25 SIMI

medicina minimamente invasiva
liderando el camino

minimally invasive medicine
leading the way

ENERI
DR. PEDRO LYLYK

www.lylyk.com.ar

SAGRADA FAMILIA

www.sagradafamilia.com.ar

Organización de la Unidad de Stroke Fija y Móvil

Dr Bleise Carlos

Change of mentality...

80´s

Elective evaluation

Prevention of medical complications

Recurrent stroke prevention : Anticoagulation

Strategy: Rehabilitation, social exclusion

year 2000 (1996)

Stroke = Medical emergency

Concept of reperfusion

Stroke Interruption

Early discharge

Strategy: Social integration

“Time is Brain”

- ***1.8 Million neurons are lost per minute during a large vessel occlusion**

- ***Ischemic brain will age 3.6 years for every hour a large vessel stroke goes untreated**

Table 1. Time-to-treat impact on stroke outcomes

	Neurons lost[a]	Synapses lost	Accelerated aging
Per stroke	1.2 billion	8.3 trillion	36 yr
Per hour	120 million	830 billion	3.6 yr
Per minute	1.9 million	14 billion	3.1 wk
Per second	32,000	230 million	8.7 hr

[a]Average human brain has 130 billion neurons.

Reprinted from Saver JL. Time is brain—quantified. Stroke 2006; 37(1):263–266. © 2006, with permission from Wolters Kluwer Health, Inc.

***Stroke 2006; 37: 263–266**

Of the patients who come to hospital with stroke less 10% are treated in US and less than 3% in the RA

THERE ARE TREATMENTS AVAILABLE:

What do we need……?

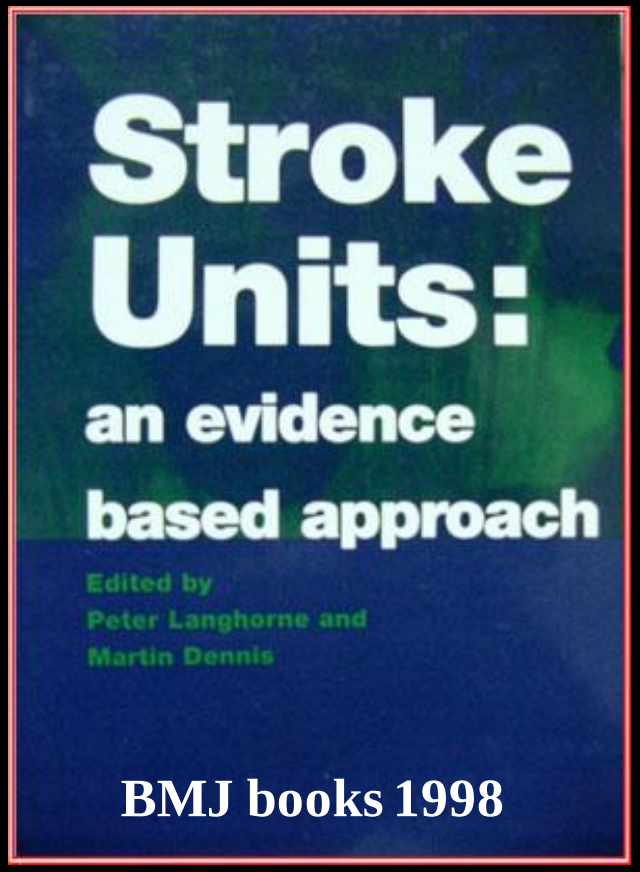
Arrive ON TIME……!!!

Emergency system

Certified Stroke Unit

There are trained personnel
And treatments

STROKE UNIT (SU)



- Mortality
- Morbidity
- Patient costs
- Hospital Costs

- Stroke Unit Trialists' Collaboration. Organised inpatient (stroke unit) care for stroke: Cochrane Review. In The Cochrane Library. Issue 3. 2004.

Characteristics of Stroke Treatment Systems

Emergency Medical Services EMS

- Trained dispatchers, high priority triage
- Paramedics trained to recognize stroke
- Transport patients to the nearest hospital capable of treating acute stroke
- Notification before arrival

Primary Stroke Center PSC

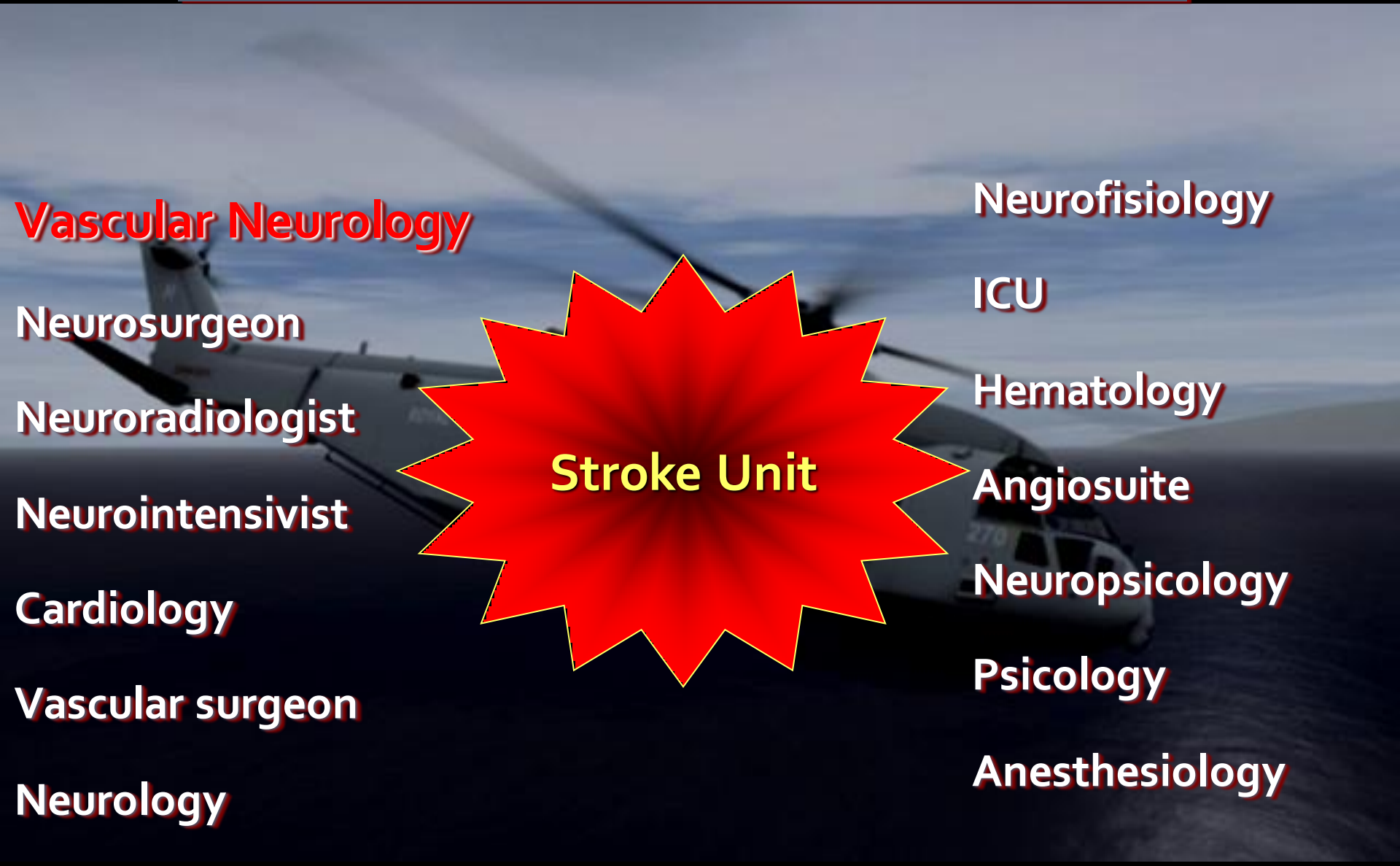
- Initial capacity to provide acute care
- Ability to use r -TPA and other acute therapies in an efficient and safe way
- They can admit their patients to stroke units

