



NZ Spinal Cord Injury Registry
In partnership with the Rick Hansen Institute

Annual Report 2016/17

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1 Executive Summary

A key objective of the New Zealand (NZ) Spinal Cord Impairment Action Plan (2014-2019) is to improve information sharing. Following a pilot of two international registries, NZ has partnered with the Rick Hansen Institute (RHI), to establish the New Zealand Spinal Cord Injury Registry (NZSCIR). NZSCIR collects data for traumatic and non-traumatic spinal cord injuries (SCI) which can be used to inform quality improvement and research objectives to help improve outcomes for people with SCI. This is the first annual report from NZSCIR.

Participants enrolled in NZSCIR in its first year included those with a new SCI admitted to one of NZ's two supra-regional SCI services between 1 August 2016 and 31 July 2017. Data was extracted on 10 October 2017. In this report you will find information about the patient demographics, type of SCI and its causes, the patient journey pathway, length of hospital stay, functional outcomes and secondary complications after SCI. This is a small subset of the data that NZSCIR collects; other information includes further details regarding first responders timing, surgery and other interventions, services provided to participants, functional outcome score breakdowns, bladder and bowel function. This annual report's primary purpose is to serve as a descriptive account with no endorsement of, or recommendations about, policies or programmes. However, the data can be informative to research and clinical practice as well as policy and program planning. Data from this report provides researchers, health care providers and decision makers with knowledge that may support strategies to improve SCI care services within their institutions.

A total of 161 participants were enrolled in NZSCIR in its first year. Ninety-two participants were enrolled at Counties Manukau Health and 69 at Canterbury District Health Board. In total, 67% of participants were classified as having a traumatic SCI and 33% were non-traumatic, of which 73% were men and 27% were women. Men account for 78% of traumatic SCI's. The median age for a traumatic SCI was 49.5 years and a non-traumatic SCI 57 years. Noting that this is an adult registry, the youngest person was 15 years old and the oldest person was 88 years old. Differences in percentages were similar for both sites.

Most participants were NZ European (47%) followed by Maori (21%) and Samoan (6%). There was a significantly higher number of Maori experiencing a traumatic SCI (27.8%) than non-traumatic (7.5%).

For participants with a traumatic SCI the top three causes of the SCI were falls (36%), sports (28%) and transport related (23%). For participants with a non-traumatic SCI the most common cause was a vertebral column degenerative disorder (26%). It is likely that those with malignant tumours are not fully captured in this report, as those few people with cancers admitted to the supra-regional SCI services who have a poor prognosis did not have the full data set collected.

Changes to the minimal data set to ensure more detailed aetiology data collection were made late in 2017.

Complete records were available for 101 participants. This includes a minimum data set of 37 non-consenting participants. Overall, there was a 71% consent rate to participate in NZSCIR. Consent rates were 14% higher in participants with a traumatic SCI than non-traumatic.

More pre-injury co-morbidities were reported by traumatic SCI participants than non-traumatic SCI participants, although this may be due to more complete data collection. Participants from the Canterbury District Health Board were more likely to have co-morbidities than the Counties Manukau Health. The most common co-morbidities were hypertension (10.6%) followed by diabetes (8.3%) and asthma (7.6%).

Data from NZSCIR indicates that the NZ national destination policy, which aims to have people with traumatic SCI receive their acute care and rehabilitation from a SCI supra-regional service, is having an impact. Time from injury to acute admission at a SCI supra-regional service was recorded for 29 participants. Data indicates a median time of 2.4 hours for Counties Manukau Health and 11.3 hours for Canterbury District Health Board. The minimum time was 0.7 hours and maximum time was 217.8 hours. Just over half of traumatic SCI admissions to a SCI supra-regional service were direct admissions from the scene of an accident. This suggests there are opportunities to improve application of the national destination policy, however data cleaning is still required to remove potential outliers (i.e. those with traumatic yet stable SCI not requiring rapid surgery or transfer).

For those traumatic SCI participants with complete records, 77% received surgery. Time to spinal cord decompression and time to first spinal surgery have been collected for 20 and 27 participants respectively. Time to spinal cord decompression ranged from 4.8 hours to 237 hours. The median time varied from 12 to 24.5 hours between the two supra-regional services. Seven participants had surgery within 12 hours and a further 9 had surgery within 24 hours. Time to surgery median time was 22 hours which is consistent with good practice. Time to surgery and time to decompression are dependent on a range of clinical factors, which impacts on how quickly people receive services from the supra-regional spinal services. This information will be useful to help improve timeliness of services.

After accounting for outliers, acute length of stay for traumatic SCI participants was similar for both supra-regional services. The median number of days from injury to admission to a SCI supra-regional rehabilitation service was 12 days for traumatic SCI participants. Inferences from data related to early tracheostomy and ventilation cannot be drawn due to low volumes in NZSCIR.

Most participants (83%) received their acute care from a SCI supra-regional acute service before moving to its rehabilitation service. The median length of stay in a SCI supra-regional

rehabilitation service was 76.5 days for traumatic SCI participants and 45.5 days for non-traumatic participants.

Changes from a baseline measure of the Spinal Cord Independence Measure (SCIM), a functional outcome measure, has been collected in a small number of participants. Based on 45 participants with complete data, 42% discharged as community ambulators (walking 100 metres outdoors). However, additional data is required before inferences can be made.

Data to help identify the incidence of common complications has been collected. Improvement is needed in data collection of pressure injuries occurring during acute care. Due to the volume of missing data, no inferences can be made related to acute care and pressure injuries. Pressure injuries received during rehabilitation indicates a 11% incidence in participants with traumatic SCI and 15% in non-traumatic SCI, both of which are low. Urinary tract infections are more common with a 31% incidence occurring during rehabilitation.

For those participants who have been discharged, most were discharged home to a private residence (69%) with a further 14% discharged to a residential care setting. Overall, time from injury to discharge for traumatic SCI participants was a median of 85.5 days, but varied significantly based on neurology. Pain on discharge appears to be prevalent, occurring in 63% of cases based on records of 64 participants with complete data.

Due to NZSCIR volumes, it is difficult to draw any inferences about neurology at the time of admission compared to time to participating in rehabilitation and discharge. Mortality rates between the two SCI supra-regional services are not directly comparable. The overall rate from 101 participants with complete records found a mortality rate of 5%.

NZSCIR requires further refinement in relation to non-traumatic data collection and minimal data set components. Some changes have already occurred throughout the year which accounts for some missing data. As part of the implementation of NZSCIR, ongoing refinement of data will occur, processes will continue to be streamlined and further historic data will be added and reflected in future reports. Future reports will also include results from the regular follow-up of registry participants in the community, beginning at one year post-SCI.

NZSCIR would like to acknowledge the spinal service clinicians and coordinators for collecting and inputting data into the registry. Also many thanks to the RHI team for their support and expertise given in establishing the NZSCIR and its reports. And finally, thank you to those people with a SCI – the participants who enrolled in NZSCIR. Thank you for contributing your time and experiences to the registry. We thank you for your continued participation which determines the value and success of NZSCIR.

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3 Introduction

This is the first annual report of the NZ Spinal Cord Injury Registry (NZSCIR). Data collected for the registry is intended to provide nationally relevant and internationally comparable data which can be used to inform quality improvement and research objectives to help improve outcomes for people with SCI.

This report is publicly available and provides a high-level overview of the majority of data entered into NZSCIR in its first year. A basic summary of the NZSCIR Annual Report data will be available on the NZ Spinal Trust website: <https://nzspinaltrust.org.nz/nzscir/>. Further data can be obtained through the NZSCIR Coordinators and the Data Access Policy.

3.1 Background

The NZ Spinal Cord Impairment Action Plan (2014-2019) (SCI Action Plan) includes an objective to improve information sharing by establishing a national registry. A pilot was implemented to test two international registries which could be adopted for New Zealand use. Following the pilot, a partnership was established with the Canadian Rick Hansen Institute (RHI) that has enabled NZ to adopt and modify the Rick Hansen Spinal Cord Injury Registry (RHSCIR), to establish NZ's first adult SCI registry.

A national model for the delivery of SCI services in NZ was developed through the implementation of the SCI Action Plan. Adult services are provided by two supra-regional services delivered by Canterbury District Health Board (CDHB) and Counties Manukau Health (CMH). Both services provide comprehensive acute care, rehabilitation and follow-up services for people with SCI.

CDHB provides its services from Christchurch Hospital and Burwood Spinal Unit (BSU), whilst CMH provides its services through Middlemore Hospital and Auckland Spinal Rehabilitation Unit (ASRU).

3.2 NZSCIR

NZSCIR is jointly funded by the Accident Compensation Corporation, CDHB and CMH, in partnership with RHI. The NZSCIR governance group includes a consumer representative, clinicians, funders and research representatives.

There are extensive policies and procedures which ensure the ethical collection and use of data that meets the NZ Code of Rights, privacy legislation and requirements for the security of information. Data is collected by clinicians and two NZSCIR Coordinators based at the SCI supra-regional services for people newly admitted with SCI. A minimum data set can be collected without consent, whereas a more comprehensive data set is collected with consent.

Data points for the collection of information are determined by *a priori* questions which were developed by the NZSCIR governance group. All data obtained for this report was collected through RHI's Global Research Platform (GRP).

As part of the implementation of NZSCIR, historic data entry and opt-in participation by people with SCI who have previously been admitted (prior to NZSCIR implementation on 1 August 2016) to either SCI supra-regional service is occurring over a two-year period.

4 Data Covered in this Report

This report includes data collected from 161 participants who sustained a new SCI and were subsequently admitted to either supra-regional spinal service between 1 August 2016 and 30 July 2017. This includes information from the 115 fully consented participants and 46 non-consented participants for whom only the minimal data set was collected. Participant data includes data collected up until 10 October 2017.

The data provided in this report includes:

1. Volume of SCI.
2. Participant demographics including gender, age at injury, pre-injury comorbidities, ethnicity, mechanism of injury, neurology at admission.
3. Participant flow by facility including time from injury to admission, admission type, discharge destination and length of stay.
4. Other variables such as time to surgery, mortality rates during inpatient stay, neurology over time, changes in AIS, functional changes, and clinical health complications.
5. Discharge to the community.

4.1 Limitations of the Report

Data relates only to the two supra-regional SCI sites. This means people with a SCI who have not received specialist SCI services from the national service are not included in the data capture process.

The information contained in this report is a snapshot of certain data at a point in time and is expected to change. As the first report of NZSCIR, data is still to be cleansed which is likely to result in changes to future reports. Only basic descriptive statistics have been performed on a limited set of NZSCIR data. This annual report's primary purpose is to serve as a descriptive account with no endorsement of, or recommendations about, policies or programmes.

A request can be made via one of the NZSCIR Coordinators if data from NZSCIR is needed to contribute to research.

4.2 Disclaimer and copyright

Any modification of the information is a violation of our copyright and other proprietary rights. Any information in this report may be used if referenced. No representations, warranties or guarantees (express, implied, statutory or otherwise) are made regarding this data on which the information is based or the information itself, whether regarding quality, accuracy, fitness for any particular purpose, reliability, completeness or otherwise. Neither RHI nor its licensors will have any liability (for direct or indirect damages or otherwise) relating to or arising from the use of, reliance on, or any errors or omissions in, such data or information.

