# Bordeaux Research Center for Population Health

Team 7

## Injury Epidemiology, Transport, Occupation

**IETO**

Director: Emmanuel Lagarde

C·H·U
Hôpitaux de Bordeaux

Inserm
Institut national
de la santé et de la recherche médicale

université de BORDEAUX

CENTRE HOSPITALIER DE CADILLAC

# SOFTER Project

# Symptoms Following Trauma: Emergency Response

Several symptoms

Several months

- Intrusion
- Avoidance
- Hyperarousal
- Numbing

Post Traumatic Stress Disorder

Several symptoms

Several months

- Intrusion
- Avoidance
- Hyperarousal
- Numbing

Post Traumatic Stress Disorder

Post Concussion Syndrome

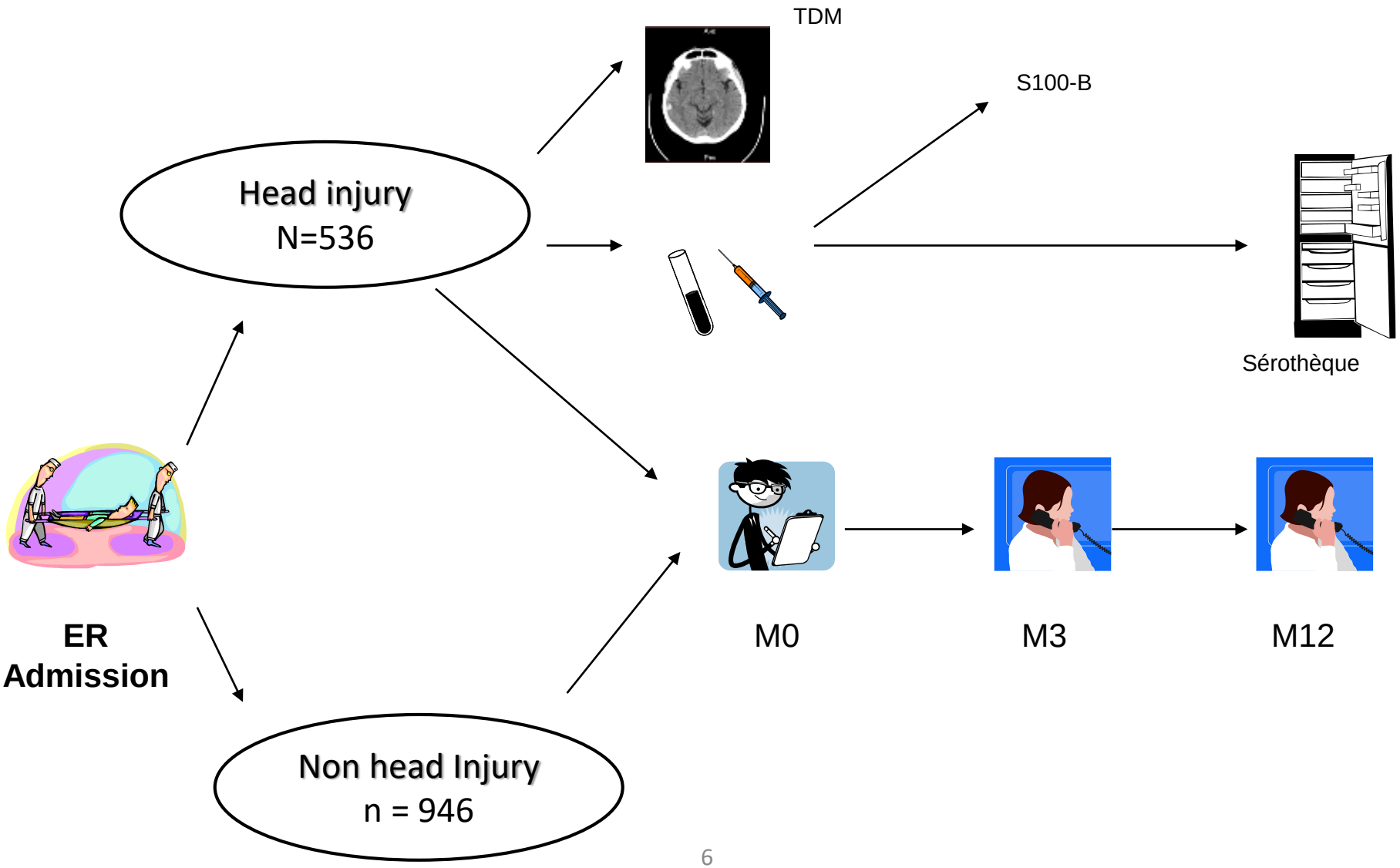
- **Headache**
- **dizziness**
- **Memory loss**
- **Poor concentration**
- **Personality changes**
- **Blurred vision**
- **…**

**PERICLES Study**

**set of symptoms** 3 months after the injury event
among **head** injury patients
among **non-head** injury patients

*J Head Trauma Rehabil 2013*

# Pericles : Protocol



JAMA Psychiatry
Formerly *Archives of General Psychiatry*

Original Investigation

# Association of Symptoms Following Mild Traumatic Brain Injury With Posttraumatic Stress Disorder vs Postconcussion Syndrome

Emmanuel Lagarde, PhD; Louis-Rachid Salmi, MD, PhD; Lena W. Holm, DrMedSc; Benjamin Contrand, MPH; Françoise Masson, MD; Régis Ribéreau-Gayon, MD; Magali Laborey, PhD; J. David Cassidy, PhD, DrMedSc

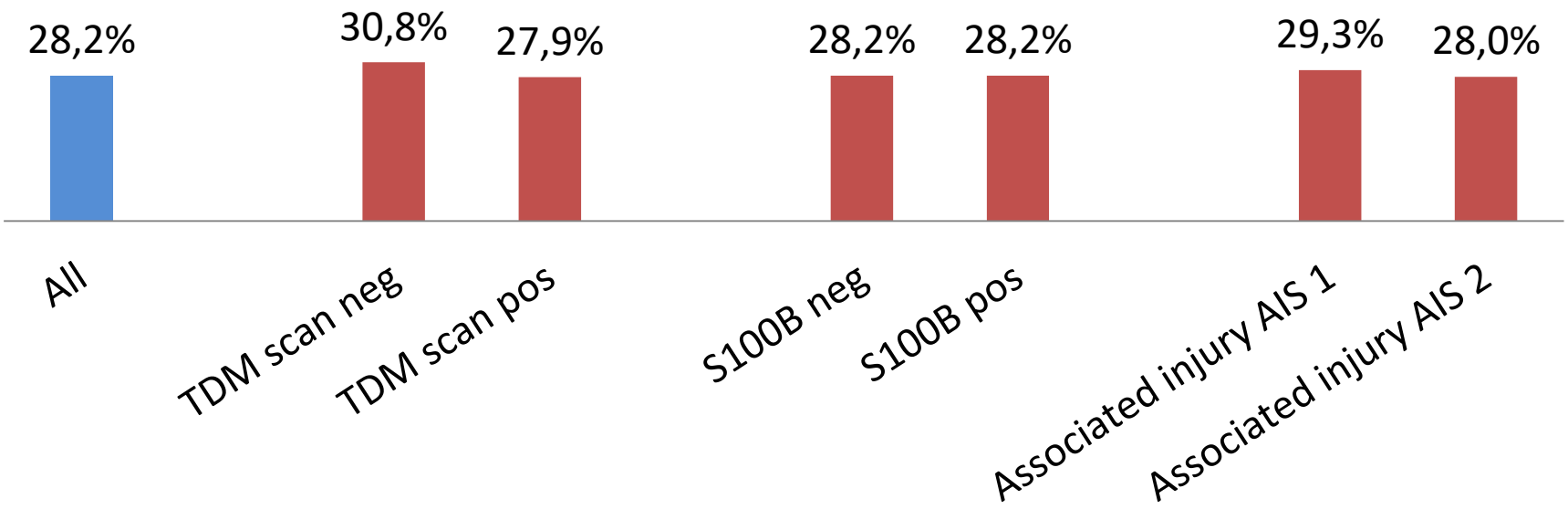
**IMPORTANCE** A proportion of patients experience long-lasting symptoms following mild traumatic brain injury (MTBI). The postconcussion syndrome (PCS), included in the *DSM-IV*, has been proposed to describe this condition. Because these symptoms are subjective and common to other conditions, there is controversy whether PCS deserves to be identified as a diagnostic syndrome.