Comprehensive Stroke Center CSC

- Ability to provide care for complex cases
- Advanced treatments (i.e.coils , stents, etc.)
- Specialists trained in key areas (vascular neurology, Interventional Neuroradiology, neuro critical care, neurosurgery Vascular)

Dr Viñuela

Multidisciplinary Team



ENERI DR. PEDRO LYLYK Y ASOC. CLÍNICA LA SAGRADA FAMILIA

Multidisciplinary Team

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Clínica
La Sagrada Familia

: : ENERI STROKE CENTER : :

✓ Vascular Neurology

Dr. J. Vila
Dr. Cirio J.
Dra. A. Franco
Dr. J. Fridman
Dra. A. Luraschi
Dra. M. Di Egidio
Dra. Ciardi Celina
Dr Mariano Buezas

Neurosurgery

Dr. P. Lylyk
Dr. D´Osvaldo
Dr Pirozzo Mariano
Dr. F. Sánchez
Dr. Morsuchi
Dr. C. Petre
Dr. P. Jalon
Dr. Carballo Leandro
Dr Matias Baldoncini

Neuro Images

Dr. H. Lambre
Dra. D. Boero
Dra. L. Salvático
Dr. Di Luca Pablo

Neuropsicology

Lic. C. Horisny
Lic. J. Toranzo
Lic. Josefina Boer

Interventional Neuroradiology

Dra. R. Ceratto
Dr. A. Ferrario
Dr. J. Lundquist
Dr. E. Scrivano
Dr. R. Nella Castro
Dr. Jorge Chudyk

Neuro Cardiology

Dr. C. Ingino
Dr Ceron-Dra Archer-Dr Pulido

Vascular Surgery

Dr. R. Lamura
Dr. M. Ferreira
Dr. Lisandro Carnero

Neuro Critical Care

Dr. R. Romero
Dr. M. Wilches
Dr. L. Trunzo
Dra. Natalia Prieto

Neurophysiology

Dr. R. Rivero
Dr J. Cirio

Interventional Oncology

Dr. J. Lundquist
Dr. A. Ferrario
Dr. Nestor Kizilevzky

Hemodinamia

Dr. A. Cherro
Dr. M. Halac
Dra. A Descalzo

Anesthesiology

Dra. A. Muro
Dr. L. Rodriguez
Dr. A. Patiño
Dr. N. Herschuck
Dr. E. Cerletti

Hematology

Dr. M. Tamashiro

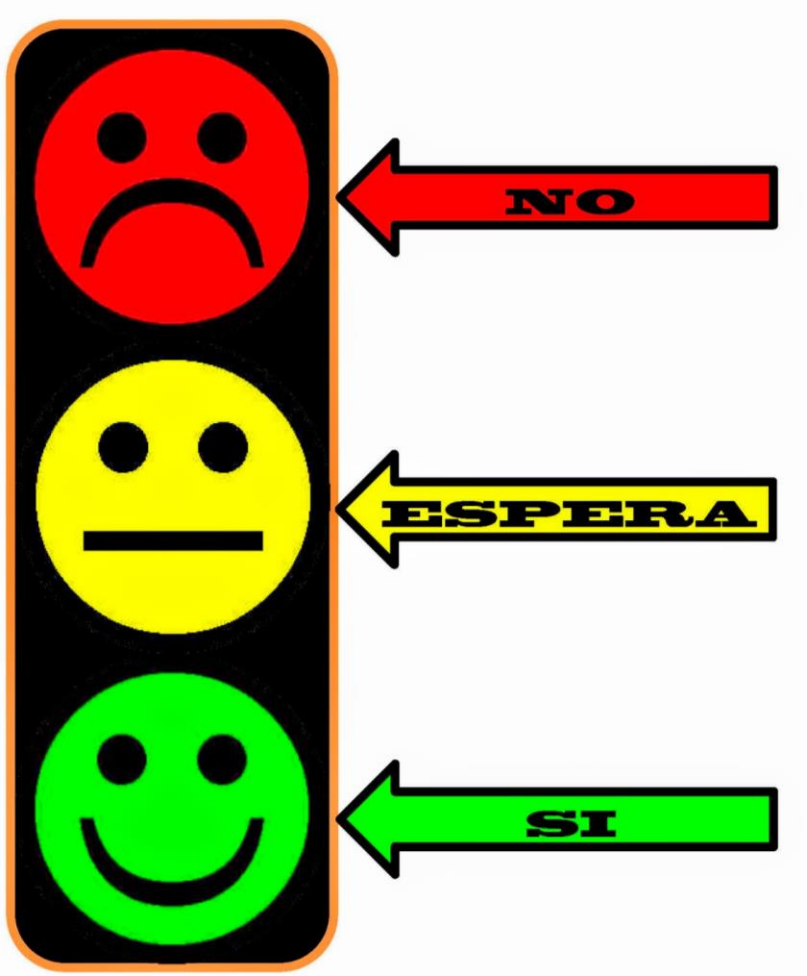
Fellows

Dr. Felix Falcón
Dr. Cristobal Silva
Dr. Cristobal Salgado
Dr. Omar Pichardo
Dr. Germán Castillo
Dr. Jose Lavoisier
Dr. Jose Correia

