

AER 2019



AER

ACTUALITÉS EN RÉANIMATION

25^{ème} AER : 19 & 20 novembre 2020

Neuro-réanimation

Jeudi 21 novembre 2019 17h00-17h30

Que retenir de 2019 ? NEUROREANIMATION

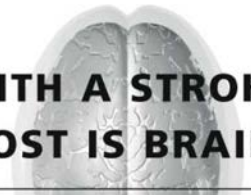
V. DEGOS

APHP-SORBONNE UNIVERSITE, Pitié Salpêtrière

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 **MÉDECINE**
SORBONNE
UNIVERSITÉ


**WITH A STROKE,
TIME LOST IS BRAIN LOST.**

Instituts
thématiques  **Inserm**


Institut national
de la santé et de la recherche médicale

Invitations.....

**22 > 24 APRIL 2020
SPRING IN PARIS**

**EURONEURO 2020
11TH EDITION**

**UPDATE ON NEUROANESTHESIA
& NEURO-INTENSIVE CARE**

WWW.EURONEURO2020.COM

**PALAIS DES CONGRÈS
ISSY-LES-MOULINEAUX**



Lésions cérébrales aiguës adulte et Réanimation

	Incidence	Mortalité 30 jours
AVC	25/10000	2/10000 <i>(12000 DC / an en F)</i>
Trauma crânien	20/10000	0.5/10000 <i>(3000 DC / an en F)</i>
Arrêt cardiaque	6/10000	5/10000 <i>(40000 DC/an en F)</i>

Etat de choc, hypoperfusion cérébrale.....

Chirurgie carotidienne, CEC, neurochirurgie....

Problème de santé publique et thérapeutique

Lésions cérébrales aiguës

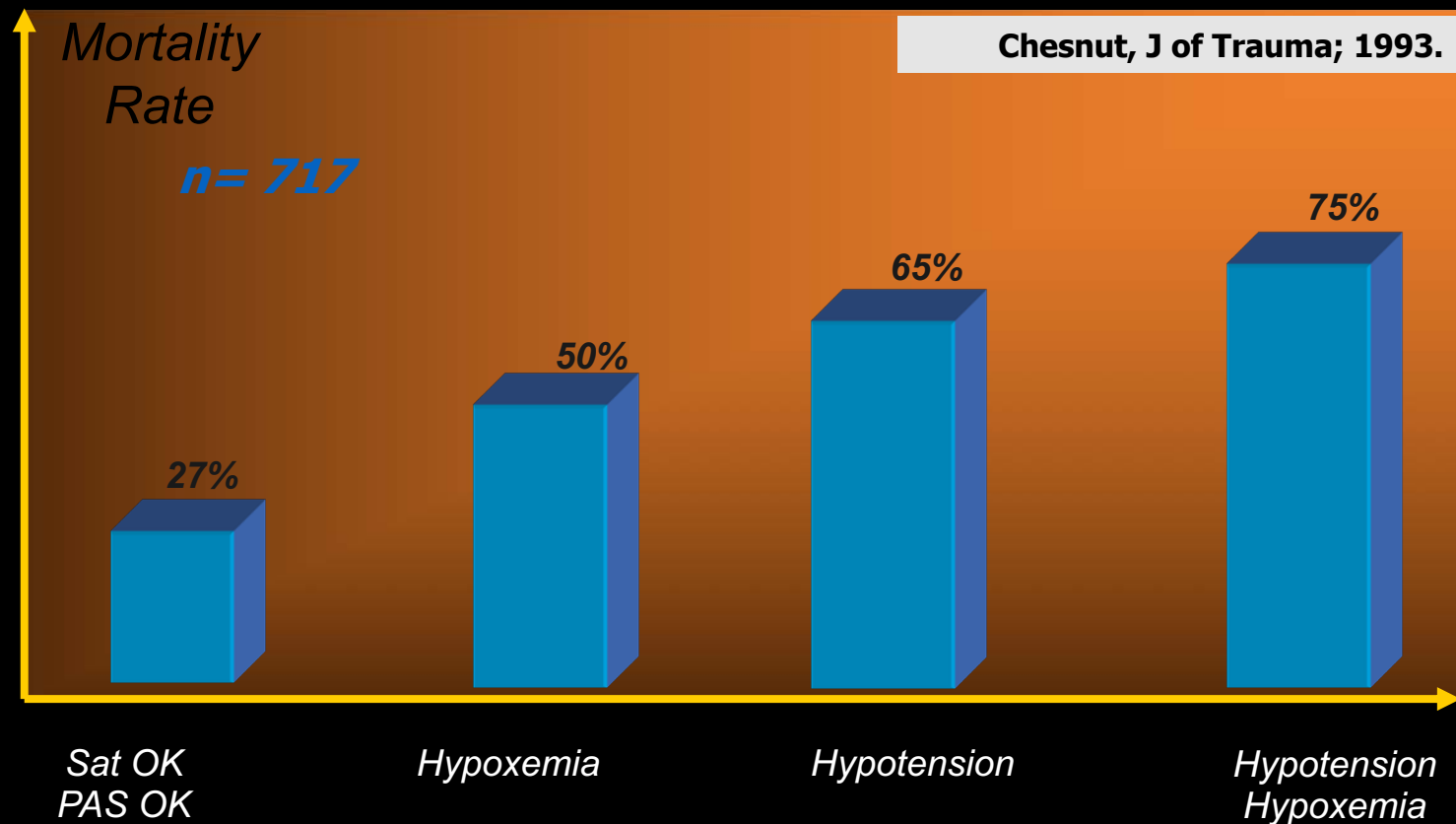
- Population jeune et pronostic sévère

◆ Hypothèse proposée:

Pronostic corrélé
à la qualité de la prise en charge initiale

Agressions secondaires d'origine systémique

Association identifiée, causalité probable



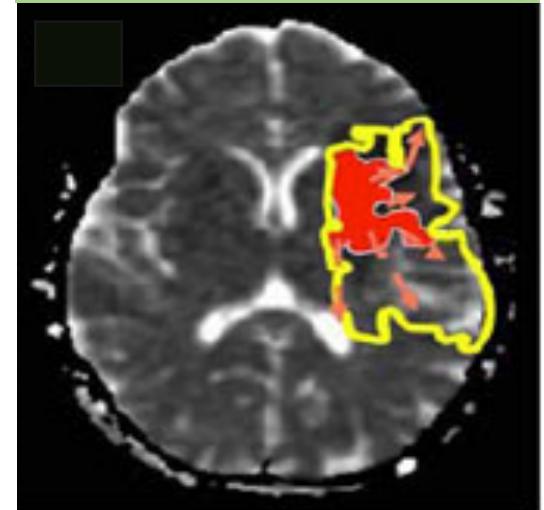
Lésions cérébrales aiguës: Acquisition de lésions « secondaires »

Sensitizing factors

Primary lesions



Secondary lesions



Therapeutic strategies:
Secondary lesions prevention

Impact réel Neuro-ICU

Crit Care Med. 2001 Mar;29(3):635-40.

Admission to a neurologic/neurosurgical intensive care unit is associated with reduced mortality rate after intracerebral hemorrhage.

Diringer MN¹, Edwards DF.

Prospective 40000 patients ICH

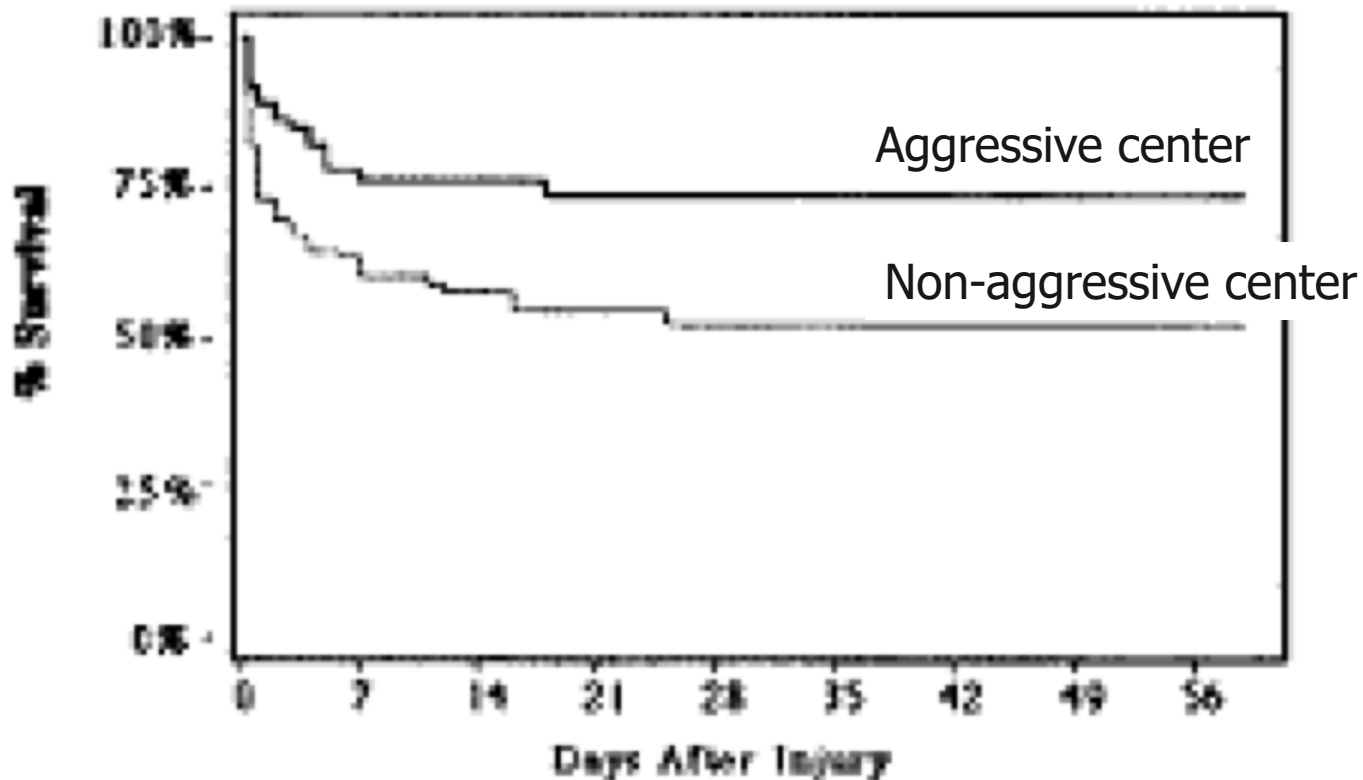
Association with an increase in hospital mortality rate

	OR	IC
REA non spécialisée	3.4	1.7-7.6
Age (/an)	1.03	1.01-1.04
GCS (/point)	0.6	0.58-0.65
REA <10 lits	1.1	1.02-1.13

Impact de la filière NREA/NC/NRI adaptée positif
Rôle de l'autoprophétie ?