Table 3. Proportion of Participants With PTSD and PCS at the 3-Month Follow-up

| Criteria | Meeting Syndrome Definition at Month 3, %: Head Injury (n = 534) | Meeting Syndrome Definition at Month 3, %: Nonhead Injury (n = 827) |
|---|---|---|
| PCS | | |
| Rivermead[a] | 28.7 | 22.9 |
| *DSM-IV*[a] | 21.2 | 16.3 |
| *ICD-10*[a] | 53.4 | 43.1 |
| Laborey[a] | 27.5 | 14.9 |
| PTSD *DSM-IV*[a] | 8.8 | 2.2 |
| Intrusion | 33.7 | 25.2 |
| Avoidance | 20.4 | 6.9 |
| Hyperarousal | 24.7 | 18.5 |

“Post-concussion syndrome” at 3 months :

**No association with severity**



# Associated with preexisting health condition

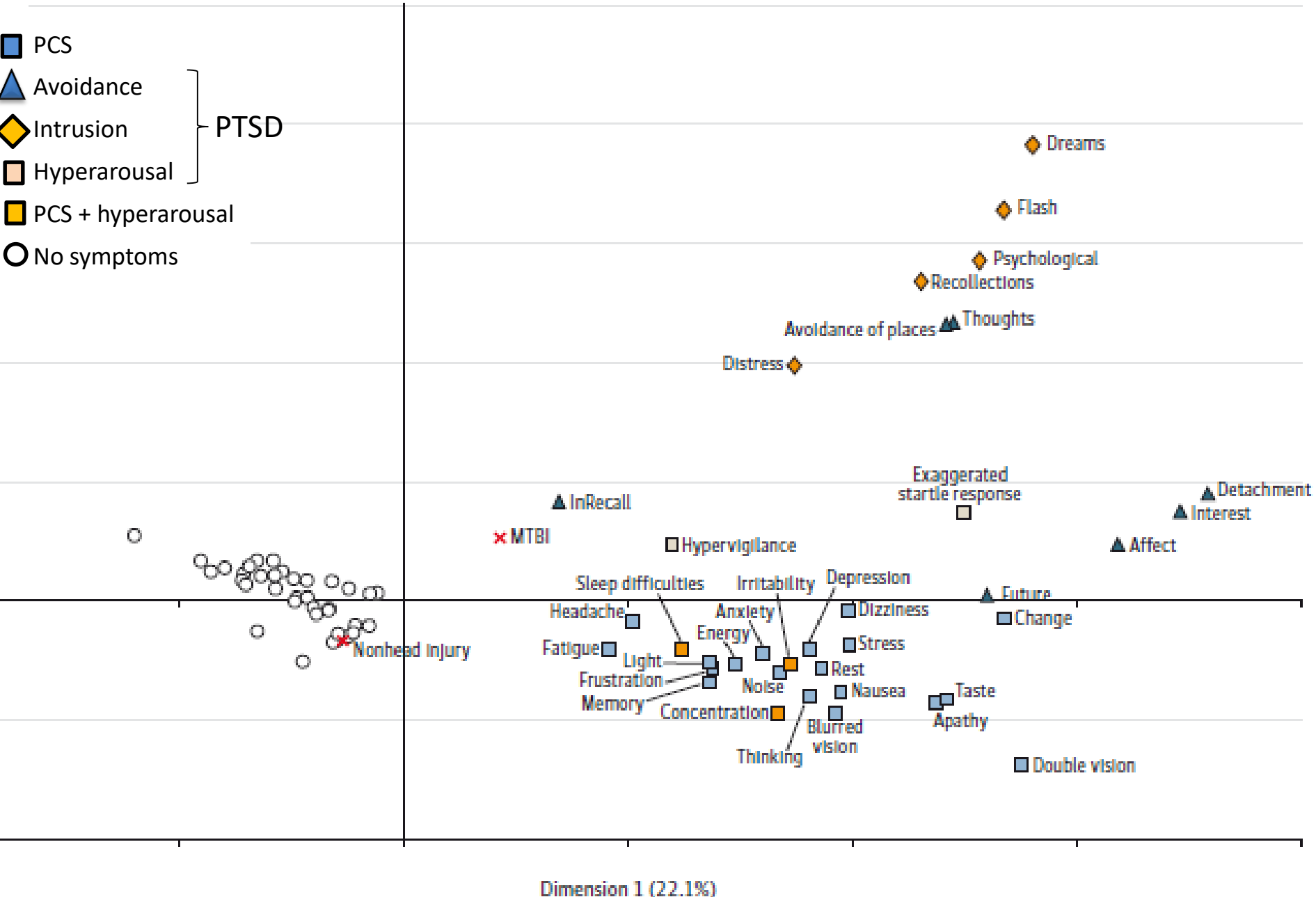
| Variable | No. | PCS (*DSM-IV*) | |
|---|---|---|---|
| | | % | OR (95% CI)[a] |
| Causal event | | | |
| Assault | 71 | 28.2 | 2.17 (1.18-3.99) |
| Road crash | 253 | 19.8 | 1.32 (0.88-1.98) |
| Fall | 533 | 19.7 | 1 [Reference] |
| Other | 479 | 13.6 | 0.89 (0.60-1.3) |
| Health condition before trauma | | | |
| Excellent/very good | 565 | 12.6 | 1 [Reference] |
| Fair | 653 | 19.7 | 1.56 (1.12-2.16) |
| Poor | 118 | 33.9 | 2.69 (1.65-4.38) |
| History of anxiolytics consumption | | | |
| Yes | 148 | 34.5 | 2.10 (1.39-3.18) |
| No | 1188 | 15.9 | 1 [Reference] |

Table 3. Proportion of Participants With PTSD and PCS at the 3-Month Follow-up

| Criteria | Meeting Syndrome Definition at Month 3, %: Head Injury (n = 534) | Meeting Syndrome Definition at Month 3, %: Nonhead Injury (n = 827) |
|---|---|---|
| PCS | | |
| Rivermead[a] | 28.7 | 22.9 |
| *DSM-IV*[a] | 21.2 | 16.3 |
| *ICD-10*[a] | 53.4 | 43.1 |
| Laborey[a] | 27.5 | 14.9 |
| PTSD *DSM-IV*[a] | 8.8 | 2.2 |
| Intrusion | 33.7 | 25.2 |
| Avoidance | 20.4 | 6.9 |
| Hyperarousal | 24.7 | 18.5 |