Technicians

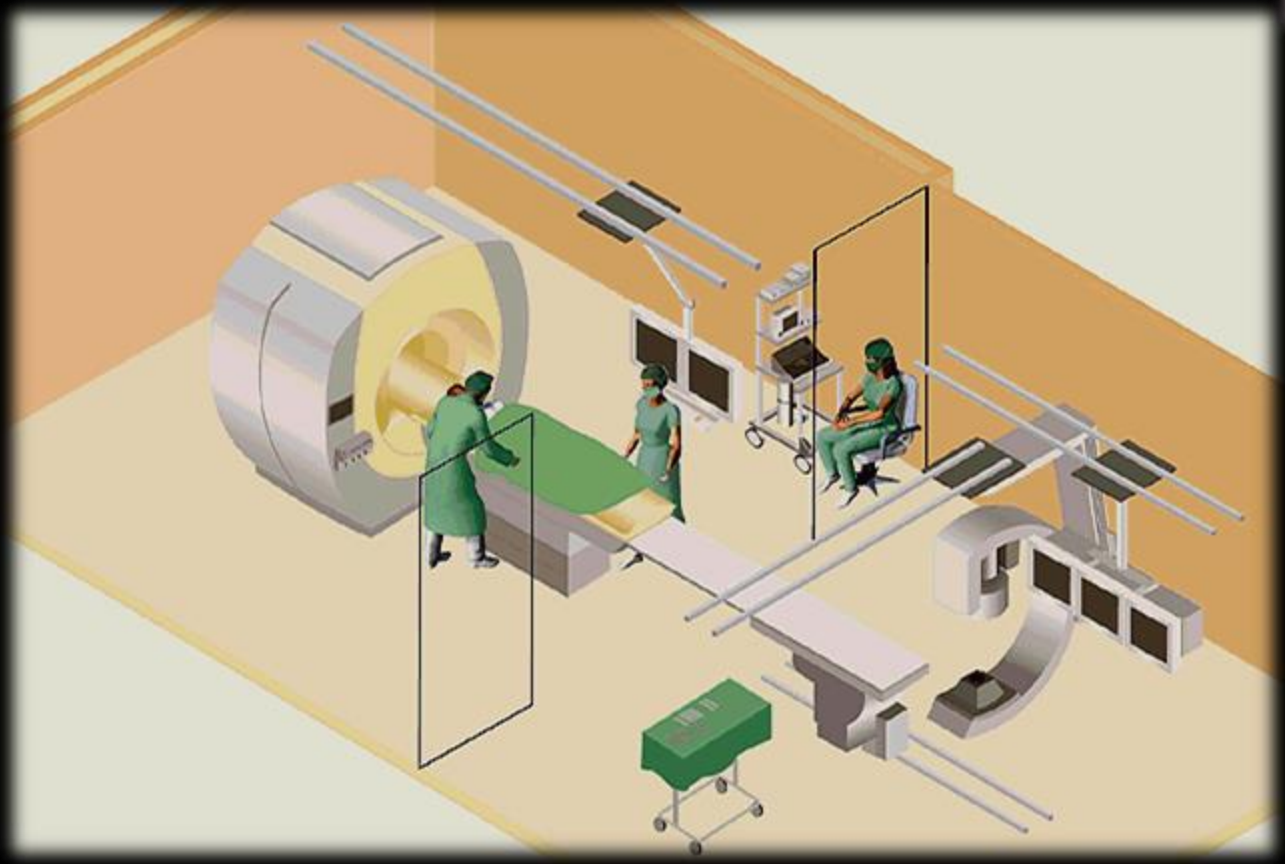
Lic. Carlos Maryszczyn
Tr. J. Castagno
Tr. Fabián Cañete
Tr. R. D ¨Agosto

Neurologia



Tratamiento endovascular en sala de hemodinamia
Equipo de Neuro Intervencionismo

Angiosuite - MRI



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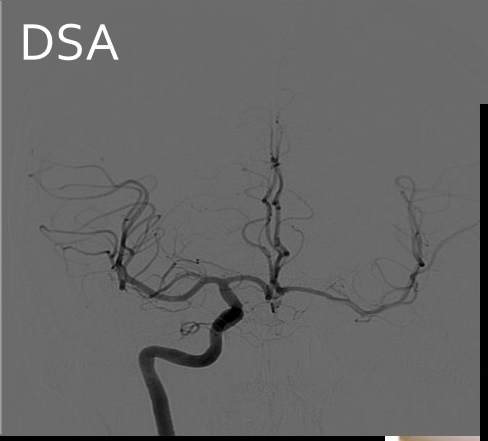
UNIDAD DE TRATAMIENTO INTEGRAL DEL ACV

DSA

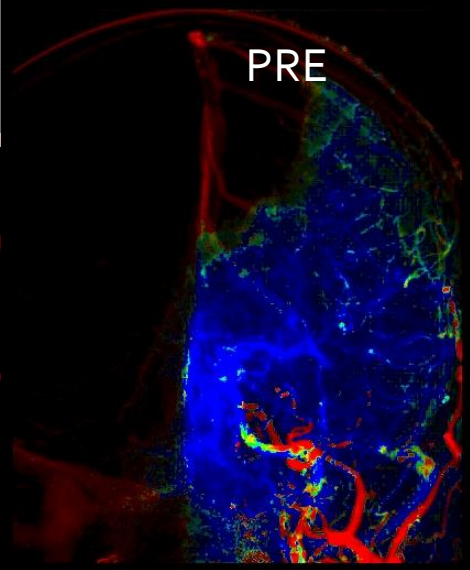


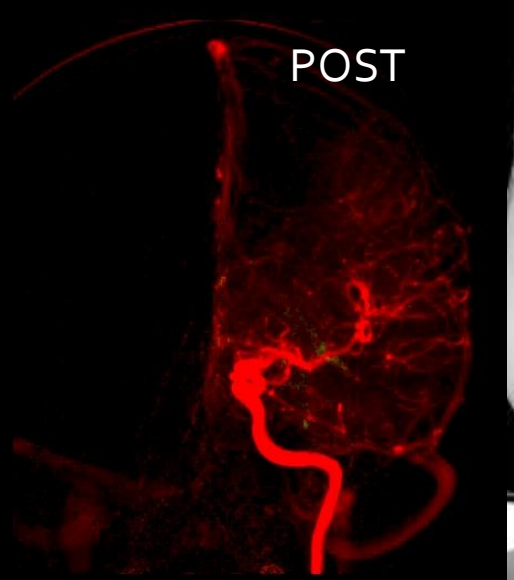
SAGGIO ALFIO R20100319144086/Run8 R20100319144086/Run30

