Trends in Canadian Inpatient Rehabilitation Outcomes Following Traumatic Brain Injury

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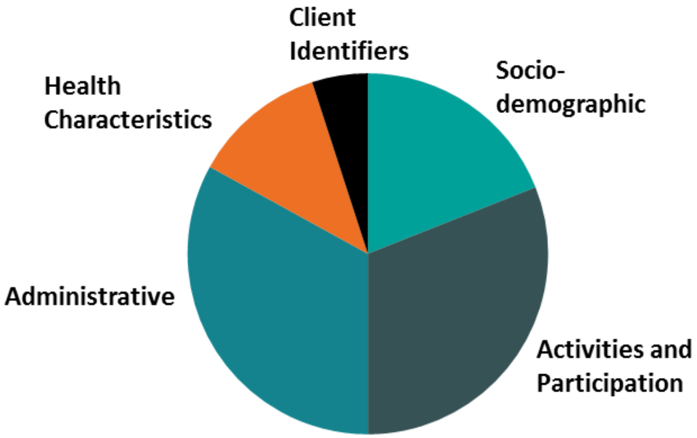
Background

- **Canadian Institute for Health Information (CIHI)**
  - Better data. Better decisions. Healthier Canadians.
- **National Rehabilitation Reporting System (NRS)**
  - 17 years of data
  - 100+ facilities in 9 provinces
  - General and specialized facilities
  - Data collected at admission and discharge (and optionally at follow-up)



For inpatient rehabilitation clients with moderate to severe TBI

How are outcomes **changing over time**?

How do outcomes **differ** based on **level of disability**?

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Methodology

- **5,582 patient episodes with TBI**
- **5 years of NRS data**
  - 2011/2012 – 2015/2016
- **Episode grouping**
  - by Rehabilitation Patient Group (RPG)

Resource Intensity Grouping*	Rehabilitation Patient Group (RPG)
Most Resource Intensive	1200
Moderately Resource Intensive	1210, 1220 & 1230
Least Resource Intensive	1240 & 1250

*Based on Rehabilitation Cost Weights

How do admission characteristics and outcomes **differ based on level of disability?**

Most Resource Intensive

- Younger (age=41 years*)
- Arrived later (onset days=82*)
- Stayed longer (ALOS=85 days*)
- More likely to wait for discharge (20% waited)
- Waited longer for discharge (24 day wait*)

Moderately Resource Intensive

Highest functional gains (median total function [FIM®] change = 28 points)

Least Resource Intensive

More likely to return home after rehabilitation (88% returned home)

*median

How are admission characteristics and outcomes **changing over time?**

Decreasing

Admission total function
(median 87 to 79 points)

Discharge total function
(median 113 to 111 points)

No Change

Active Length of Stay
(median 30 days)

Increasing

Total function change
(median 19 to 23 points)

Function scores referenced herein are based on data collected using the FIM® instrument. The 18-item FIM® instrument is the property of Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.