X 4

tiple Correspondence Analysis of Dimensions 1 and 2



Several months

Several symptoms

- Intrusion
- Avoidance
- Hyperarousal
- Numbing

Post Traumatic Stress Disorder

Several months

Several symptoms

- Intrusion
- Avoidance
- Hyperarousal
- Numbing

Post Traumatic Stress Disorder

Post Concussion Syndrome

**Summarizing**

# Post concussion syndrome

## Summarizing

**Post concussion syndrome**

## Summarizing

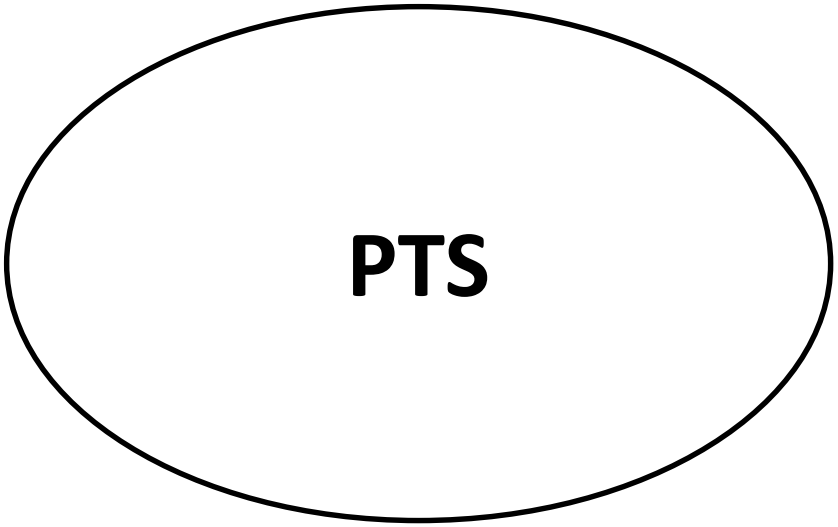
**Post concussion syndrome**

**Post traumatic syndrome (PTS)**

## Summarizing

~~Post concussion~~ syndrome

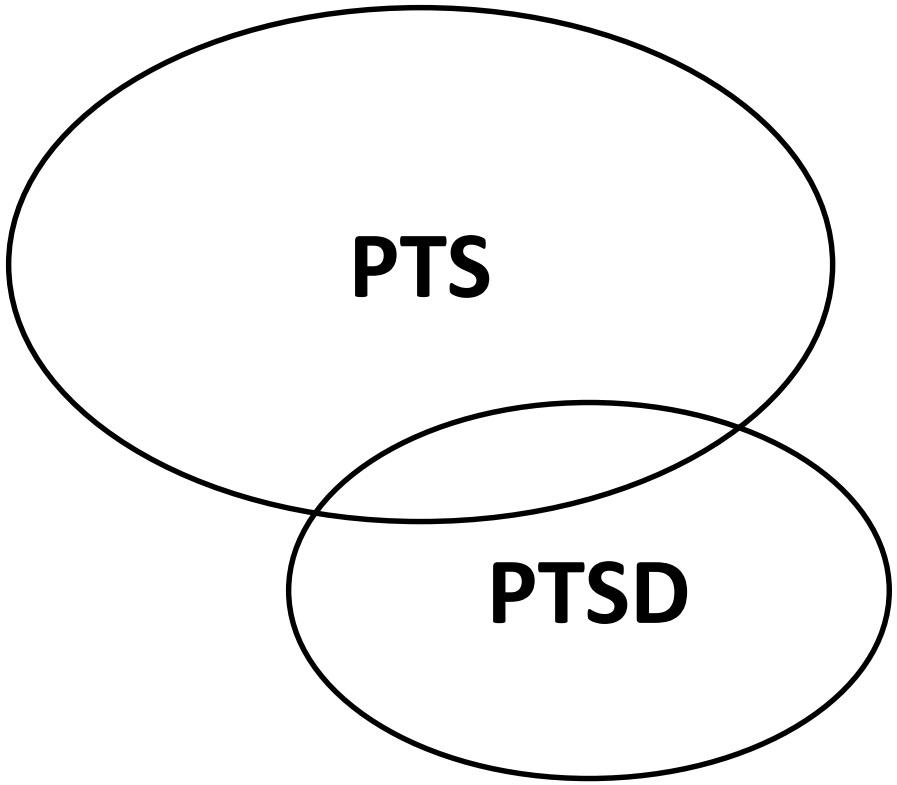
Post traumatic syndrome (PTS)



## Summarizing

~~Post concussion~~ syndrome

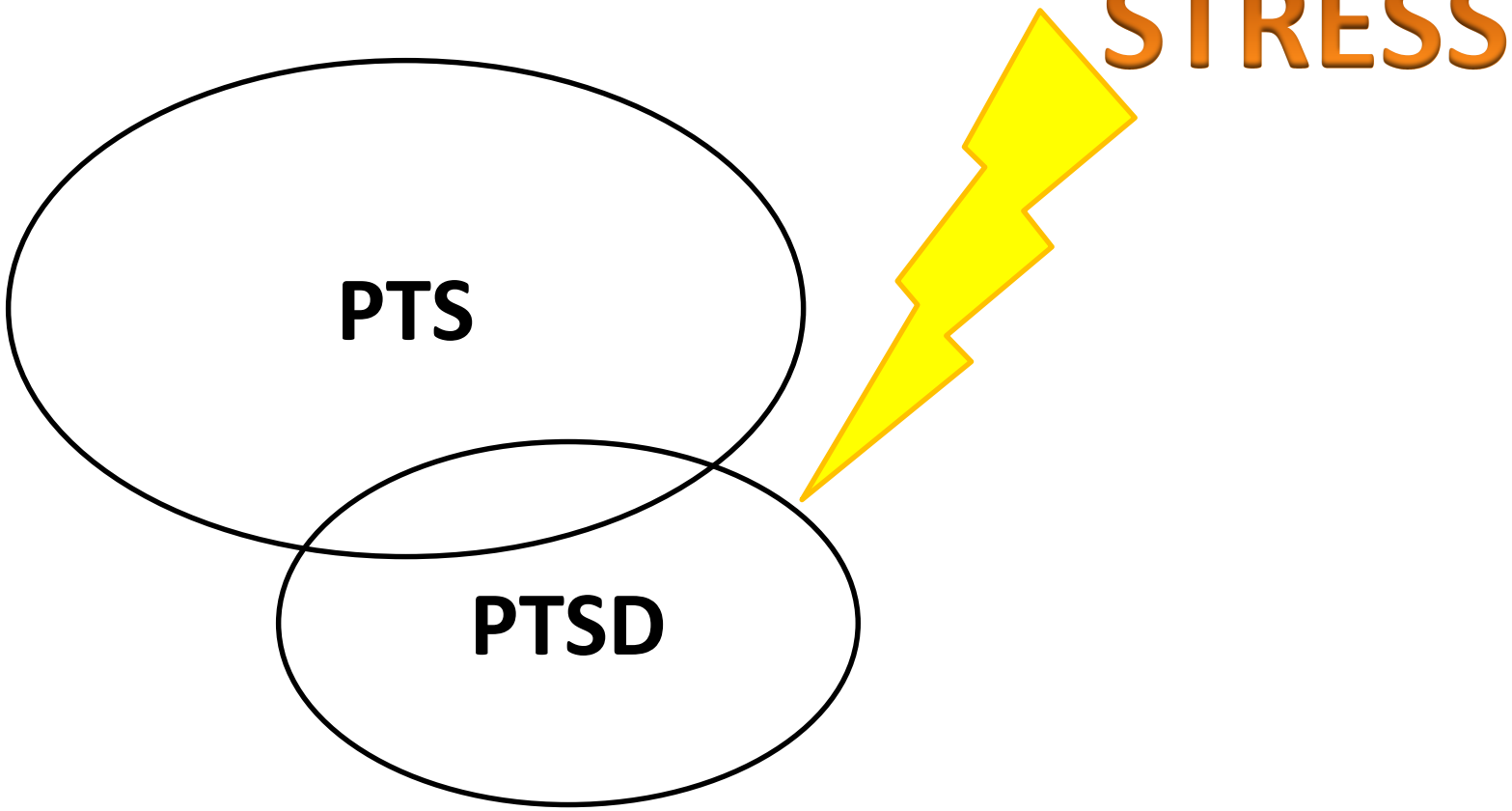
Post traumatic syndrome (PTS)



## Summarizing

~~Post concussion~~ syndrome

Post traumatic syndrome (PTS)