2D PERFUSION

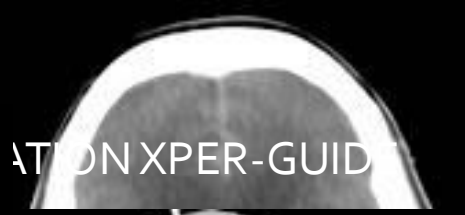
PRE

POST

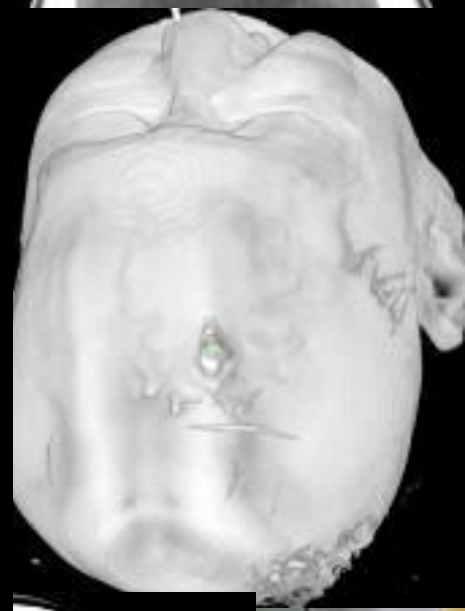




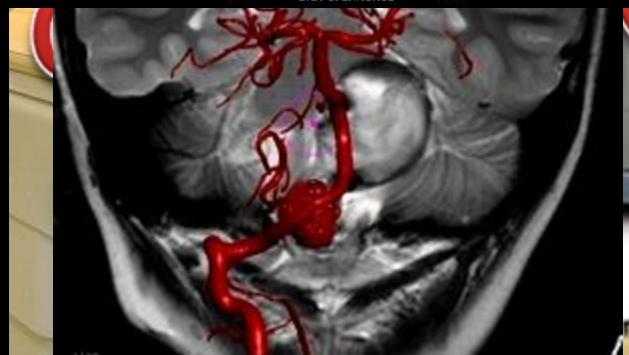
3DRA



ATION XPER-GUID



CT LIKE



TION

Timeline

- CSF: 9:47
- MR: 10:09 — 22 min
- DSA: 11:02 — 75 min
- Reperfusion: 11:25 — 98 min
  TICI IIB

NIHSS : 15 → NIHSS 02.30 hs: 10 → 24 hs: 3

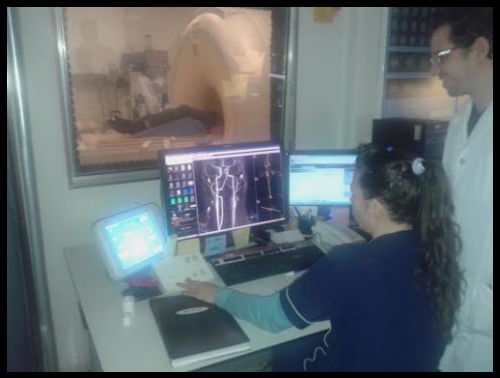
6 MESES

¡GRACIAS!

