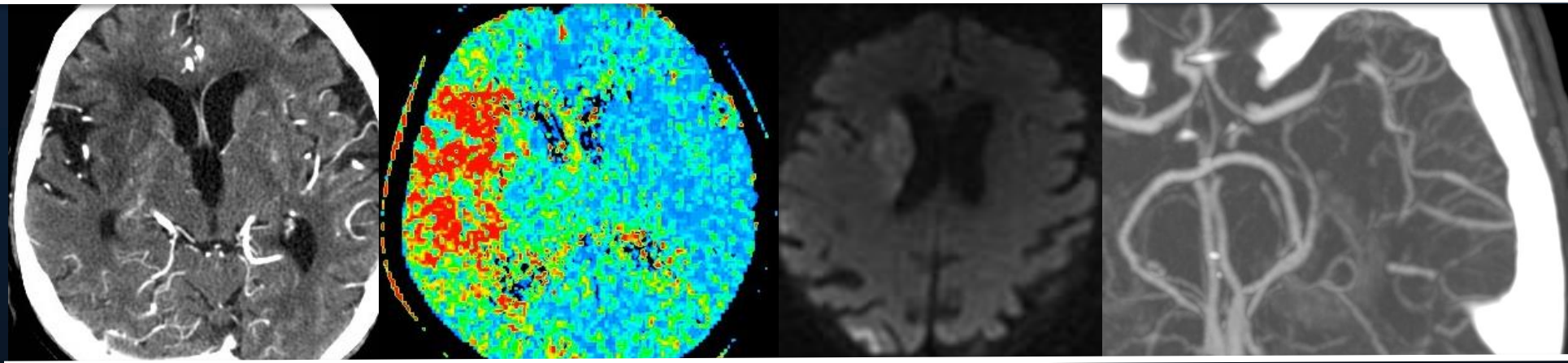


Nouvelles recommandations en imagerie dans la fenêtre du traitement en phase aigu, aspect physiologique



Laurent Letourneau-Guillon, MD, MSc

Professeur adjoint de clinique

Université de Montréal

Neuroradiologue, CHUM

9e Sommet sur l'AVC

15 novembre 2019



Déclaration des conflits d'intérêt réels ou potentiels

Nom du conférencier/modérateur :