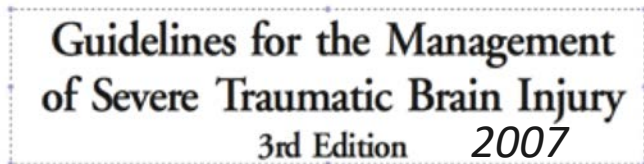
Management of severe head injury: Institutional variations in care and effect on outcome*

- Mortalité Agressive Centers: 27%
- Mortalité Non agressive Centers: 45% (p=0.01)



Epidemiological point of view for TBI

Failure of Evidence Based Medicine



165 reviewed studies

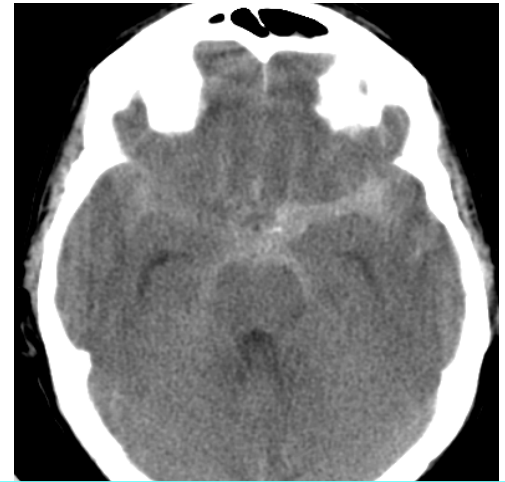
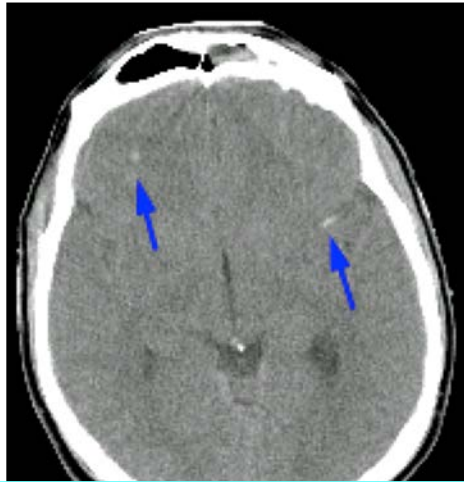
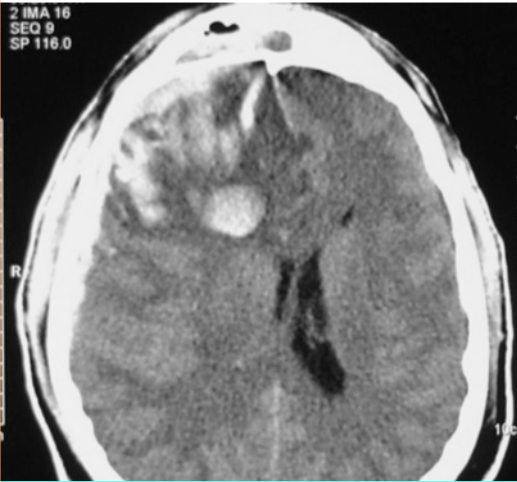
Only 1 study
with Level I recommendation:
Ineffectiveness of prophylactic steroids



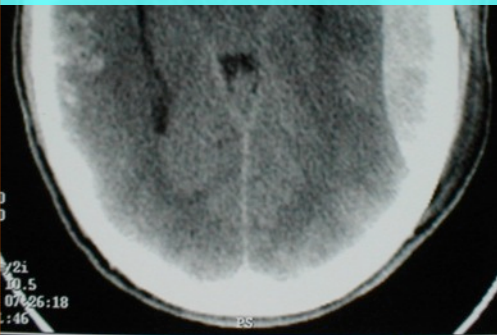
TBI's mortality shows a 9% decrease every 10 years since 1990....

Stein SC J Neurosurg 2010

TC est un paradoxe scientifique
Moins de morts sans preuve thérapeutique
Place de la médecine individualisée vs EBM ??



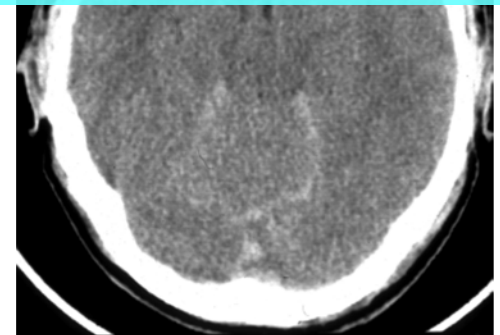
Il n'y a pas **UN** traumatisme crânien
mais
DES traumatismes Crâniens



Hématome extra-dural



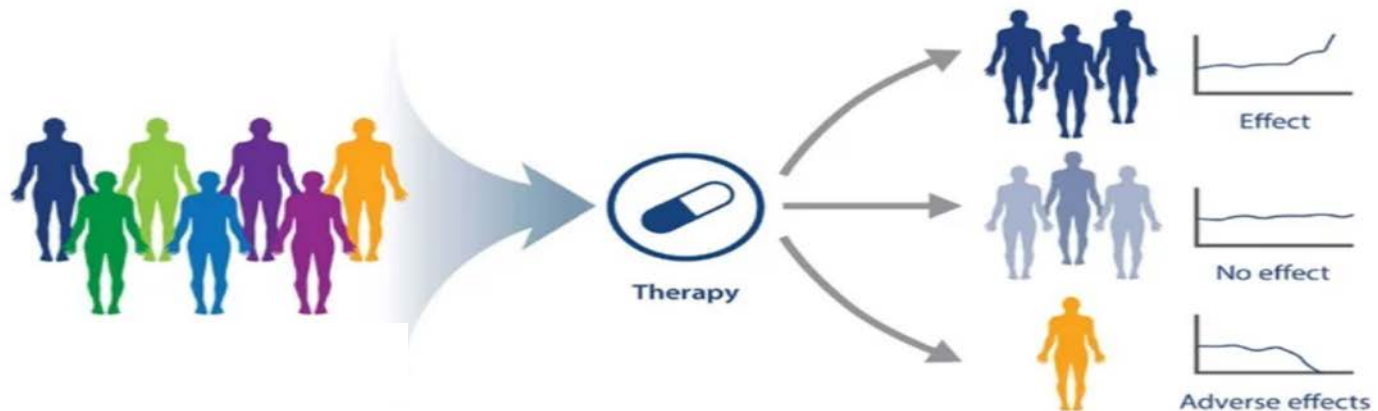
Hématome sous-dural



Œdème diffus

Current Medicine

One Treatment Fits All



Future Medicine

More Personalized Diagnostics



THE LANCET

Neurology

Volume 18, Issue 10, October 2019, Pages 923-934



Articles

Case-mix, care pathways, and outcomes in patients with traumatic brain injury in CENTER-TBI: a European prospective, multicentre, longitudinal, cohort study

Prof Ewout W Steyerberg PhD ^{a, b}, Eveline Wiegers MSc ^{a*}, Charlie Sewalt MSc ^{a*}, Prof Andras Buki MD ^{c, d}, Prof Giuseppe Citerio MD ^{e, f}, Véronique De Keyser MA ^g, Ari Ercole MD ⁱ, Kevin Kunzmann PhD ^j, Linda Lanyon PhD ^k, Prof Fiona Lecky MD ^m, Hester Lingsma PhD ^a, Prof Geoffrey Manley MD ⁿ, David Nelson MD ^l, Prof Wilco Peul MD ^o, Prof Nino Stocchetti MD ^{p, q}, Prof Nicole von Steinbüchel PhD ^r, Thijs Vande Vyvere MSc ^{h, t}, Jan Verheyden MSc ^s ... Tommaso Zoerle

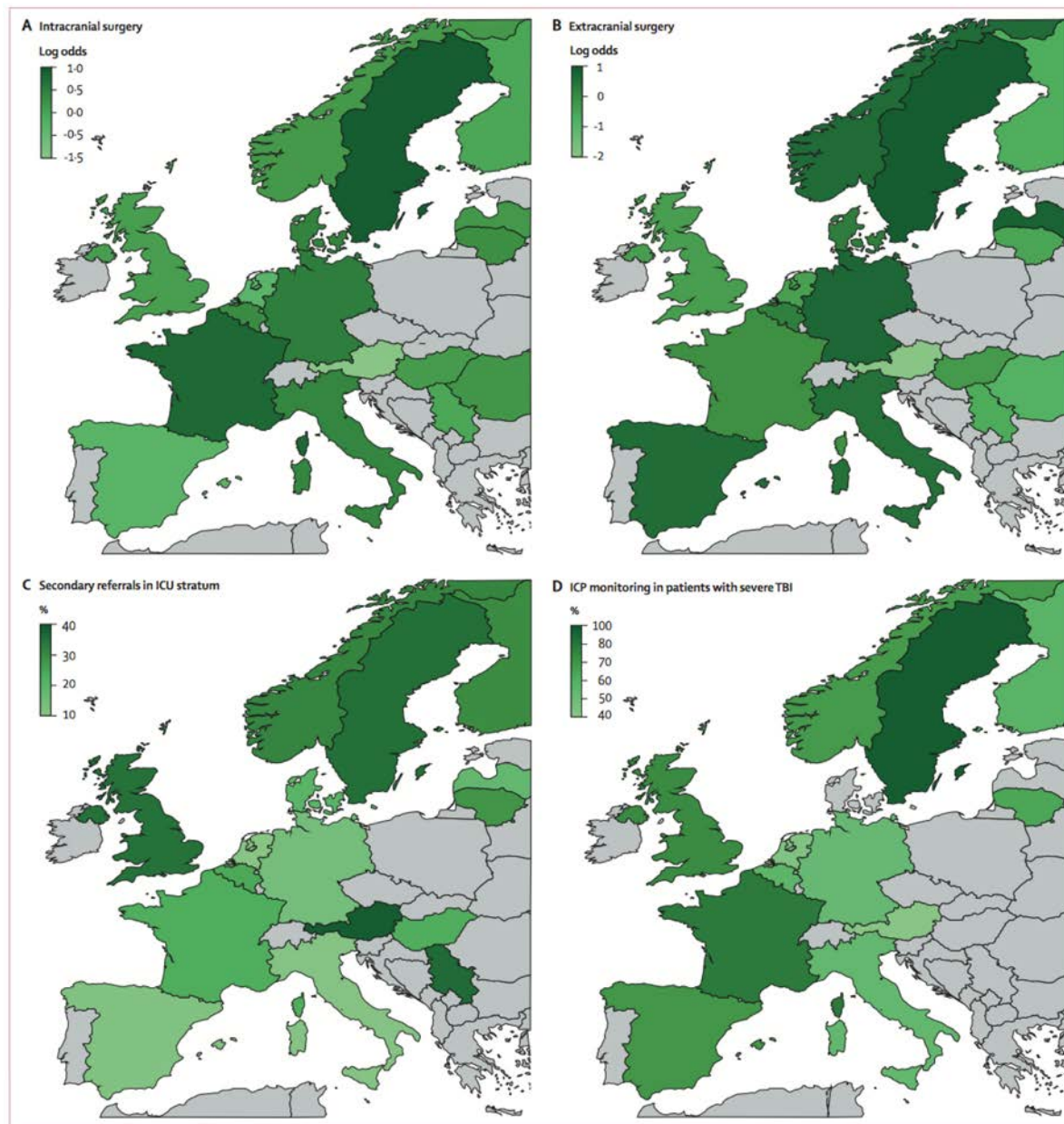


Figure 2: Between-country differences in processes of care for TBI in Europe

(A) The log odds ratio of intracranial surgery, representing the log odds of intracranial surgery per country compared with the overall average, adjusted for IMPACT CT model and stratum.

(B) The log odds ratio of extracranial surgery, representing the log odds of extracranial surgery per country compared with the overall average, adjusted for any major extracranial injury and stratum.

(C) The percentage of patients in the intensive care unit stratum (n=2138) referred from another hospital, per country. (D) Percentage of patients with severe TBI (n=958) with ICP monitoring, per