# 2015 Pilot Study at the ED

IN → OUT

N=193

# 2015 Pilot Study at the ED

IN → OUT



N=193

# 2015 Pilot Study at the ED

IN → OUT

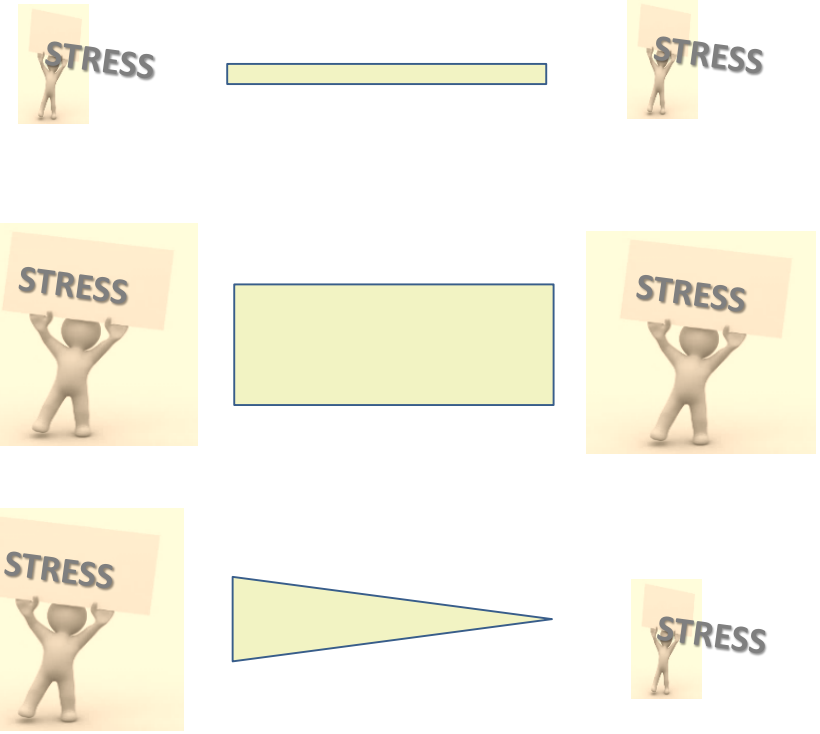




N=193

# 2015 Pilot Study at the ED

N=193



# 2015 Pilot Study at the ED

N=193





IN

OUT




# 2015 Pilot Study at the ED

IN → OUT



N=193

# 2015 Pilot Study at the ED

IN → OUT

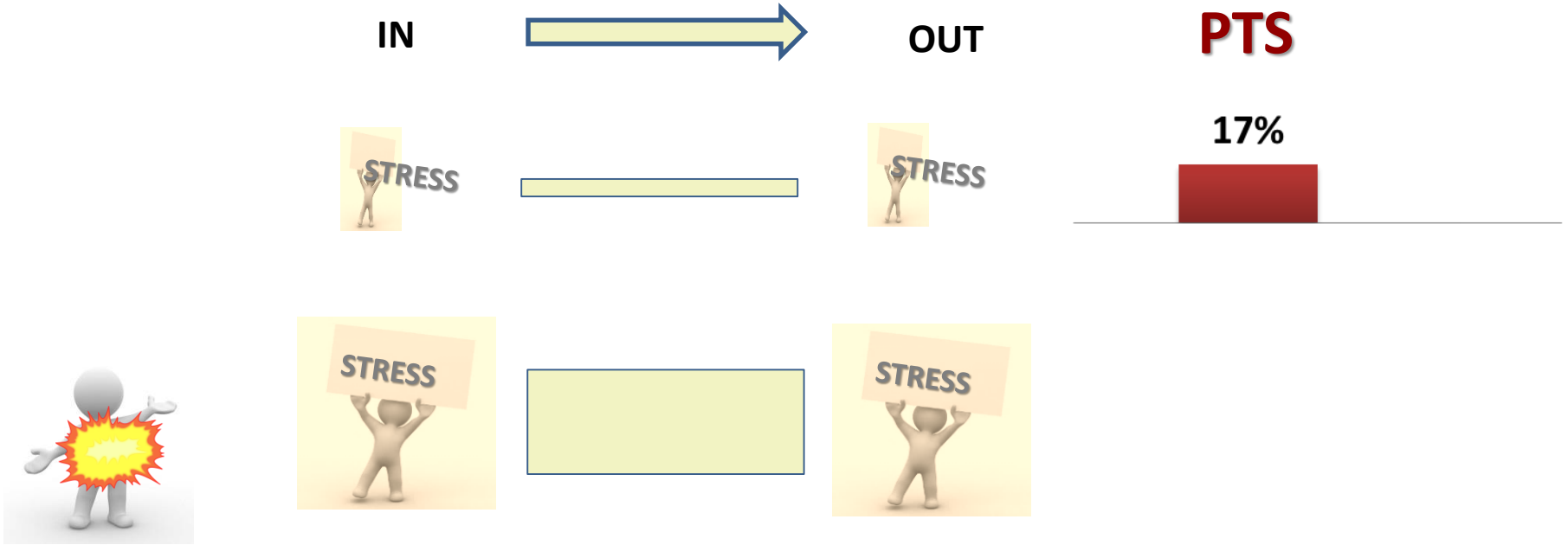


**PTS**

17%

N=193

# 2015 Pilot Study at the ED




N=193

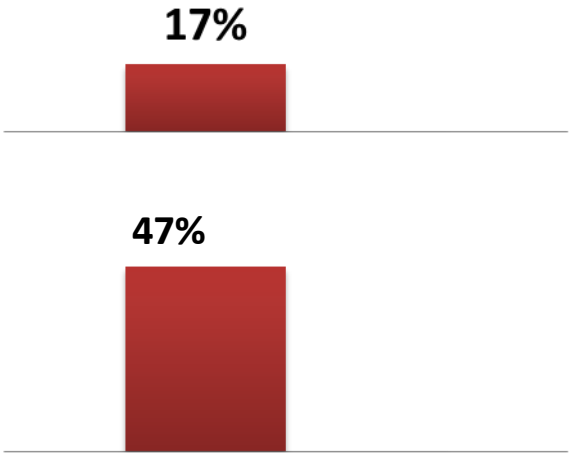
# 2015 Pilot Study at the ED

IN → OUT





PTS



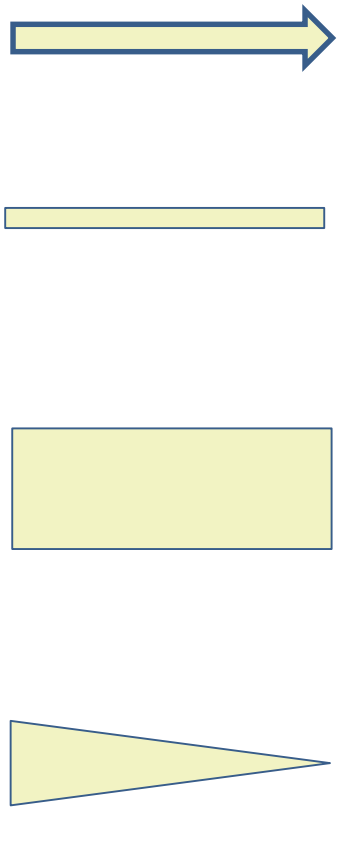

N=193

# 2015 Pilot Study at the ED

N=193

IN

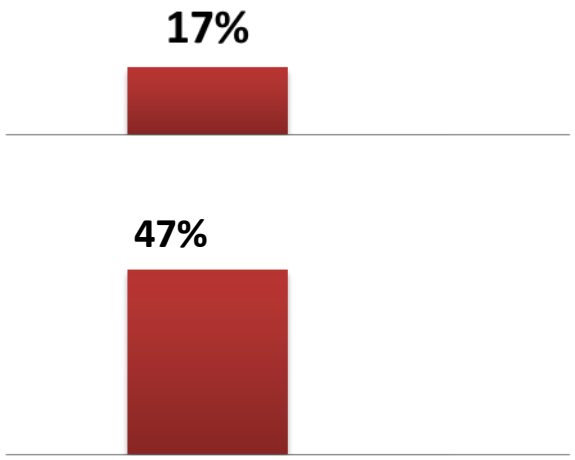


OUT




PTS



# 2015 Pilot Study at the ED

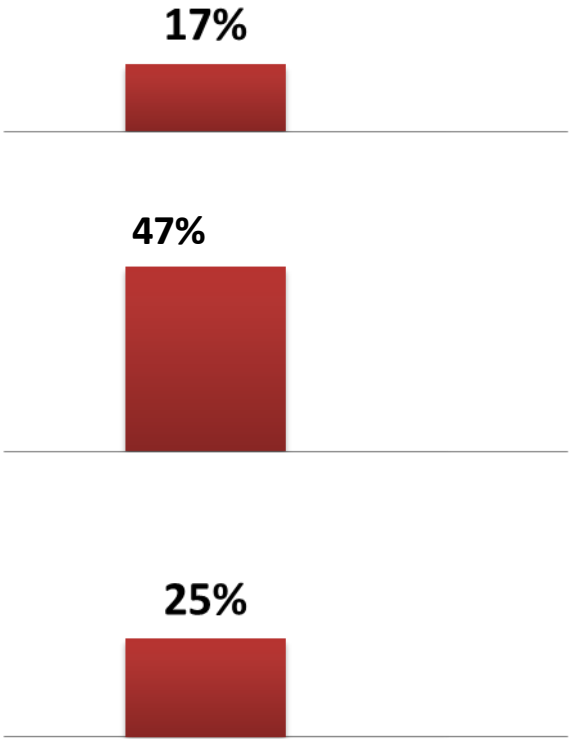
N=193




IN → OUT




**PTS**



# 2015 Pilot Study at the ED

N=193