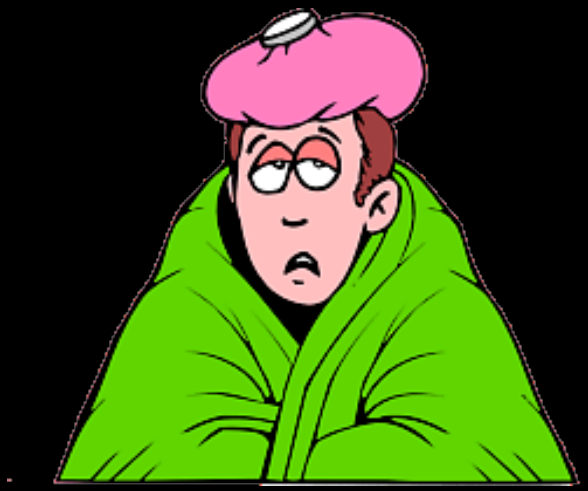
Stroke is an Emergency

Prof Dr. Pedro Lylyk

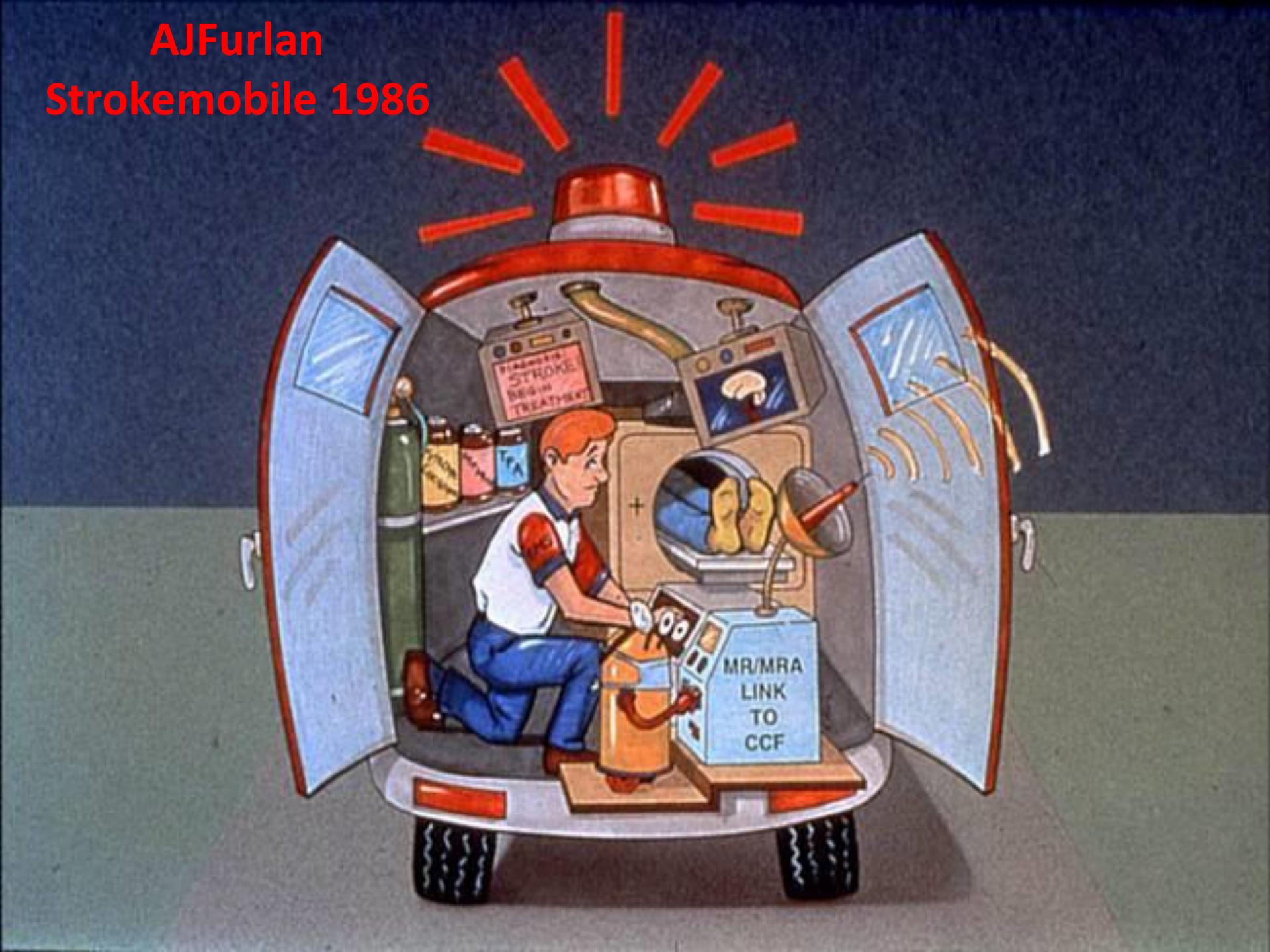
Traditional Concept



New Concept



AJFurlan
Strokemobile 1986




SERVICE RADIOLOGIQUE


WILLS'S CIGARETTES.

States was sometimes looked upon as an experimental ground which was still a land of great possibilities, although its limitations were beginning to be appreciated. But his own countrymen looked to Britain as a country with fascinating economic and cultural and social problems and with a people having a blend of present-day practical sense, respect for the past, and mindfulness of the immediate future. Those who knew how to come and learn would always have cause to cherish Anglo-American contacts and co-operation.

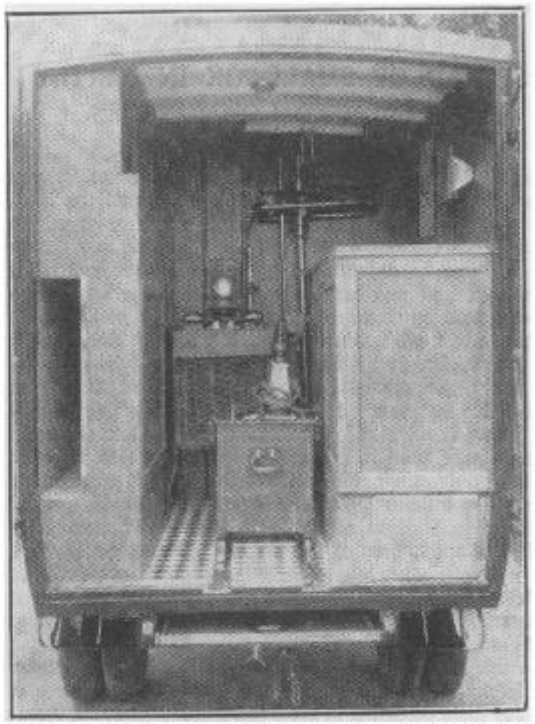
On the motion of Sir HUBERT BOND, seconded by Professor D. K. HENDERSON, a resolution of thanks to Dr. Meyer was carried by acclamation.

MOBILE X-RAY APPARATUS

THE HOME AMBULANCE UNIT

The general practitioner would undoubtedly welcome more help from radiology if he could get it. His difficulty until recently was that unless he could send his patient to a department or consulting room equipped with permanent apparatus he had to dispense with *x*-ray help altogether. During the last few years the "portable" diagnostic outfit has partly filled the breach. The manufacturers who first designed this set deserve the highest credit, for it really represents a marvellous achievement to pack into containers not larger than a pair of suitcases a tube and transformer, which are not only ray-proof and shock-proof, but will also take very good radiographs. Nevertheless, *pace* its makers, the portable set has definite limitations. It will take a great many of the usual radiograms with reasonably short exposures, and is perfectly effective when the exposure is no object, but in work that requires very short exposures and high power the radiologist feels the need of a set with considerably more reserve. It is unreasonable to expect even the best of portable sets to take a chest at 2 metres in a fraction of a second. Moreover, the portable set has to be worked off the house current, and the ordinary main supply has several grave defects, chief among which are its lamentable fluctuations. An *x*-ray transformer makes a heavy demand on the supply, and when it is put on the main in a country district the voltage is apt to waver considerably. Moreover, in urban practice changes occur through the varying demands of other users. When a set is working on the same substation as an electric lift, or, *a fortiori*, as a factory or workshop employing electric power intermittently, the radiologist is never certain what his voltage is going to be, and only the best of stabilizers can make him moderately secure. This objection applies not only to a portable set but also to the permanent installation, unless this is very carefully protected. The "ward" set mounted on a trolley has more power, but not all that is desired, and is also at

pushed into a slot on the left-hand side of the vehicle. The tubes are housed in wooden drawers and the Potter-Bucky diaphragm in its own holder, and the transformer and control trolley fit into rails in the middle of the floor. The unit can be assembled and ready for work within seven or eight minutes of arriving at the patient's home. The most remarkable feature is the amplitude and steadiness of the supply. The generator is driven by the engine of the van, which develops 44 brake h.p. at 2,400 revolutions. The output is controlled by a voltage regulator, which automatically interposes and withdraws resistances in the field circuit. This device cuts down fluctuation to within 1 per cent., and the remaining error is smoothed out by a milliampere-second relay on the control trolley. Steadiness is helped by the use of an unusually high frequency—90 cycles, as against the ordinary 50 of the National Grid—and as the iron and copper losses of the transformer are so low it can be made comparatively small. The tube, a metalix, which is self-rectified, normally works at 90 kV, and can, if required, pass a radiographic current of 100 mA—a genuine 100 mA, as Mr. H. T. Ferrier, the council's radiographer, demonstrated. The result is that for ordinary pictures it will work comfortably on exposures of one-thirtieth to one-



Interior of mobile unit, showing tube-stands, transformer and control trolley, washing-tank cabinet, and viewing-box. Slot for housing of wooden couch is seen on the left.

Br Med J. 1933 May 27;1(3777):929-30.

MOBILE X-RAY APPARATUS: THE HOME AMBULANCE UNIT.

