

# International Standards for Neurological Classification of Spinal Cord Injury (ISNCSCI) – Utilizing Rick Hansen SCI Registry (RHSCIR) data to inform implementation in acute care in Canada

Jessica Parsons<sup>1</sup>, Kristen Walden<sup>1</sup>, Christopher S Bailey<sup>2,3</sup>, Perry Dhaliwal<sup>4</sup>, Daryl R Fournery<sup>5</sup>, Vanessa Noonan<sup>1</sup>, RHSCIR Network



## Introduction

- **ISNCSCI** is the gold standard for assessing neurological function after spinal cord injury (SCI)
- It is used clinically for prognostication, goal setting and to monitor changes in neurological function over time
- Despite these benefits, there are variations in how it is implemented into clinical practice across Canada

### Objectives of this study:

1. Explore degree of ISNCSCI implementation in RHSCIR acute hospitals
2. Identify which injury and care factors impact completion
3. Utilize results to support discussions to improve ISNCSCI completion

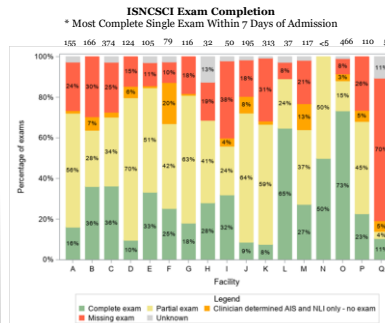
## Method

### 18 acute hospitals participating in RHSCIR

Patients discharged Jan 1, 2015 - June 30, 2019 (n=2649)

- **Documented ISNCSCI data** within 7 days of admission
- **Classification Accuracy** (of those with data available)
  - ❖ Clinically determined NLI and AIS versus those calculated by the Praxis ISNCSCI Algorithm. Mismatch = clinically determined value that did not match the value, or range of possible values given by the Algorithm
- Bivariate analyses of possible **variables impacting completion**
- **Results presented to clinical teams** at participating hospitals to facilitate discussion of tailored implementation strategies to improve ISNCSCI completion

## Results



Only 3/18 hospitals with ≥50% of patients with complete admission exams

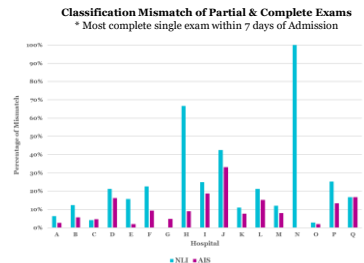
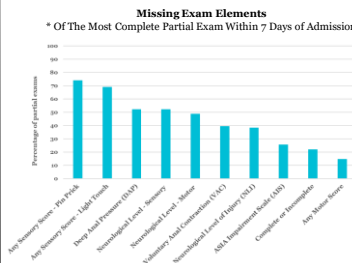
Pinprick sensation missed most often

40-52% missing rectal exam components (despite required for classification)

Motor scores most frequently completed

Classification Inaccuracy (% of patients):  
NLI = 17% (257/1496)  
AIS = 10% (157/1496)

❖ Complete Exam = all motor and sensory scores, Voluntary Anal Contraction score, Deep Anal Pressure score, ASIA Impairment Scale (AIS) & Neurological Level of Injury (NLI) documented.  
❖ Not testable scores counted as valid, documented scores  
❖ Unknown = exams missing exam date or patient admission date



### What Impacts National ISNCSCI Completion?

- |   |   |
|---|---|
| <p><b>Facilitators</b></p> <ul style="list-style-type: none"> <li>+ Admission to Step Down Unit (full exam 77% vs no exam 56%, p&lt;0.0001)</li> <li>+ ISNCSCI worksheet use (partial exam 38% vs full exam 90%)</li> </ul> | <p><b>Barriers</b></p> <ul style="list-style-type: none"> <li>- Multi-trauma (Injury Severity Score &gt;25) (no exam 45% vs full exam 38%, p=0.017)</li> <li>- Time to surgery later (no exam median 35h vs full exam median 22 hr, p&lt;0.0001)</li> <li>- Admission to ICU (no exam 78% vs full exam 61%, p&lt;0.0001)</li> </ul> |
|---|---|

### Data Informed Implementation

- Site by site analysis:
- Set **national benchmarks** for clinical teams
  - Identified **knowledge gaps** and need for further resource development
  - Facilitated discussions to develop **site-specific goals** to improve completion
    - o ISNCSCI worksheet use, ISNCSCI training, clinicians involved

## Take Home Messages

- ISNCSCI use and completeness varies widely
- SCI registries like RHSCIR can support quality improvement initiatives for implementing ISNCSCI
- SCI clinicians should understand ISNCSCI terminology as well as the value of its use in practice to support implementation
- Freely available resources & hands-on training should be utilised to improve ISNCSCI completion and classification accuracy

### What Next?

- Share ongoing ISNCSCI data with hospitals to track implementation goals (improvements noted already)
- Further investigation into unknown and other reasons given where ISNCSCI not used
- More detailed analysis of potential barriers/facilitators
- Evaluation of ISNCSCI implementation in Canadian rehabilitation facilities

Questions?  
[clinical@praxisinstitute.org](mailto:clinical@praxisinstitute.org)



ISNCSCI Worksheet



ISNCSCI Algorithm