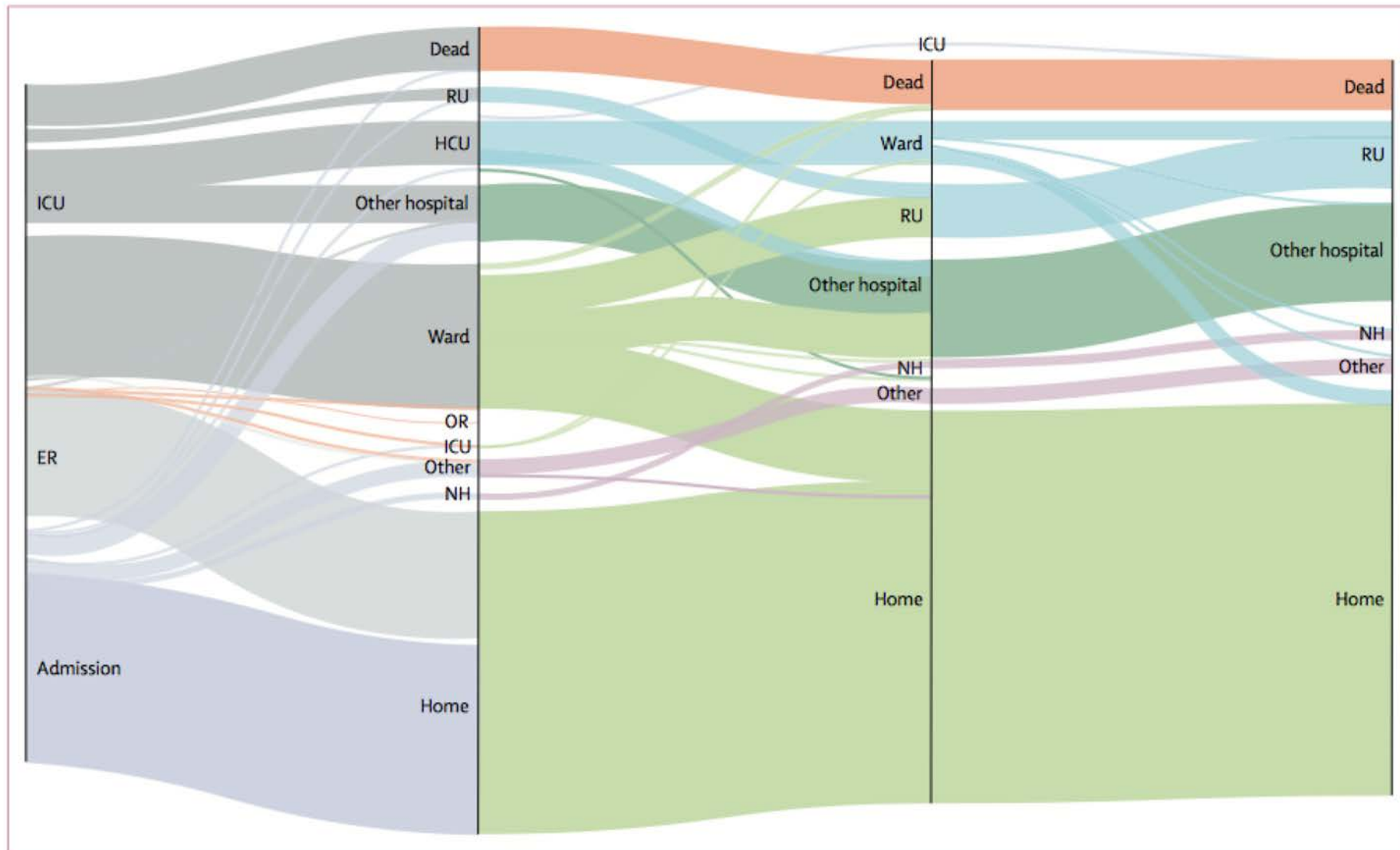
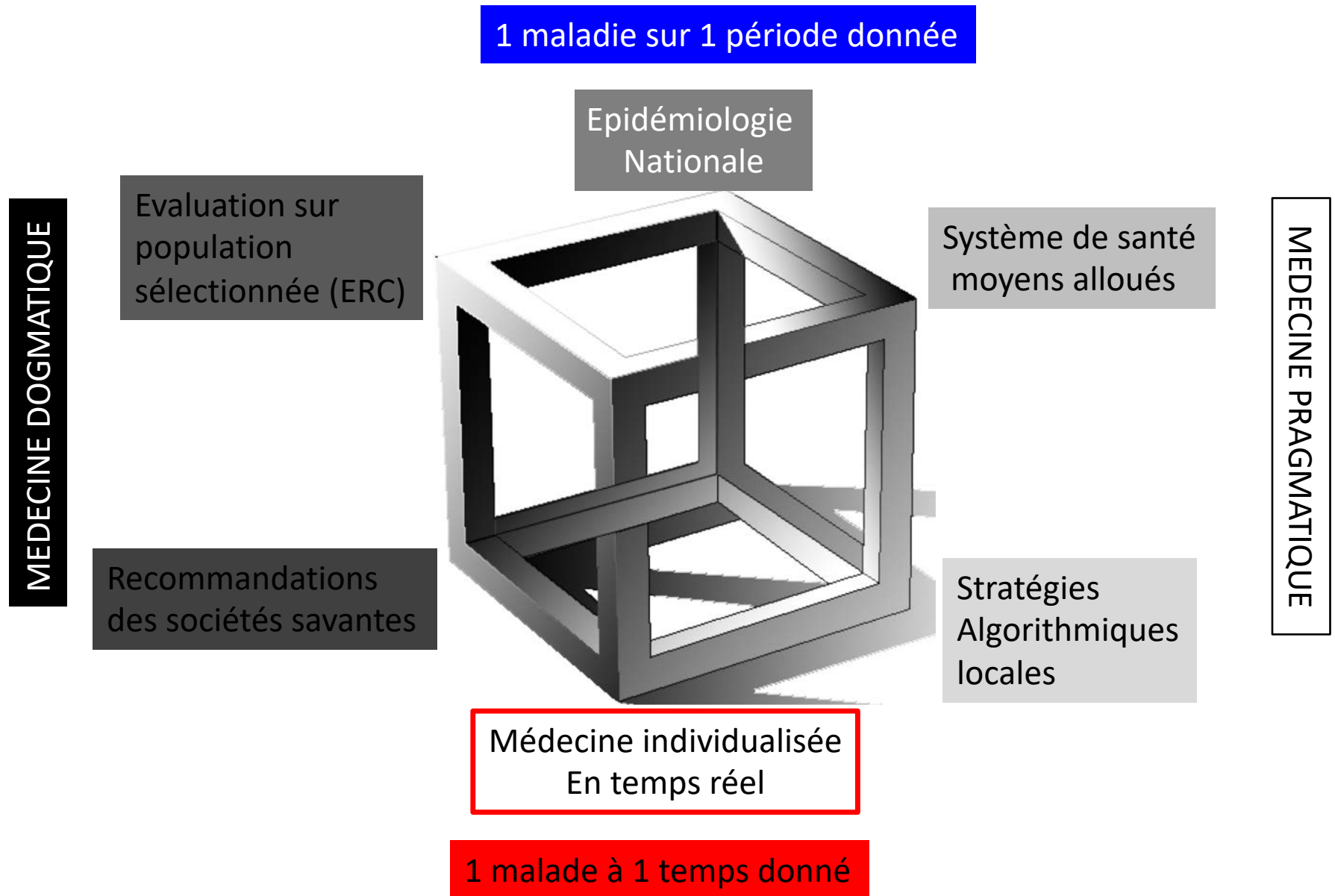


Figure 3: Care pathway by stratum in the CENTER-TBI core study (n=4509 patients)

Vertical lines represent the first, second, and third transition of care. For example, most patients from the ER are discharged home and from the ICU most patients go to the ward. The width of each stream reflects the number of patients in that particular stream. The colours have been chosen to allow for clear visual differentiation between streams but do not carry any other intrinsic information. ER=emergency room. ICU=intensive care unit. ED=emergency department. HCU=high care unit. OR=operation room. RU=rehabilitation unit. NH=nursing home.

Paradoxes des prismes





Recommandations Formalisées d'Experts

Actualisation des recommandations

PRISE EN CHARGE DES TRAUMATISES CRANIENS GRAVES A LA PHASE PRECOCE (24 premières heures)

Société Française d'Anesthésie et de Réanimation

En collaboration avec les Sociétés ANARLF, SFMU, SFNC, GFRUP, ADARPEF

Association de Neuro-Anesthésie Réanimation de Langue Française

Société Française de Médecine d'Urgence

Société Française de Neurochirurgie

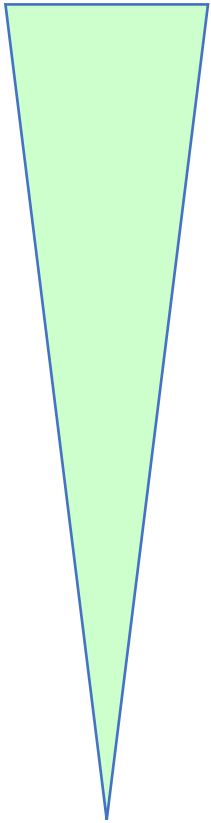
Groupe Francophone de Réanimation et d'Urgences Pédiatriques

Association des Anesthésistes-Réanimateurs Pédiatriques d'Expression Française

Des nouveautés ??

OUI

IMPACT



Détecter les malades à risque

Optimisation cérébrale dès la prise en charge initiale

Objectifs thérapeutiques de l'HIC

Thérapeutiques recommandées en réanimation

RFE 2017

But de la Neuro-réanimation

Identifier défaillance NEURO

Intervenir défaillance NEURO

Sevrer suppléance

Pronostiquer lésions NEURO

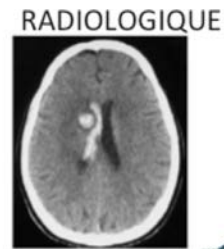
But de la Neuro-réanimation

Identifier défaillance NEURO

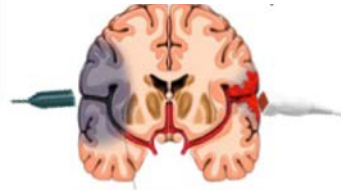
Intervenir défaillance NEURO

Sevrer suppléance

Pronostiquer lésions NEURO



Monitoring non-invasif
dynamique



Monitoring global
Et invasif



Monitoring tissulaire
et localisé

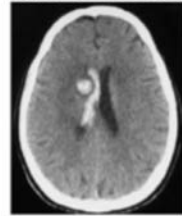


Détecter l'Olighémie
tissulaire cérébrale

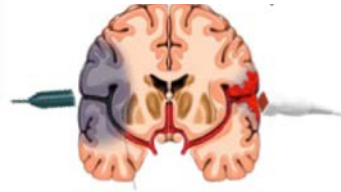
Diminuer la zone d'incertitude



RADIOLOGIQUE



Monitoring non-invasif
dynamique



Monitoring global
Et invasif



Monitoring tissulaire
et localisé



Détecter l'Olighémie tissulaire cérébrale

Transcranial Doppler to Screen on Admission Patients With Mild to Moderate Traumatic Brain Injury

Neurosurgery 2011

Pierre Bouzat, MD*
 Gilles Francony, MD*
 Philippe Declety, MD*
 Céline Genty, BSc‡
 Affif Kaddour, MD§
 Pierre Bessou, MD¶
 Julien Brun, MD*
 Claude Jacquot, MD*
 Stephan Chabardes, MD, PhD |
 Jean-Luc Bosson, MD, PhD‡
 Jean-François Payen, MD, PhD*

98 patients, GCS 9-15
 TCDB I-II (normal ou lésions mineures)
 Stables, sans anticoagulants

secondary neurological deterioration

	No SND (n = 77)	SND (n = 21)	P
FVm, cm/s	49 (31-80)	31 (18-60)	<.01
FVs, cm/s	84 (47-128)	69 (38-119)	<.01
FVd, cm/s	34 (18-64)	18 (11-36)	<.01
Pulsatility index	1.02 (0.66-1.83)	1.47 (1.07-2.33)	<.01
Injury-to-TCD time, min	215 (42-700)	300 (90-690)	.03



Quantitative pupillometry for the monitoring of intracranial hypertension in patients with severe traumatic brain injury

Fritz-Patrick Jahns¹, John Paul Miroz², Mahmoud Messerer³, Roy T. Daniel³, Fabio Silvio Taccone⁴, Philippe Eckert¹ and Mauro Oddo^{1,2*}

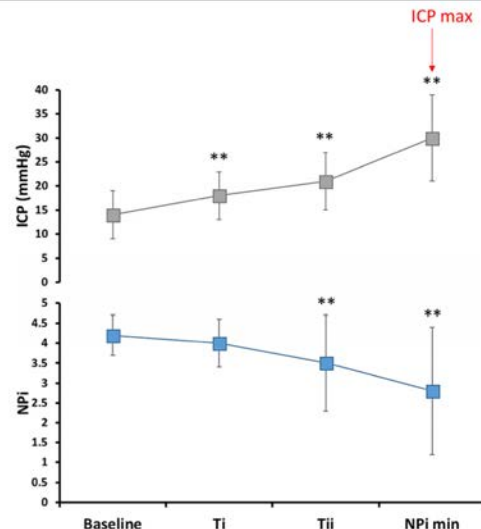


Fig. 2 Trends over time of the Neurological Pupil Index (NPI) during episodes of sustained elevated intracranial pressure (ICP). Line graphs illustrating trends over time of the NPI (blue line) during 43 episodes of elevated ICP (gray line). Data are mean $\pm$ standard deviation of a total of 172 paired ICP-NPI measurements; ** $p < 0.001$ for pairwise comparisons of baseline ICP and NPI values (6 h previous to ICP max [red arrow]) with T₁ (= -4 h), T₂ (= -2 h), ICP max, and NPi min, respectively (time 0)