[No authors listed]

2000s

Mobile stroke unit

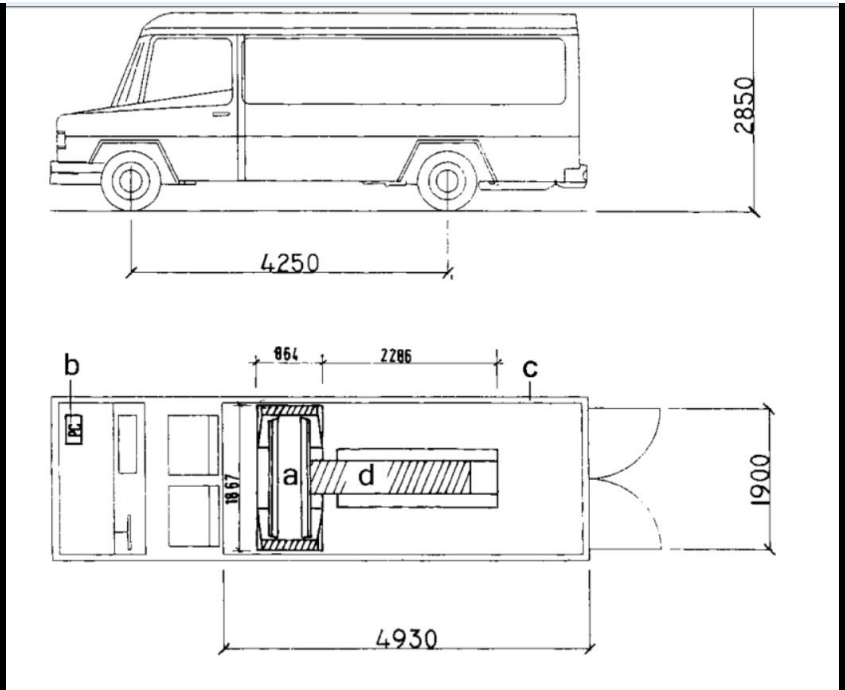
Stroke
JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Stroke Association℠
A Division of American Heart Association

"Mobile Stroke Unit" for Hyperacute Stroke Treatment

Klaus Fassbender, Silke Walter, Yang Liu, Frank Muehlhauser, Andreas Ragoschke, Sandra Kuehl and Orell Mielke

Stroke 2003;34;e44; originally published online May 15, 2003;
DOI: 10.1161/01.STR.0000075573.22885.3B
Stroke is published by the American Heart Association. 7272 Greenville Avenue, Dallas, TX 72514
 Print ISSN: 0039-2499. Online ISSN: 1524-4628



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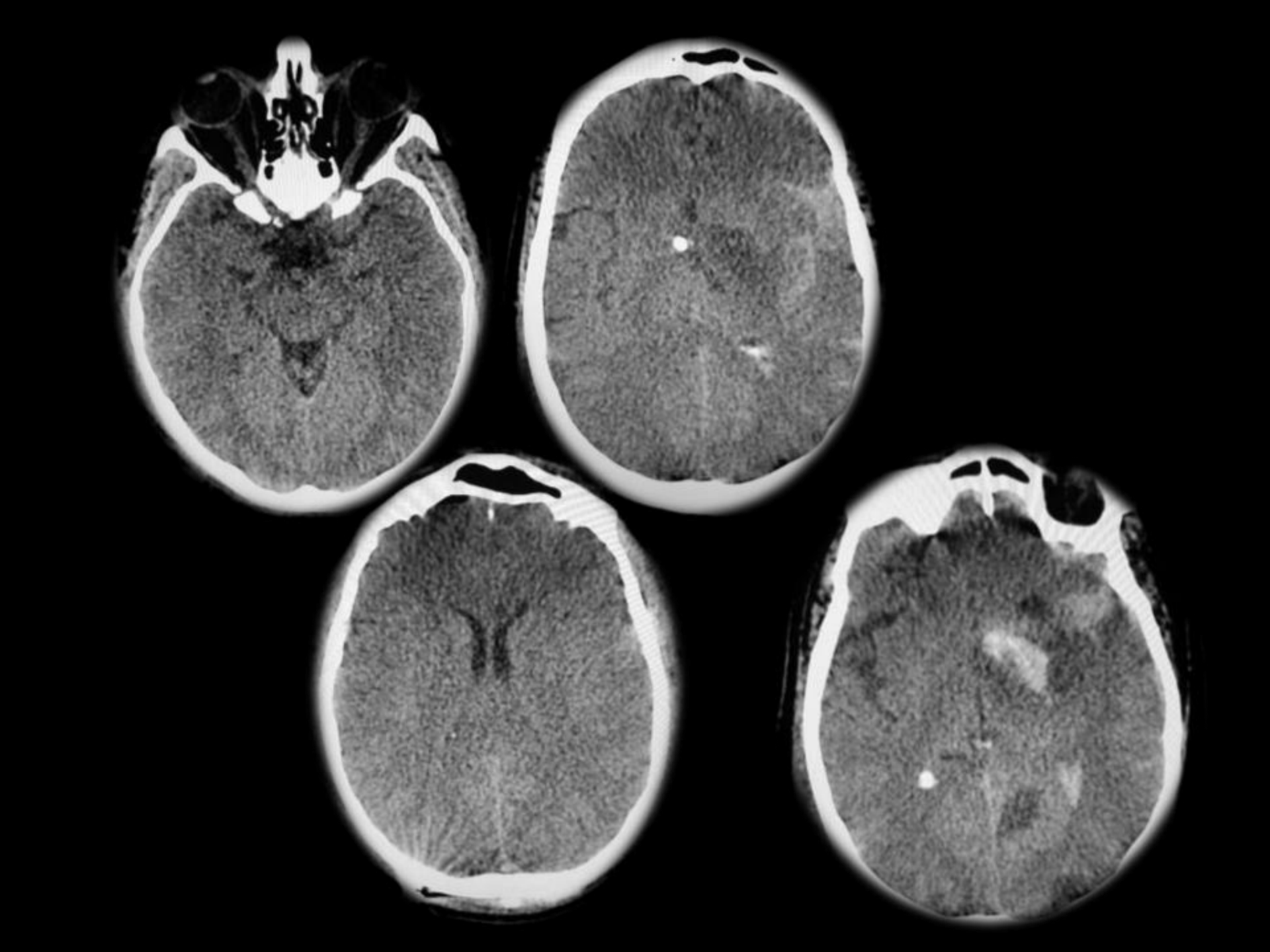
Unidad Móvil de Rescate Cerebral

Tomógrafo Portátil	Laboratorio	Personal
		

Tomógrafo Portátil CereTom

- Unidades de Terapia Intensiva.
- Quirófanos convencionales.
- Salas de urgencias.
- Salas de internación general.