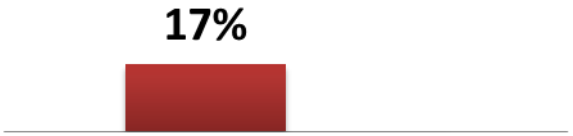


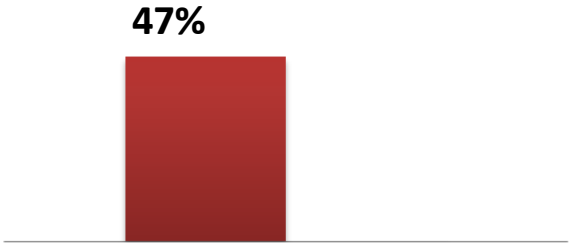
IN → OUT

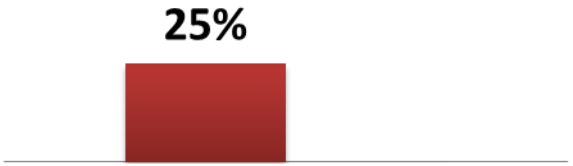




**PTS**



# 2015 Pilot Study at the ED

N=193



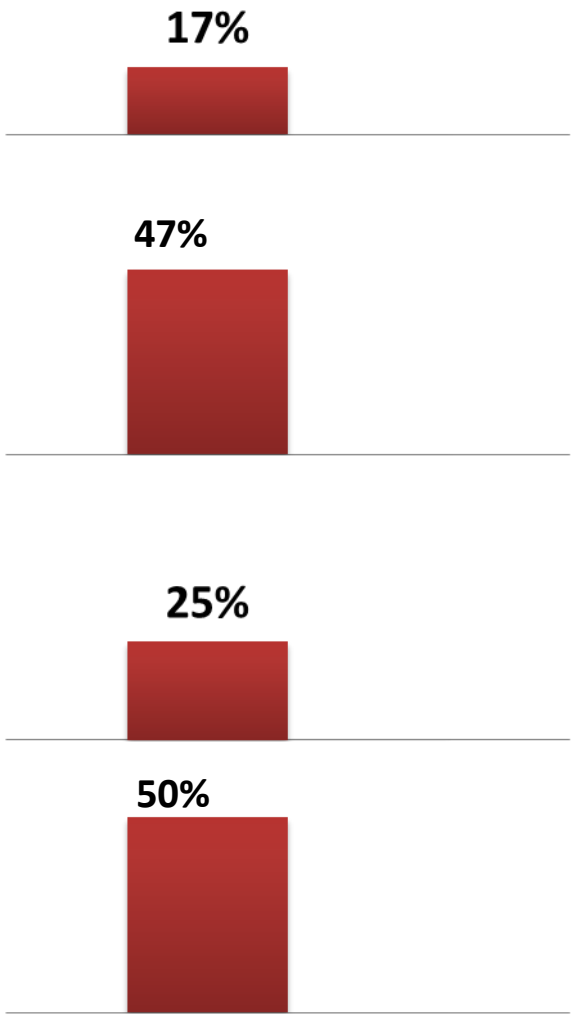


IN → OUT





**PTS**



# 2015 Pilot Study at the ED

N=193

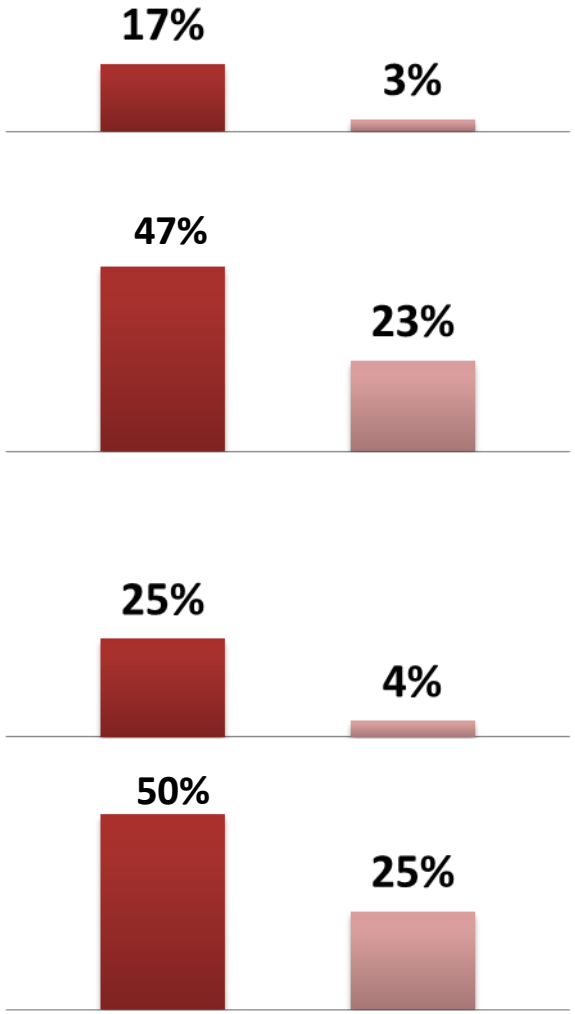




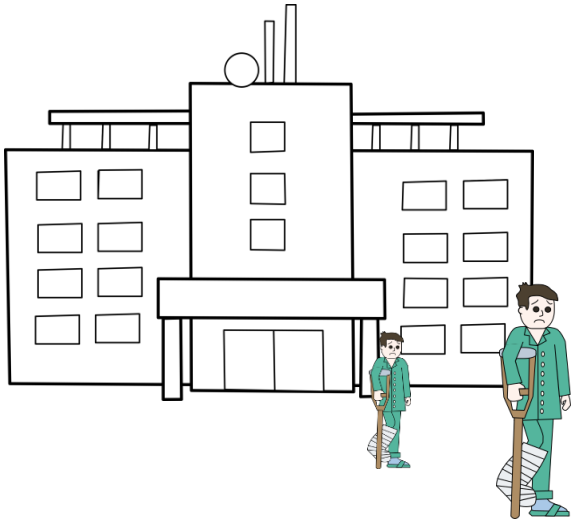
IN → OUT

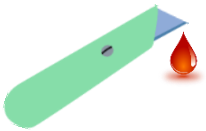






# TRAUMA

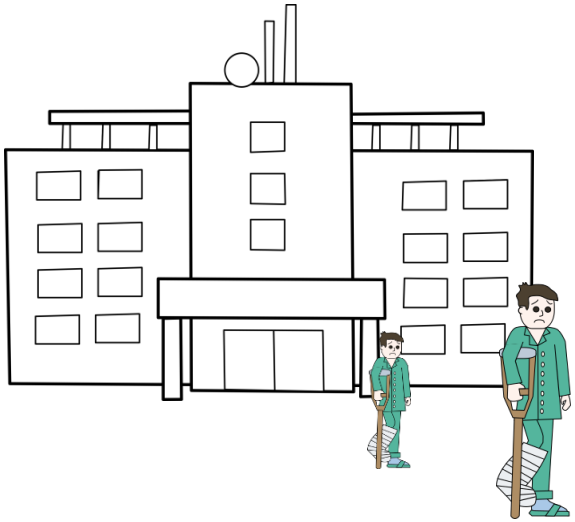


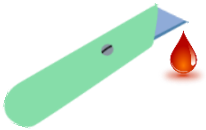


5 000 000 every year

**TRAUMA**

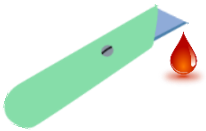
**+ NON-TRAUMA**

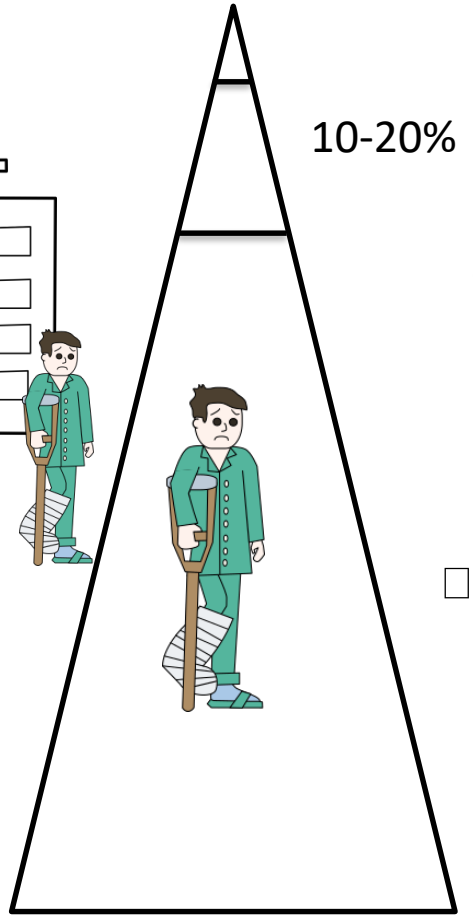




**11 000 000 every year**

**On average once every 6 years !**





10-20%

- Headache
- dizziness
- Memory loss
- Poor concentration
- Personality changes
- Blurred vision
- …

