IDENTIFICATION AND CHARACTERIZATION OF NON-TRAUMATIC SPINAL CORD DYSFUNCTION IN NEW BRUNSWICK, CANADA USING POPULATION-BASED ADMINISTRATIVE HEALTH CLAIMS DATA

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SUMMARY

➢ Non-traumatic spinal cord dysfunction (NTSCD) is more common but under-studied compared to traumatic spinal cord injury

➢ Understanding NTSCD epidemiology is important to support disease management through policy guidance and health system planning

➢ We used administrative health data to estimate the prevalence of NTSCD in the province of New Brunswick (NB), Canada and characterize NTSCD cases from fiscal year 2003-2017 at the population level

BACKGROUND

- Non-traumatic spinal cord dysfunction (NTSCD) refers to neurological impairment such as paraplegia and tetraplegia resulting from non-traumatic causes such as degenerative disease, inflammation, and tumors
- NTSCD is under-studied compared to traumatic spinal cord injuries, despite being the more prevalent cause of spinal cord dysfunction
- Further study of the epidemiology of NTSCD is important for health system planning and evidence-informed policymaking to support effective disease management
- Population-level studies are particularly useful for studying prevalence and incidence, and characterizing individuals with NTSCD in an unrestricted sample
- Administrative health data provides a useful means of studying NTSCD at the population level
- Recent studies have described algorithms for identifying NTSCD cases in administrative health data using standard diagnostic codes (ICD-10, RCG)

RESEARCH OBJECTIVE

Estimate the prevalence of NTSCD and characterize NTSCD cases in New Brunswick, Canada using administrative health data

METHODS

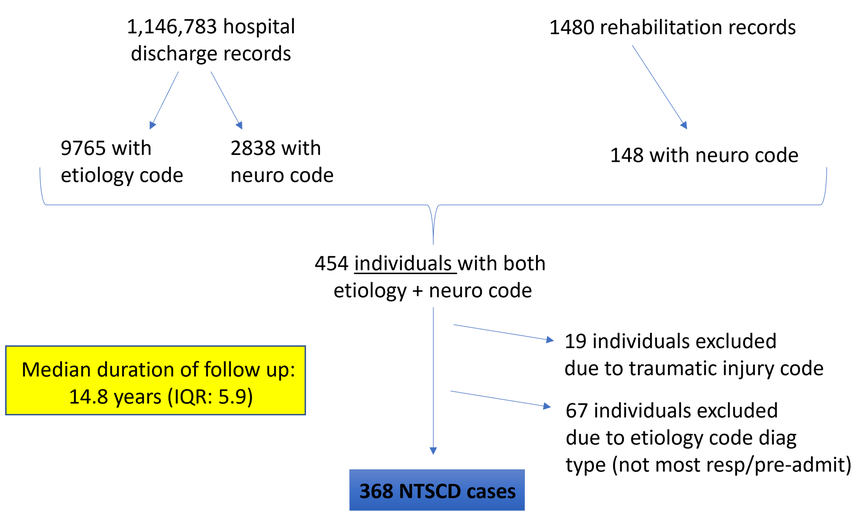
Study Design

- Retrospective analysis using administrative health data accessed within the New Brunswick Institute for Research, Data and Training (NB-IRDT) secure data facility at the University of New Brunswick

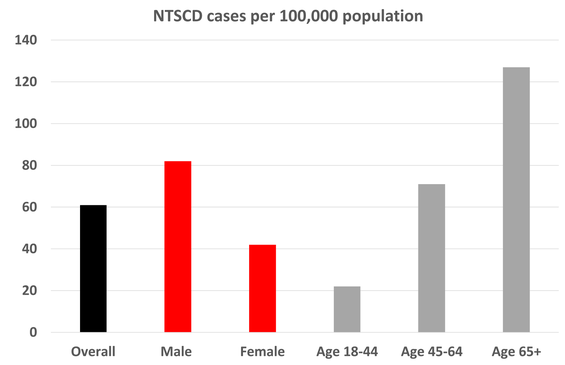
Case Identification

- NB hospital discharge and rehabilitation facility records from FY 2003-2017 screened for cases using algorithm described previously (*Guilcher et al 2017 Top Spi Cord Inj Rehabil 23(4):343-52*)
- NTSCD cases defined by diagnostic codes in health records over the 15-year window. An NTSCD case has at least one code indicating neurological impairment AND at least one code indicating NTSCD etiology AND no codes indicating traumatic spinal cord injury AND must be age 18+

NTSCD case identification: New Brunswick April 1 2003 – Mar 31 2018



Prevalence of NTSCD in New Brunswick, FY 2003-2017



NB Period Prevalence (cases per 100,000 pop)	
2003-2007	28
2008-2012	39
2013-2017	43
2003-2017	**61**

*Counting only individuals alive at start of period

Canadian Context

Canada (excl Quebec) Period Prevalence	
2004-2011	**25**

(derived from Guilcher et al, using same methodology for case identification)

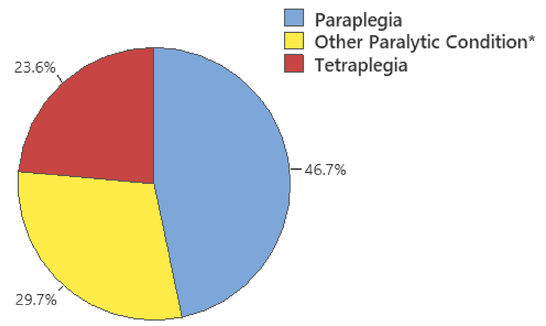
Perspective: Economic Burden of Spinal Cord Injury

Cost Implications of Spinal Cord Injury		
Parameter	**Cost ($)***	**Source**
Mean total annual health care utilization costs per NTSCD case	**68,987** (main contributor – inpatient care days)	USA 2008 (St Andre et al)
Mean lifetime economic impact per SCI case (sample:13% NTSCD/ 87% TSCI)	**2,001,859** (main contributors – ongoing home care, productivity losses)	UK 2019 (McDaid et al)

*Cost estimates adjusted to 2021 Canadian dollars

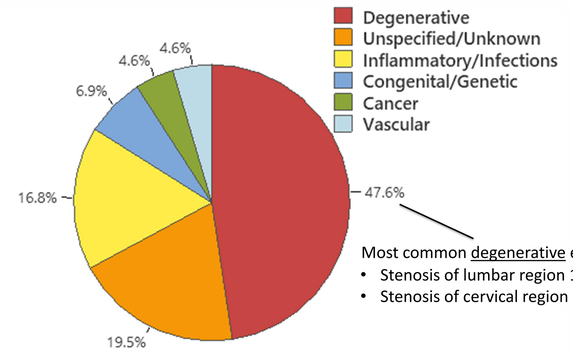
Characterization of NTSCD cases in New Brunswick, FY 2003-2017

Relative frequency of neurological impairment codes in hospitalization records of NTSCD cases



*Diplegia of upper limbs, monoplegias, cauda equina syndrome, other unspecified

Relative frequency of NTSCD etiology codes in hospitalization records of NTSCD cases



Most common degenerative etiologies:
- Stenosis of lumbar region 16.8%
- Stenosis of cervical region 12.0%

RESULTS AND DISCUSSION

- 368 NTSCD cases identified in NB administrative health data between FY 2003 and 2017
- NTSCD prevalence of 61 cases per 100,000 pop; prevalence higher in males, increases with age
- Paraplegia was the most common neurological impairment among NTSCD cases
- NTSCD cases were most commonly associated with degenerative etiologies, predominantly spinal stenoses of the lumbar and cervical regions

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