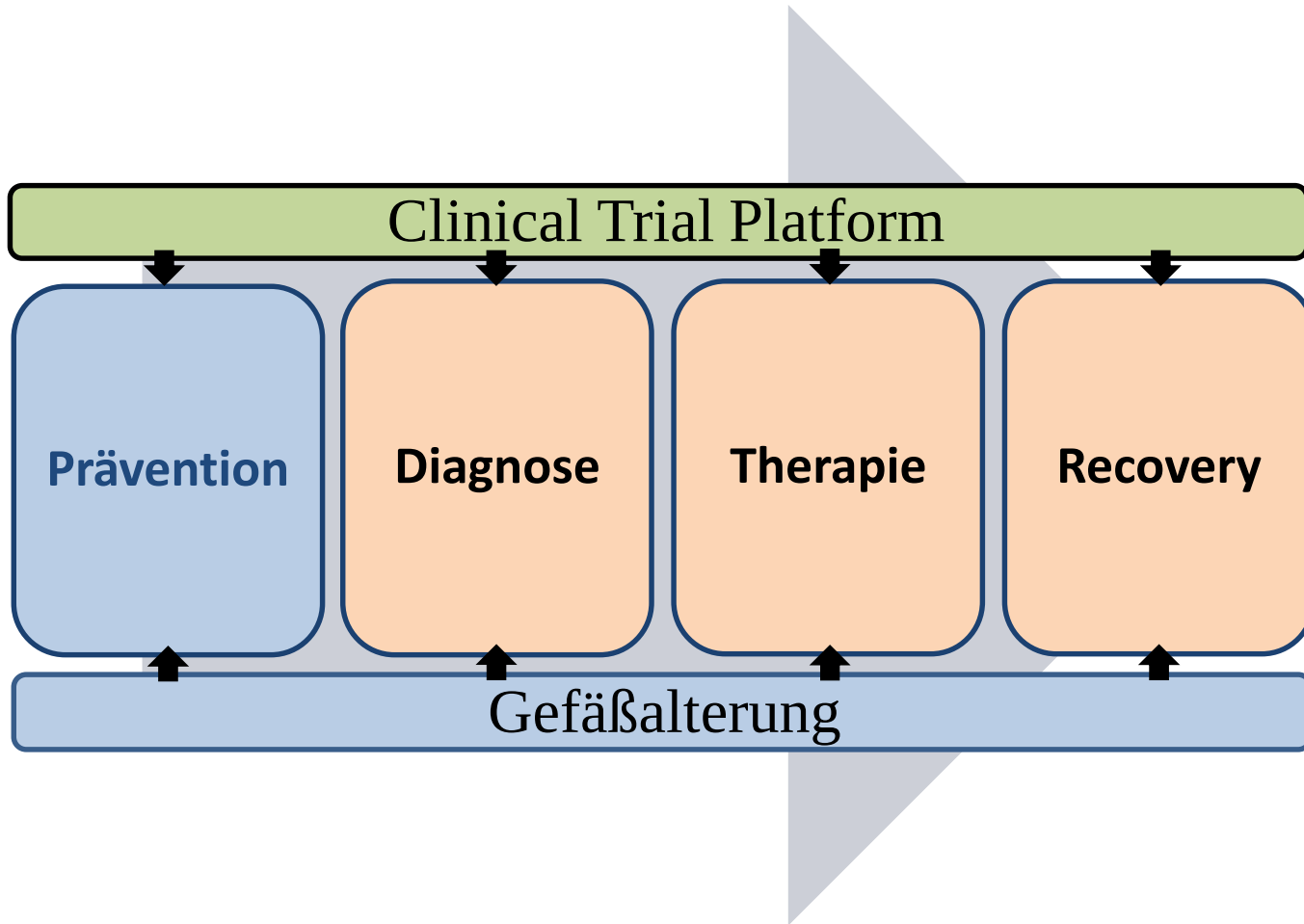
and the federal states

- Tyrol
- Salzburg
- Vienna

The COMET Programme is conducted by the Austrian Research Promotion Agency (FFG).

Neues zum Schlaganfall





Vielen Dank für die Aufmerksamkeit