4.3 Contact details

If you have additional questions about the data, please contact the NZSCIR Coordinators:

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4.4 Acknowledgements

Thank you to the dedicated spinal service clinicians and coordinators who collect and input data into NZSCIR. Many thanks to the RHI team for their ongoing support and assistance with NZSCIR. The dedication and expertise that has been applied to this registry is much appreciated.

The most vital and fundamental component of NZSCIR is its contributors - people with a SCI. Thank you to those who have contributed your time and experiences to the registry. We thank you for your continued participation which determines the value and success of NZSCIR.

The contributions of everyone involved are vital to improving the ability to provide care for those with SCI and maximizing the potential for these and other individuals to reach their fullest recovery possible.

4.5 How to cite this document

Rick Hansen Institute (2018). New Zealand Spinal Cord Injury Registry Annual Technical Report 2016/17.

5 *A priori* questions for NZSCIR

A priori questions are developed to guide the collection of data. Over time, *a priori* questions are updated or replaced. As of August 2017, there are 11 *a priori* questions used to guide information collected for NZSCIR. This report is structured using the NZSCIR *a priori* questions. Community phase data is yet to be collected and will appear in future reports. Canadian comparisons are to be investigated and will be reported separately to this document.

Aetiology and demographics

1. What is the incidence, aetiology and demographics of SCI persons admitted to a specialist spinal centre in NZ?

Facilities and length of stay

2. What does a person's journey with SCI look like, in terms of facilities and length of stay, in NZ?

Surgery

3. What are the timeframes from injury to decompression for someone admitted to a specialist spinal centre in NZ, and does this influence outcome?

Respiratory

4. Does early tracheostomy reduce the time spent on a ventilator in people with SCI admitted to a specialist spinal centre in NZ?

Function

5. What percentage of patients in NZ discharge from a specialist spinal centre as community ambulators (defined as "Mobility Outdoors more than 100 metres")?
6. What are the functional changes in SCIM between admission and discharge of a specialist spinal centre in NZ?

Complications

7. What is the incidence of clinical health complications e.g. pressure sores, pain, secondary health complications, identified in the acute, rehabilitation and community phases of SCI in NZ?

Psychological

8. What are patient self-efficacy levels on discharge from a specialist spinal centre in NZ, and do they change once in the community?

Benchmarking

9. How does NZ SCIM outcomes compare within NZ and with Canada?

Community

10. Have participants had difficulty accessing health services or activities in the community?

11. What are the functional, employment, quality of life and life satisfaction trends of participants 1, 2, 5 years+ post impairment?

6 Data Source and Summary

6.1 Global Research Platform (GRP)

This report reflects participant data entered into NZSCIR on the GRP prior to 10 October 2017 (the data extract date) and includes data cleaning completed prior to this date.

6.1.1 Sample selection criteria

Except for Sections 7 and 8 where all 161 participants were included (except where stated), this report includes 101 participants with a complete inpatient record (both 'Admission' and 'Discharge to Community' Data Collection Points (DCP)). Complete inpatient records with questionable hospital admission patterns, missing admission date/time, missing discharge date/time and missing injury date were excluded. These anomalies will be resolved during future data cleaning.

6.1.2 Complete records

Sections 8-17 of this report include data from the 101 participants with complete records as defined in section 6.1.1.

"ALL" in section 8-17 of this report refers to all 101 participants across both NZSCIR sites. "CDHB" refers to 40 participants and "CMH" refers to 61 participants with complete records enrolled at the respective sites, as defined in section 6.1.1.

6.1.3 Incomplete records

Across both NZSCIR sites, 60 participant records did not meet the criteria for inclusion in sections 8-17 of this report. This included 29 participant records enrolled at the CDHB site and 31 participant records enrolled at the CMH site. Incomplete records include inpatient records where participants are yet to be discharged to the community, or their data had yet to be entered into the GRP system by the data extract date of 10 October 2017.

6.1.4 Missing date variables

In sections 8-17 of this report, for any summaries that are created using raw date variables, the following rules apply. If a date has year and month present but is missing the day element, the first of the month is substituted. If a date has year present but month and day are missing, the first day and month of the year are substituted.

6.1.5 Risk adjustment disclaimer

Due to potential differences in participant population characteristics and hospital procedures between the two NZSCIR sites, some summary values may not be directly comparable. A risk adjustment has not been performed in this report but differences suggesting data is not directly comparable have been indicated where this may be an issue.

6.2 Selected cohort data summary

6.2.1 Consent status

Across both NZSCIR sites, 64 (63.4%) of the 101 participants who met the above selection criteria (see section 6.1.1) provided consent to participate in NZSCIR, and 37 participants (36.6%) did not provide consent. This includes participants who were not approached to be involved in the study for reasons such as language barriers, poor prognosis, non-NZ residents and being discharged from hospital before being identified as eligible for the study. Participants who did not provide consent have a limited amount of data collected (a 'minimal data set', see Appendix).

At the CMH site, of the 61 participants who met the above selection criteria (see section 6.1.1), 32 participants (52.5%) provided consent to participate in the NZSCIR study, and 29 participants (47.5%) did not provide consent for study participation.

At the CDHB site, of the 40 participants who met the above selection criteria (see section 6.1.1), 32 participants (80%) provided consent to participate in the NZSCIR study, and 8 participants (20%) did not provide consent for study participation.

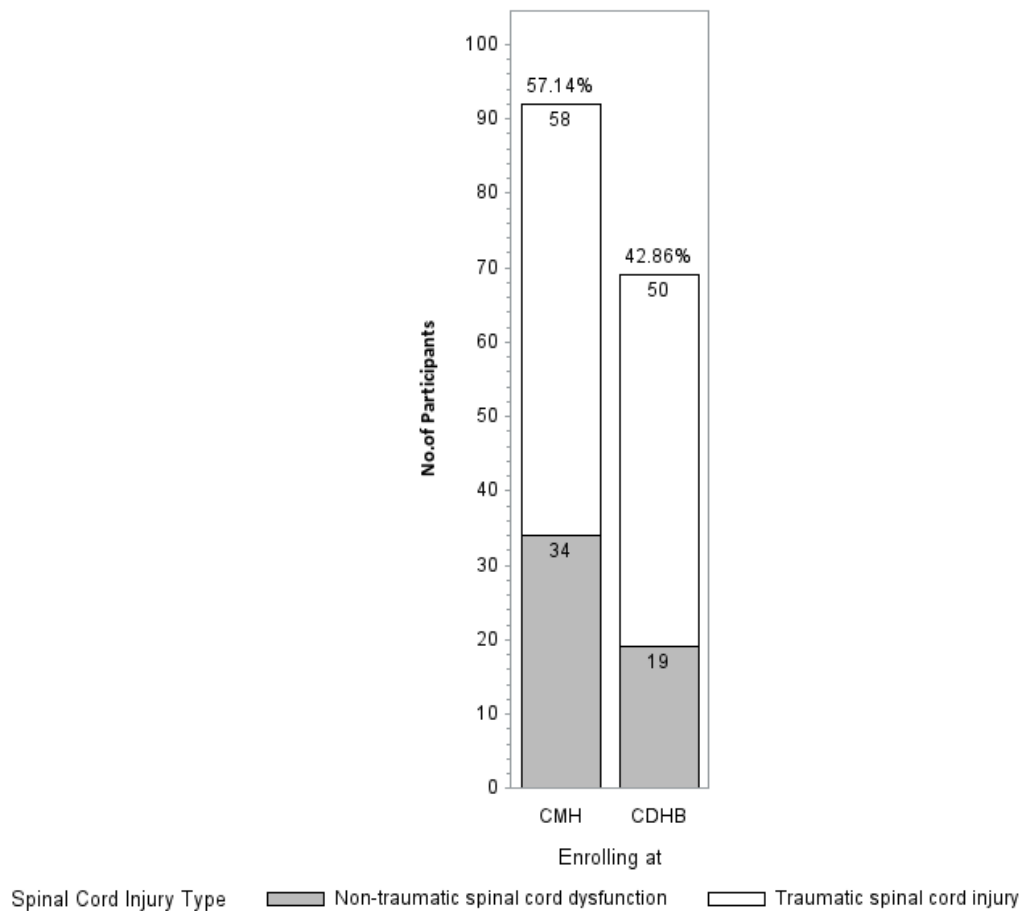
7 Volume of SCI and Consent Status

7.1 Volume of SCI at both sites for all participants

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
Year of Injury	Spinal Cord Injury Type						
2016/17	Non-traumatic spinal cord dysfunction	34	37.0	19	27.5	53	32.9
	Traumatic spinal cord injury	58	63.0	50	72.5	108	67.1
	All	92	100.0	69	100.0	161	100.0

- If a participant was admitted to both sites, then this participant was counted twice, once for CMH and once for CDHB. One participant was admitted to both services in 2016/17.

Volume of SCI at both sites for all participants

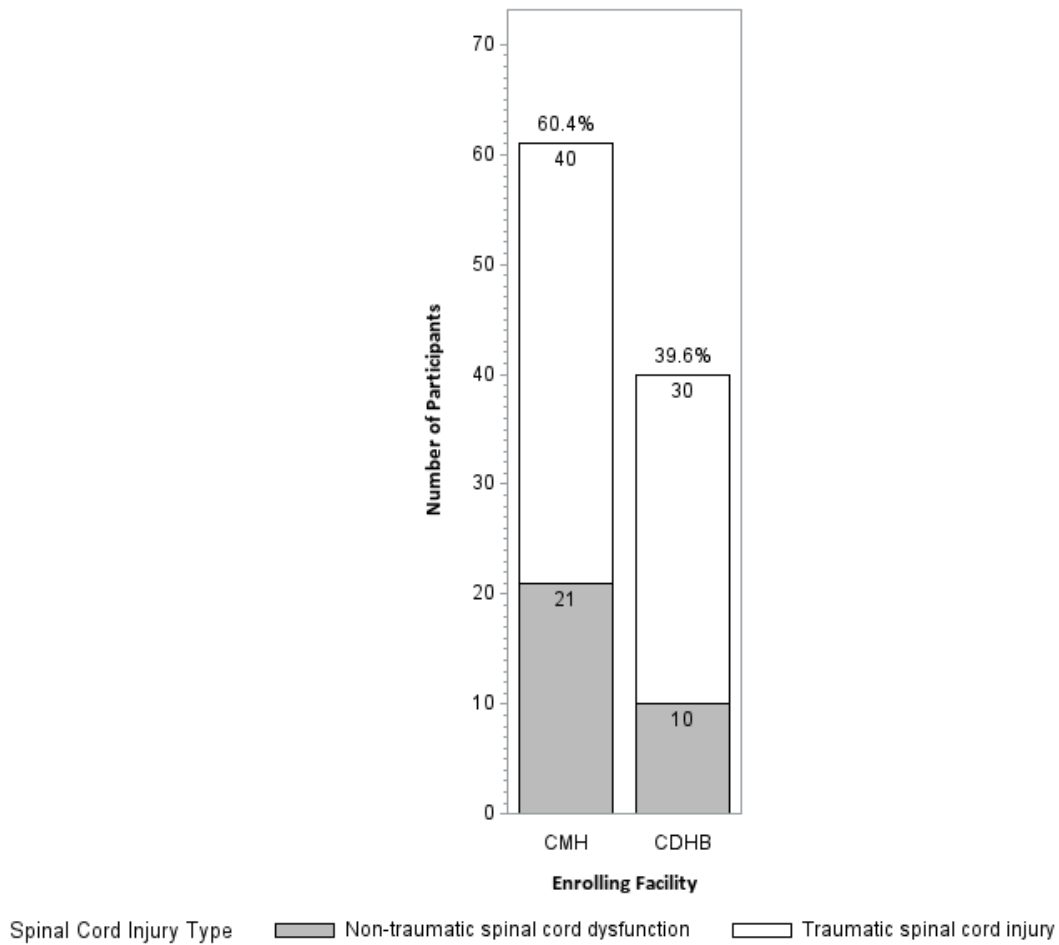


7.2 Volume of SCI at both sites for participants with complete records

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
Year of Injury	Spinal Cord Injury Type	21	34.4	10	25.0	31	30.7
2016/17	Non-traumatic spinal cord dysfunction						
	Traumatic spinal cord injury						
	All						

- If a participant was admitted to both sites, then this participant was counted twice, once for CMH and once for CDHB. One participant was admitted to both services in 2016/17.