- TC de 8 canales.
- Angio TC
- Perfusión cerebral




COSMOS

Unidad Móvil de Rescate Cerebral

Personal

- ***Neurólogos/neurocirujanos experimentados en el manejo del ACV***
- ***Enfermero con experiencia en manejo de pacientes neurológicos.***
- ***Técnico radiólogo para el manejo de la unidad y del equipo de tomografia.***

Laboratorio

- ***Hemograma***
- ***INR***
- ***Glucemia.***

Doppler

TELEMEDICINA

ImageOverGlobe

infomedica

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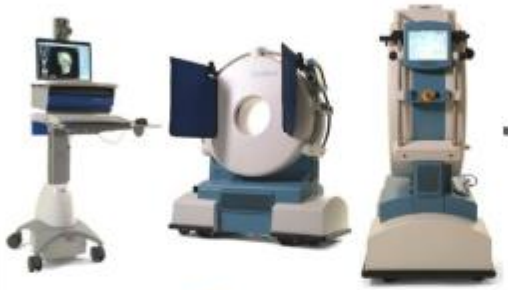
Ambulance car connection

DICOM!!!!



Direct device connection

GSM Router HSDPA

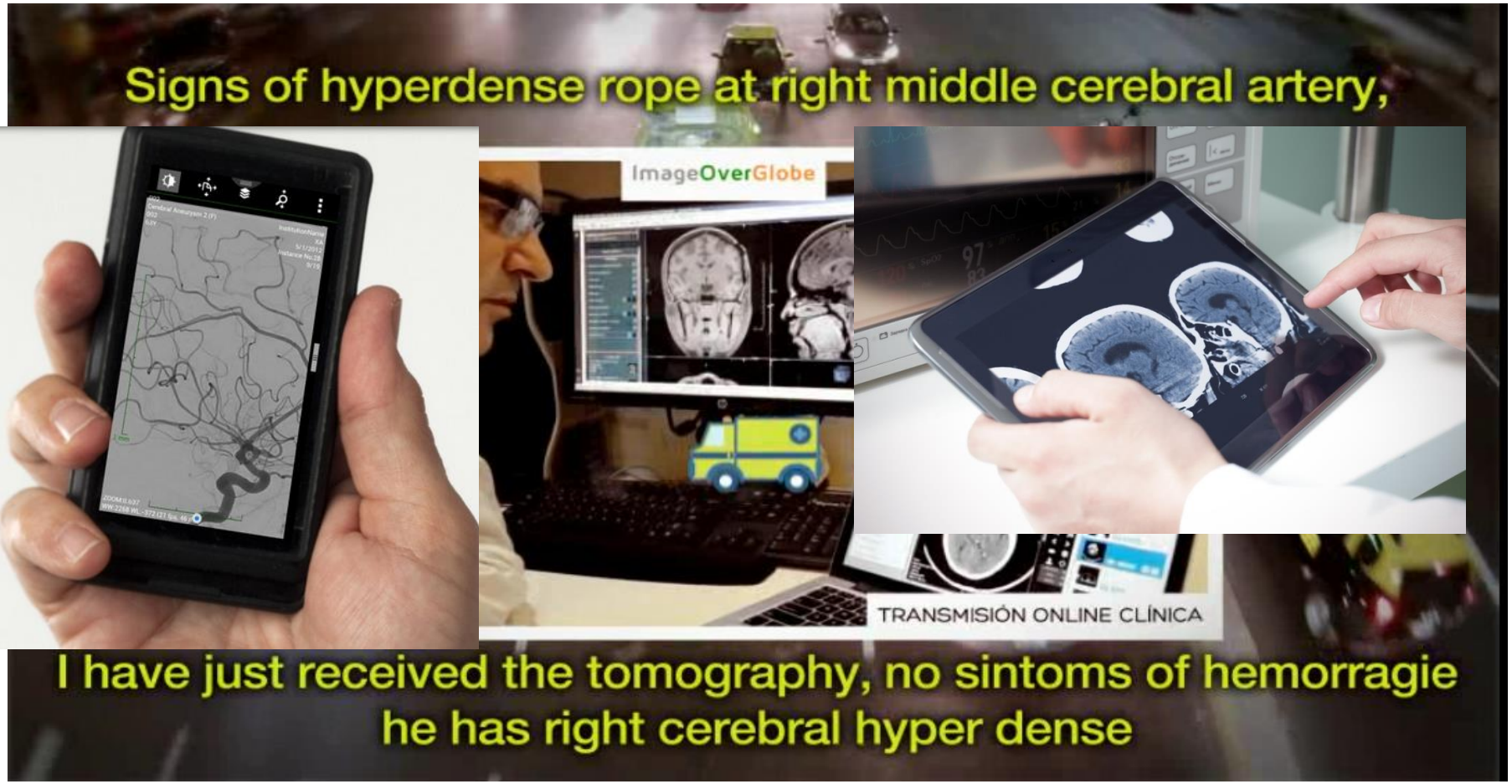
IOGlobe Secure Connector

Internet

Mobile stroke unit

Telemedicine

Transmission of clinical and radiological data in real time between the MSU and the hospital.



Nuevas posibilidades médicas

- Acceso rápido al diagnóstico de ACV isquémico o hemorrágico.
- Tratamiento pre hospitalario del ACV isquémico.
- Inicio de la terapia ¨puente¨ con IV-IA.

Nuevas posibilidades médicas

- Diagnóstico de otras lesiones neurológicas (trauma, HSA, HSD, etc).

- Triage específico para cada centro hospitalario (unidad primaria vs terciaria).