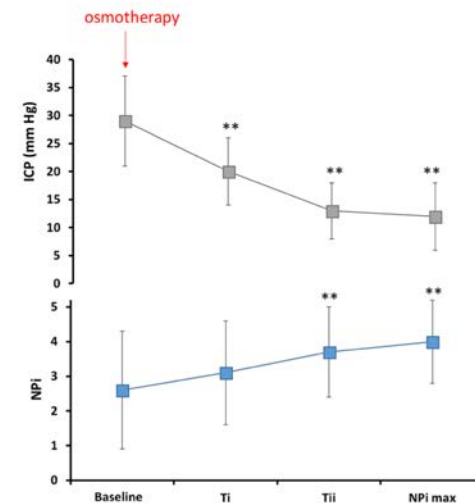
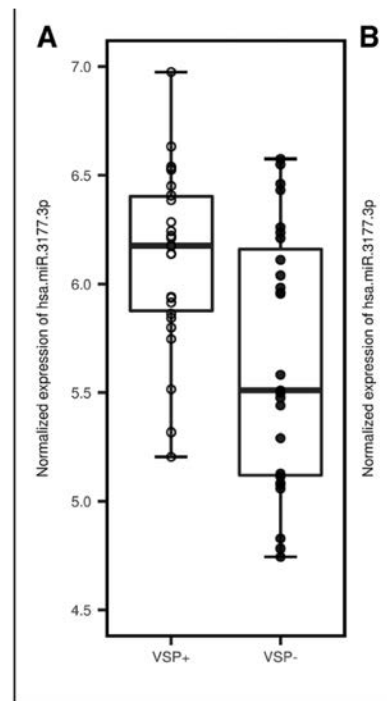


Fig. 3 Trends over time of the Neurological Pupil Index (NPI) during elevated intracranial pressure (ICP) treated with osmotherapy (mannitol or hypertonic saline bolus). Line graphs illustrating trends over time of the NPI (blue line) during 15 episodes of elevated ICP (gray line). Data are mean $\pm$ standard deviation of a total of 50 paired ICP-NPI measurements; ** $p < 0.001$ for pairwise comparisons of baseline ICP and NPI values (start of osmotherapy [red arrow]) with T₁ (= -4 h), T₂ (= -2 h), ICP min, and NPi max, respectively (time 0)

Brief Report

Whole-Blood miRNA Sequencing Profiling for Vasospasm in Patients With Aneurysmal Subarachnoid Hemorrhage

Anne-Sophie Pulcrano-Nicolas, MSc; Carole Proust; Frédéric Clarençon, MD, PhD;
Alice Jacquens; Claire Perret, MSc; Maguelonne Roux; Eimad Shotar, MD; Florian Thibord, MSc;
Louis Puybasset, MD, PhD; Sophie Garnier, PhD; Vincent Degos, MD, PhD;
David-Alexandre Trégouët, PhD



But de la Neuro-réanimation

Identifier défaillance NEURO

Intervenir défaillance NEURO

Sevrer suppléance

Pronostiquer lésions NEURO

D'un point de vue physiopathologique

But = préserver le transport en oxygène

$$DaO_2 = DSC \times CaO_2$$

$$DaO_2 = DSC \times 1,34 \times \overbrace{Hb} \times SaO_2$$

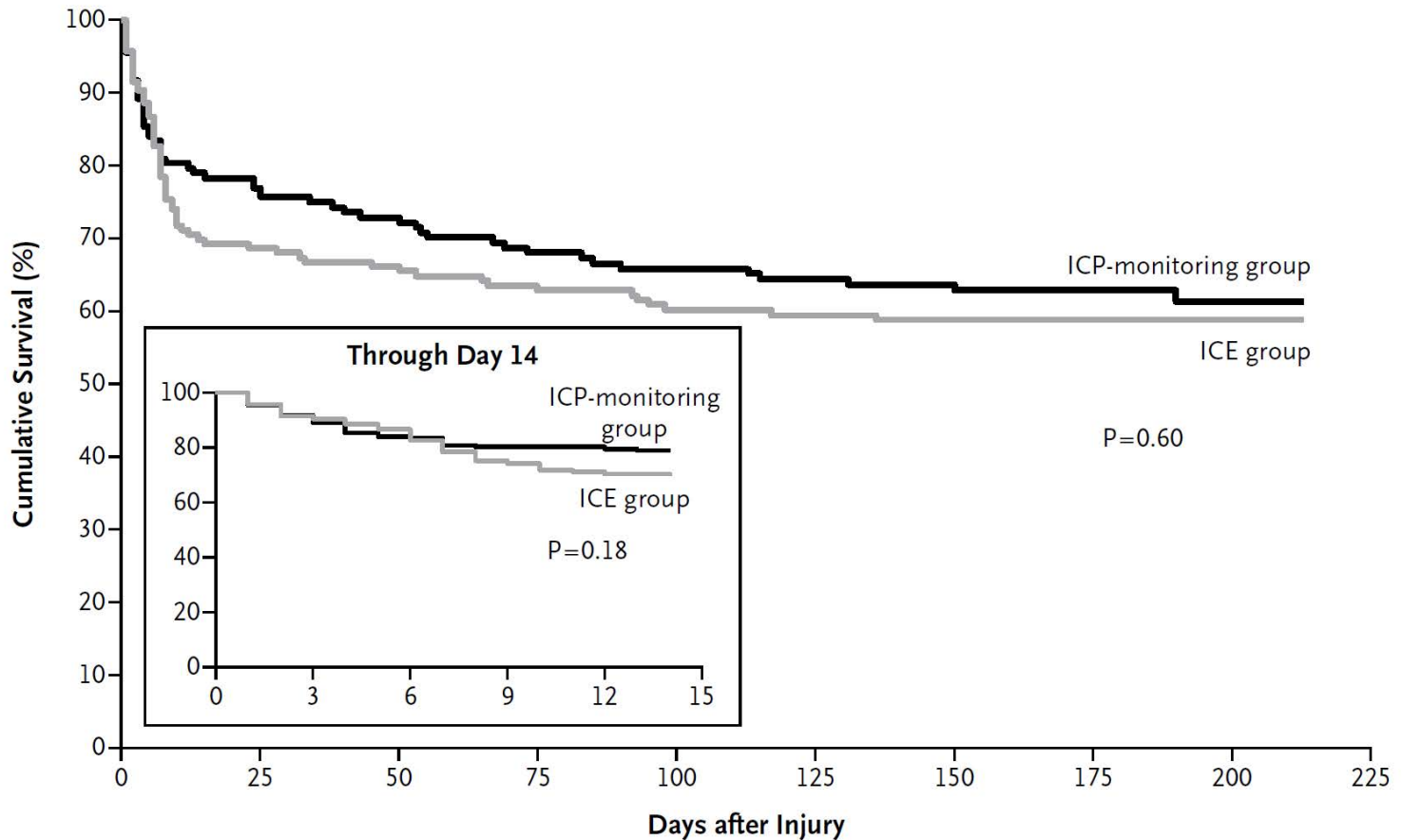
DSC:

- PPC (=PAM-**PIC**)
- PaCO₂
- Volémie

CaO₂:

- Hémoglobinémie
- SaO₂

Mesurer ne veut pas dire guérir....



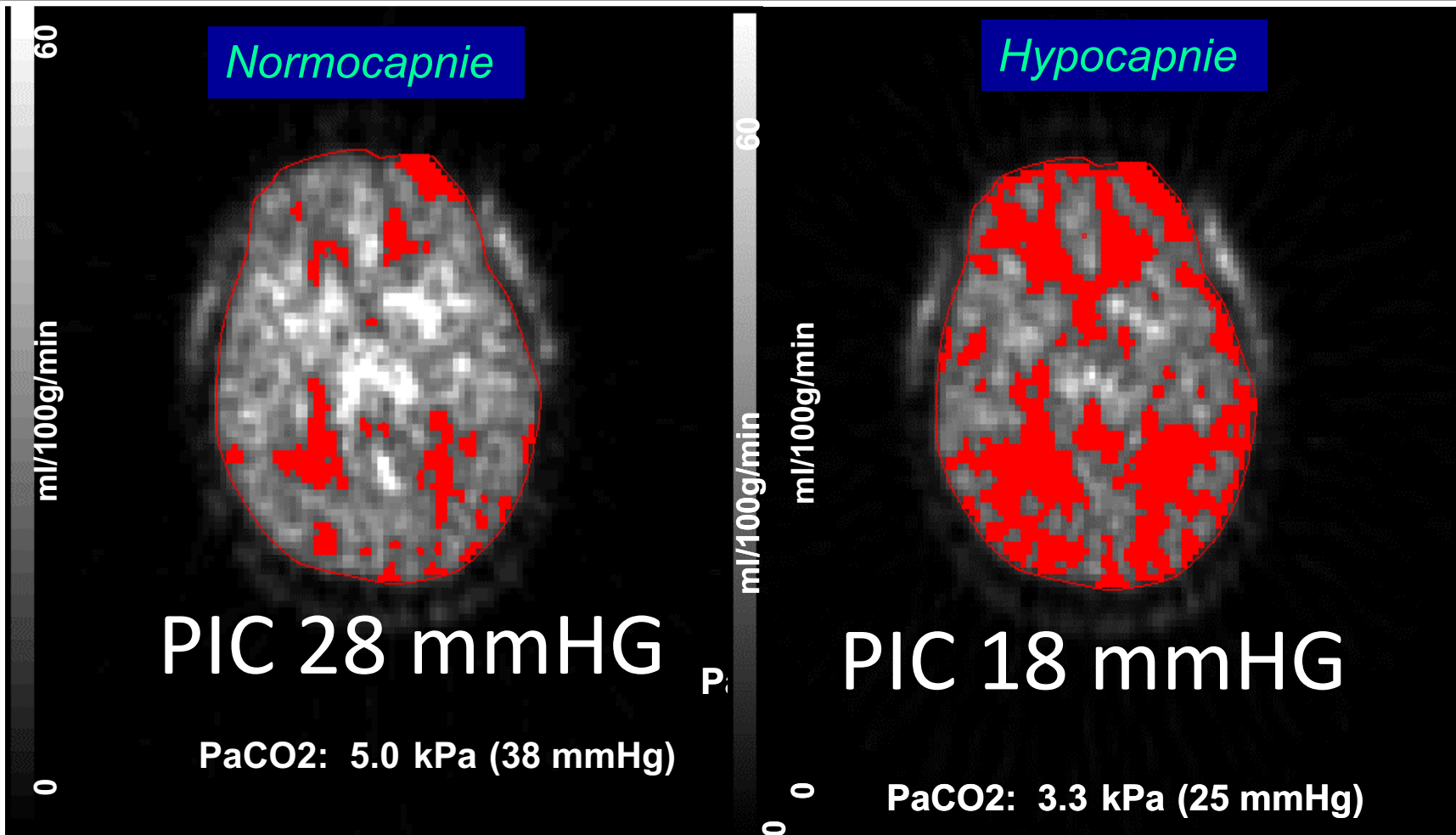
Chesnut, *N Eng J Med* 2012

Etude très discutée par l'auteur lui-même



Trauma crânien et hyperventilation

Surfaces en rouge indiquent un $DSCr \leq 20$ ml/100g/min)
(Coles et al. Crit Care Med. 2002)



OBJECTIF principal:

- maintenir un débit sanguin cérébral adapté

 - «Mesure de PIC peut être fausse »

 - «Une PIC contrôlée est insuffisante »

 - «Une PIC contrôlée au dépend du DSC est dangereuse »

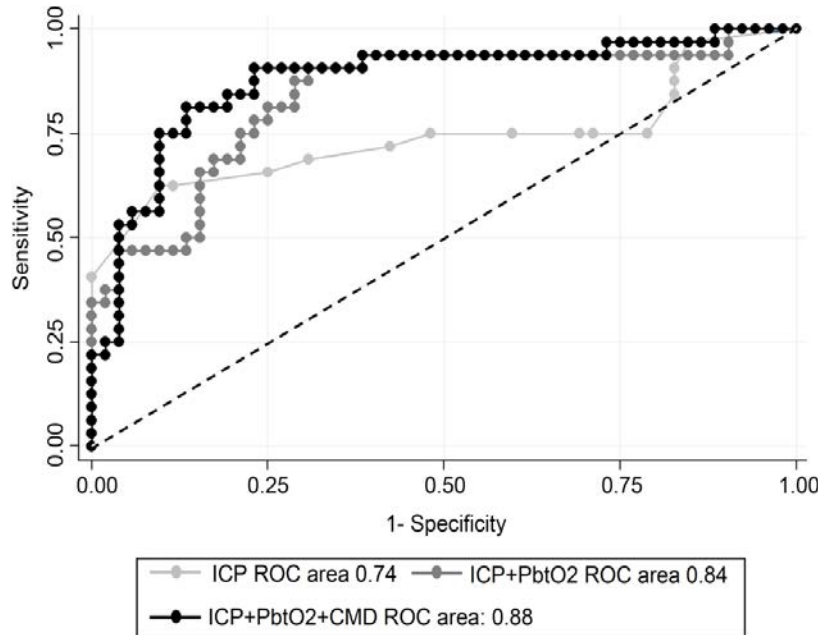
 - « Cut-off de PIC à 20 mmHg est remis en question »