Volume of SCI at both sites for participants with complete records by site



7.3 Participants with a “Consented data set” vs. a “Minimal data set”

See Appendix for definitions of the “Consented data set” and the “Minimal data set”. The numbers of consented participants (based on most recent consent status) versus those who had only a minimal data set collected (did not consent or were missed during their stay) are listed below:

		Most Recent Consent Status		All
		Consent	No Consent	
		N	N	N
Enrolled at	Spinal Cord Injury Type			
CMH	Non-Traumatic	17	17	34
	Traumatic	42	16	58
	All	59	33	92
CDHB	SCI			
	Non-Traumatic	16	3	19

	Traumatic	40	10	50
	All	56	13	69
All	SCI			
	Non-Traumatic	33	20	53
	Traumatic	82	26	108
	All	115	46	161

7.4 Participants with complete records by consent status

Enrolled at	Spinal Cord Injury Type	Most Recent Consent Status				All	
		Consent		No Consent			
		N	%	N	%	N	%
CMH	Non-Traumatic	7	10.9	14	37.8	21	20.8
	Traumatic	25	39.1	15	40.5	40	39.6
	All	32	50.0	29	78.4	61	60.4
CDHB	SCI						
	Non-Traumatic	7	10.9	3	8.1	10	9.9
	Traumatic	25	39.1	5	13.5	30	29.7
	All	32	50.0	8	21.6	40	39.6
All	SCI						
	Non-Traumatic	14	21.9	17	45.9	31	30.7
	Traumatic	50	78.1	20	54.1	70	69.3
	All	64	100.0	37	100.0	101	100.0

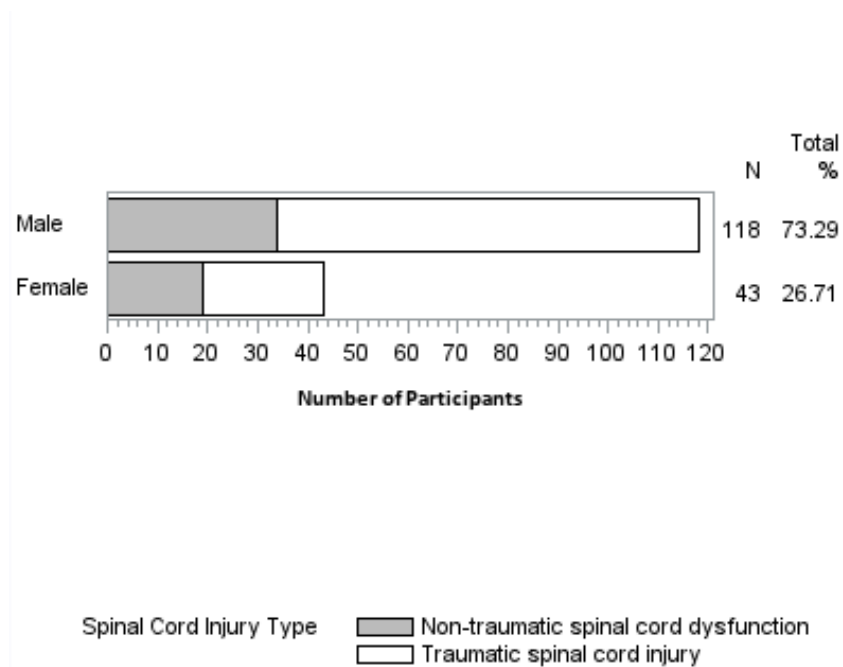
8 What is the incidence, aetiology and demographics of SCI persons admitted to a specialist spinal centre in NZ?

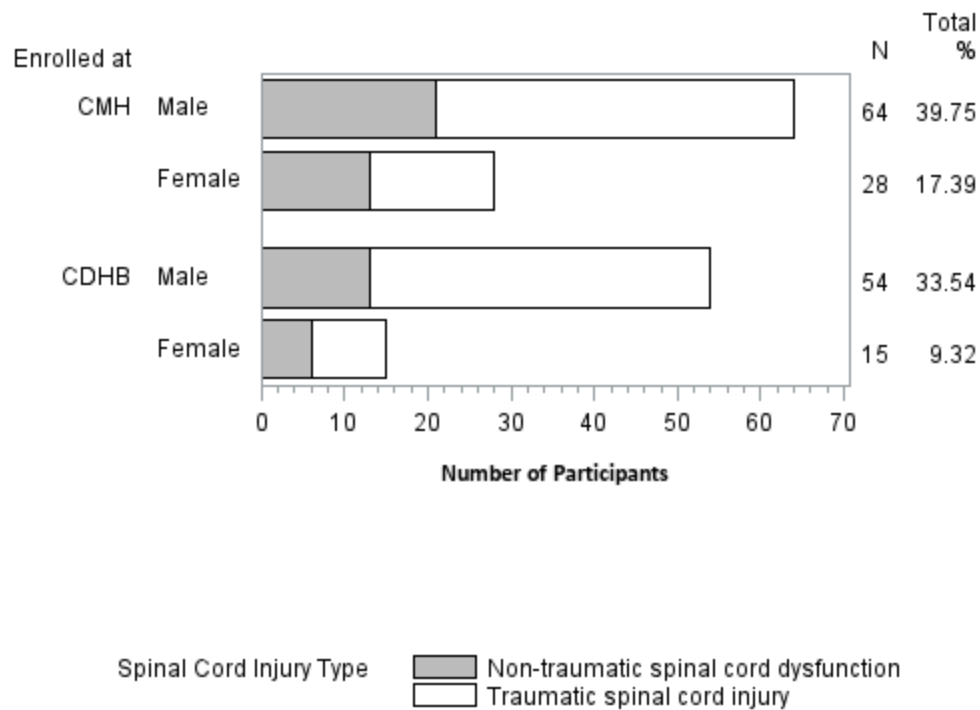
8.1 Gender

- Males account for 73% of all SCI in 2016/17. Traumatic SCI account for 67% of SCI in NZ for 2016/7. Males are more likely to sustain a traumatic SCI (n=84/118; 71%) than females (n=24/43; 56%). Females have a higher percentage of non-traumatic SCI (n=19/43; 44%) compared to males (n=34/118; 29%). CMH have 92 participant enrolments versus CDHB's 69. CMH have a higher proportion of non-traumatic SCI than CDHB (37% vs 27.5%).

Gender	Spinal Cord Injury Type	Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
Female	Non-traumatic	13	14.1	6	8.7	19	11.8
	Traumatic	15	16.3	9	13.0	24	14.9
	All	28	30.4	15	21.7	43	26.7
Male	Non-traumatic	21	22.8	13	18.8	34	21.1
	Traumatic	43	46.7	41	59.4	84	52.2
	All	64	69.6	54	78.3	118	73.3
All	Non-traumatic	34	37.0	19	27.5	53	32.9
	Traumatic	58	63.0	50	72.5	108	67.1
	All	92	100.0	69	100.0	161	100.0

- Gender data are available for all 161 participants across both NZSCIR sites.





8.2 Age at injury

- The mean age of NZSCIR participants is 51.2 years. The age range for participants admitted to the CMH & CDHB specialist service is 15-88 years. Participants with non-traumatic SCI tend to be older than those with traumatic SCI. CDHB have an older population, with 74% aged over 45 years, whilst CMH has 58% over 45 years. Participants aged over 76 years account for 12.4% of the NZSCIR population.

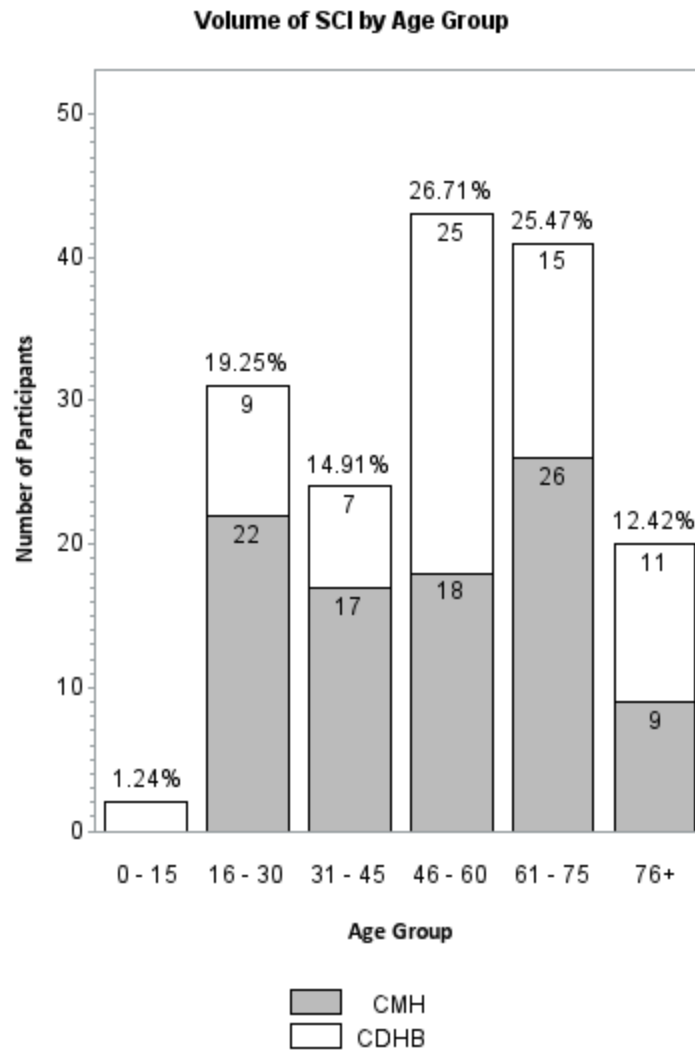
		Age (Years) at Time of Injury					
		N	Mean	Std	Median	Min	Max
Enrolled at	SCI						
CMH	Non-Traumatic	34	56.3	19.0	59.0	17.0	88.0
	Traumatic	58	45.8	19.3	46.5	16.0	79.0
	All	92	49.7	19.8	52.0	16.0	88.0
CDHB	SCI						
	Non-Traumatic	19	63.0	13.8	57.0	46.0	88.0
	Traumatic	50	49.4	20.8	52.5	15.0	85.0
	All	69	53.2	20.0	54.0	15.0	88.0
All	SCI	53	58.7	17.5	57.0	17.0	88.0

	Non-Traumatic						
	Traumatic	108	47.5	20.0	49.5	15.0	85.0
	All	161	51.2	19.9	54.0	15.0	88.0

- Age at injury data are available for all 161 participants across both sites

Age (Years) at time of injury has been grouped as below:

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Age Group						
Non-Traumatic	0 - 15	0	0.0	0	0.0	0	0.0
	16 - 30	2	2.2	0	0.0	2	1.2
	31 - 45	9	9.8	0	0.0	9	5.6
	46 - 60	6	6.5	10	14.5	16	9.9
	61 - 75	11	12.0	4	5.8	15	9.3
	76+	6	6.5	5	7.2	11	6.8
	All	34	37.0	19	27.5	53	32.9
Traumatic	Age Group						
	0 - 15	0	0.0	2	2.9	2	1.2
	16 - 30	20	21.7	9	13.0	29	18.0
	31 - 45	8	8.7	7	10.1	15	9.3
	46 - 60	12	13.0	15	21.7	27	16.8
	61 - 75	15	16.3	11	15.9	26	16.1
	76+	3	3.3	6	8.7	9	5.6
	All	58	63.0	50	72.5	108	67.1
All	Age Group						
	0 - 15	0	0.0	2	2.9	2	1.2
	16 - 30	22	23.9	9	13.0	31	19.3
	31 - 45	17	18.5	7	10.1	24	14.9
	46 - 60	18	19.6	25	36.2	43	26.7
	61 - 75	26	28.3	15	21.7	41	25.5
	76+	9	9.8	11	15.9	20	12.4
	All	92	100.0	69	100.0	161	100.0



8.3 Pre-injury comorbidities

- Hypertension, diabetes and asthma are the most common pre-existing comorbidities for this population. Just under 40% of participants had no health conditions prior to injury.