□ 1 000 000 people

**On average once every 6 years !**

# Prognosis is modifiable

OPEN ACCESS Freely available online

PLOS MEDICINE

*2008*

## Expectations for Recovery Important in the Prognosis of Whiplash Injuries

**Lena W. Holm[1*], Linda J. Carroll[2,3], J. David Cassidy[4,5], Eva Skillgate[6], Anders Ahlbom[1,7]**

**1** Division of Epidemiology, Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden, **2** Department of Public Health Sciences, School of Public Health, University of Alberta, Edmonton, Alberta, Canada, **3** Alberta Centre for Injury Control and Research, University of Alberta, Edmonton, Alberta, Canada, **4** Toronto Western Hospital, University Health Network University of Toronto, Toronto, Ontario, Canada, **5** Department of Public Health Sciences, Faculty of Medicine, University of Toronto, Toronto, Ontario, Canada, **6** Division of Cardiovascular Epidemiology, Institute of Environmental Medicine, Karolinska Institutet, Stockholm, Sweden, **7** Stockholm Center for Public Health, Stockholm, Sweden



*J Head Trauma Rehabil*
Vol. 28, No. 4, pp. 313–322

*2013*

## Cognitive-Behavioral Prevention of Postconcussion Syndrome in At-Risk Patients: A Pilot Randomized Controlled Trial

*Noah D. Silverberg, PhD; Bradley J. Hallam, PhD; Alice Rose, B.OT.; Heather Underwood, MD; Kevin Whitfield, MA; Allen E. Thornton, PhD; Maureen L. Whittal, PhD*

# PTSD prevention in literature

*Issues in Mental Health Nursing*, 37:787–799, 2016

## Early Psychological Preventive Intervention For Workplace Violence: A Randomized Controlled Explorative and Comparative Study Between EMDR-Recent Event and Critical Incident Stress Debriefing

Cyril Tarquinio PhD, Christine Rotonda PhD, William A. Houllé MPsych, Sébastien Montel PhD, Jenny Ann Rydberg MPsych, Laetitia Minary PhD, Hélène Dellucci MPsych, Pascale Tarquinio MPsych, Any Fayard & François Alla PhD



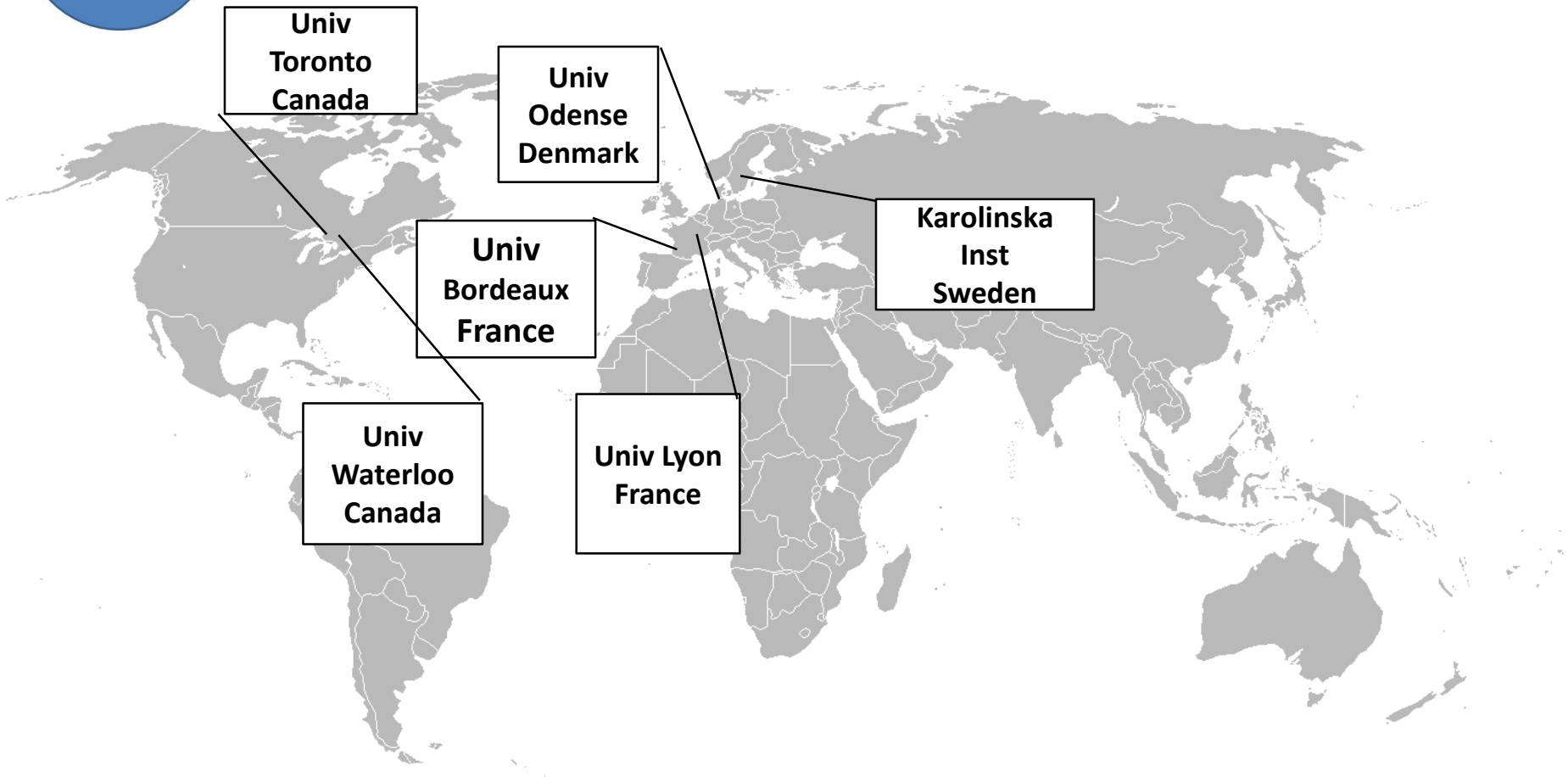
*JAMA Psychiatry*. 2015;72(3):259-267.