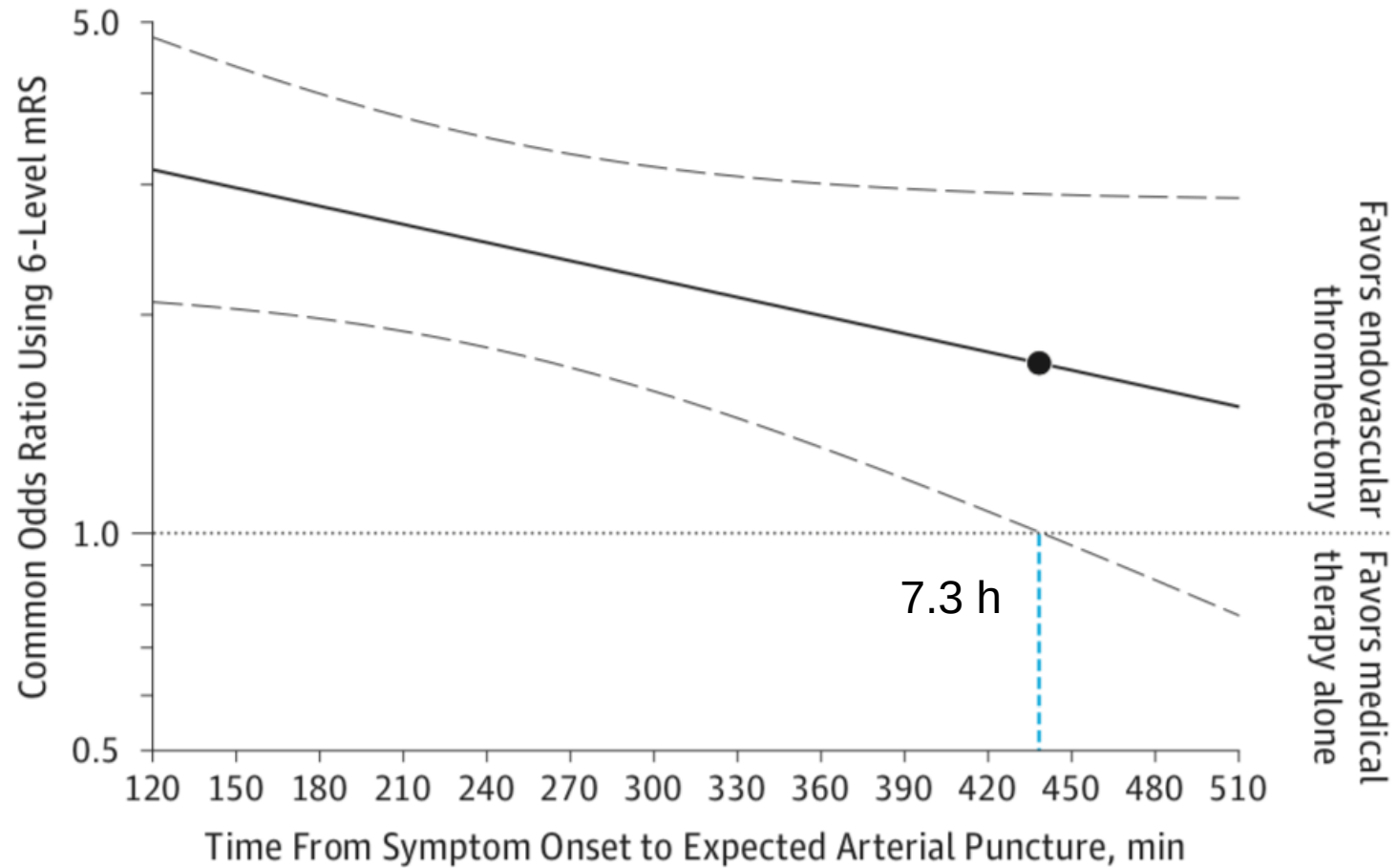
Laurent Letourneau-Guillon

**Je n'ai aucun conflit d'intérêt réel ou
potentiel en lien avec le contenu de cette
présentation.**

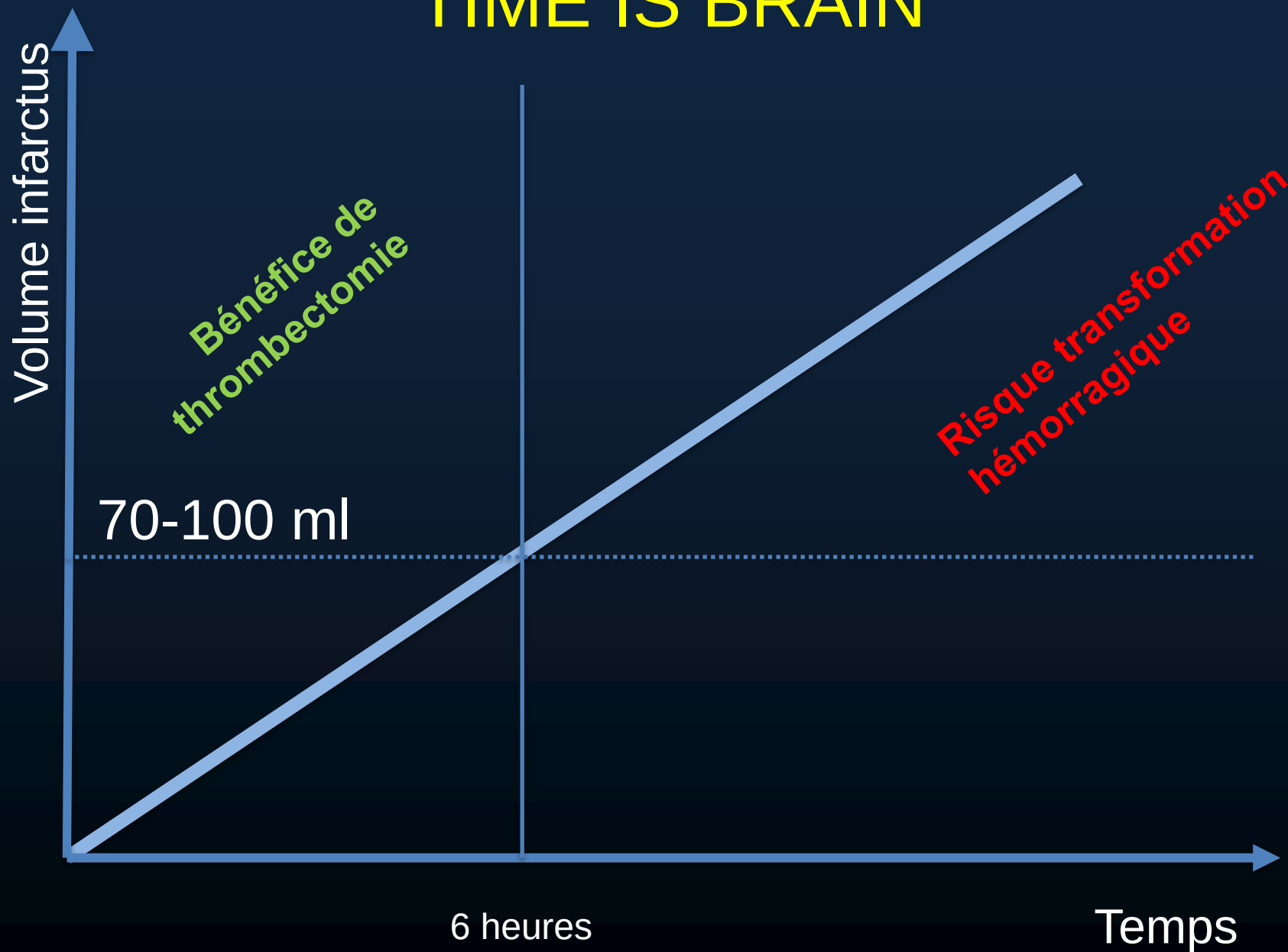
Objectifs

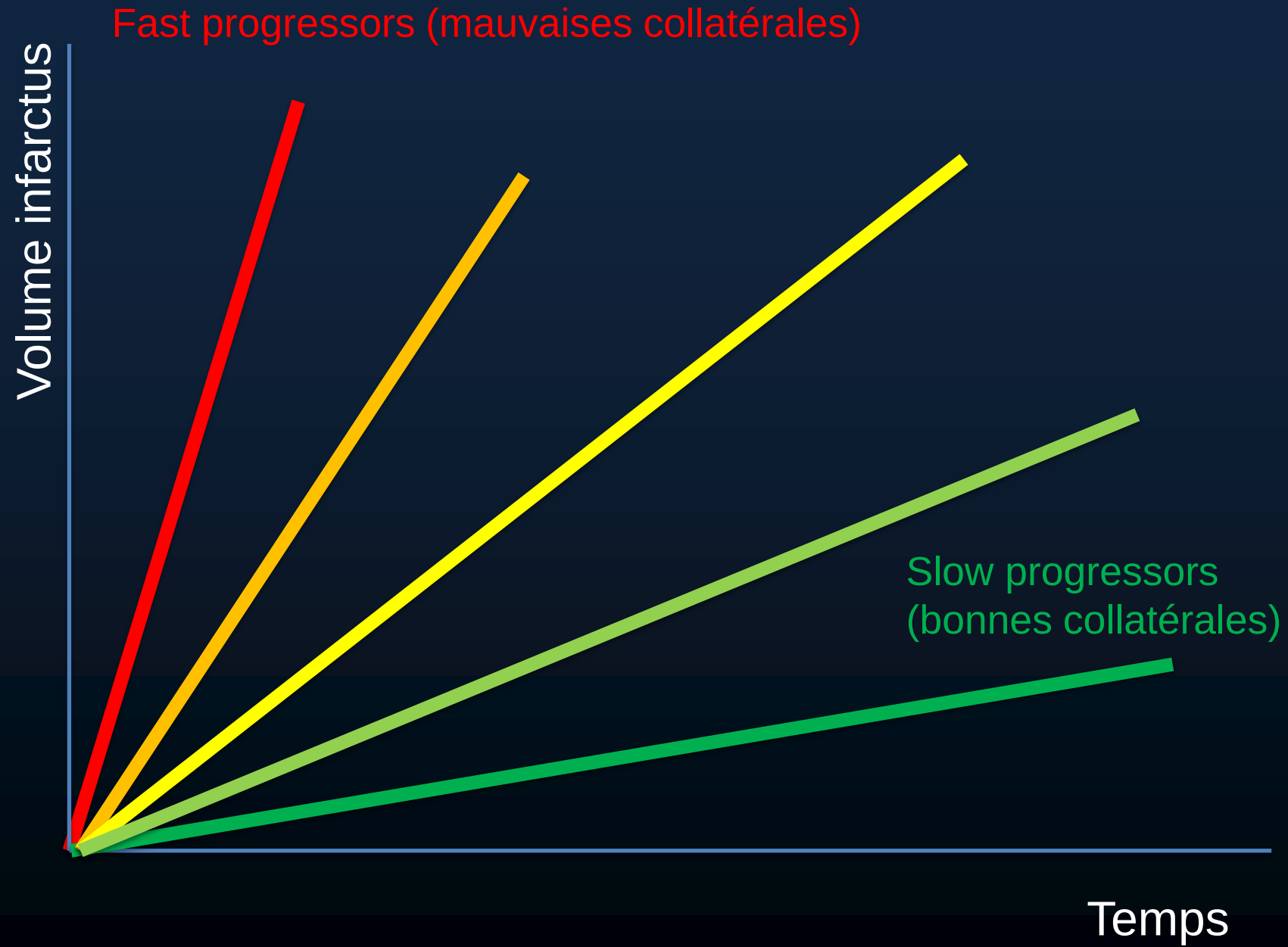
1. Expliquer les principes de bases de l'imagerie de perfusion cérébrale.
2. Décrire les indications cliniques de l'imagerie de perfusion dans la prise en charge de l'AVC aigu.
3. Décrire comment la neuro-imagerie physiologique oriente le traitement de l'AVC aigu.

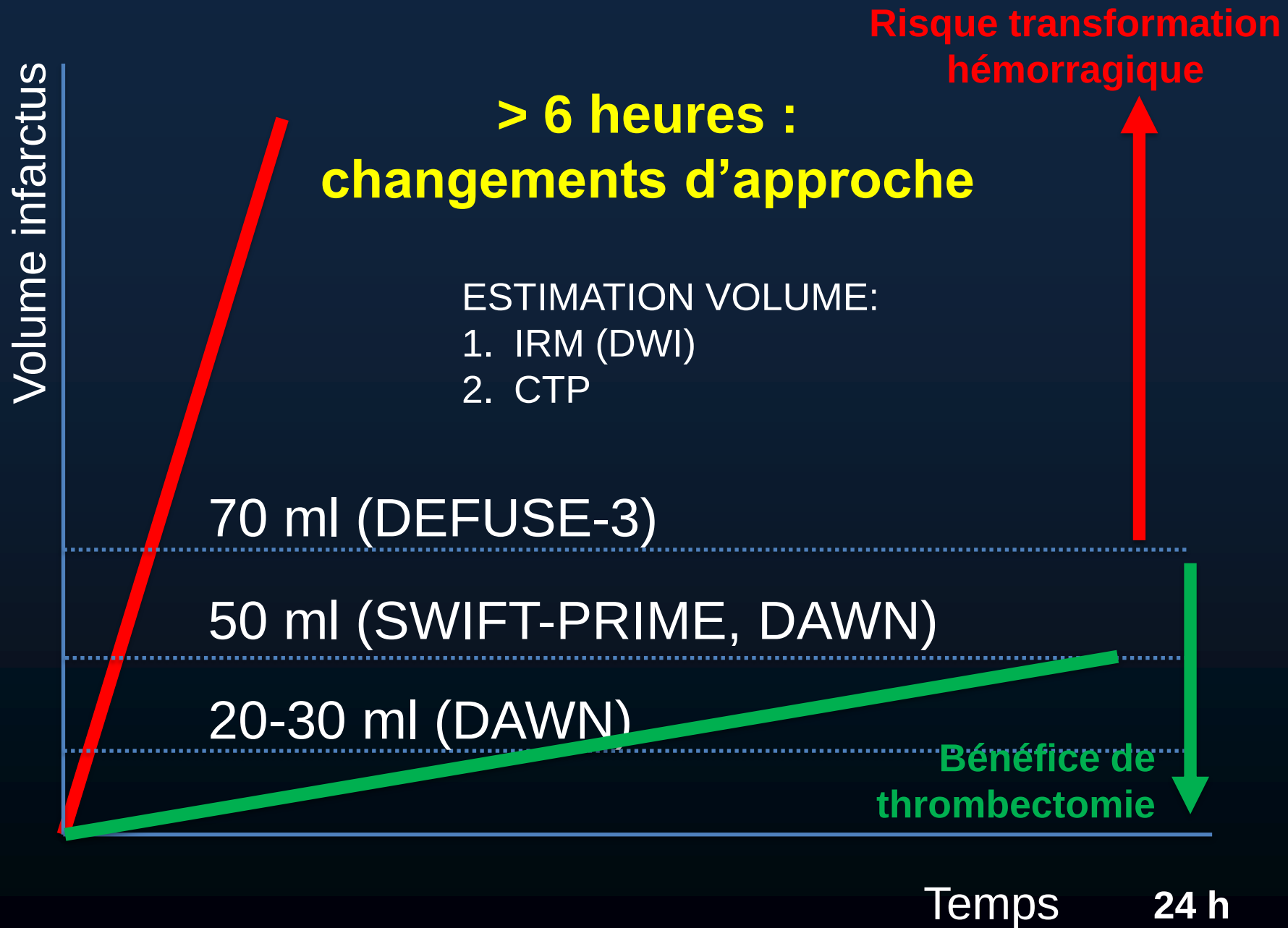
TIME IS BRAIN



TIME IS BRAIN







DAWN

ORIGINAL ARTICLE

Thrombectomy 6 to 24 Hours after Stroke with a Mismatch between Deficit and Infarct