		CMH		CDHB		All	
		N	%	N	%	N	%
SCI	Pre-existing Comorbidity						
Non-Traumatic	Ankylosing Spondylitis	0	0.0	0	0.0	0	0.0
	Any malignancy	0	0.0	1	1.5	1	0.8
	Asthma	0	0.0	3	4.6	3	2.3
	Bone fractures	1	1.5	0	0.0	1	0.8
	Cerebrovascular disease	1	1.5	0	0.0	1	0.8
	Chronic lung disease	0	0.0	1	1.5	1	0.8

		CMH		CDHB		All	
		N	%	N	%	N	%
	Congestive heart failure	0	0.0	0	0.0	0	0.0
	Connective tissue disease	0	0.0	1	1.5	1	0.8
	Depression/Mood problems	0	0.0	2	3.1	2	1.5
	Diabetes	1	1.5	2	3.1	3	2.3
	Documented history of excessive alcohol intake/use	0	0.0	1	1.5	1	0.8
	End Organ Damage	1	1.5	1	1.5	2	1.5
	High blood pressure/hypertension	1	1.5	3	4.6	4	3.0
	Portal Hypertension/Chronic Hepatitis	0	0.0	0	0.0	0	0.0
	Kidney disease	0	0.0	0	0.0	0	0.0
	Liver disease	0	0.0	0	0.0	0	0.0
	Lymphoma	0	0.0	0	0.0	0	0.0
	Metastatic solid malignancy	1	1.5	0	0.0	1	0.8
	Myocardial infarction	0	0.0	0	0.0	0	0.0
	No health conditions prior to injury	4	6.0	2	3.1	6	4.5
	Obstructive sleep apnea	0	0.0	0	0.0	0	0.0
	Osteoarthritis/degenerative arthritis	0	0.0	0	0.0	0	0.0
	Unknown	0	0.0	0	0.0	0	0.0
	All	10	14.9	17	26.2	27	20.5
Traumatic	Pre-existing Comorbidity						
	Ankylosing Spondylitis	0	0.0	2	3.1	2	1.5
	Any malignancy	1	1.5	3	4.6	4	3.0
	Asthma	3	4.5	4	6.2	7	5.3
	Bone fractures	0	0.0	1	1.5	1	0.8
	Cerebrovascular disease	0	0.0	0	0.0	0	0.0
	Chronic lung disease	2	3.0	0	0.0	2	1.5
	Congestive heart failure	1	1.5	1	1.5	2	1.5
	Connective tissue disease	0	0.0	0	0.0	0	0.0
	Depression/Mood problems	2	3.0	3	4.6	5	3.8
	Diabetes	5	7.5	3	4.6	8	6.1
	Documented history of excessive alcohol intake/use	4	6.0	1	1.5	5	3.8
	End Organ Damage	2	3.0	0	0.0	2	1.5
	High blood pressure/hypertension	4	6.0	6	9.2	10	7.6
	Portal Hypertension/Chronic Hepatitis	1	1.5	0	0.0	1	0.8
	Kidney disease	1	1.5	0	0.0	1	0.8
	Liver disease	1	1.5	0	0.0	1	0.8
	Lymphoma	2	3.0	0	0.0	2	1.5
	Metastatic solid malignancy	0	0.0	0	0.0	0	0.0
	Myocardial infarction	2	3.0	0	0.0	2	1.5

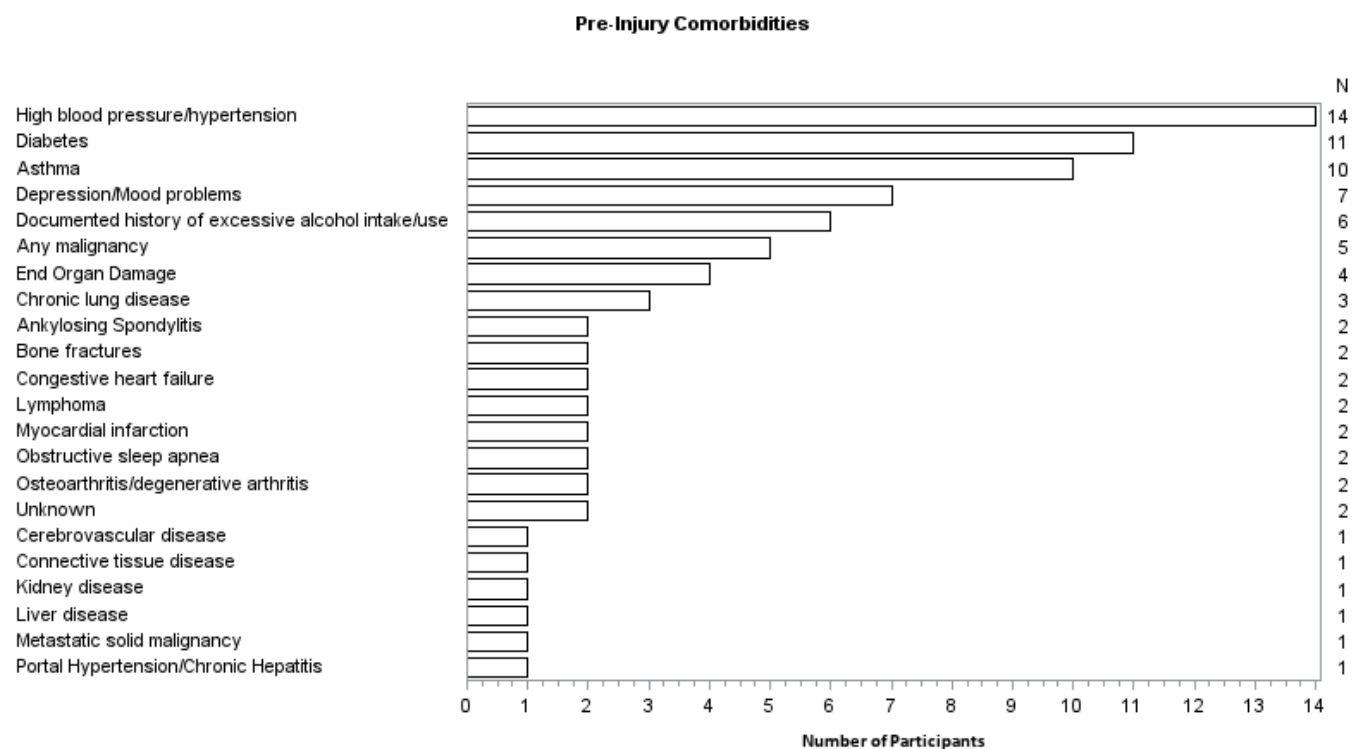
		CMH		CDHB		All	
		N	%	N	%	N	%
	No health conditions prior to injury	25	37.3	19	29.2	44	33.3
	Obstructive sleep apnea	0	0.0	2	3.1	2	1.5
	Osteoarthritis/degenerative arthritis	0	0.0	2	3.1	2	1.5
	Unknown	1	1.5	1	1.5	2	1.5
	All	57	85.1	48	73.8	105	79.5
All	Pre-existing Comorbidity						
	Ankylosing Spondylitis	0	0.0	2	3.1	2	1.5
	Any malignancy	1	1.5	4	6.2	5	3.8
	Asthma	3	4.5	7	10.8	10	7.6
	Bone fractures	1	1.5	1	1.5	2	1.5
	Cerebrovascular disease	1	1.5	0	0.0	1	0.8
	Chronic lung disease	2	3.0	1	1.5	3	2.3
	Congestive heart failure	1	1.5	1	1.5	2	1.5
	Connective tissue disease	0	0.0	1	1.5	1	0.8
	Depression/Mood problems	2	3.0	5	7.7	7	5.3
	Diabetes	6	9.0	5	7.7	11	8.3
	Documented history of excessive alcohol intake/use	4	6.0	2	3.1	6	4.5
	End Organ Damage	3	4.5	1	1.5	4	3.0
	High blood pressure/hypertension	5	7.5	9	13.8	14	10.6
	Portal Hypertension/Chronic Hepatitis	1	1.5	0	0.0	1	0.8
	Kidney disease	1	1.5	0	0.0	1	0.8
	Liver disease	1	1.5	0	0.0	1	0.8
	Lymphoma	2	3.0	0	0.0	2	1.5
	Metastatic solid malignancy	1	1.5	0	0.0	1	0.8
	Myocardial infarction	2	3.0	0	0.0	2	1.5
	No health conditions prior to injury	29	43.3	21	32.3	50	37.9
	Obstructive sleep apnea	0	0.0	2	3.1	2	1.5
	Osteoarthritis/degenerative arthritis	0	0.0	2	3.1	2	1.5
	Unknown	1	1.5	1	1.5	2	1.5
	All	67	100.0	65	100.0	132	100.0

- Data are not collected for participants who do not provide consent.
- One participant could have more than one comorbidity pre-injury.