TBI clients are discharged at relatively high levels of function

Median discharge total function score (FIM®): **112 points**

→

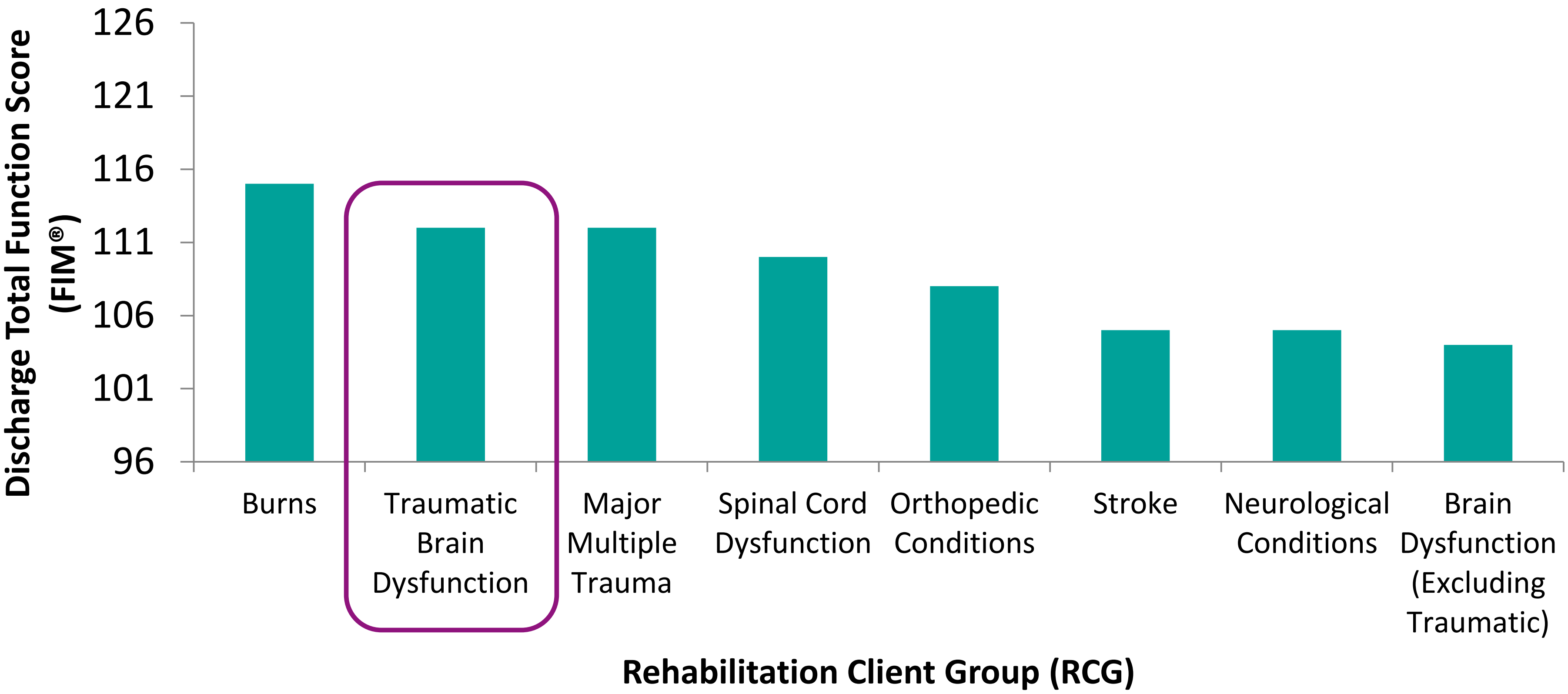
Modified independence

→

0 minutes of care required for **basic** activities of daily living (ADLs)*

*Uniform Data System for Medical Rehabilitation. 2012. *The FIM® Instrument: Its Background, Structure, and Usefulness.* Buffalo: UDS_{MR}

Discharge Total Function Score (FIM®) by RCG



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Conclusions

- NRS data can be used to facilitate more proactive discharge planning
- Good news: Active LOS is not increasing, but function change is improving
- TBI clients are discharged at *relatively* high functional levels for basic ADLs

References

- **Measures of client function used in this analysis are based on data collected using the FIM® instrument, property of Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.**

- **Nehra D, Bulger E, Cuschieri J, Maier R, Nixon Z, Lengenfeld C. Acute rehabilitation after trauma: Does it really matter? *Journal of the American College of Surgeons*. November 2016.**

- **Chen A, Bushmeneva K, Zagorski B, Colantonio A, Parsons D, Wodchis W. Direct cost associated with acquired brain injury in Ontario. *BMC Neurology.* August 2012.**

- **Uniform Data System for Medical Rehabilitation. *The FIM® Instrument: Its Background, Structure, and Usefulness.* 2012.**

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