Raul G. Nogueira, M.D., Ashutosh P. Jadhav, M.D., Ph.D., Diogo C. Haussen, M.D., Alain Bonafe, M.D., Ronald F. Budzik, M.D., Parita Bhuva, M.D., Dileep R. Yavagal, M.D., Marc Ribo, M.D., Christophe Cognard, M.D., Ricardo A. Hanel, M.D., Cathy A. Sila, M.D., Ameer E. Hassan, D.O., et al., for the DAWN Trial Investigators*

DEFUSE-3

ORIGINAL ARTICLE

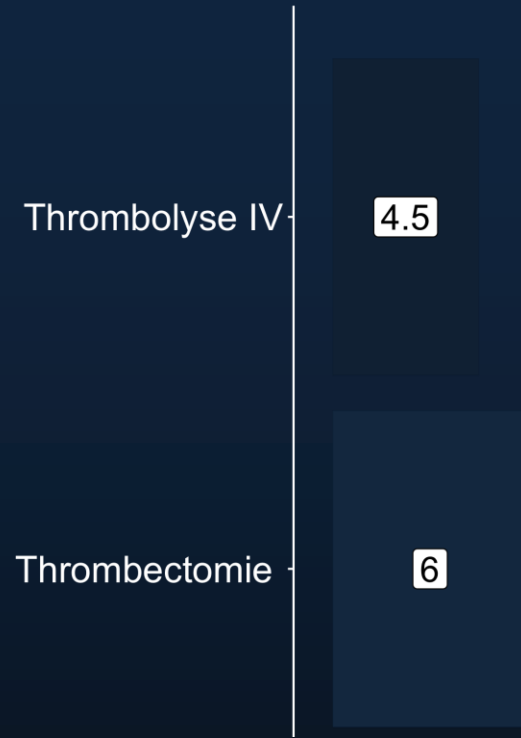
Thrombectomy for Stroke at 6 to 16 Hours with Selection by Perfusion Imaging

Gregory W. Albers, M.D., Michael P. Marks, M.D., Stephanie Kemp, B.S., Soren Christensen, Ph.D., Jenny P. Tsai, M.D., Santiago Ortega-Gutierrez, M.D., Ryan A. McTaggart, M.D., Michel T. Torbey, M.D., May Kim-Tenser, M.D., Thabele Leslie-Mazwi, M.D., Amrou Sarraj, M.D., Scott E. Kasner, M.D., et al., for the DEFUSE 3 Investigators*

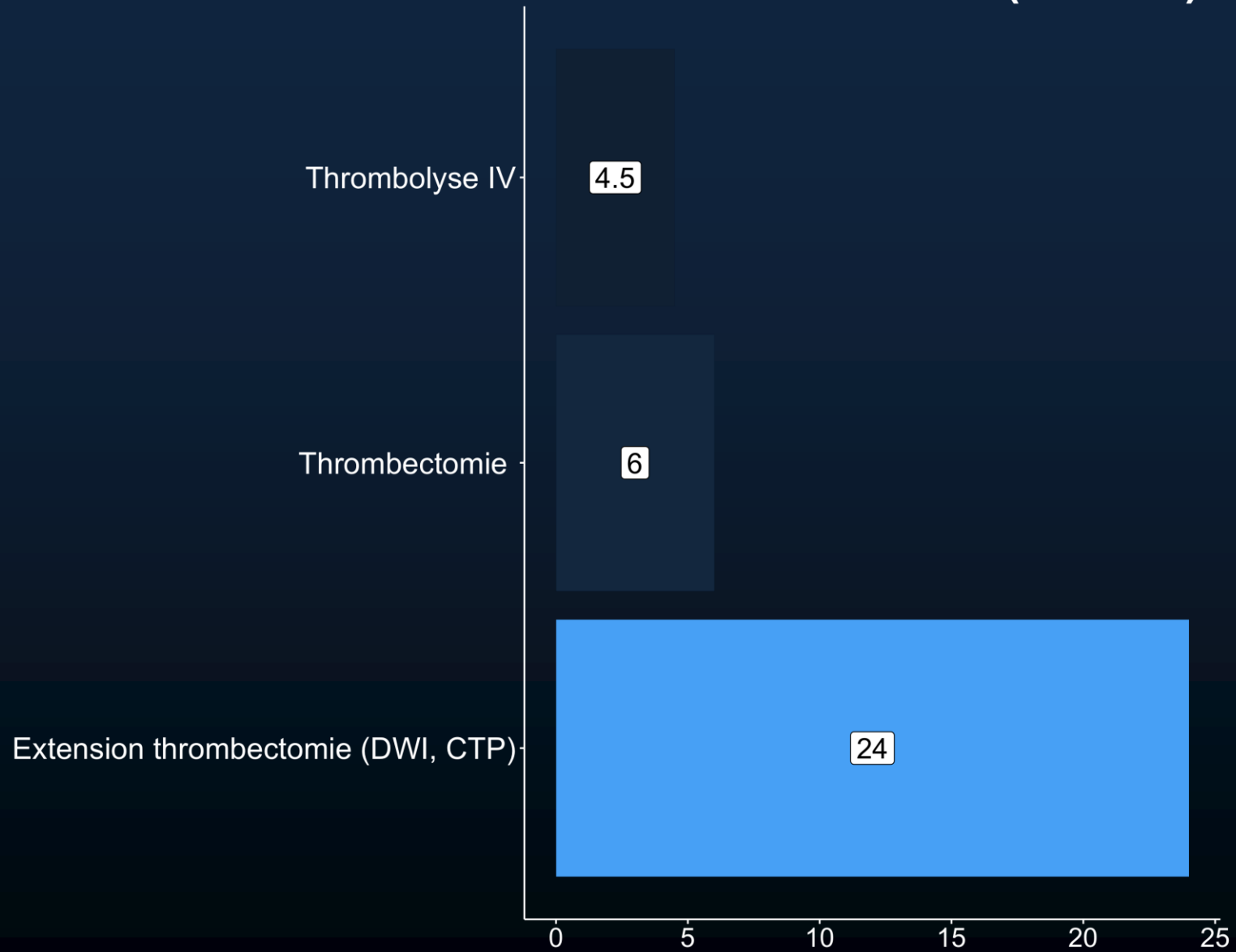
2018



Délai début des Sx (heures)

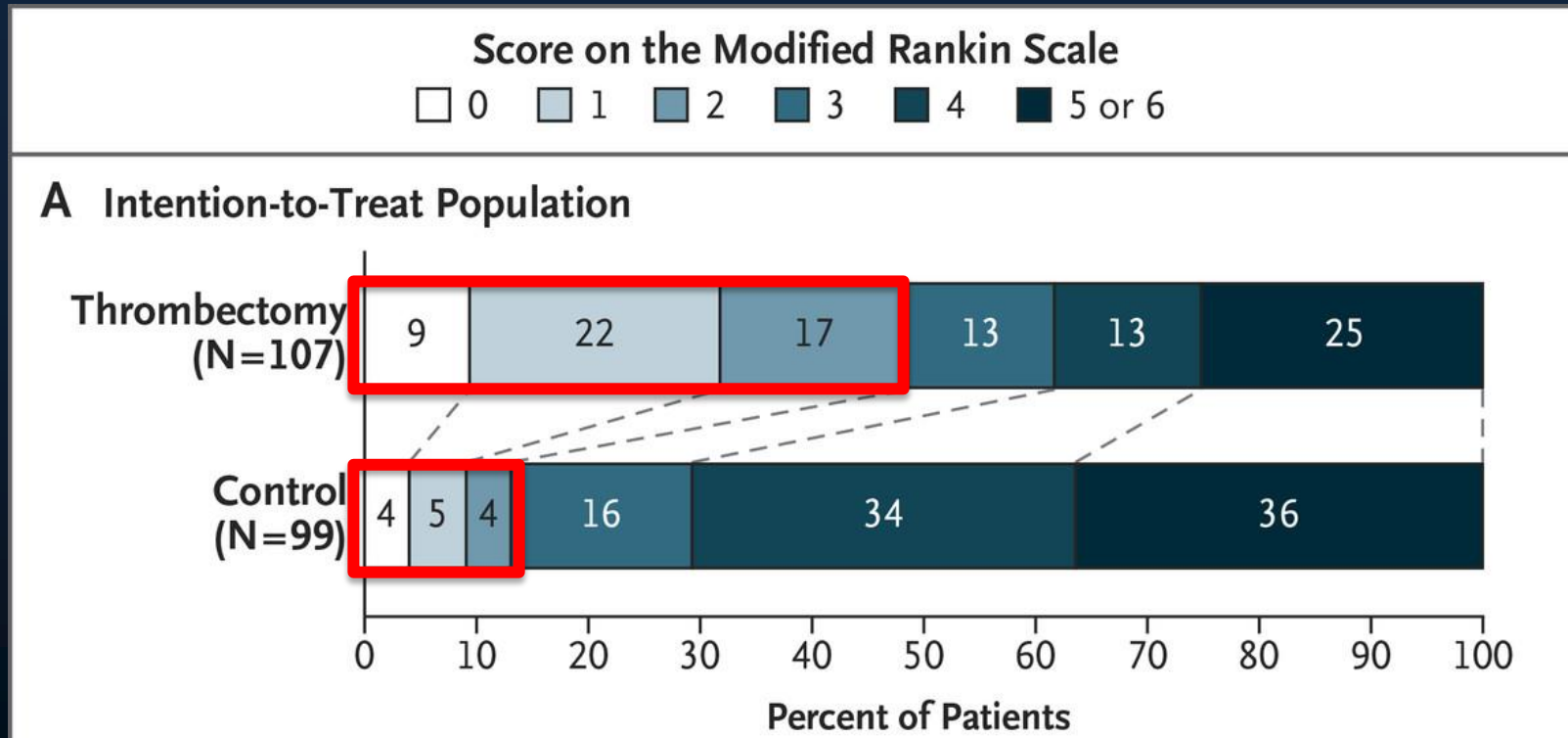


Délai début des Sx (heures)