The number of unique participants included in the table above are summarised below:

		Participants Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI							
Non-Traumatic	8	9.0	9	10.1	17	19.1	
Traumatic	38	42.7	34	38.2	72	80.9	
All	46	51.7	43	48.3	89	100.0	

The following graph shows the top pre-injury comorbidities across both sites:



8.4 Ethnicity and Residency

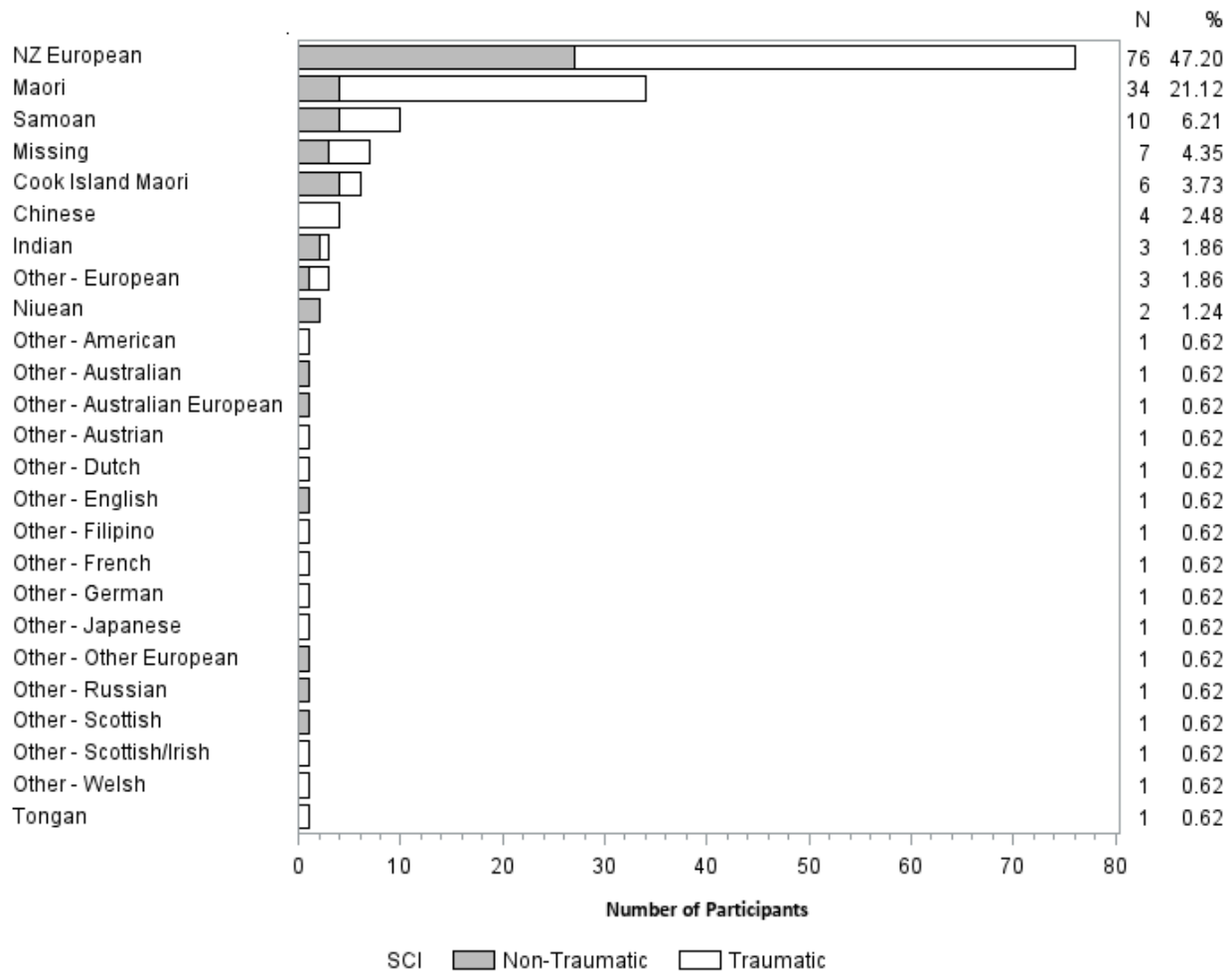
- 47.2% of NZSCIR participants identified as NZ European. 21.1% identified as Maori, which is higher than the 2013 Census 15%. Pacific peoples (Samoan, Cook Island Maori, Tongan, Niuean) accounted for 11.8% of NZSCIR participants, compared to 7% from the 2013 Census data.
- NZ residents have the full consented data set collected. Non-residents have the minimal data set collected. 11 (6.8%) participants were non-residents, from 9 different countries.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Ethnicity						
Non-Traumatic	NZ European	11	12.0	16	23.2	27	16.8
	Cook Island Maori	4	4.3	0	0.0	4	2.5
	Maori	3	3.3	1	1.4	4	2.5
	Samoan	3	3.3	1	1.4	4	2.5
	Niuean	2	2.2	0	0.0	2	1.2
	Indian	2	2.2	0	0.0	2	1.2
	Other - Australian	1	1.1	0	0.0	1	0.6
	Other - Australian European	1	1.1	0	0.0	1	0.6
	Other - English	1	1.1	0	0.0	1	0.6
	Other - European	1	1.1	0	0.0	1	0.6
	Other - Other European	1	1.1	0	0.0	1	0.6
	Other - Russian	1	1.1	0	0.0	1	0.6
	Other - Scottish	0	0.0	1	1.4	1	0.6
	Missing	3	3.3	0	0.0	3	1.9
	All	34	37.0	19	27.5	53	32.9
Traumatic	Ethnicity						
	NZ European	21	22.8	28	40.6	49	30.4
	Maori	20	21.7	10	14.5	30	18.6
	Samoan	5	5.4	1	1.4	6	3.7
	Cook Island Maori	2	2.2	0	0.0	2	1.2
	Chinese	1	1.1	3	4.3	4	2.5
	Other - European	1	1.1	1	1.4	2	1.2
	Indian	1	1.1	0	0.0	1	0.6
	Other - American	0	0.0	1	1.4	1	0.6
	Other - Austrian	0	0.0	1	1.4	1	0.6
	Other - Dutch	0	0.0	1	1.4	1	0.6
	Other - Filipino	0	0.0	1	1.4	1	0.6
	Other - French	0	0.0	1	1.4	1	0.6
	Other - German	1	1.1	0	0.0	1	0.6
	Other - Japanese	0	0.0	1	1.4	1	0.6
	Other- Scottish/Irish	0	0.0	1	1.4	1	0.6
	Other - Welsh	1	1.1	0	0.0	1	0.6
	Tongan	1	1.1	0	0.0	1	0.6
	Missing	4	4.3	0	0.0	4	2.5
	All	58	63.0	50	72.5	108	67.1
All	Ethnicity	32	34.8	44	63.8	76	47.2

	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
NZ European						
Maori	23	25.0	11	15.9	34	21.1
Samoan	8	8.7	2	2.9	10	6.2
Cook Island Maori	6	6.5	0	0.0	6	3.7
Chinese	1	1.1	3	4.3	4	2.5
Indian	3	3.3	0	0.0	3	1.9
Other - European	2	2.2	1	1.4	3	1.9
Niuean	2	2.2	0	0.0	2	1.2
Other - American	0	0.0	1	1.4	1	0.6
Other - Australian	1	1.1	0	0.0	1	0.6
Other - Australian European	1	1.1	0	0.0	1	0.6
Other - Austrian	0	0.0	1	1.4	1	0.6
Other - Dutch	0	0.0	1	1.4	1	0.6
Other - English	1	1.1	0	0.0	1	0.6
Other - Filipino	0	0.0	1	1.4	1	0.6
Other - French	0	0.0	1	1.4	1	0.6
Other - German	1	1.1	0	0.0	1	0.6
Other - Japanese	0	0.0	1	1.4	1	0.6
Other - European	1	1.1	0	0.0	1	0.6
Other - Russian	1	1.1	0	0.0	1	0.6
Other - Scottish	0	0.0	1	1.4	1	0.6
Other - Scottish/Irish	0	0.0	1	1.4	1	0.6
Other - Welsh	1	1.1	0	0.0	1	0.6
Tongan	1	1.1	0	0.0	1	0.6
Missing	7	7.6	0	0.0	7	4.3
All	92	100.0	69	100.0	161	100.0

- Ethnicity data are available for all 161 participants across both sites. Participants could only select one ethnicity (whilst the 2013 Census had unlimited options). 4.3% of ethnicity data is missing.

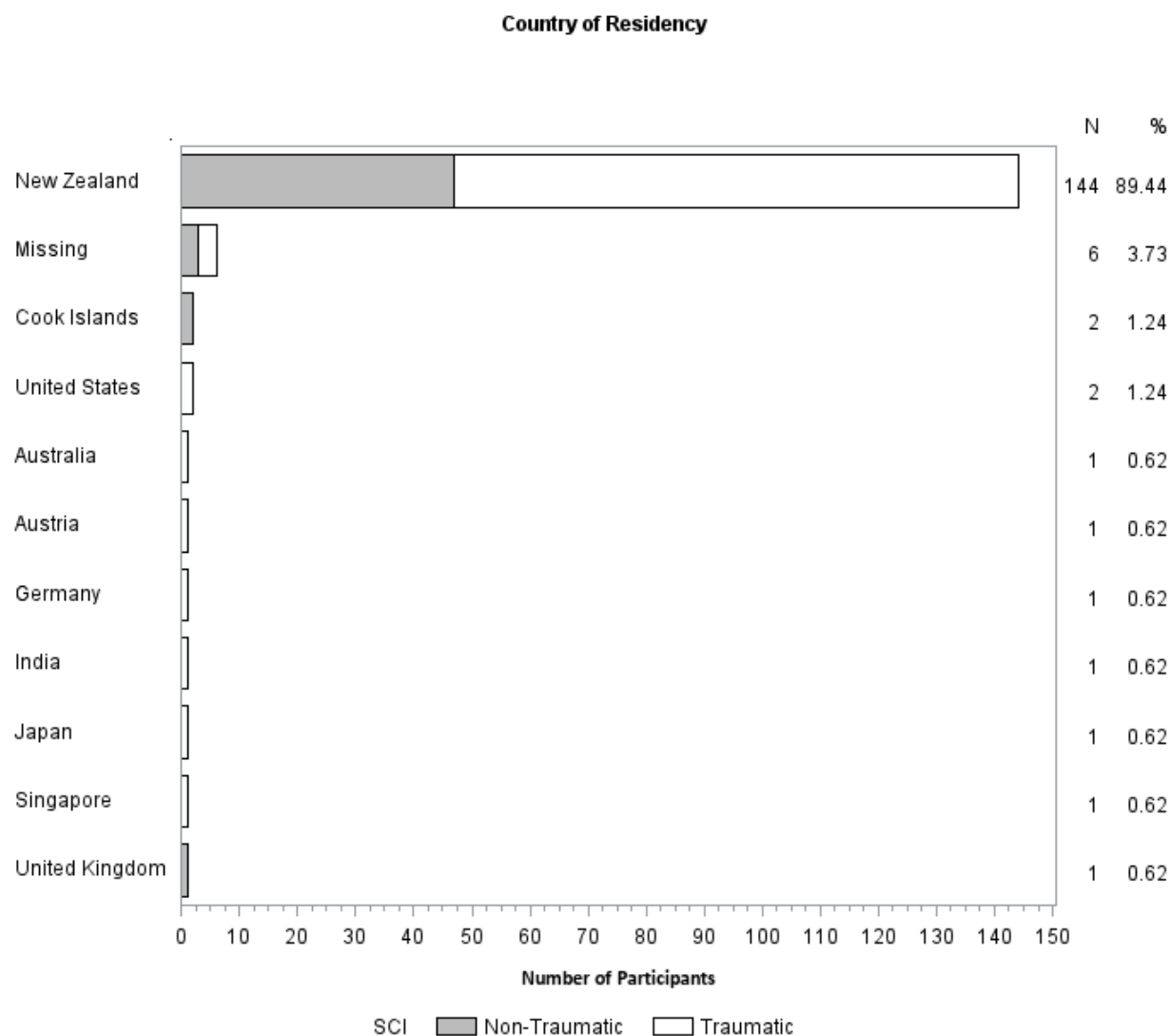
Ethnicity



		Enrolled at				All	
		CMH		CDHB		N	%
		N	%	N	%		
SCI	Country of Residency						
Traumatic	New Zealand	52	56.5	45	65.2	97	60.2
	United States	0	0.0	2	2.9	2	1.2
	Cook Islands	0	0.0	0	0.0	0	0.0
	Austria	0	0.0	1	1.4	1	0.6
	Singapore	1	1.1	0	0.0	1	0.6
	Germany	1	1.1	0	0.0	1	0.6
	India	1	1.1	0	0.0	1	0.6
	Japan	0	0.0	1	1.4	1	0.6