MSU around the world

GERMANY

RUSSIA

NORWAY

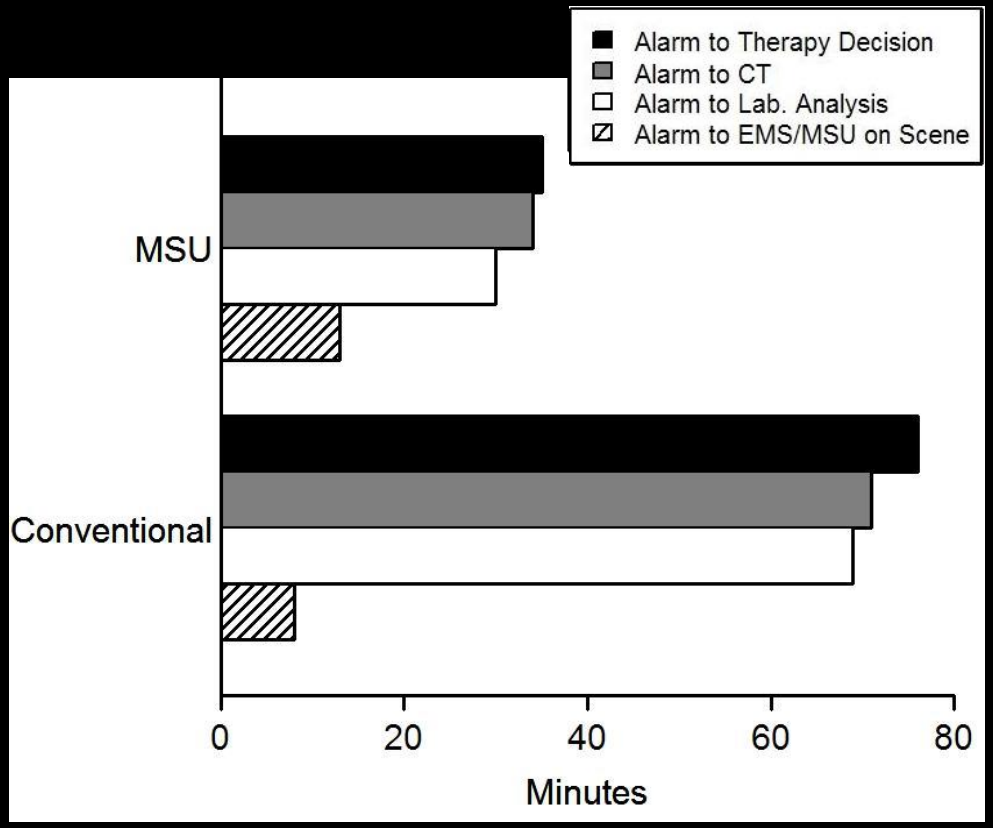
EE.U

Germany

THE LANCET Neurology

Diagnosis and treatment of patients with stroke in a mobile stroke unit versus in hospital: a randomised controlled trial

Silke Walter MD [a], Panagiotis Kostopoulos MD [a], Prof Anton Haass MD [a], Isabel Keller MD [a], Martin Lesmeister [a], Thomas Schlechtriemen MD [d], Christian Roth MD [b], Panagiotis Papanagiotou MD [b], Prof Iris Grunwald MD [e], Helmut Schumacher PhD [f], Stephan Helwig [a], Julio Viera [b], Heiko Körner [b], Maria Alexandrou [b], Umut Yilmaz MD [b], Karin Ziegler MD [b], Kathrin Schmidt MD [b], Rainer Dabew [b], Darius Kubulus MD [c], Yang Liu MD [a], Prof Thomas Volk MD [c], Kai Kronfeld MD [g], Christian Ruckes PhD [g], Thomas Bertsch MD [h], Prof Wolfgang Reith MD [b], Prof Klaus Fassbender MD [a]



35 min

76 min

Safe and Precise

Walter et al., Lancet Neurol 2012

Effect of the Use of Ambulance-Based Thrombolysis on Time to Thrombolysis in Acute Ischemic Stroke
A Randomized Clinical Trial

Martin Ebinger, MD; Benjamin Winter, MD; Matthias Wendt, MD; Joachim E. Weber, MD; Carolin Waldschmidt, MD; Michal Rozanski, MD; Alexander Kunz, MD; Peter Koch, MD; Philipp A. Kellner, MD; Daniel Gierhake, MD; Kersten Villringer, MD; Jochen B. Fiebach, MD; Ulrike Grittner, PhD; Andreas Hartmann, MD; Bruno-Marcel Mackert, MD; Matthias Endres, MD; Heinrich J. Audebert, MD; for the STEMO Consortium

STEMO: Stroke Einsatz Mobil Prof. Heinrich Audebert

JAMA April 23/30, 2014 Volume 311, Number 16

Prospective, randomized study with >7000 patients, from 2010, Berlin, Germany
Portable CT + IV TPA vs standard treatment

Decreased time alert-treatment of 77 to 52 minutes.

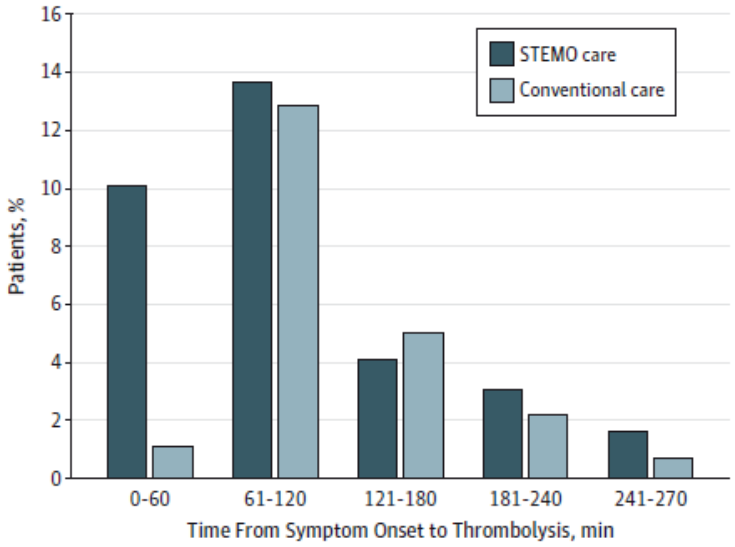
Increase % in treated patients within the 90´(58% with MSU vs 37% without)
Increased use of TPA in the golden hour from 4,9 to 31%
No increase of ICH or mortality in 7 days

Effects of Golden Hour Thrombolysis

A Prehospital Acute Neurological Treatment and Optimization of Medical Care in Stroke (PHANTOM-S) Substudy

Martin Ebinger, MD; Alexander Kunz, MD; Matthias Wendt, MD; Michal Rozanski, MD; Benjamin Winter, MD; Carolin Waldschmidt, MD; Joachim Weber, MD; Kersten Villringer, MD; Jochen B. Fiebach, MD; Heinrich J. Audebert, MD

Figure 2. Thrombolysis Rates in 60-Minute Intervals



CONCLUSIONS AND RELEVANCE The use of STEMO increases the percentage of patients receiving thrombolysis within the golden hour. Golden hour thrombolysis entails no risk to the patients' safety and is associated with better short-term outcomes.

JAMA Neurol. doi:10.1001/jamaneurol.2014.3188
Published online November 17, 2014.


COSMOS
A

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Avellaneda
San Justo
US Dept of State Geographer
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Image © 2015 DigitalGlobe
Google earth
34°32'33.91" S 58°10'08.01" O elevación -4 m alt. ojo 36.53 km

Conclusiones

Aumento en el % de tratamientos (de 3% a 27%)

Reducción en el tiempo (entre 25-40 minutos)

Mas pacientes tratados en la golden hour
TIEMPO ES CEREBRO

UNIDAD DE RESCATE CEREBRAL

Estos beneficios se obtiene en forma segura y costo efectiva

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LET`S TAKE CARE OF IT!


Thank you!!!