DAWN

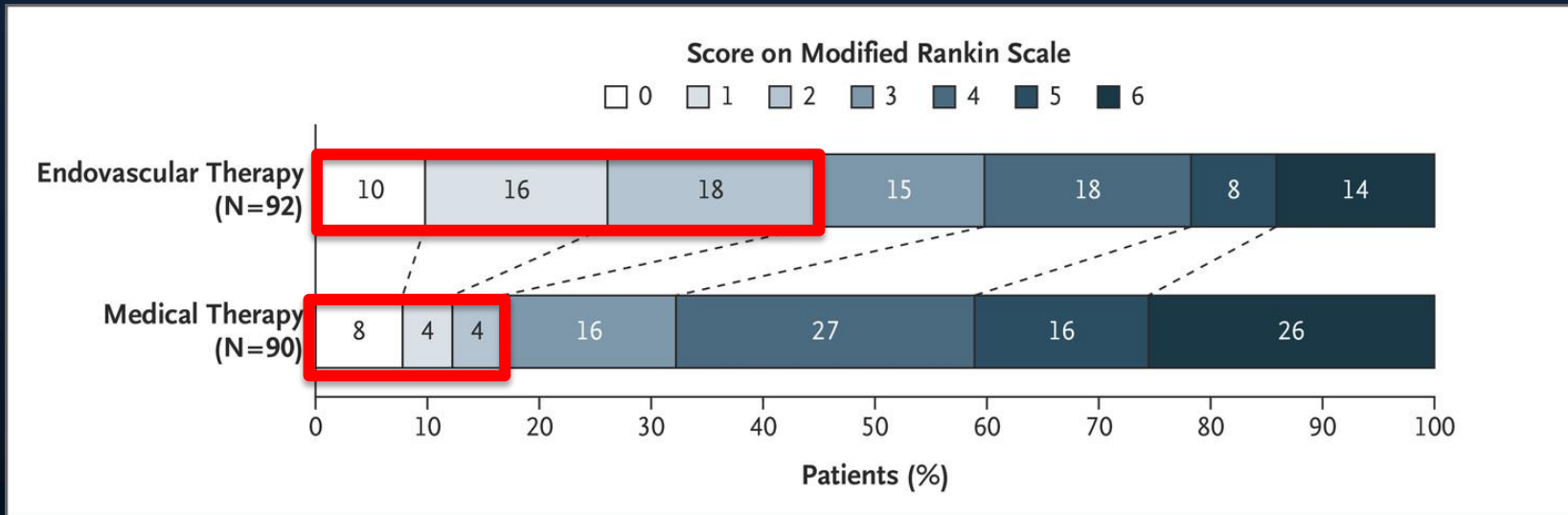
Distribution of Scores on the Modified Rankin Scale at 90 Days.



49 % (thrombectomie) vs 13 %

DEFUSE-3

Scores on the Modified Rankin Scale at 90 Days.



45 % (thrombectomie) vs 17 %

Mismatch

DAWN

6-24 h

- Déficit Clinique vs Core

- A: > 80 ans, NIHSS ≥ 10 , infarctus 0-20 ml
- B: < 80 ans, NIHSS ≥ 10 , infarctus 0-30 ml
- C: < 80 ans, NIHSS ≥ 20 , infarctus 31-50 ml

DEFUSE-3

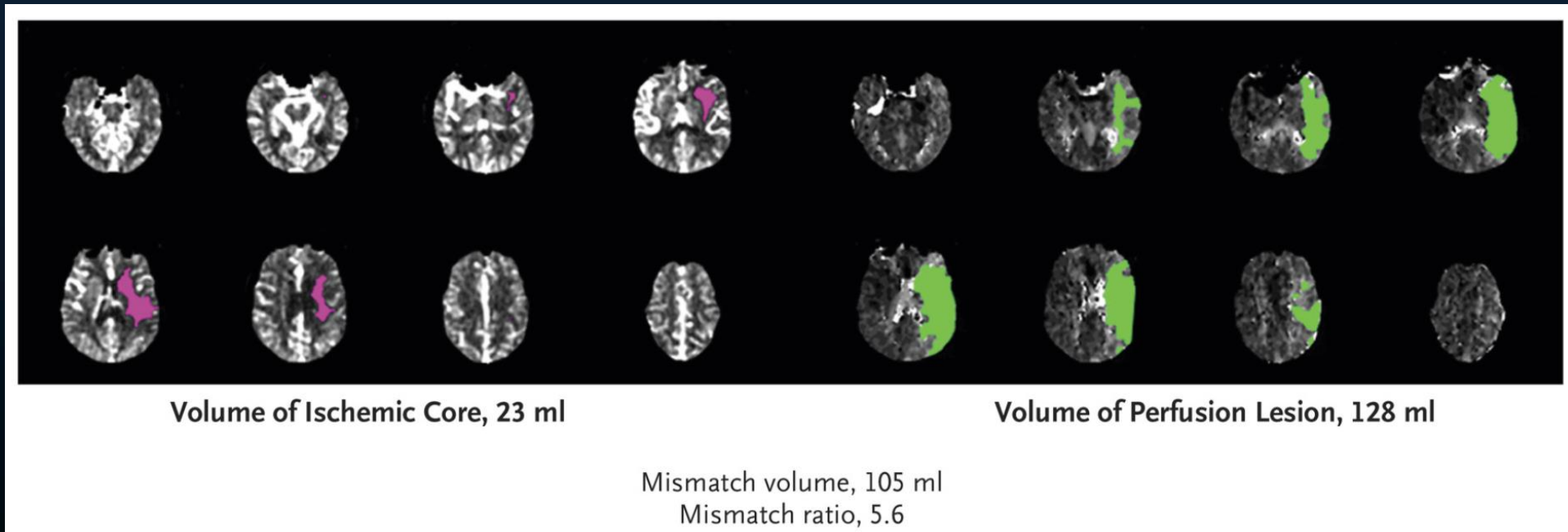
6-16 h

- Pénombre vs Core

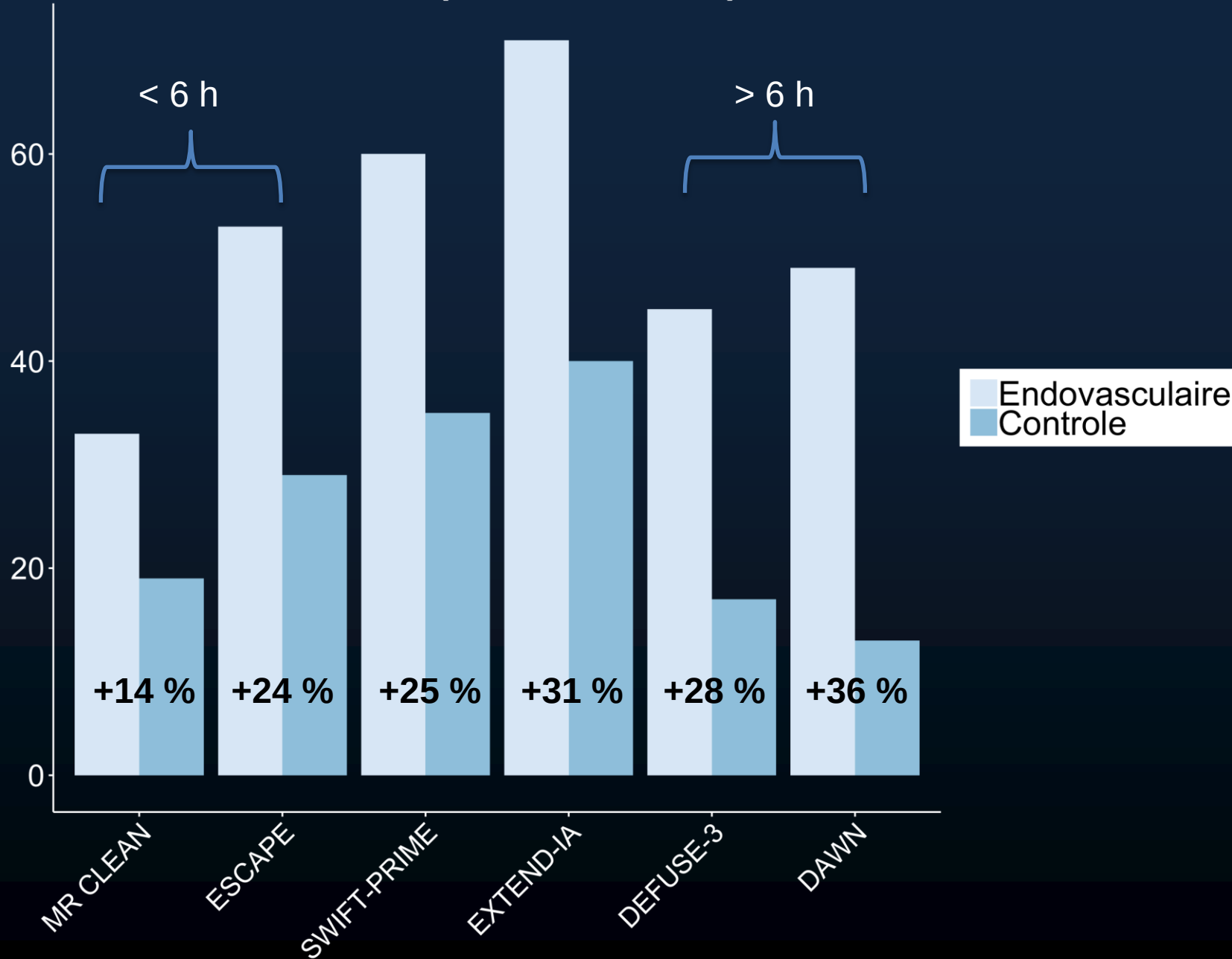
- Core < 70 ml
- Mismatch pénombre : core > 1.8
- Volume pénombre ≥ 15 ml