	United Kingdom	0	0.0	0	0.0	0	0.0
	Australia	0	0.0	1	1.4	1	0.6
	Missing	3	3.3	0	0.0	3	1.9
	All	58	63.0	50	72.5	108	67.1
Non-Traumatic	Country of Residency						
	New Zealand	28	30.4	19	27.5	47	29.2
	United States	0	0.0	0	0.0	0	0.0
	Cook Islands	2	2.2	0	0.0	2	1.2
	Austria	0	0.0	0	0.0	0	0.0
	Singapore	0	0.0	0	0.0	0	0.0
	Germany	0	0.0	0	0.0	0	0.0
	India	0	0.0	0	0.0	0	0.0
	Japan	0	0.0	0	0.0	0	0.0
	United Kingdom	1	1.1	0	0.0	1	0.6
	Australia	0	0.0	0	0.0	0	0.0
	Missing	3	3.3	0	0.0	3	1.9
	All	34	37.0	19	27.5	53	32.9
All	Country of Residency						
	New Zealand	80	87.0	64	92.8	144	89.4
	United States	0	0.0	2	2.9	2	1.2
	Cook Islands	2	2.2	0	0.0	2	1.2
	Austria	0	0.0	1	1.4	1	0.6
	Singapore	1	1.1	0	0.0	1	0.6
	Germany	1	1.1	0	0.0	1	0.6
	India	1	1.1	0	0.0	1	0.6
	Japan	0	0.0	1	1.4	1	0.6
	United Kingdom	1	1.1	0	0.0	1	0.6
	Australia	0	0.0	1	1.4	1	0.6
	Missing	6	6.5	0	0.0	6	3.7
	All	92	100.0	69	100.0	161	100.0

- Country of residency data are available for all 161 participants across both sites.



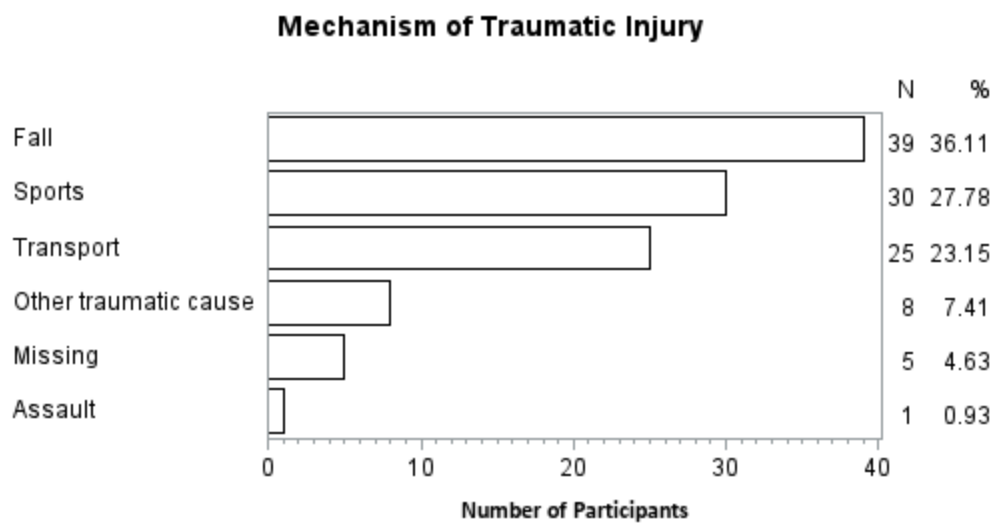
8.5 Mechanism of injury

- Non-traumatic SCI (33%) is the most prevalent cause of SCI admitted to either supra-regional spinal service for 2016/17.
- Looking at traumatic causes only, falls account for 36%, followed by sport (28%) and transport (23%).
- Wheeled non-motorsports (mountain bike, BMX and cycling) account for the most sporting injuries (n=6). Acrobatic sports (trampolining), aero sports (paraponting, paragliding, skydiving), and equestrian rank second equal with 3 injuries each.
- Ice or snow sports (skiing, snowboarding), team ball sports (rugby), wheeled motor sports (motor cross, car racing) and individual water sports (scuba diving) account for 2 injuries each.

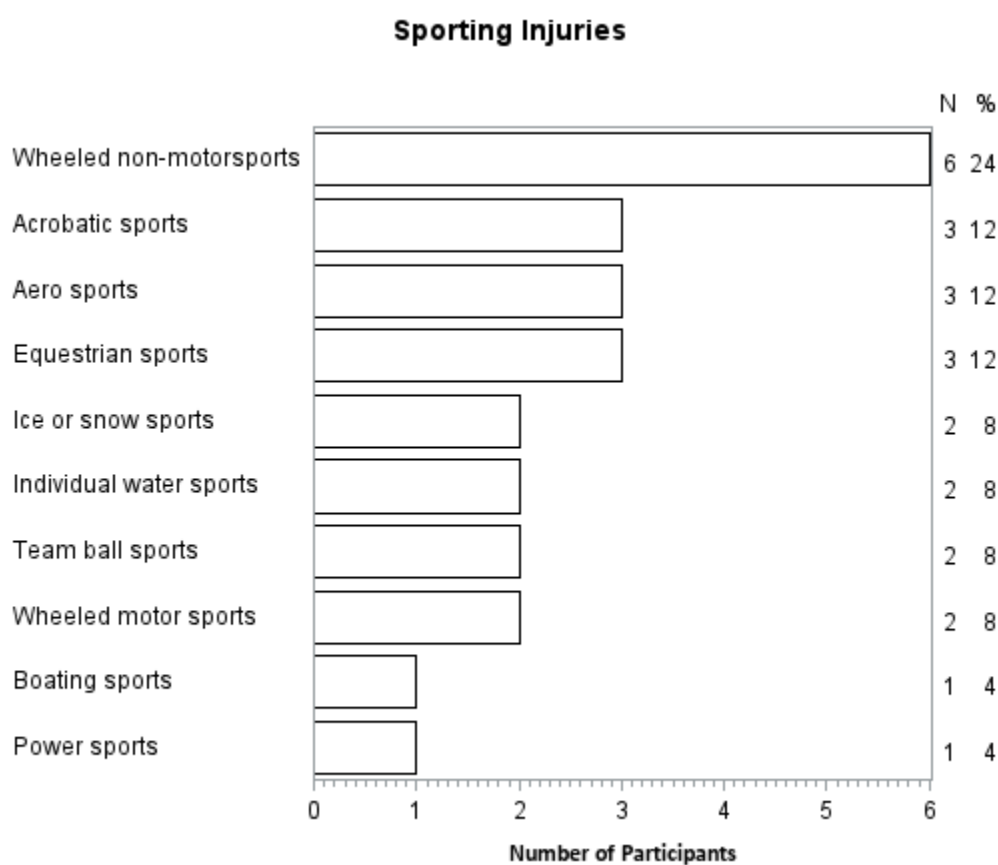
- The most common form of non-traumatic spinal cord dysfunction with 26% is due to vertebral column degenerative disorders (such as Disc prolapse, Ligamentum flavum hypertrophy, Ossification of the posterior longitudinal ligament, Spinal osteophytosis, Spondylolisthesis, Spondylosis, or Spinal stenosis). However, there is a significant amount of missing data (47%) for this data point (see explanatory notes below non-traumatic graphs) so results are to be interpreted with caution. This will be updated in future reports.
- Bacterial infection, Inflammatory and Auto-immune Diseases (including Transverse Myelitis and Rheumatoid Arthritis) and Vascular disorders (Haemorrhage, vascular malformations, Ischaemia) are the next most common presentation of non-traumatic SCI.

	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
Mechanism of Injury						
Non-traumatic spinal cord dysfunction	34	37.0	19	27.5	53	32.9
Fall	23	25.0	16	23.2	39	24.2
Sports	9	9.8	21	30.4	30	18.6
Transport	18	19.6	7	10.1	25	15.5
Other traumatic cause	4	4.3	4	5.8	8	5.0
Assault	0	0.0	1	1.4	1	0.6
Missing	4	4.3	1	1.4	5	3.1
All	92	100.0	69	100.0	161	100.0

- Mechanism of injury data are available for 156 participants across both sites.
- Because an injury event may be classified into more than one category, the following prioritisation has been established to determine aetiology (Biering-Sørensen et al, 2017). The first coding priority is given to Sports, then Assault, then Transport followed by Falls. Finally, Other covers all other causes including SCI secondary to surgical procedures. As an example, if a participant fell whilst mountain biking, the priority is given to sport, not transport or fall.
- Missing data are due to data not being entered prior to extract, or ongoing data cleaning.

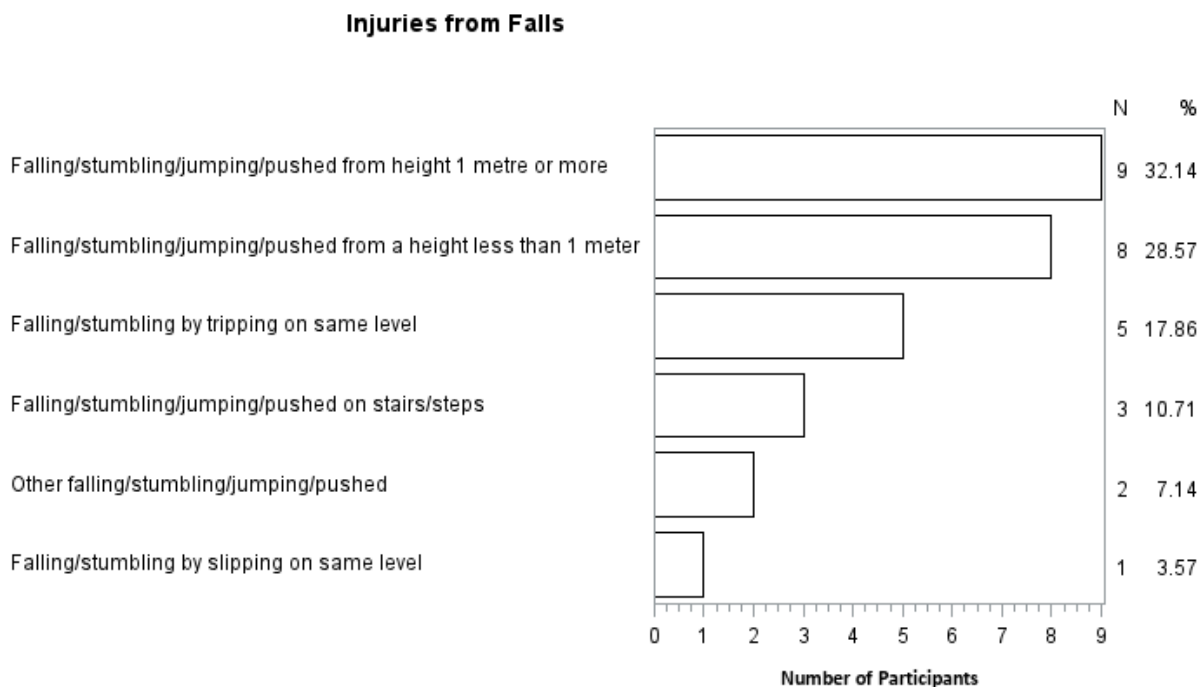


Further breakdown for the sporting injuries are shown below:



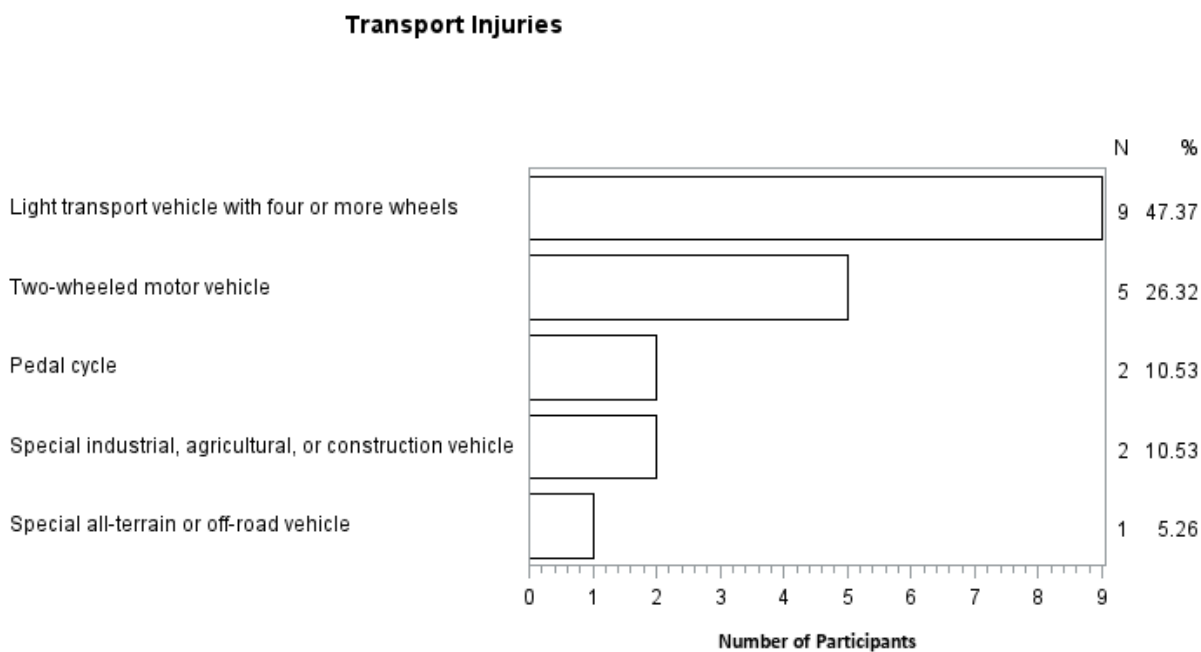
- 5 participants have missing data

Further breakdown for injuries from falls are shown below:



- 11 participants have missing data

Further breakdown for injuries from transport are shown below:

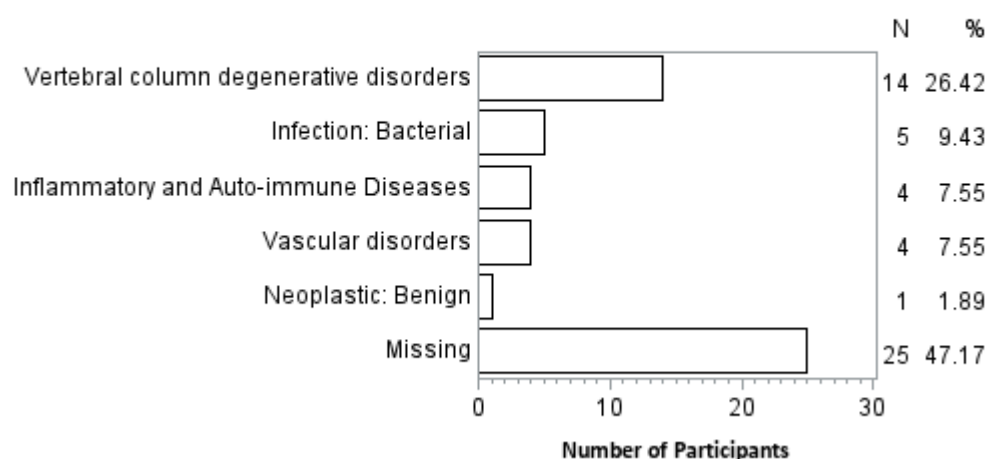


- 6 participants have missing data

The following table shows the ‘Non-traumatic spinal cord dysfunction’ acquired abnormalities diagnosed across both sites:

For ntSCI participants	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
Acquired Abnormalities Diagnosed						
Vertebral column degenerative disorders	8	23.5	6	31.6	14	26.4
Infection: Bacterial	3	8.8	2	10.5	5	9.4
Inflammatory and Auto-immune Diseases	0	0.0	4	21.1	4	7.5
Vascular disorders	1	2.9	3	15.8	4	7.5
Neoplastic: Benign	1	2.9	0	0.0	1	1.9
Missing	21	61.8	4	21.1	25	47.2
All	34	100.0	19	100.0	53	100.0

Acquired Abnormalities Diagnosed for Non-Traumatic Injury



- The “minimal data set” was expanded during 2017. Detailed aetiology data was not collected for non-consenting non-traumatic participants until later in the year, therefore much data is classified as “missing”. It can be assumed those participants who had a Malignant Neoplasm had the minimal data set collected (due to poor prognosis), yet are not represented here due to the lack of a detailed aetiology data point earlier in the year.

8.6 Neurology over time

- Analysis of the following tables are difficult due to missing data. However, using available data, traumatic SCI appears to result in more tetraplegia than paraplegia. A complete SCI is more likely at admission following a traumatic SCI (31%) than non-traumatic (3%). Missing data is likely to skew results. The most common non-traumatic SCI presentation is incomplete paraplegia.

Neurology assessments are entered for all NZSCIR participants (consented and non-consented) at initial (acute phase), rehab admission and rehab discharge timeframes. They are taken from clinician-completed ISNCSCI (International Standards for Neurological Classification of Spinal Cord Injury) worksheets, if available. The following tables group AIS (ASIA Impairment Scale) with Single Neurological Level (SNL) for each participant. SNL and AIS have been grouped into the following neurological categories: C1-C4 AIS A-C, C5-C8 AIS A-C and T1-S5 AIS-C, all levels AIS D, as directed by the International Spinal Cord Injury Core Data Set (version 2.0) (Biering-Sørensen et al, 2017).

Non-traumatic participants may not have had an ISNCSCI completed, as the ISNCSCI is designated as an assessment of traumatic SCI. This may contribute to missing data.

If there were multiple neurology records for a participant, the first test date was used as the admission time point for analysis.

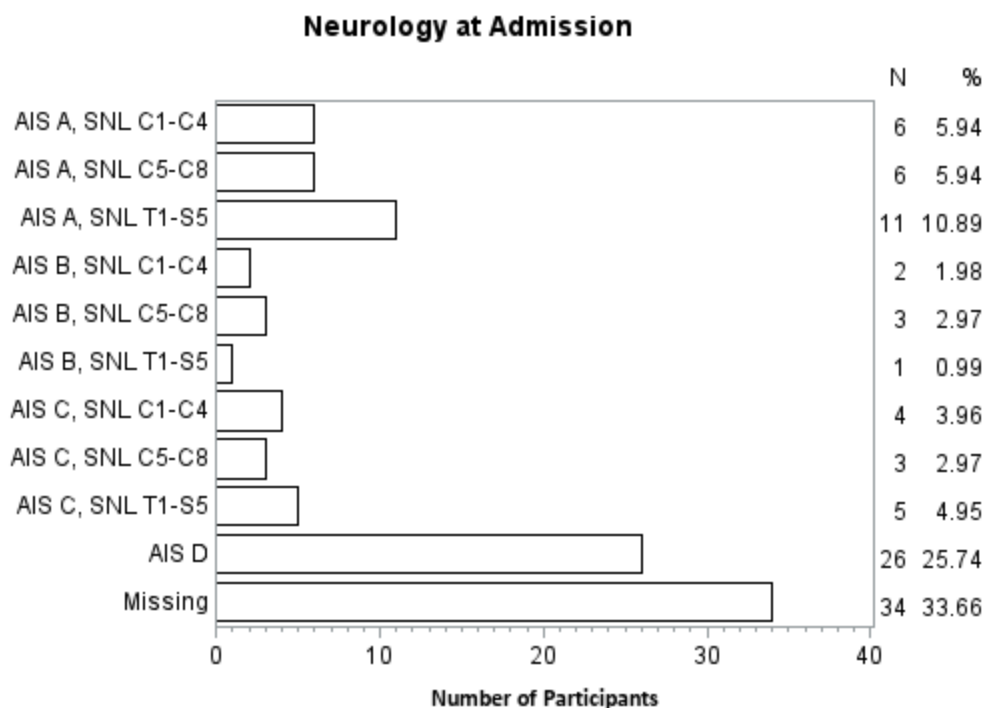
8.6.1 Neurology at admission

This section relates to the first neurology assessment entered for each participant, irrespective of timeframe. It therefore may be their initial, acute or rehabilitation admission assessment.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Neurology at Admission						
Non-Traumatic	AIS A, SNL C1-C4	0	0.0	0	0.0	0	0.0
	AIS A, SNL C5-C8	0	0.0	0	0.0	0	0.0
	AIS A, SNL T1-S5	1	1.6	0	0.0	1	1.0
	AIS B, SNL C1-C4	0	0.0	0	0.0	0	0.0
	AIS B, SNL C5-C8	0	0.0	0	0.0	0	0.0
	AIS B, SNL T1-S5	1	1.6	0	0.0	1	1.0
	AIS C, SNL C1-C4	0	0.0	0	0.0	0	0.0
	AIS C, SNL C5-C8	1	1.6	0	0.0	1	1.0
	AIS C, SNL T1-S5	2	3.3	0	0.0	2	2.0
	AIS D	12	19.7	4	10.0	16	15.8
	Missing	4	6.6	6	15.0	10	9.9

	All	21	34.4	10	25.0	31	30.7
Traumatic	Neurology at Admission						
	AIS A, SNL C1-C4	4	6.6	2	5.0	6	5.9
	AIS A, SNL C5-C8	5	8.2	1	2.5	6	5.9
	AIS A, SNL T1-S5	7	11.5	3	7.5	10	9.9
	AIS B, SNL C1-C4	2	3.3	0	0.0	2	2.0
	AIS B, SNL C5-C8	1	1.6	2	5.0	3	3.0
	AIS B, SNL T1-S5	0	0.0	0	0.0	0	0.0
	AIS C, SNL C1-C4	4	6.6	0	0.0	4	4.0
	AIS C, SNL C5-C8	1	1.6	1	2.5	2	2.0
	AIS C, SNL T1-S5	3	4.9	0	0.0	3	3.0
	AIS D	5	8.2	5	12.5	10	9.9
	Missing	8	13.1	16	40.0	24	23.8
	All	40	65.6	30	75.0	70	69.3
All	Neurology at Admission						
	AIS A, SNL C1-C4	4	6.6	2	5.0	6	5.9
	AIS A, SNL C5-C8	5	8.2	1	2.5	6	5.9
	AIS A, SNL T1-S5	8	13.1	3	7.5	11	10.9
	AIS B, SNL C1-C4	2	3.3	0	0.0	2	2.0
	AIS B, SNL C5-C8	1	1.6	2	5.0	3	3.0
	AIS B, SNL T1-S5	1	1.6	0	0.0	1	1.0
	AIS C, SNL C1-C4	4	6.6	0	0.0	4	4.0
	AIS C, SNL C5-C8	2	3.3	1	2.5	3	3.0
	AIS C, SNL T1-S5	5	8.2	0	0.0	5	5.0
	AIS D	17	27.9	9	22.5	26	25.7
	Missing	12	19.7	22	55.0	34	33.7
	All	61	100.0	40	100.0	101	100.0

- Neurology at admission data are available for 67 participants with complete records across both sites.
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.
- Neurology data are collected for both consented and non-consented participants.