## Prolonged Exposure vs Eye Movement Desensitization and Reprocessing vs Waiting List for Posttraumatic Stress Disorder in Patients With a Psychotic Disorder

A Randomized Clinical Trial

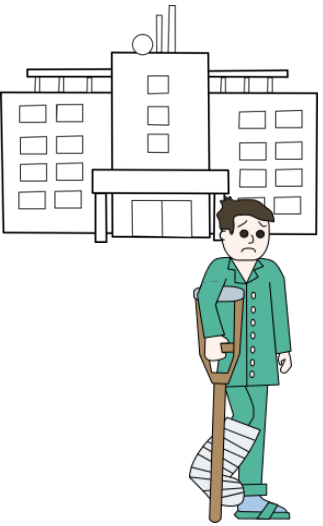
David P. G. van den Berg, MSc; Paul A. J. M. de Bont, MSc; Berber M. van der Vleugel, MSc; Carlijn de Roos, MSc; Ad de Jongh, PhD; Agnes Van Minnen, PhD; Mark van der Gaag, PhD

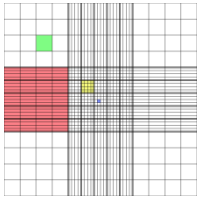
# SOFTER consortium



# 2016 Pilot study #2 : Randomized Controlled Trial

3 months later





Screening (20%)

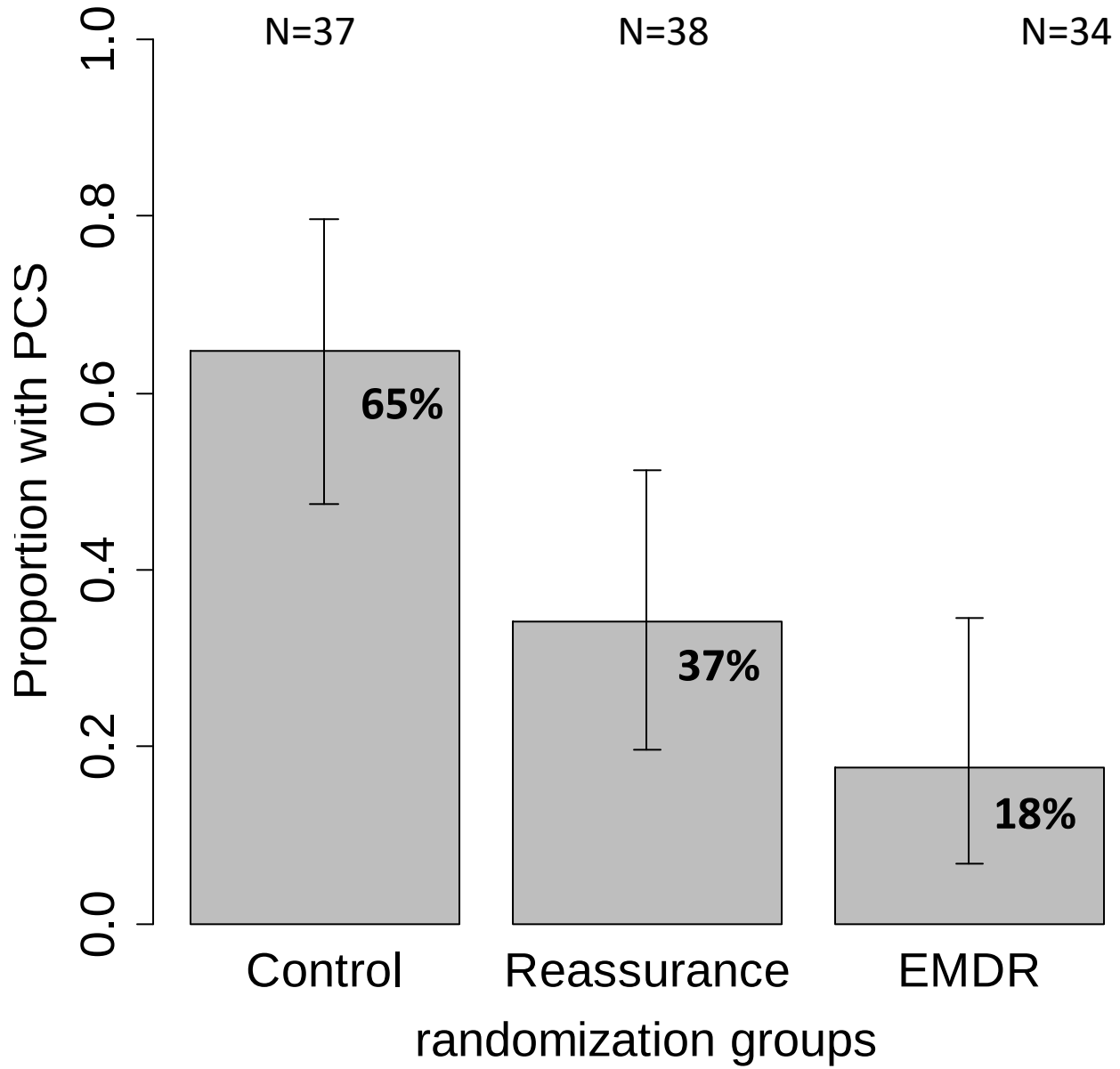
Randomization

Control → Symptoms ?

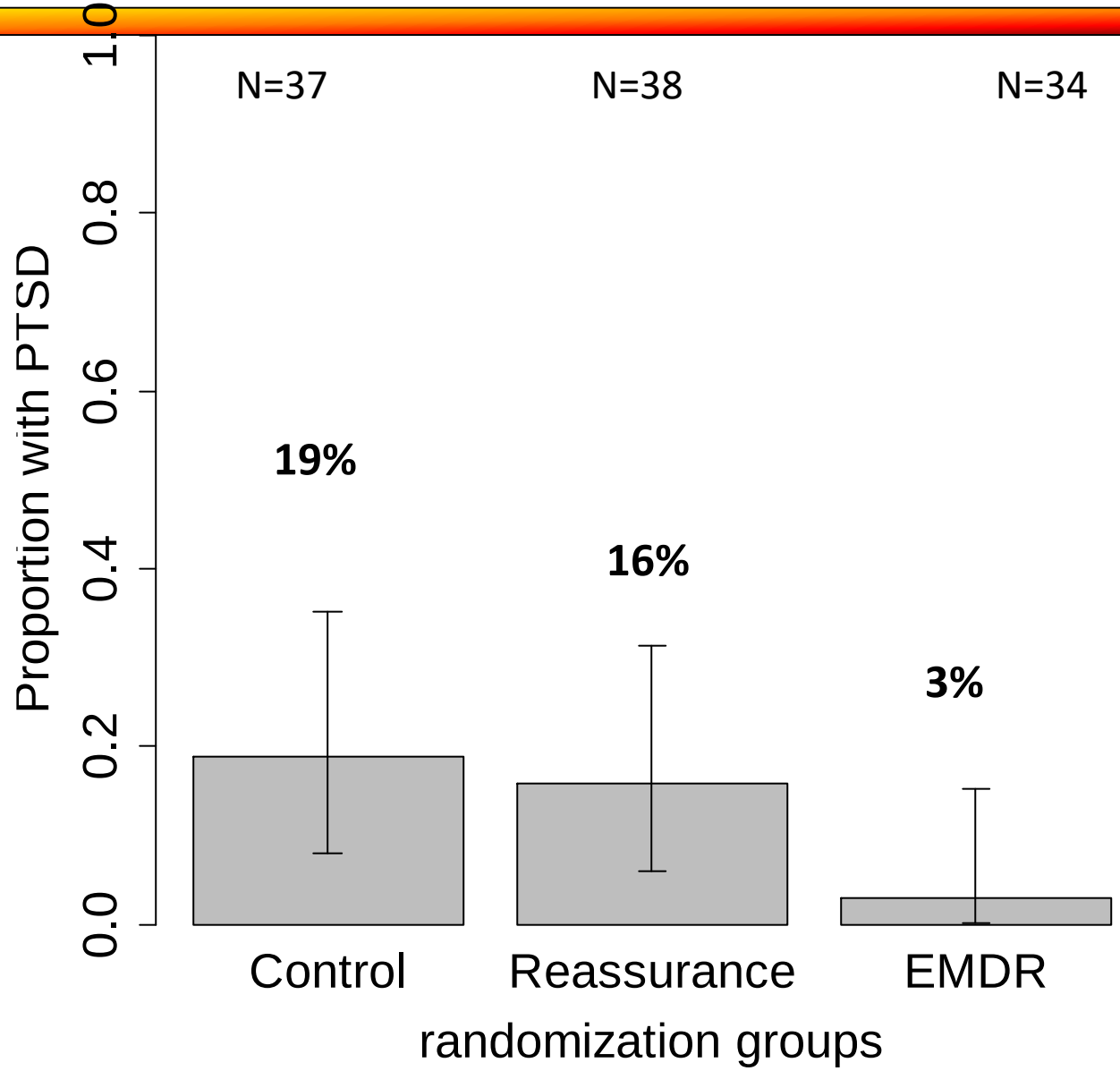
Reassurance → Symptoms ?

EMDR → Symptoms ?