Évaluation infarctus/pénombre

- Infarctus (core)
 - DWI
 - CTP: rCBF < 30 % normal
- Pénombre
 - Tmax > 6 secondes



mRs $\leq$ 2 (fonctionnel)



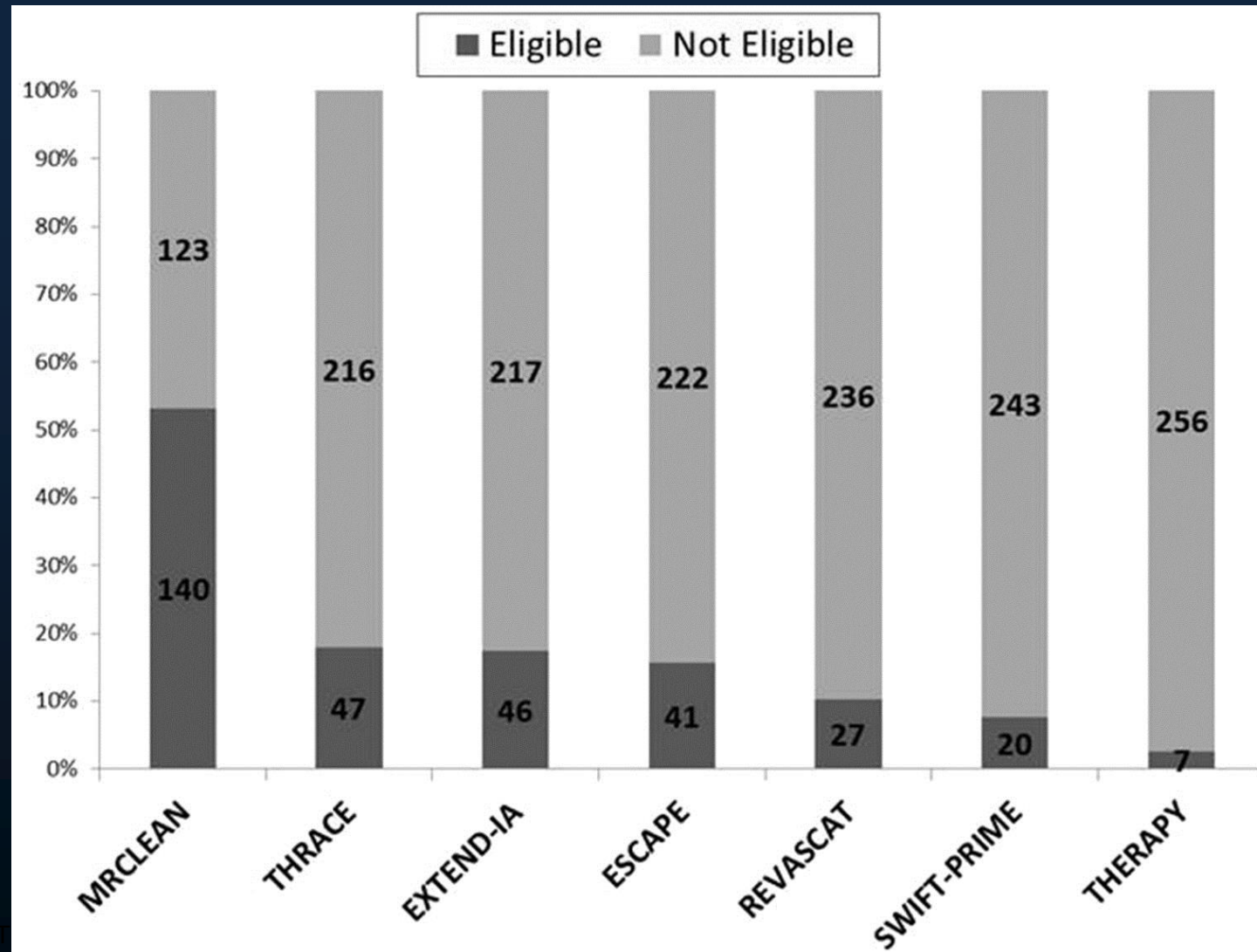


Figure 1. T

Technique

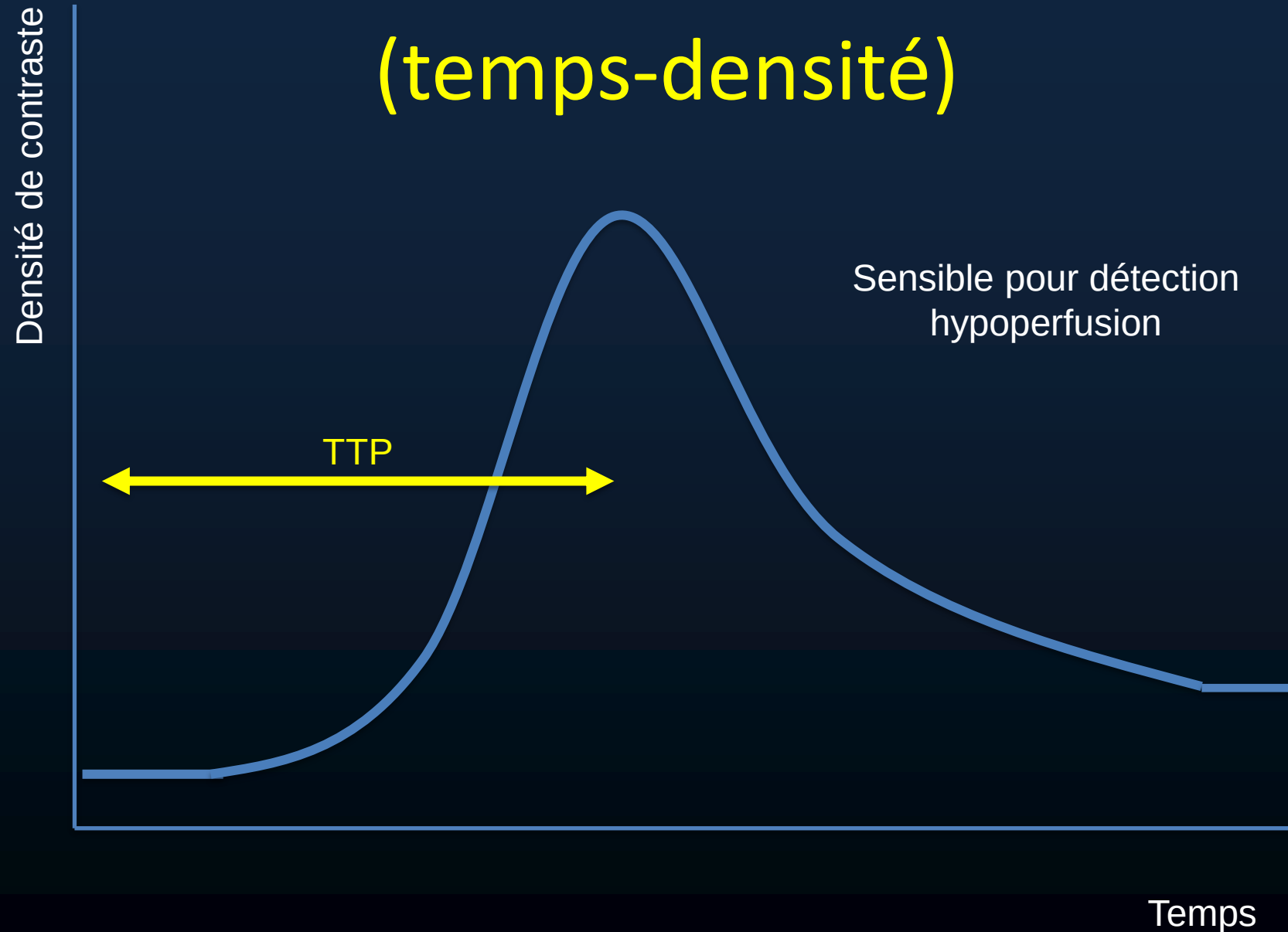


40-50 ml contraste iodé
(e.g. Iohexol 350 mgI/ml)

