

Recherche  
CIUSSS NÎM

Université   
de Montréal

# Can clinicians predict a patient's capacity to walk after a traumatic spinal cord injury?

Rémi Pelletier-Roy, MD<sup>1,2</sup>, Andréane Richard-Denis, MD, MSc<sup>1,2</sup>,  
Stéphanie Jean, MD<sup>1,3</sup>, Étienne Bourassa-Moreau, MD, MSc<sup>1,2</sup>,  
Jean Fleury, MD<sup>1,3</sup>, Geneviève Beauchamp-Vien, MSc<sup>2</sup>, Jean Bégin, PhD<sup>2</sup>,  
Jean-Marc Mac-Thiong, MD, PhD<sup>1,2</sup>

1. Université de Montréal, Faculty of Medicine, Montreal, Quebec, Canada
2. Hôpital du Sacré-Cœur de Montréal, Montréal, Quebec, Canada
3. Institut de réadaptation Lindsay-Gingras de Montréal, Montreal, Quebec, Canada



**Savoirs  
partagés**

Centre intégré  
universitaire de santé  
et de services sociaux  
du Nord-de-  
l'Île-de-Montréal

Québec 



## DISCLOSURE OF POTENTIAL CONFLICT OF INTEREST FORM

This page must be the first slide of your presentation (oral, e-poster, symposium, debate)

- I **DO NOT** have any affiliations (financial or otherwise) to declare. Speakers who have no involvement with industry should inform the audience that they cannot identify any conflict of interest.
- I **HAVE / HAD** an affiliation (financial or otherwise) to declare. Complete the section below as it applies to you during the past two years. Please indicate the commercial organization(s) with which you have/had affiliations, and briefly explain what connection you have/had with the organization. You must disclose this information to your audience.

	RELEVANT DISCLOSURE RELATIONSHIPS	COMPANY/ORGANIZATION
<b>A</b>	I am a member of an Advisory Board or equivalent with a commercial organization.	
<b>B</b>	I am a member of a Speaker Bureau.	
<b>C</b>	I have received payment from a commercial organization (including royalties, gifts or other consideration or 'in kind' compensation).	
<b>D</b>	I have received a grant(s) or an honorarium from a commercial organization.	
<b>E</b>	I hold a patent for a product referred to in the CME/CPD program or that is marketing by a commercial organization.	
<b>F</b>	I hold investments in a medical devices company, pharmaceutical organization or similar.	
<b>G</b>	I am currently participating in or have participated in a clinical trial within the past two years.	

CHECK ALL THAT APPLY: Presenter  Program Committee  Moderator  Speaker

**NAME OF EVENT:** 21<sup>st</sup> Annual Scientific Conference of the Canadian Spine Society

**DATE:** Feb 3,10,15,17,24, 2021

**LOCATION:** Virtual Conference ON Canada

Please enter all abstract numbers you are presenting

**ABSTRACT NUMBER(S):**

33

Please enter your title, first & last name

**ACKNOWLEDGEMENT:**

Remi Pelletier-Roy

I acknowledge that this information is accurate. I understand that this information will be publically available.

January 14th 2021

**SIGNATURE:** *Remi Pelletier-Roy*

**DATE:** \_\_\_\_\_



**Savoirs  
partagés**

RECHERCHE CIUSSS NÎM

# Context

- **Ambulation recovery is one of the highest priorities for patients after a traumatic spinal cord injury (tSCI)**
- Increased popularity of clinical prediction rules (CPR) in medical literature
  - Only a few have been compared to unstructured clinical judgment<sup>1</sup>
- Many CPR exist for ambulation outcomes after a tSCI
  - **None of them have been compared to unstructured clinical judgment**

# Objective

- Compare unstructured clinical judgment to van Middendorp's CPR<sup>2</sup> (vM-CPR) on predicting ambulation outcomes after tSCI

# Hypothesis

- vM-CPR is more accurate than unstructured clinical judgment
- vM-CPR should be routinely used in clinical practice



VS



# M&M – Design

- Retrospective comparative study on a prospective cohort
- **6 clinicians**
  - 2 different clinical settings
    - Acute and long-term rehabilitation facilities
  - 2 different fields of expertise
    - Physical Medicine and Rehabilitation (PM&R) and Orthopedic Surgery
  - Different levels of experience
    - Residents to senior staff
- **Predicting item 12** of the Spinal Cord Independence Measure (SCIM)
- **Compared to vM-CPR's accuracy**

# M&M - Statistics

- **To detect a 5% clinical difference**
  - Between vM-CPR and clinicians
- **Sample required: 68 patients**
  - $p < 0.05$
  - Power 80%
- **Bilateral McNemar test**

# M&M - Population

Table I. Characteristics of the Study Cohort

	Study Cohort (n=68)
Settings	Level one trauma center specialized in tSCI
Inclusion period	April 2010 to December 2018
Sex male (n, %)	54 (79%)
Age (mean $\pm$ SD)	44 ( $\pm$ 18)
AIS grade (n, %)	
Grade A	28 (41%)
Grade B	21 (31%)
Grade C	19 (28%)

# Results

**Table II. Van Middendorp's CPR accuracy stratified by AIS grade compared to clinicians**

	Clinical prediction rule (vM-CPR)	All clinicians
AIS grade A	89%	89%
AIS grade B	76%	83%
AIS grade C	74%	68%
All grades	<b>81%</b>	<b>79%</b>

Similar performances between vM-CPR and clinicians



# Results

Table III. Individual clinician's accuracy stratified by AIS grade

	PM&R resident	PM&R junior staff	PM&R senior staff	Orthopedic resident	Orthopedic junior staff	Orthopedic senior staff
AIS grade A	71%	86%	86%	89%	89%	89%
AIS grade B	71%	81%	81%	86%	81%	86%
AIS grade C	68%	84%	42%	63%	84%	68%
All grades	71%*	84%	72%*	81%	85%	82%

Lower accuracy for long-term rehabilitation clinicians in our group

# Conclusion

- **1st study** to compare clinicians to a CPR on predicting ambulation outcomes after a tSCI
  - Similar performances between vM-CPR and clinicians
  - Lower accuracy for long-term rehabilitation clinicians in our group
- **Essential steps** to validate a CPR:
  1. Define the minimal performance improvement needed by the CPR
  2. Build an adequately sized cohort of patients and clinicians
  3. Select the information disclosed to clinicians
  4. Compare clinicians' prediction to the CPR
- **CPR usage should be personalized** depending on:
  - Individual clinician accuracy
  - Complexity of prediction
  - Educational purposes