- Optimiser la mesure de la PIC

- Evaluation du DCS concomitante

Intérêt du monitoring multimodal pour Estimer le DSC

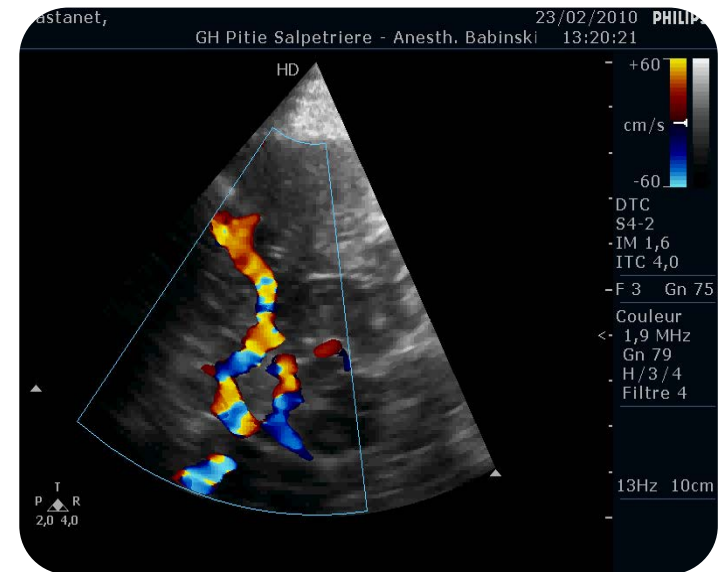
PTiO2, Microdialyse



Bouzat, Crit Care Med 2015

Doppler Trans-Crânien

- Vélocités diastoliques < 30 cm/s
- Index de Pulsatilité > 1.4



Hiérarchiser les thérapeutiques

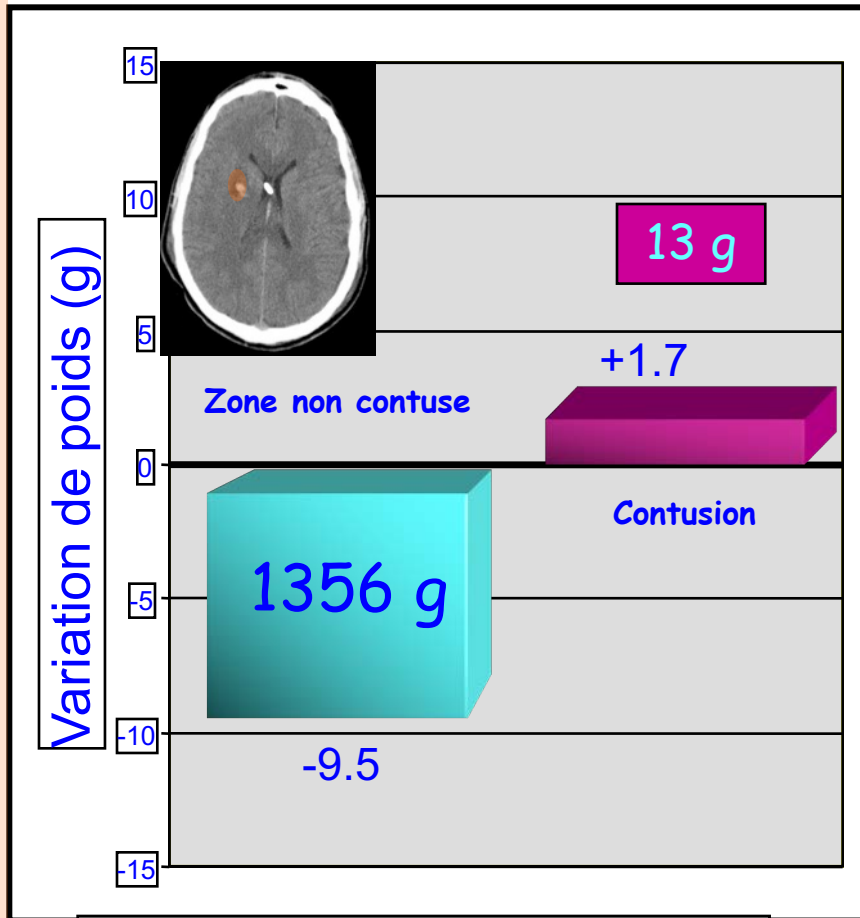
- fonction de leur toxicité selon la lésion
- fonction de leur toxicité selon le terrain
- fonction de paramètres multimodaux

Levels of Evidence	Treatment	Risk
8 Not reported	Decompressive craniectomy	Infection or delayed hematoma Subdural effusion Hydrocephalus and syndrome of the trephined
7 Level II	Metabolic suppression (barbiturates)	Hypotension and increased number of infections
6 Level III	Hypothermia	Fluid and electrolyte disturbances and infection
5 Level III	Induced hypocapnia	Excessive vasoconstriction and ischemia
4 Level II	Hyperosmolar therapy Mannitol or hypertonic saline	Negative fluid balance Hypernatremia Kidney failure
3 Not reported	Ventricular CSF drainage	Infection
2 Level III	Increased sedation	Hypotension
1 Not reported	Intubation Normocarbic ventilation	Coughing, ventilator asynchrony, ventilator-associated pneumonia

Opposed effects of hypertonic saline on contusions and noncontused brain tissue in patients with severe traumatic brain injury*

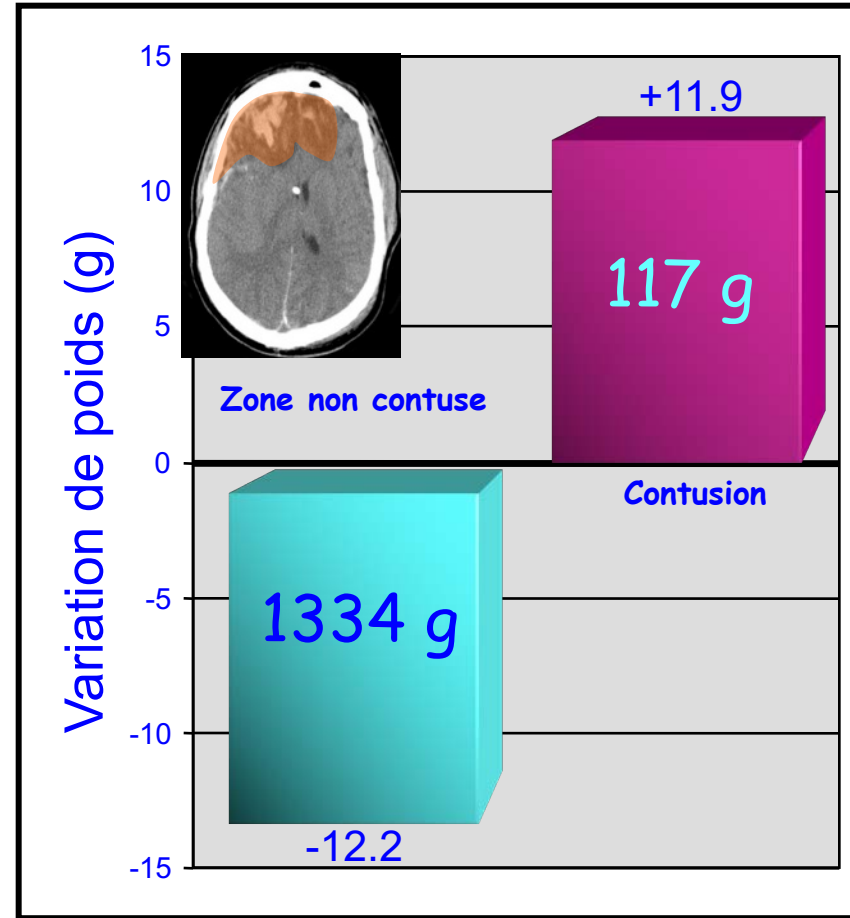
Thomas Lescot, MD; Vincent Degos, MD; Abderrezak Zouaoui, MD, PhD; Françoise Préteux, PhD; Pierre Coriat, MD; Louis Puybasset, MD, PhD (Crit Care Med 2006; 34:3029–3033)

Contusion < 20 ml, n = 8



$\Delta \text{ Poids} = - 7.8 \text{ g}$

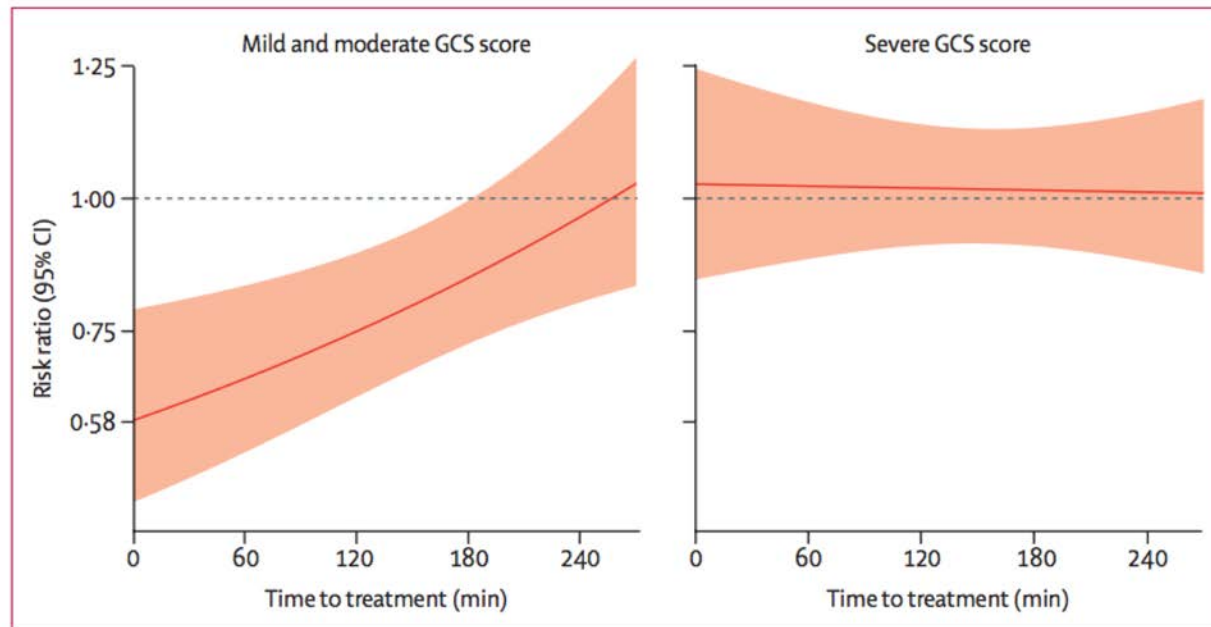
Contusion > 20 ml, n = 12



$\Delta \text{ Poids} = - 0.3 \text{ g}$

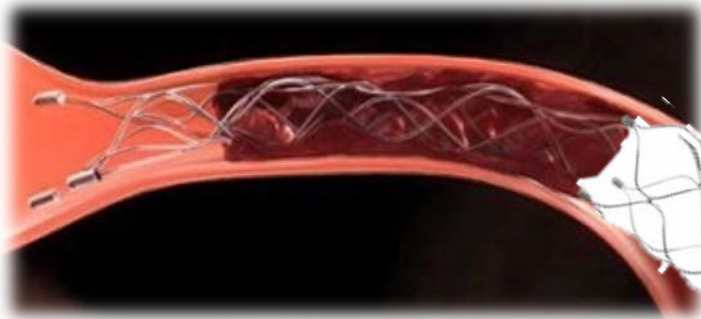
Effects of tranexamic acid on death, disability, vascular occlusive events and other morbidities in patients with acute traumatic brain injury (CRASH-3): a randomised, placebo-controlled trial

*The CRASH-3 trial collaborators**



Lancet, 2019

1 Janvier 2015: AVC ischémique devient une urgence interventionnelle



The NEW ENGLAND
JOURNAL *of* MEDICINE

ESTABLISHED IN 1812

JANUARY 1, 2015

VOL. 372 NO. 1

A Randomized Trial of Intraarterial Treatment for Acute
Ischemic Stroke



Intégrer la Thrombectomie

THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLES

A Randomized Trial of Intracranial Thrombectomy for Acute Ischemic Stroke

O.A. Berthelson, P.S.S. Fransen, D. Bevilacqua, W.J. Schonewille, J.A. Vos, P.J. Nederk, J. Staals, J. Hofmeijer, J.A. van Oort, P.A. Brouwer, B.J. Emmert, S.P. de, E.J. van Dijk, J. de Vries, P.L.M. de, S.A.A.M. van Hasselt, L.A.M. Al, P.C. Vroomen, O. Elshof, T.H. A.V. Tielbeek, H.M. den Hertog, D.E.W. Steyerberg, H.Z. Flach, H.A.N. L.J.M. Beenen, E. van den Berg, P.A. van der Lugt, R.J. van Oostel, for the MR CLEAN Investigators

BACKGROUND

In patients with acute ischemic stroke, intracranial thrombectomy may improve functional outcome. However, proof of a benefit is lacking.