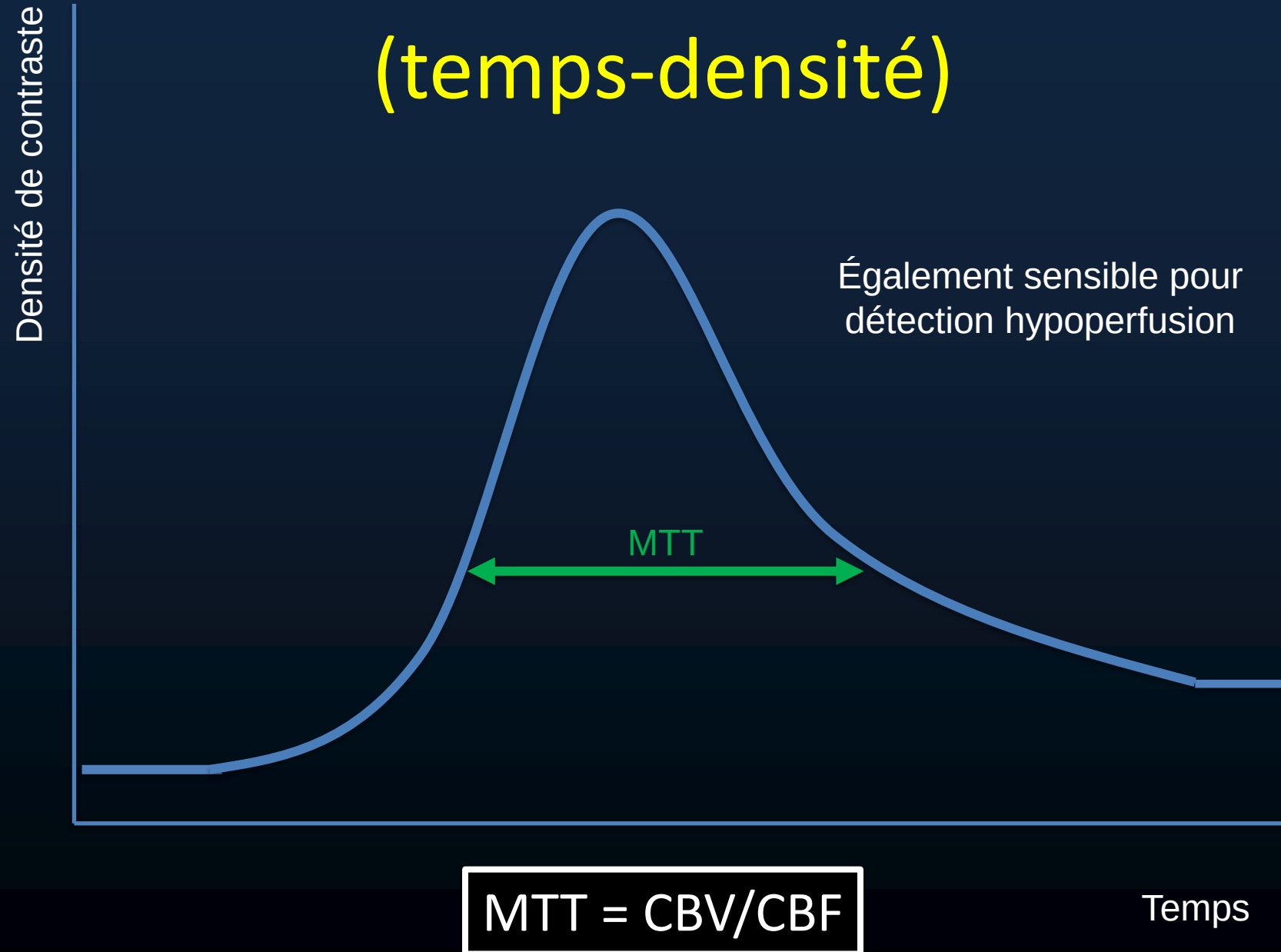
30 ml NS

5 ml/sec

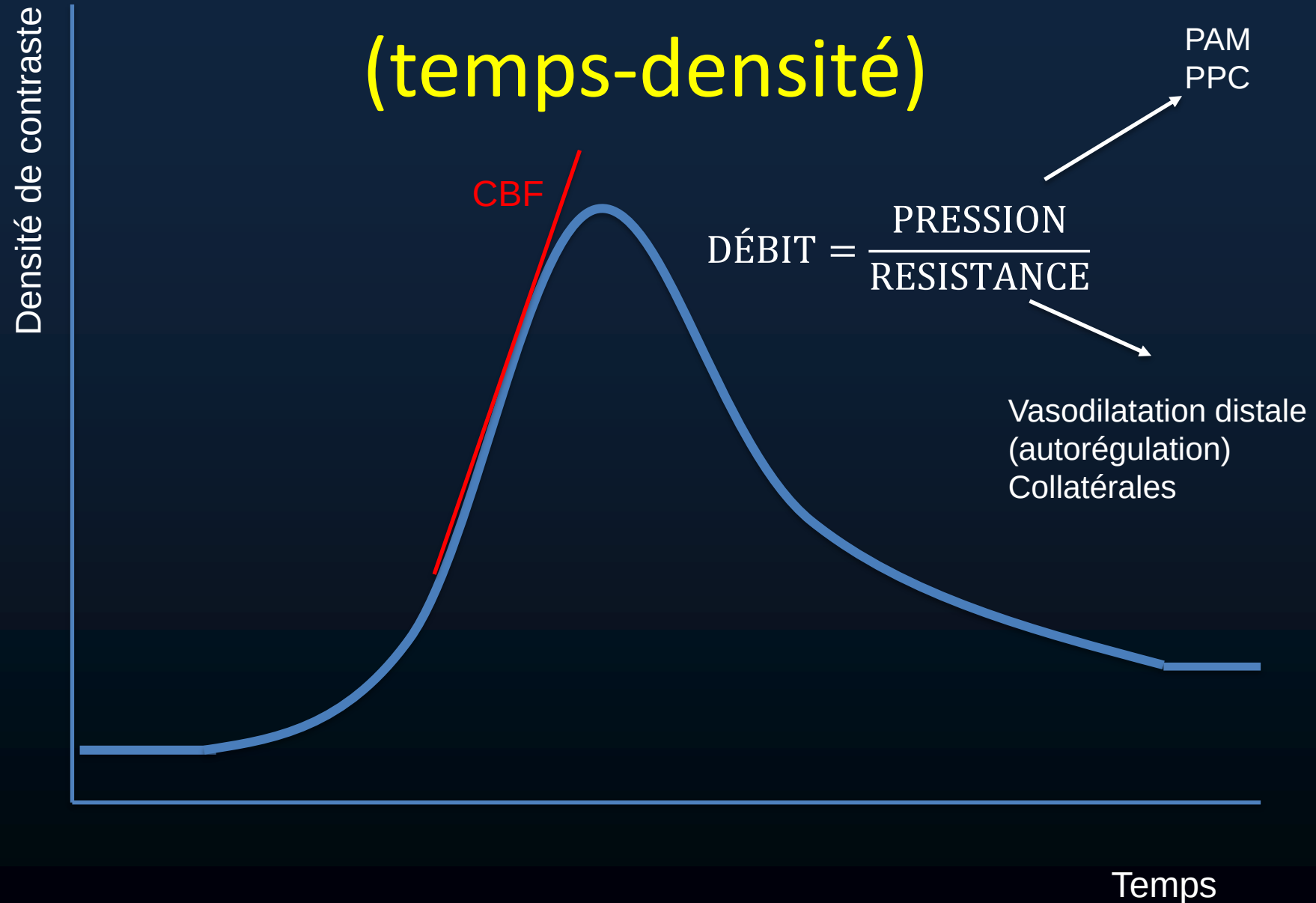
Courbe de rehaussement (temps-densité)



