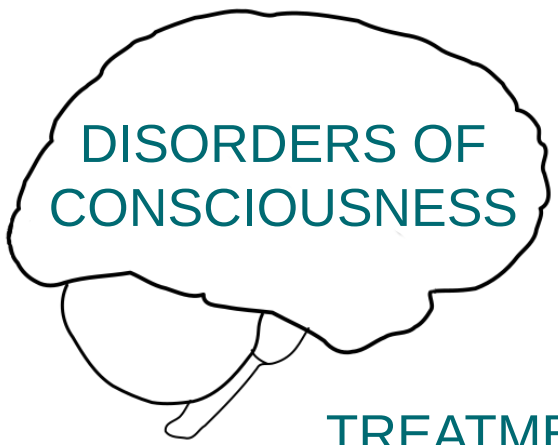


Multimodal improvements after **apomorphine** treatment for chronic disorders of **consciousness**

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ePoster presentation
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DISORDERS OF CONSCIOUSNESS

TREATMENT

APOMORPHINE

- Dopamine agonist
 - Approved for Parkinson's Disease
 - Subcutaneous infusion
 - Well-documented safety
 - Preliminary behavioral results in UWS & MCS [4]
- promising therapeutic candidate

DIAGNOSIS

UNRESPONSIVE WAKEFULNESS
SYNDROME (UWS) / VEGETATIVE STATE

- eye opening
- reflexive behaviors [1]

MINIMALLY CONSCIOUS (MCS)

- reproducible signs of consciousness
- no functional communication [2]

COST

HEALTHCARE FOR
1 TYPICAL UWS
>118'000 CHF
per year (UK) [3]



[1] Laureys et al, *BMC Med*, 2010

[2] Giacino et al, *Neurology*, 2002

[3] Formby et al, *CHE Research*, 2015

[4] Fridman et al, *Brain Injury*, 2015

AIM: Confirm previous behavioral results & correlate with objective multimodal brain imaging data

3 PATIENTS

- 1 female, 2 male
- 47, 34, 23 years old
- 1 hemorrhage, 2 traumatic injuries
- 3.5, 4.5, 3 months post-onset

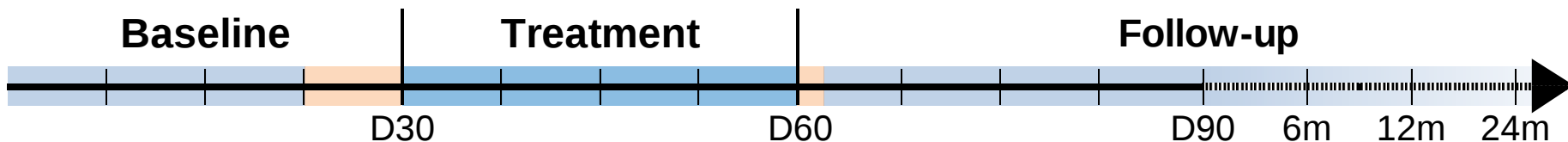
TREATMENT

- 30 days of apomorphine
- Subcutaneous infusions
- 12 hours per day
- Max. rate 6 mg/h

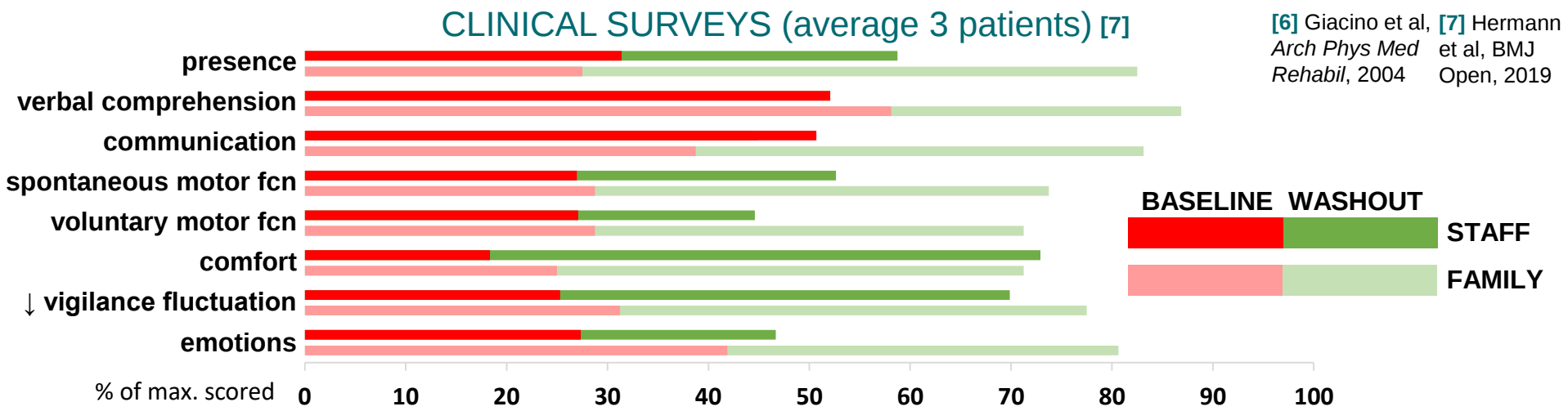
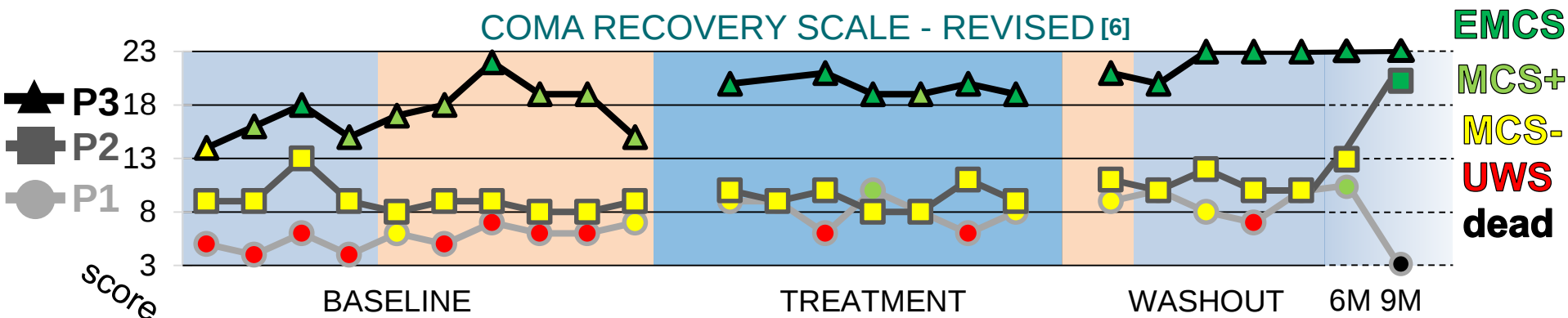
OUTCOME MEASURES