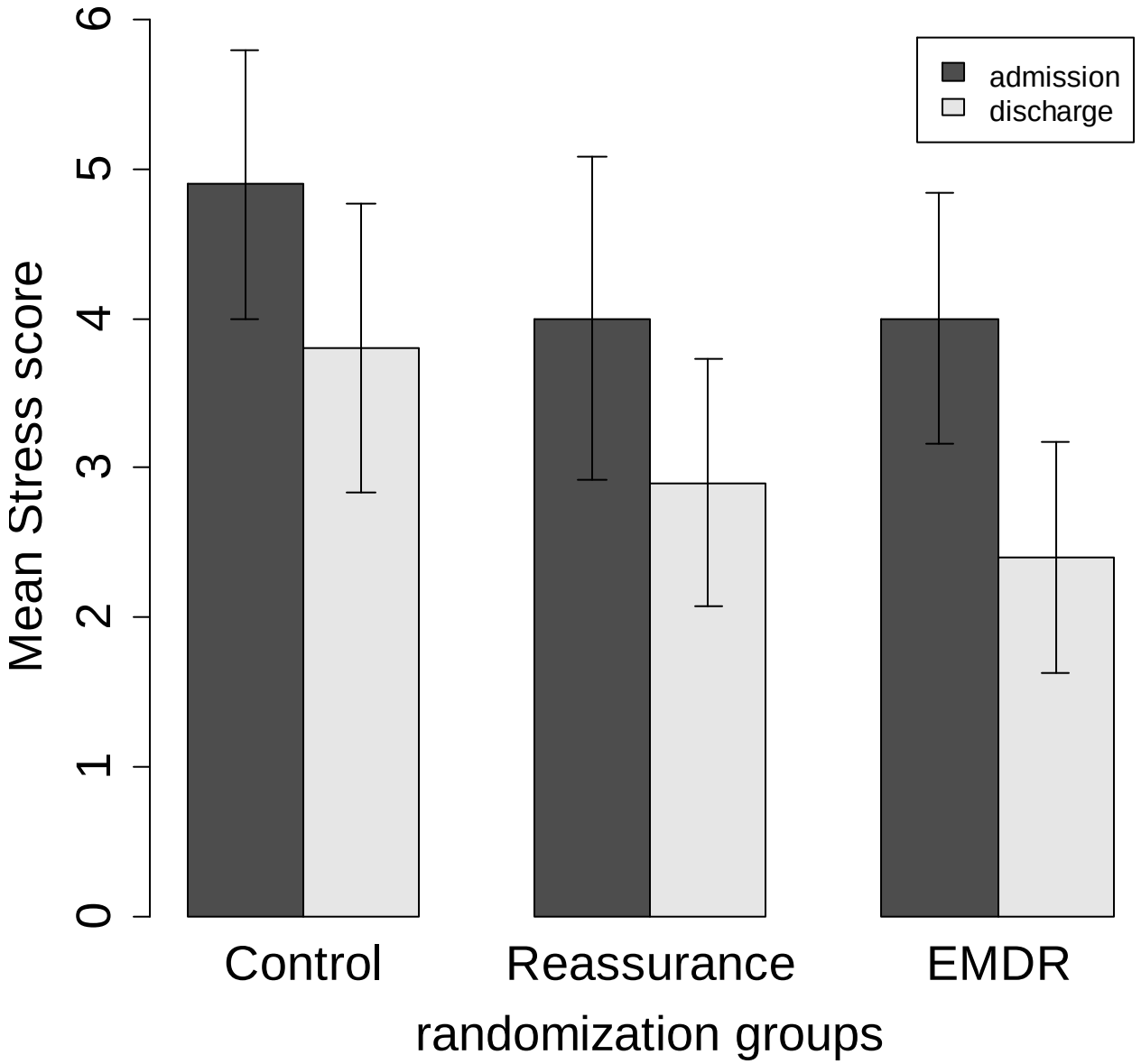
# Pilot study #2 : Results



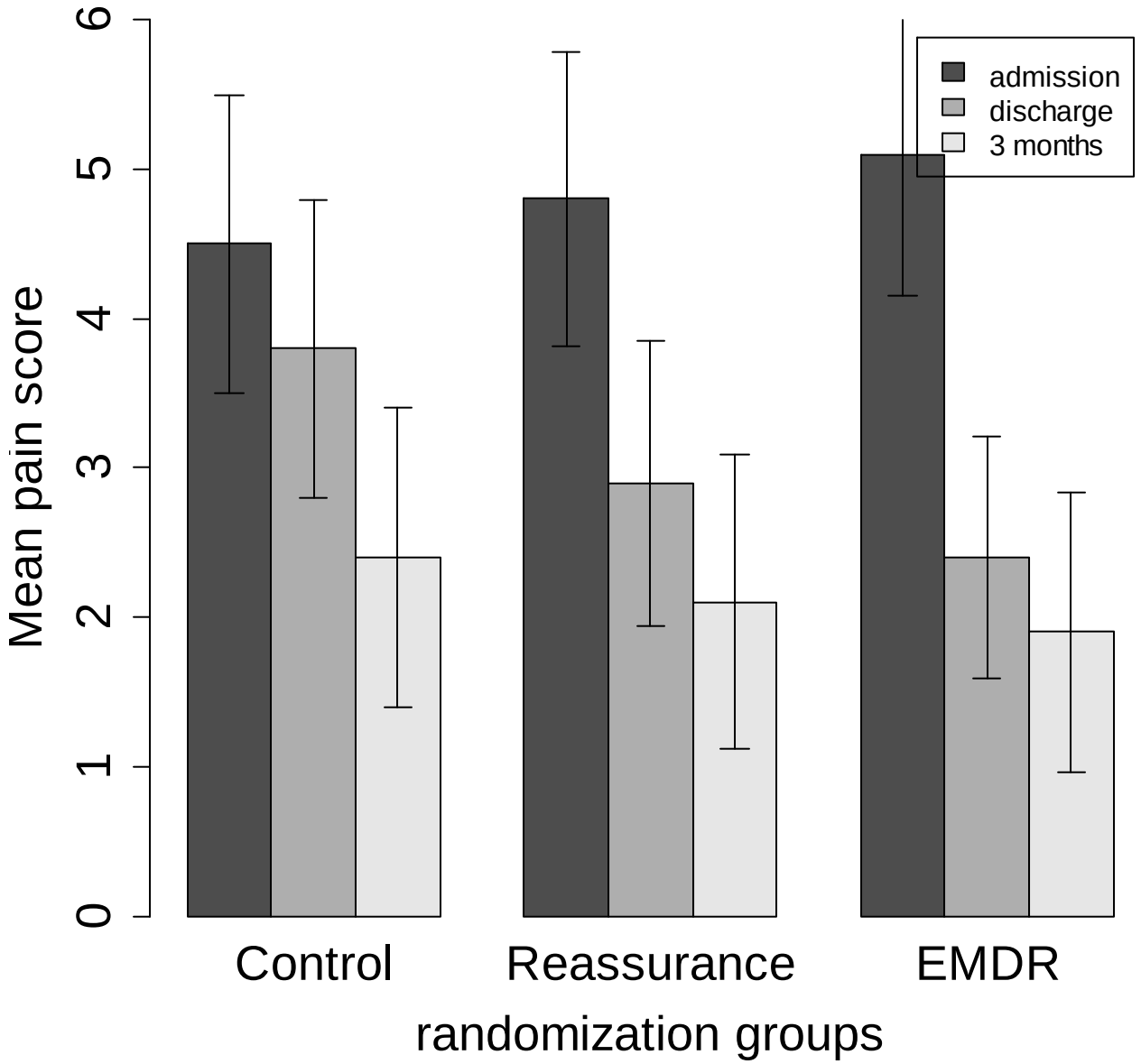
# Pilot study #2 : Results



# Pilot study #2 : Results



# Pilot study #2 : Results



# Unanswered questions

1. How long is the impact ?

- Outcome at 12 months / 24 months
- Long-term potential outcomes would address concers related to reporting bias

2. Cost-benefit evaluation

- Number of medical consultations avoided
- Medicines use reduction (antidepressant / anxiolytics hypnotics/ antalgics)
- Number of working days spared (students and professionnals)
- Psychological and medical burden reduction
- Costs for the intervention

3. Acceptability

- EMDR was feasible in our ED in Bordeaux : and else where ?
- Working conditions of a psychologist at the ED. 7/7 24/24 ?

4. Optimization

- Analysing EMDR log
- Improving screening tool

5. Reproductibility