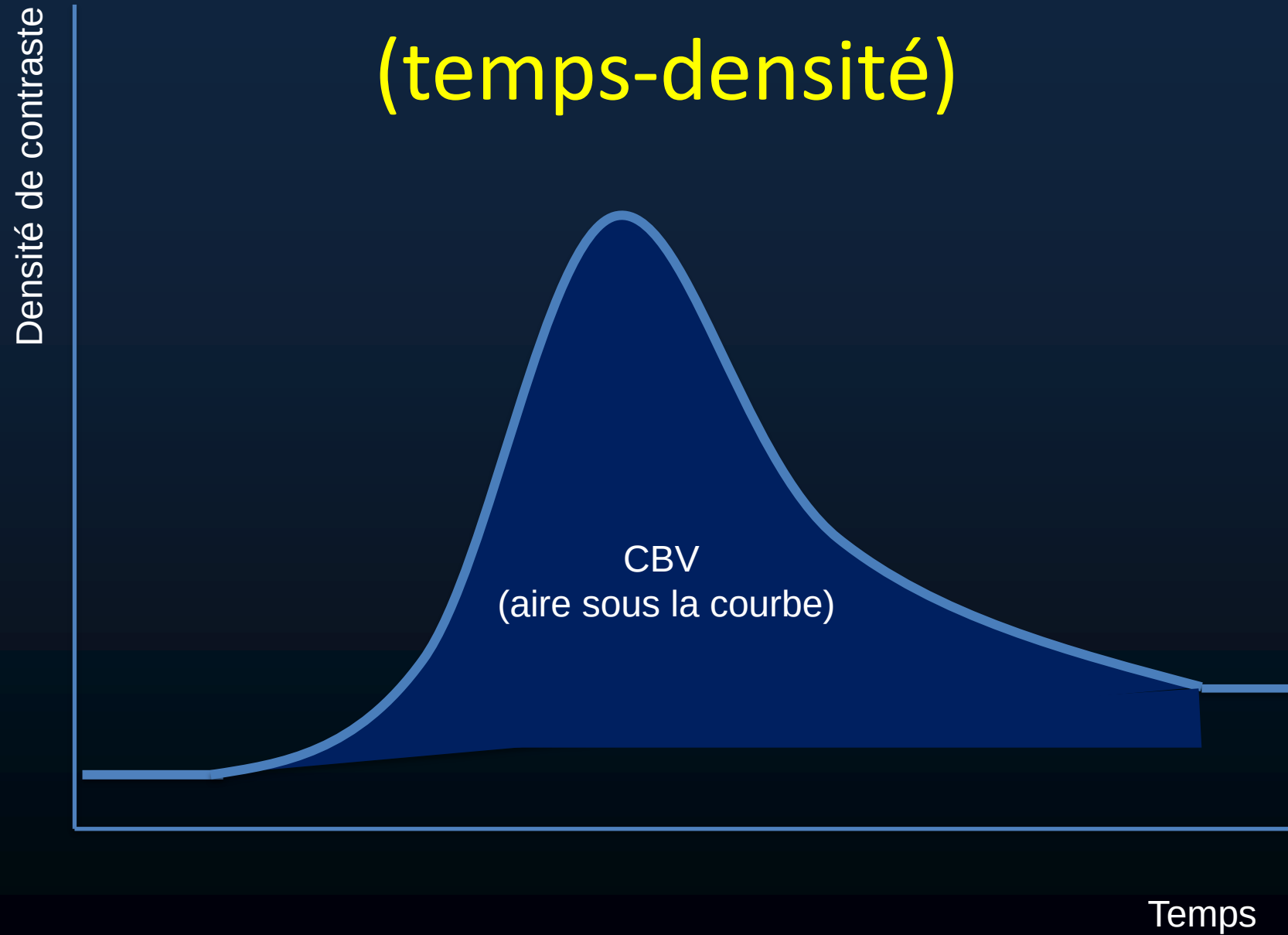
Courbe de rehaussement (temps-densité)



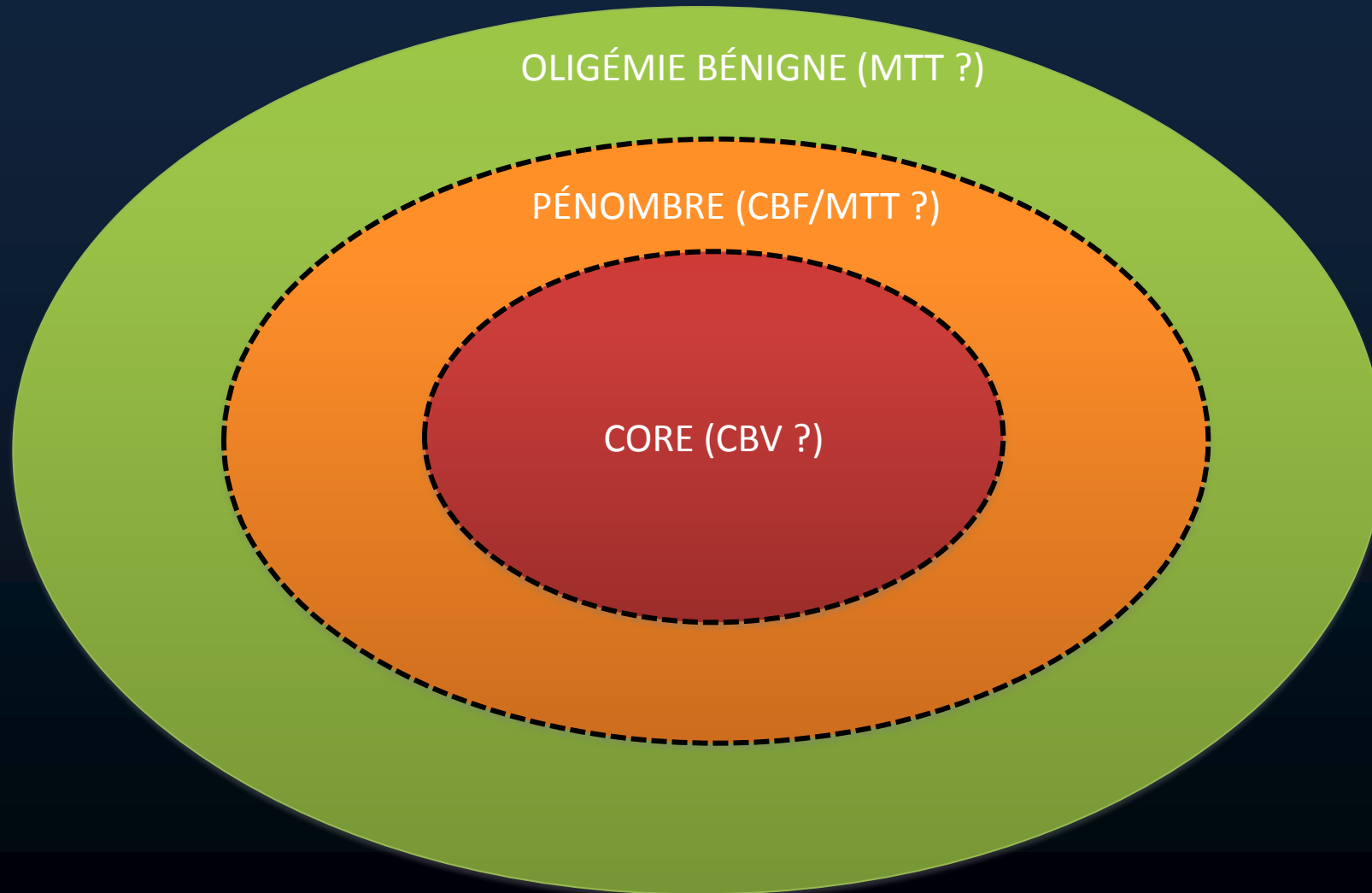
Courbe de rehaussement (temps-densité)



Courbe de rehaussement (temps-densité)

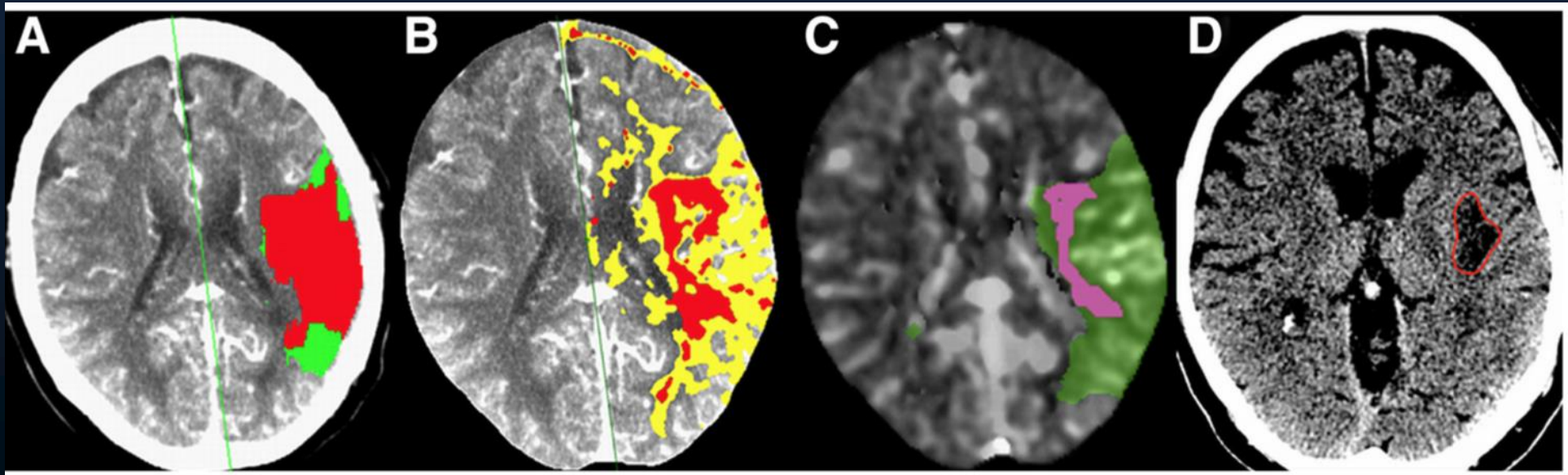


Oligémie-Pénombre-Infarctus



Quel logiciel ?

- RAPID vs autres ?