METHODS

We randomly assigned eligible patients to receive intravenous alteplase or mechanical thrombectomy. The primary outcome was functional outcome at 90 days. Secondary outcomes were mortality and quality of life. The trial was registered at www.clinicaltrials.gov (NCT01574461).

RESULTS

We enrolled 500 patients at 20 centers. The median age was 68 years (range 25 to 90), and 445 patients (89%) were male. The median time from onset to randomization was 160 minutes (interquartile range, 120 to 230). The primary outcome was functional independence at 90 days (modified Rankin scale, 0 to 2) in 25.2% of patients in the alteplase group and 32.5% in the thrombectomy group (odds ratio, 1.5; 95% confidence interval, 0.9 to 2.4; $P=0.12$).

CONCLUSIONS

In patients with acute ischemic stroke, intracranial thrombectomy did not improve functional outcome compared with intravenous alteplase. MR CLEAN is a controlled trial that

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The NEW ENGLAND JOURNAL of MEDICINE

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JUNE 11, 2015

VOL. 372 NO. 24

Stent-Retriever Thrombectomy after Intravenous t-PA vs. t-PA Alone in Stroke

Jeffrey L. Saver, M.D., Mayank Goyal, M.D., Alain Bonafe, M.D., Harm-Christoph Diener, M.D., Ph.D., Elad I. Levy, M.D., Vitor M. Pereira, M.D., Gregory W. Albers, M.D., Christophe Cognard, M.D., David J. Cohen, M.D., Werner Hacke, M.D., Ph.D., Olav Jansen, M.D., Ph.D., Tudor G. Jovin, M.D., Heinrich P. Mattle, M.D., Raul G. Nogueira, M.D., Adrian H. Siddiqui, M.D., Ph.D., Nileep R. Yavagal, M.D., Blaise W. Baxter, M.D., Thomas G. Devlin, M.D., Ph.D., Demetrios K. Lopes, M.D., Vivek K. Reddy, M.D., Richard du Mesnil de Rochemont, M.D., Oliver C. Singer, M.D., and Reza Jahan, M.D., for the SWIFT PRIME Investigators*

ABSTRACT

BACKGROUND

Among patients with acute ischemic stroke due to occlusions in the proximal anterior intracranial circulation, less than 40% regain functional independence when treated with intravenous tissue plasminogen activator (t-PA) alone. Thrombectomy with the use of a stent retriever, in addition to intravenous t-PA, increases reperfusion rates and may improve long-term functional outcome.

METHODS

We randomly assigned eligible patients with stroke who were receiving or had received intravenous t-PA to continue with t-PA alone (control group) or to undergo endovascular thrombectomy with the use of a stent retriever within 6 hours after symptom onset (intervention group). Patients had confirmed occlusions in the proximal anterior intracranial circulation and an absence of large ischemic-core lesions. The primary outcome was the severity of global disability at 90 days, as assessed by means of the modified Rankin scale (with scores ranging from 0 [no symptoms] to 6 [death]).

RESULTS

The study was stopped early because of efficacy. At 39 centers, 196 patients underwent randomization (98 patients in each group). In the intervention group, the median time from qualifying imaging to groin puncture was 57 minutes, and the rate of substantial reperfusion at the end of the procedure was 88%. Thrombectomy with the stent retriever plus intravenous t-PA reduced disability at 90 days over the entire range of scores on the modified Rankin scale ($P<0.001$). The rate of functional independence (modified Rankin scale score, 0 to 2) was higher in the intervention group than in the control group (60% vs. 35%, $P<0.001$). There were no significant between-group differences in 90-day mortality (9% vs. 12%, $P=0.50$) or symptomatic intracranial hemorrhage (9% vs. 3%, $P=0.12$).

CONCLUSIONS

In patients receiving intravenous t-PA for acute ischemic stroke due to occlusions in the proximal anterior intracranial circulation, thrombectomy with a stent retriever within 6 hours after onset improved functional outcomes at 90 days. (Funded by Covidien; SWIFT PRIME ClinicalTrials.gov number, NCT01574461.)

NEJM JUNE 11, 2015

The New England Journal of Medicine

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THE NEW ENGLAND JOURNAL OF MEDICINE

ORIGINAL ARTICLES

Thrombectomy 8 Hours after Ischemic Stroke

Victor M. Pereira, M.D., Mayank Goyal, M.D., Alain Bonafe, M.D., Harm-Christoph Diener, M.D., Ph.D., Elad I. Levy, M.D., Vitor M. Pereira, M.D., Gregory W. Albers, M.D., Christophe Cognard, M.D., David J. Cohen, M.D., Werner Hacke, M.D., Ph.D., Olav Jansen, M.D., Ph.D., Tudor G. Jovin, M.D., Heinrich P. Mattle, M.D., Raul G. Nogueira, M.D., Adrian H. Siddiqui, M.D., Ph.D., Nileep R. Yavagal, M.D., Blaise W. Baxter, M.D., Thomas G. Devlin, M.D., Ph.D., Demetrios K. Lopes, M.D., Vivek K. Reddy, M.D., Richard du Mesnil de Rochemont, M.D., Oliver C. Singer, M.D., and Reza Jahan, M.D., for the SWIFT PRIME Investigators*

Thrombectomy for the treatment of acute ischemic stroke: a systematic review and meta-analysis.

We randomly assigned patients to receive intravenous alteplase or mechanical thrombectomy. All patients had large cortical strokes. The primary outcome was functional independence at 90 days. Secondary outcomes were mortality and quality of life. The trial was registered at www.clinicaltrials.gov (NCT01574461).

the modified Rankin scale score at 90 days was significantly lower in the thrombectomy group than in the alteplase group.

Downloaded from nejm.org at UNIV OF MICHIGAN on June 11, 2015

2285

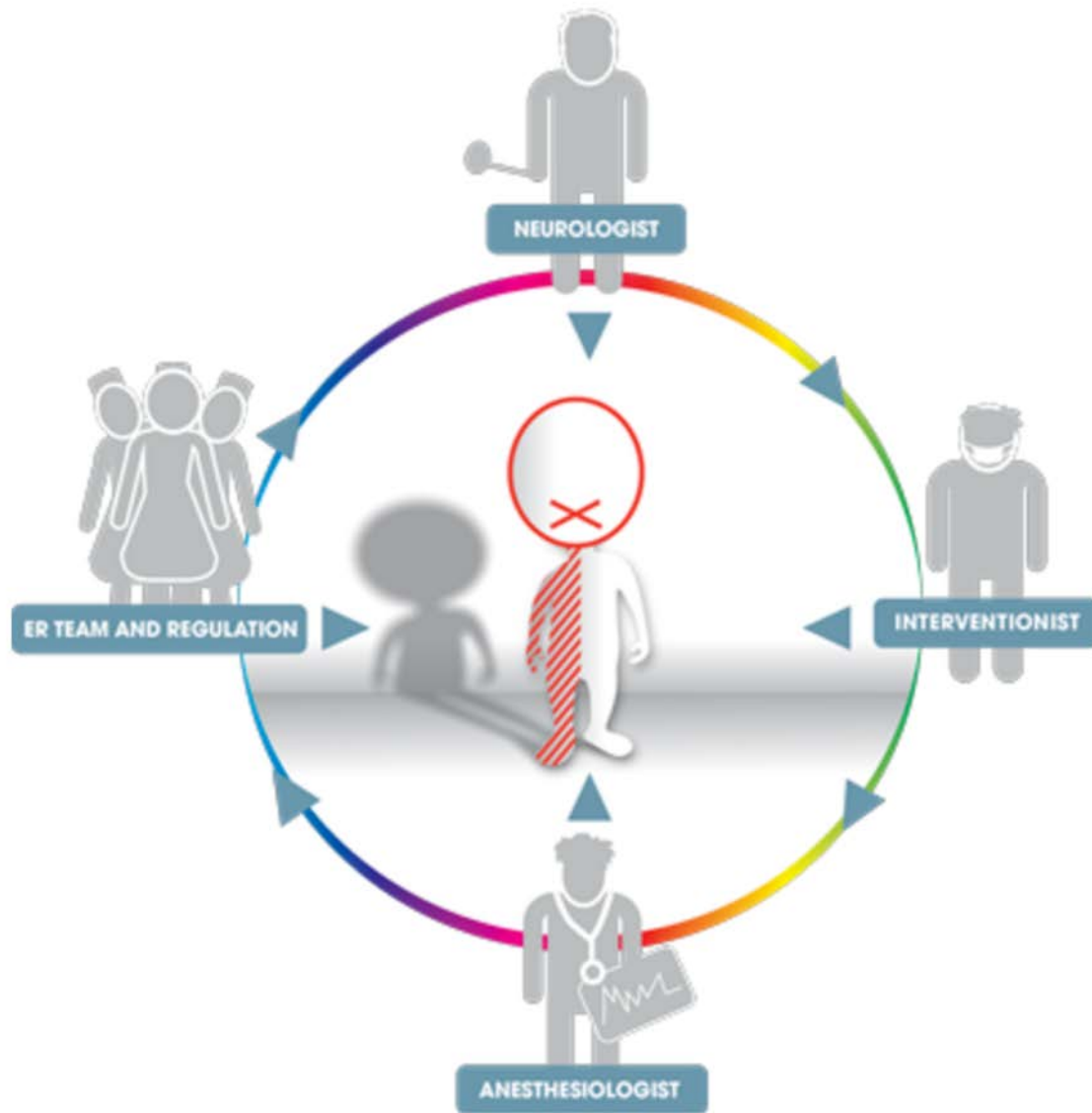
2015



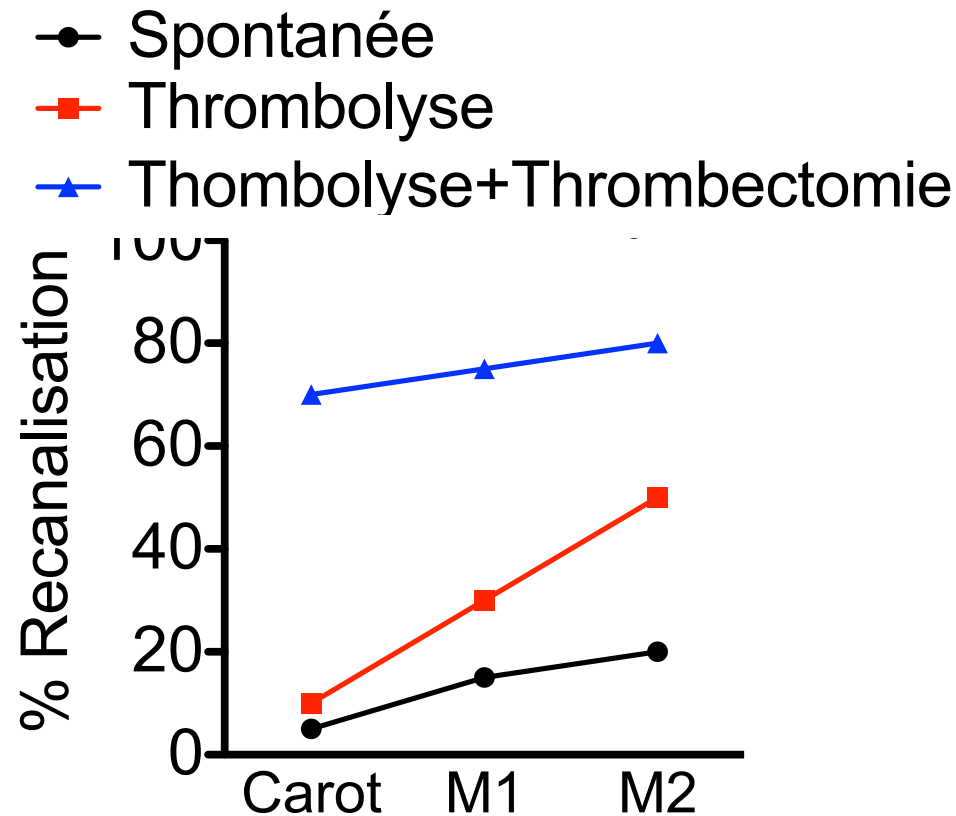
THE LANCET Neurology

Si critères neuro-vasculaires respectés,
Pas de restriction sur Age et sur gravité