- Behavioral standardized scales (CRS-R)
- Brain metabolism (FDG-PET)
- Brain functional connectivity (high-density EEG)

[5]

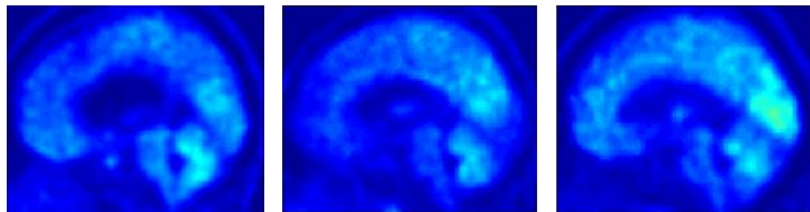


MULTIMODAL TESTING

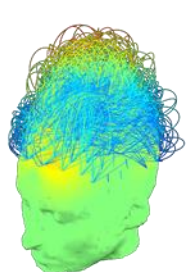
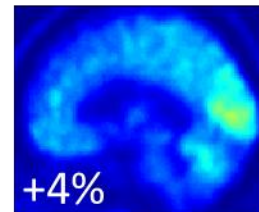
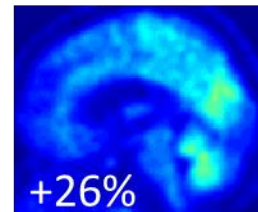
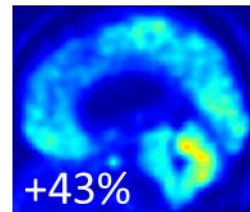


BEFORE TREATMENT

AFTER TREATMENT

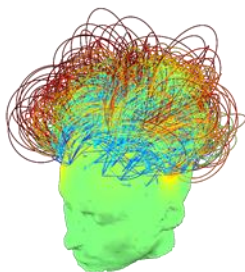


FDG-
PET
[8]



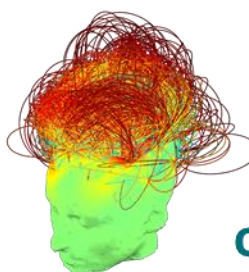
48%

P1



55%

P2



90%

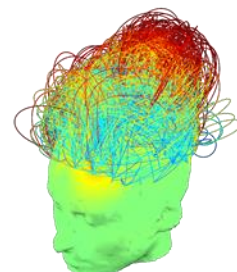
P3

hdEEG
functional
connectivity
[9]



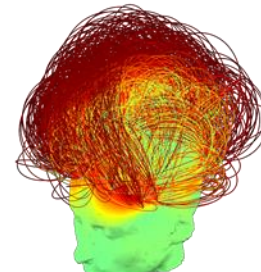
73%

P1



78%

P2



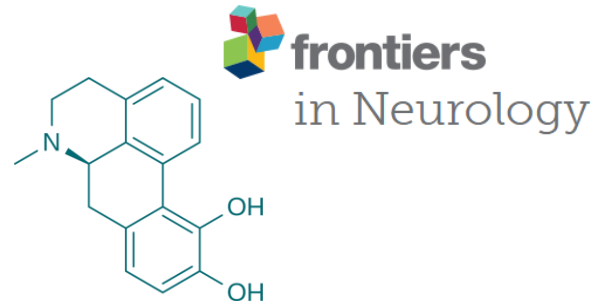
89%

P3

hdEEG
multivariate
classifier
[10]



- Improvements in **clinical** diagnosis lasting after treatment washout
- Increased **neuroimaging** outcome measures with independent modalities
- Action of apomorphine on DOC recovery is associated with **measurable multimodal changes**
- A larger **placebo-controlled double-blind trial** will confirm its efficacy and investigate the underlying neural mechanisms



Treating Disorders of Consciousness with Apomorphine: Protocol for a Double Blind Randomized Controlled Trial using Multimodal Assessments

 Leandro R. Sanz^{1, 2},  Nicolas Lejeune^{1, 2, 3, 4},  Séverine Blandiaux^{1, 2},  Estelle Bonin^{1, 2}, Aurore Thibaut^{1, 2, 5, 6}, Johan Stender⁷,  Neal Farber⁸,  Ross D. Zafonte^{5, 6},  Nicholas D. Schiff⁹,  Steven Laureys^{1, 2} and  Olivia Gosseries^{1, 2*}

Thank you !