Penumbra Properties?×

☐ Show on right hemisphere

☐ Show on both hemispheres

☒ Show on left hemisphere

☐ Restrict to gray matter

Define Tissue at Risk

Define Non-viable Tissue

CBFD <

27

mL/100mL/min

Yellow

CBVD <

1.2

mL/100mL

Red

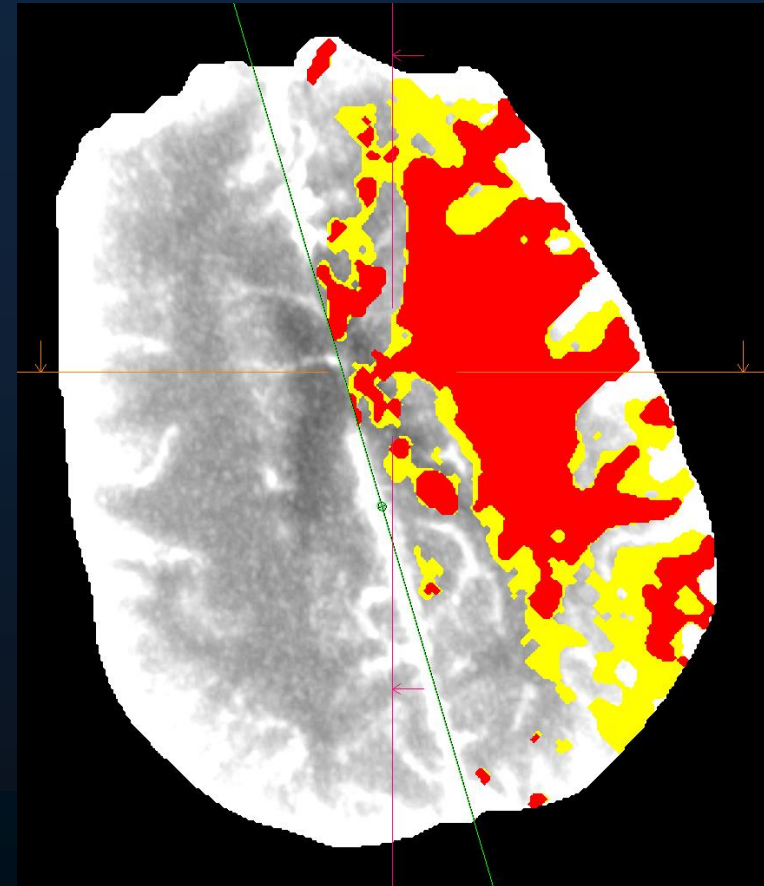
i

Please define permanent settings in the task configuration.

Apply

Default

Cancel



Est-ce que ça change quelque chose ?

Imaging features and safety and efficacy of endovascular stroke treatment: a meta-analysis of individual patient-level data



Luis San Román*, Bijoy K Menon*, Jordi Blasco, María Hernández-Pérez, Antoni Dávalos, Charles B L M Majoie, Bruce CV Campbell, Francis Guillemin, Hester Lingsma, René Anxionnat, Jonathan Epstein, Jeffrey L Saver, Henk Marquering, John H Wong, Demetrius Lopes, Gernot Reimann, Hubert Desal, Diederik W J Dippel, Shelagh Coutts, Richard du Mesnil de Rochemont, Dileep Yavagal, Jean Christophe Ferre, Yvo B W E M Roos, David S Liebeskind, Robert Lenthall, Carlos Molina, Fahad S Al Ajlan, Vivek Reddy, Dar Dowlathshahi, Nader-Antoine Sourour, Catherine Oppenheim, Alim P Mitha, Stephen M Davis, Christian Weimar, Robert J van Oostenbrugge, Erik Cobo, Timothy J Kleinig, Geoffrey A Donnan, Aad van der Lugt, Andrew M Demchuk, Olvert A Berkhemer, Anna M M Boers, Gary A Ford, Keith W Muir, B Scott Brown, Tudor Jovin, Wim H van Zwam, Peter J Mitchell, Michael D Hill, Phil White, Serge Bracad, Mayank Goyal, on behalf of the HERMES collaborators†

Summary

Background Evidence regarding whether imaging can be used effectively to select patients for endovascular thrombectomy (EVT) is scarce. We aimed to investigate the association between baseline imaging features and safety and efficacy of EVT in acute ischaemic stroke caused by anterior large-vessel occlusion.

Lancet Neurol 2018; 17: 895–904

This online publication has been corrected. The corrected version first appeared at

For large vessel occlusion stroke in the patient population studied by these trials are no longer considered ethically justifiable. This meta-analysis provides new evidence that patients with a broad range of baseline imaging characteristics, including those with large infarcts (ie, ASPECTS <6 or involvement of >33% of middle cerebral artery territory), poor collateral circulation, and any clot burden score, might benefit from EVT.

Value of Computed Tomographic Perfusion–Based Patient Selection for Intra-Arterial Acute Ischemic Stroke Treatment

Jordi Borst, MD, MSc; Olvert A. Berkhemer, MD; Yvo B.W.E.M. Roos, MD, PhD;
Ed van Bavel, PhD; Wim H. van Zwam, MD, PhD; Robert J. van Oostenbrugge, MD, PhD;
Marianne A.A. van Walderveen, MD, PhD; Hester F. Lingsma, PhD;
Aad van der Lugt, MD, PhD; Diederik W.J. Dippel, MD, PhD; Albert J. Yoo, MD;
Henk A. Marquering, PhD*; Charles B.L.M. Majoie, MD, PhD*;
on behalf of the MR CLEAN investigators

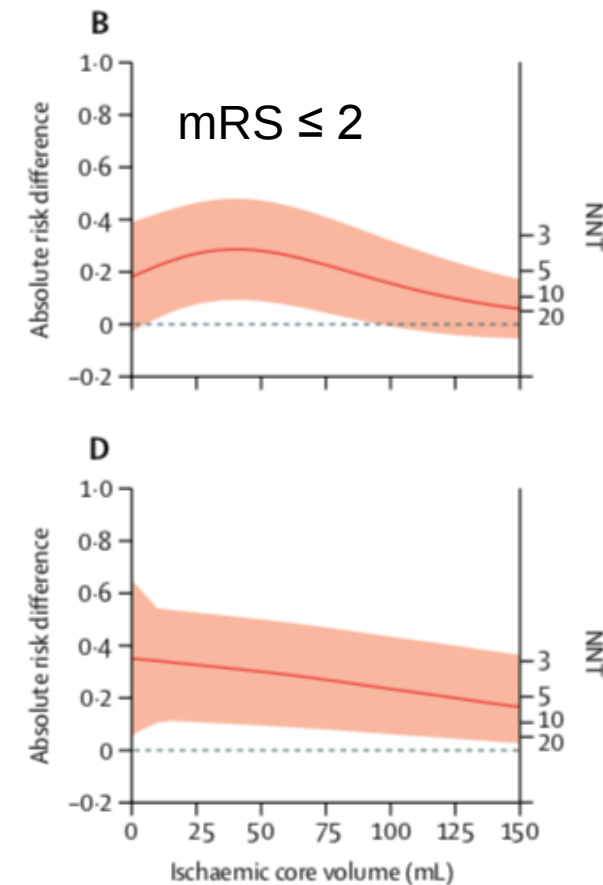
Conclusions—CTP seems useful for predicting functional outcome, but cannot reliably identify patients who will not benefit from intra-arterial therapy. (*Stroke*. 2015;46:3375-3382. DOI: 10.1161/STROKEAHA.115.010564.)

Penumbra imaging and functional outcome in patients with anterior circulation ischaemic stroke treated with endovascular thrombectomy versus medical therapy: a meta-analysis of individual patient-level data



Bruce C V Campbell, Charles B L M Majoie, Gregory W Albers, Bijoy K Menon, Nawaf Yassi, Gagan Sharma, Wim H van Zwam, Robert J van Oostenbrugge, Andrew M Demchuk, Francis Guillemin, Philip White, Antoni Dávalos, Aad van der Lugt, Kenneth S Butcher, Aboubaker Cherifi, Henk A Marquering, Geoffrey Cloud, Juan M Macho Fernández, Jeremy Madigan, Catherine Oppenheim, Geoffrey A Donnan, Yvo B W E M Roos, Jai Shankar, Hester Lingsma, Alain Bonafé, Hélène Raoult, María Hernández-Pérez, Aditya Bharatha, Reza Jahan, Olav Jansen, Sébastien Richard, Elad I Levy, Olvert A Berkhemer, Marc Soudant, Lucia Aja, Stephen M Davis, Timo Krings, Marie Tisserand, Luis San Román, Alejandro Tomasello, Debbie Beumer, Scott Brown, David S Liebeskind, Serge Bracard*, Keith W Muir*, Diederik W J Dippel*, Mayank Goyal*, Jeffrey L Saver*, Tudor G Jovin*, Michael D Hill*, Peter J Mitchell*, for the HERMES collaborators

Implications of all the available evidence
Patients should not be excluded from endovascular thrombectomy within 6 h of stroke onset purely on the basis of a large estimated ischaemic core. The patient's age and functional status, their views on disability outcomes (if known), and the expected time to achieve reperfusion should be considered alongside ischaemic core volume when estimating the attainable functional outcome and establishing the most appropriate treatment.



Conclusion

- Changement paradigme
- Traitement plus personnalisé
- Sursélection patients dans études incluant imagerie physiologique

Remerciements

- Jean Raymond
- François Guilbert
- Daniel Roy
- Alain Weill
- Céline Bard
- Manon Bélair
- David Landry
- Pierre Bourgouin
- JM Baillargeon