Filière AVC ischémique-Team Work



Nette amélioration de la recanalisation



If IV thrombolysis is contraindicated, Mechanical Thrombectomy is recommended
As first line treatment for proximal occlusion (GRADE A Reco ESO 2015)



Déchoc TM équivaut Déchoc PolyT

Même organisation

dédié

-Algorithme

-Plateau



Mise en pratique de la Thrombectomie pour les AVC postopératoires et réanimatoires

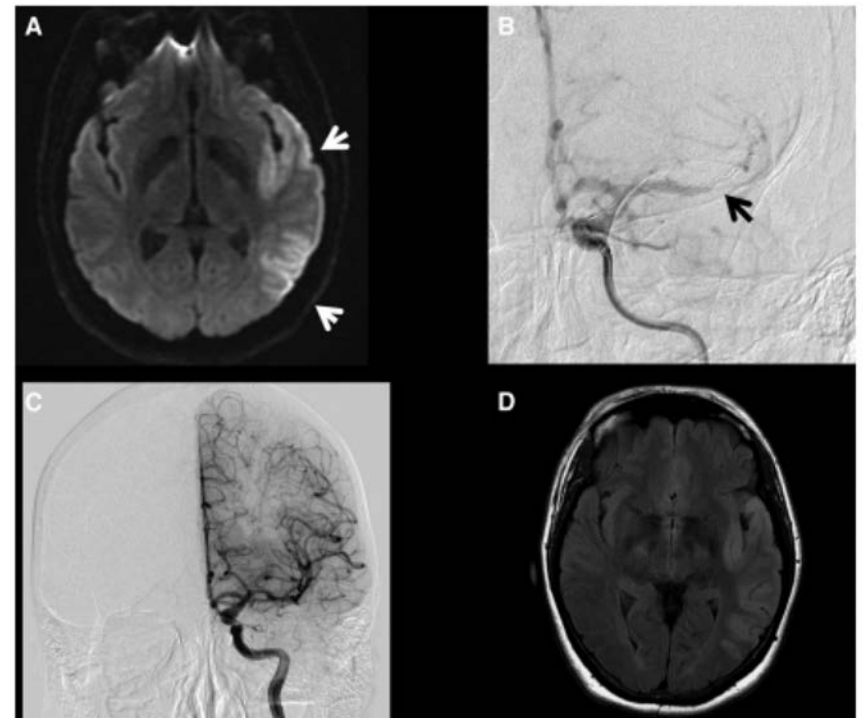
Table 2. Procedural Parameters, Angiographic, and Clinical Outcomes

Parameter	POS Group; n=25	nPOS Group; n=50	P Value*
mRS score of 0–2 at 3 mo (%)	8 (33.3)	26 (56.5)	0.055
Mortality at 3 mo (%)	8 (33.3)	2 (4.2)	0.002*
Successful reperfusion (%)	19 (76)	43 (86)	0.22
Average delays: min (±SD)			
Symptoms' onset to imaging	145.2 (±97.5)	171.9 (±153.3)	0.64
Symptoms' onset to reperfusion	294.5 (±118.5)	309.7 (±157.5)	0.92
Time to reperfusion†	74.6 (±48.3)	59.5 (±35.1)	0.34
Complications (%)			
SICH	2 (8)	5 (10)	0.57
ENT	0	1 (2)	0.5
Vascular perforation	1 (4)	1 (2)	0.56

ENT indicates embolus to new territory; nPOS, nonperioperative strokes; mRS, modified Rankin Scale; POS, perioperative strokes; and SICH, symptomatic intracranial hemorrhage.

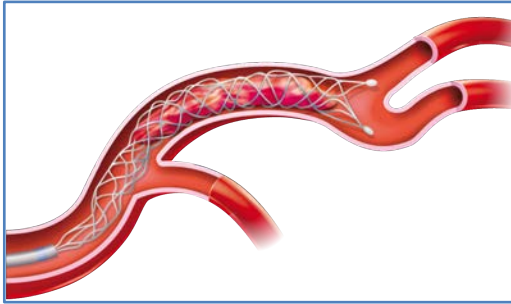
*When $P < 0.05$.

†Time from arterial puncture to successful reperfusion (when achieved).



Prémat, Stroke, 2018

Algorithme Triage post-TM



AG ou Sédation selon protocole
Ventilation M sur défaillance ou conversion

SSPI pour organiser
le triage Post-TM

Sevrage Assistance?
Risque Neuro avec besoin plateau technique?
Distance entre plateau Technique et retour

Malade stable
Retour vers USINV

Malade instable
Sans risque Neuro particulier

Risque Neuro spécifique

*Fosse postérieure étendue
AVC malin
T° hémorragique
Gestion stenting*

Retour vers USINV
Secteur ou site

Transfert Réa secteur

Maintien sur NeuroREA
Avec plateau technique

Gestion complication vasculaire selon moyen et gravité

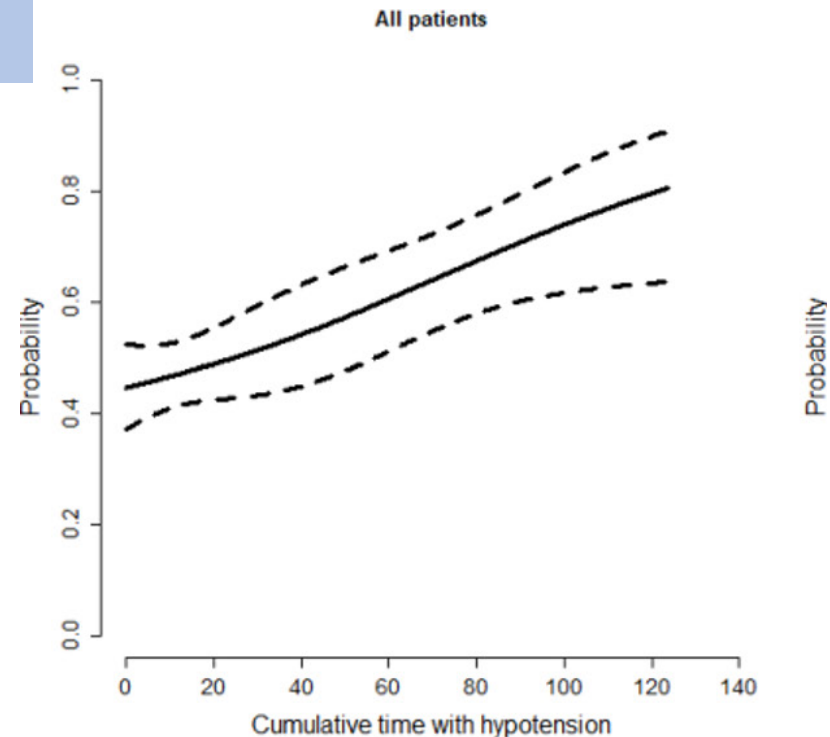
ORIGINAL RESEARCH

A 10% blood pressure drop from baseline during mechanical thrombectomy for stroke is strongly associated with worse neurological outcomes

Arnaud Valent,¹ Amard Sajadhoussen,² Benjamin Maier,³ Bertrand Lapergue,⁴ Marc-Antoine Labeyrie,⁵ Peggy Reiner,⁶ Arturo Consoli,⁷ Marc Fischler,² Etienne Gayat,^{1,8} Morgan Leguen²

Table 1 Patients' characteristics and comparison according to the 90 day functional outcome (results are expressed as median with IQR or count with percentage; p values correspond to Wilcoxon test or χ^2 test as appropriate)

	All patients (n=371)	Rankin ≤ 2 (n=174)	Rankin > 2 (n=197)	P value
Exposition				
Time under 90% of baseline MAP (min)	14.5 (0; 46.5)	10 (0; 33.6)	20 (0; 60.5)	0.0011
Time under 80% of baseline MAP (min)	0 (0; 20)	0 (0; 9.2)	4 (0; 29)	0.00019



But de la Neuro-réanimation

Identifier défaillance NEURO

Intervenir défaillance NEURO

Sevrer suppléance

Pronostiquer lésions NEURO

Extubation Failure in Brain-injured Patients

Risk Factors and Development of a Prediction Score in a Preliminary Prospective Cohort Study

Thomas Godet, M.D., Ph.D., Russell Chabanne, M.D., Julien Marin, M.D., Sophie Kauffmann, M.D., M.Sc., Emmanuel Futier, M.D., Ph.D., Bruno Pereira, Ph.D., Jean-Michel Constantin, M.D., Ph.D.

Table 2. Patients' Follow-Up and Outcomes

	Extubation Success (n = 97)	Extubation Failure (n = 43)	P Value
Extubation failure delay, days	0	1.4 ± 1.9	NA
Extubation failure < 48 h, n (%)	0	31 (72)	NA
Noninvasive ventilation, n (%)	0	12 (28)	NA
Tracheostomy, n (%)	0	9 (21)	NA
Death in ICU, n (%)	1 (1)	8 (19)	< 0.0001
Total MV, days	17 (10–25)	25 (19–35)	< 0.0001
ICU length of stay, days	23 (14–36)	30 (22–48)	< 0.001
Hospital length of stay, days	51 (35–85)	55 (37–84)	0.69
GOS			
ICU discharge	3.9 ± 0.8	3.2 ± 1.2	0.002
6 months	4.3 ± 1.5	3.3 ± 1.8	0.009

Data are presented as mean ± SD or median (interquartile range).

GOS = Glasgow Outcome Scale; ICU = intensive care unit; MV = mechanical ventilation; NA = not appropriate.

Anesthesiology, 2017

But de la Neuro-réanimation

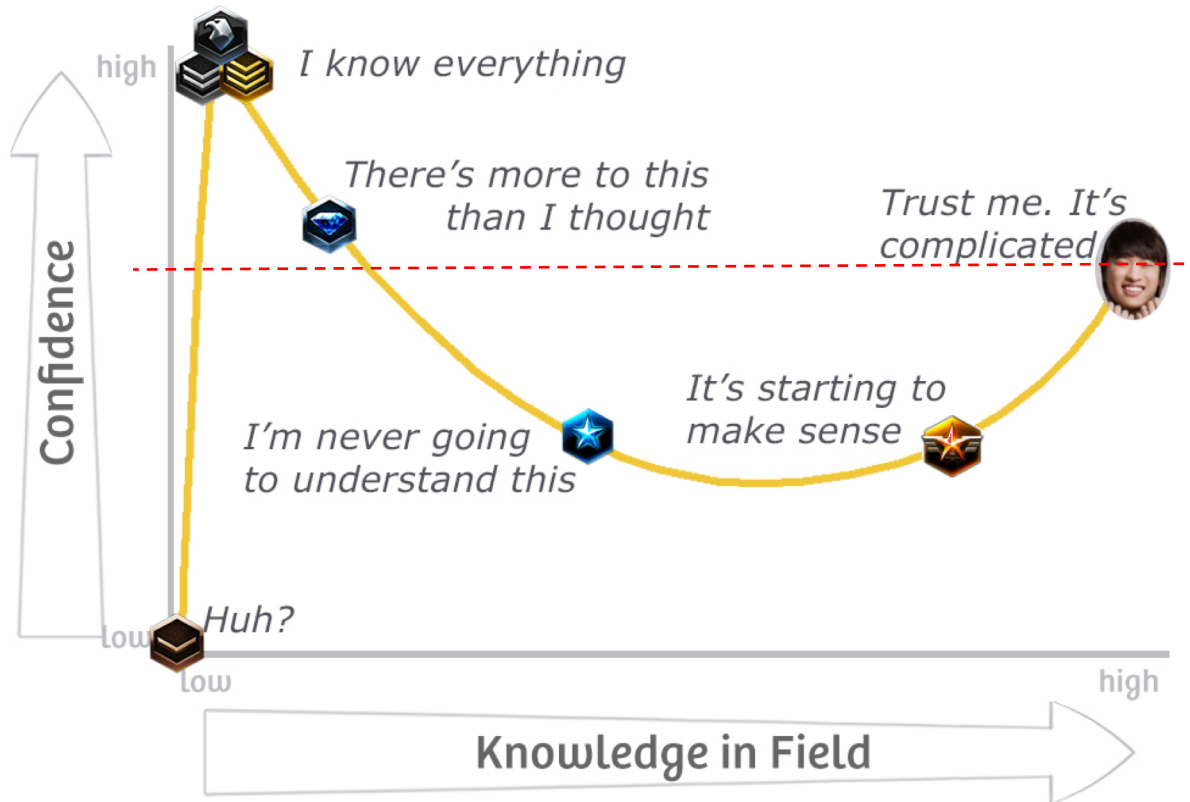
Identifier défaillance NEURO

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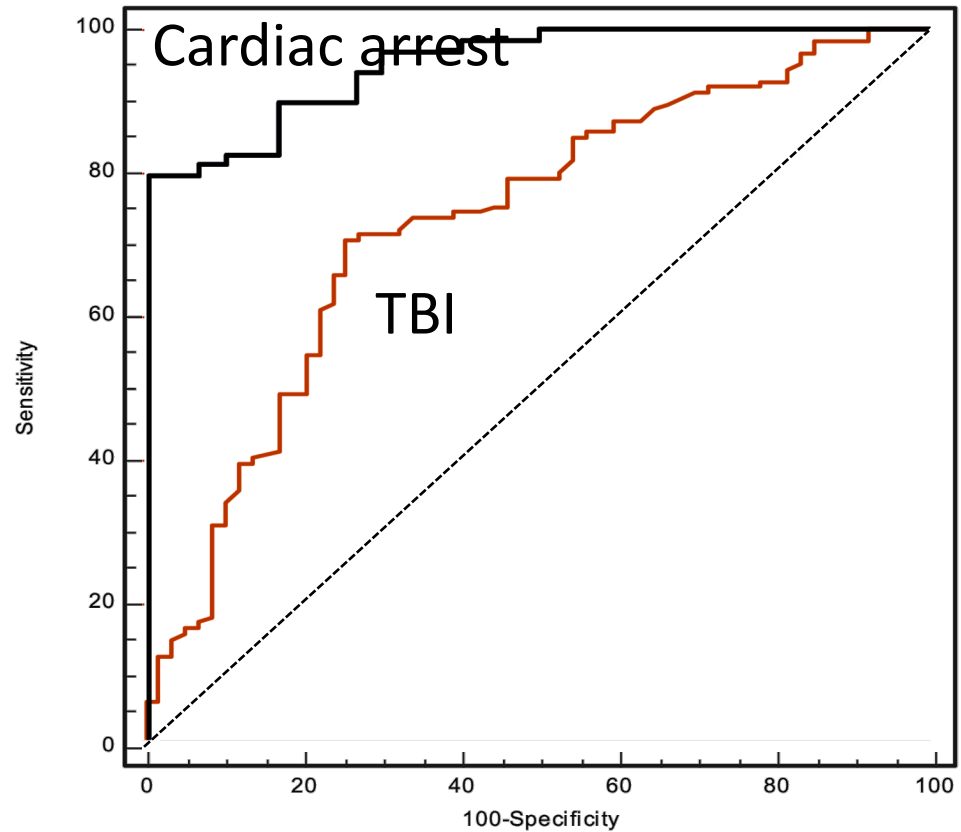
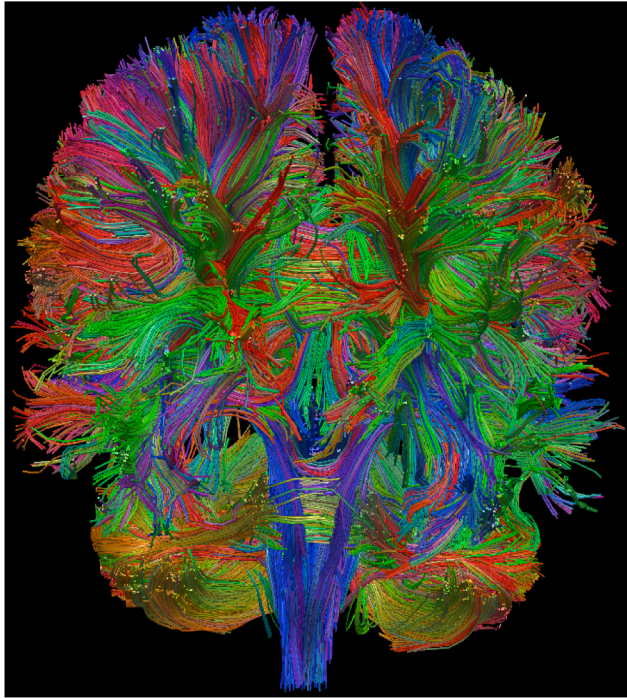
Pronostiquer lésions NEURO

Décision médicale et tolérance à l'incertitude



Dunning-Kruger effect: biais cognitif décisionnel

Outil pronostique fiable: Diffusion Tensor Imaging



Velly, Lancet Neurol, 2018

Detection of Brain Activation in Unresponsive Patients with Acute Brain Injury

Jan Claassen, M.D., Kevin Doyle, M.A., Adu Matory, B.A., Caroline Couch, B.A., Kelly M. Burger, B.A., R.E.E.G.T., Angela Velazquez, M.D., Joshua U. Okonkwo, M.D., Jean-Rémi King, Ph.D., Soojin Park, M.D., Sachin Agarwal, M.D., David Roh, M.D., Murad Megjhani, Ph.D., Andrey Eliseyev, Ph.D., E. Sander Connolly, M.D., and Benjamin Rohaut, M.D.

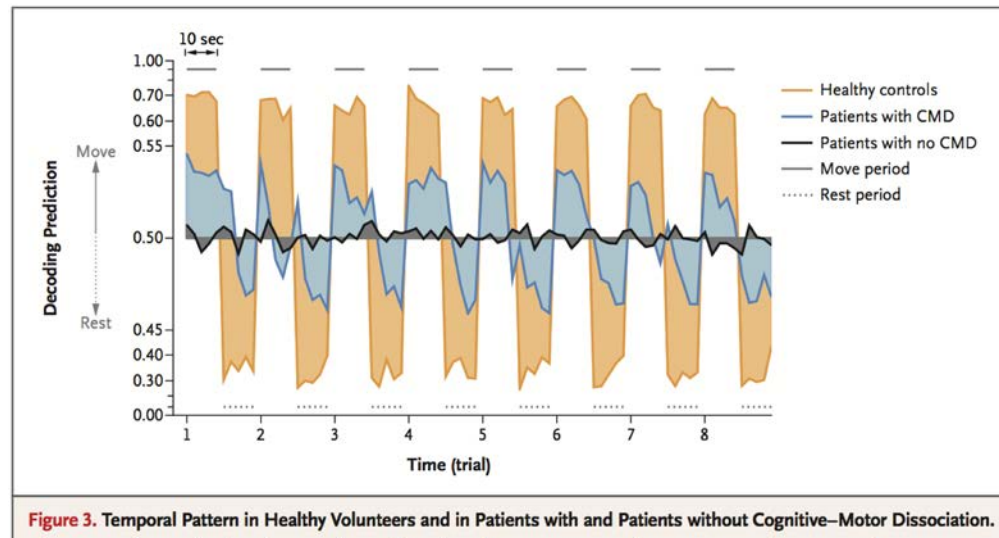
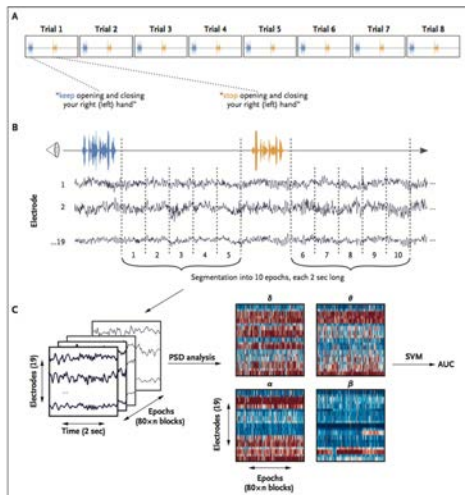


Figure 3. Temporal Pattern in Healthy Volunteers and in Patients with and Patients without Cognitive-Motor Dissociation.

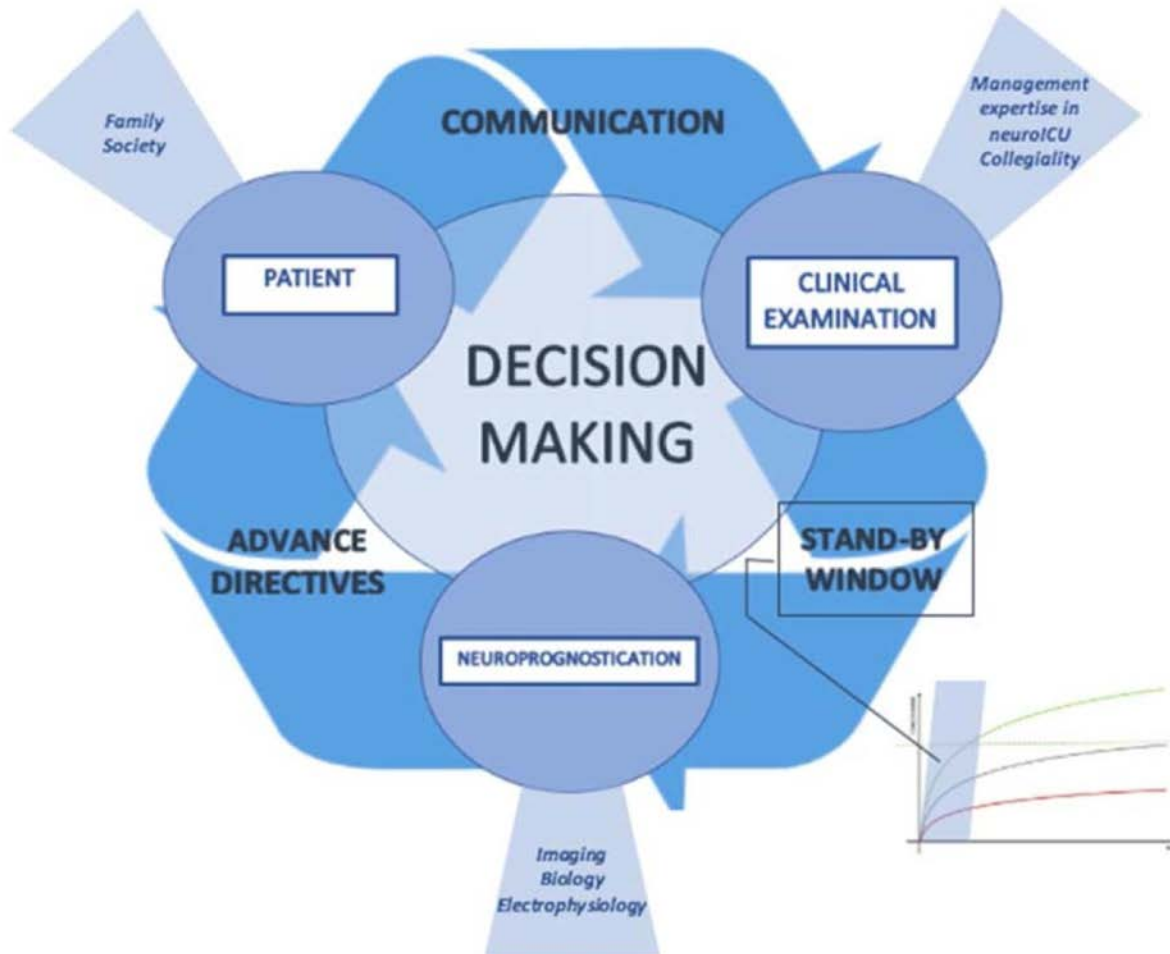
GOS-E>4 à 44% dans le groupe CMD versus 14% (OR à 4.6 (1.2-17))

Editorial

Neuro-prognostication: Don't forget that time is brain!

E Bouchereau, V Degos

Editorial/Anaesth Crit Care Pain Med 38 (2019) 415–417



REANIMATION d'ATTENTE

Survie n'est plus l'objectif
Difficulté Ethique
Difficulté Clinique
Difficulté Méthodologique

Fig. 1 Tools useful for decision-making in neuroprognostication

But de la Neuro-réanimation

Identifier défaillance NEURO

Intervenir défaillance NEURO

Sevrer suppléance

Pronostiquer lésions NEURO

Prévenir l'apparition de lésions secondaires

Mise en place d'outil de monitoring en vue d'une médecine individualisée

Réanimation d'attente pour une évaluation du pronostic

Adapter nos décisions aux directives

Préparer tous les éléments d'anticipation

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