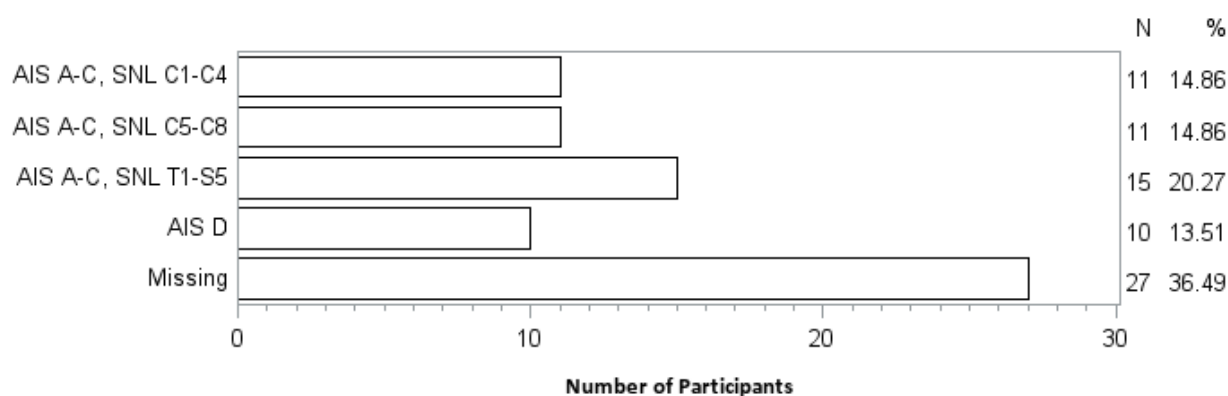
8.6.2 Neurology at acute care admission – CMH (Middlemore), CDHB (Christchurch/BSU)

- Participating acute data are available for 74 participants with complete records who attended acute care across both NZSCIR sites. Of these neurology data at acute care admission is available for 47 participants.
- Missing data are due to data not being entered prior to extract, or ongoing data cleaning.

		Participating Facility				All	
		CMH (Middlemore)		CDHB (BSU/Christchurch)			
		N	%	N	%	N	%
SCI	Neurology at Acute Admission						
Non-Traumatic	AIS A-C, SNL C1-C4	0	0.0	0	0.0	0	0.0
	AIS A-C, SNL C5-C8	1	2.3	0	0.0	1	1.4
	AIS A-C, SNL T1-S5	3	6.8	0	0.0	3	4.1
	AIS D	2	4.5	2	6.7	4	5.4
	Missing	3	6.8	3	10.0	6	8.1
	All	9	20.5	5	16.7	14	18.9
Traumatic	Neurology at Acute Admission						
	AIS A-C, SNL C1-C4	10	22.7	1	3.3	11	14.9
	AIS A-C, SNL C5-C8	6	13.6	4	13.3	10	13.5
	AIS A-C, SNL T1-S5	10	22.7	2	6.7	12	16.2

	AIS D	3	6.8	3	10.0	6	8.1
	Missing	6	13.6	15	50.0	21	28.4
	All	35	79.5	25	83.3	60	81.1
All	Neurology at Acute Admission						
	AIS A-C, SNL C1-C4	10	22.7	1	3.3	11	14.9
	AIS A-C, SNL C5-C8	7	15.9	4	13.3	11	14.9
	AIS A-C, SNL T1-S5	13	29.5	2	6.7	15	20.3
	AIS D	5	11.4	5	16.7	10	13.5
	Missing	9	20.5	18	60.0	27	36.5
	All	44	100.0	30	100.0	74	100.0

Neurology at Participating Acute Admission



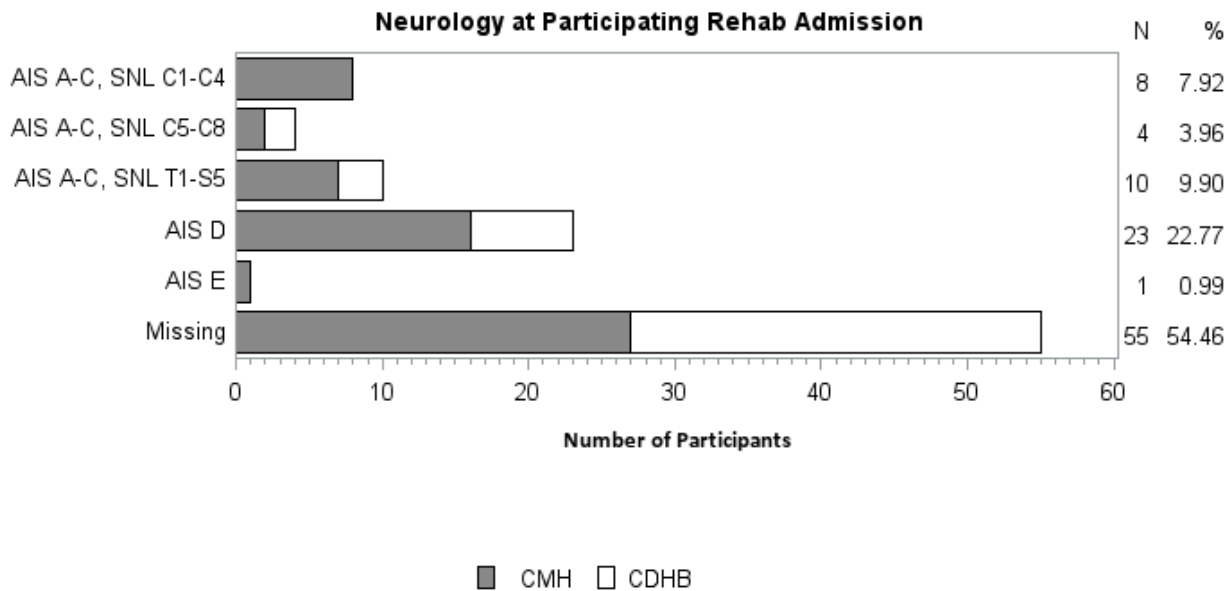
8.6.3 Neurology at admission to rehabilitation care

Of 101 participants with complete records across both NZSCIR sites, 55 participants have missing neurology at admission to rehab. Thus, the data analysed below is only for 46 participants.

SCI	Neurology at Rehab Admission	Participating Facility				All	
		CMH		CDHB		N	%
		N	%	N	%		
Non-Traumatic	AIS A-C, SNL C1-C4	0	0.0	0	0.0	0	0.0
	AIS A-C, SNL C5-C8	0	0.0	0	0.0	0	0.0
	AIS A-C, SNL T1-S5	3	4.9	1	2.5	4	4.0
	AIS D	11	18.0	2	5.0	13	12.9
	AIS E	0	0.0	0	0.0	0	0.0

	Missing	7	11.5	7	17.5	14	13.9
	All	21	34.4	10	25.0	31	30.7
Traumatic	Neurology at Rehab Admission						
	AIS A-C, SNL C1-C4	8	13.1	0	0.0	8	7.9
	AIS A-C, SNL C5-C8	2	3.3	2	5.0	4	4.0
	AIS A-C, SNL T1-S5	4	6.6	2	5.0	6	5.9
	AIS D	5	8.2	5	12.5	10	9.9
	AIS E	1	1.6	0	0.0	1	1.0
	Missing	20	32.8	21	52.5	41	40.6
	All	40	65.6	30	75.0	70	69.3
All	Neurology at Rehab Admission						
	AIS A-C, SNL C1-C4	8	13.1	0	0.0	8	7.9
	AIS A-C, SNL C5-C8	2	3.3	2	5.0	4	4.0
	AIS A-C, SNL T1-S5	7	11.5	3	7.5	10	9.9
	AIS D	16	26.2	7	17.5	23	22.8
	AIS E	1	1.6	0	0.0	1	1.0
	Missing	27	44.3	28	70.0	55	54.5
	All	61	100.0	40	100.0	101	100.0

- Missing data are due to data not being entered prior to extract or ongoing data cleaning.



8.6.4 Neurology at discharge from rehabilitation care

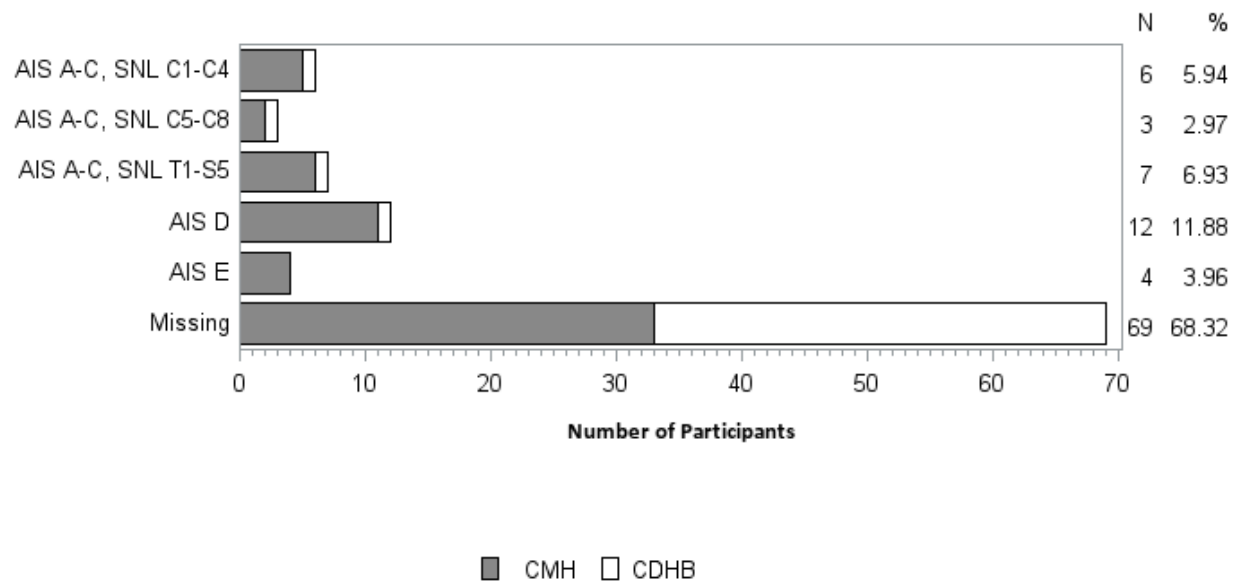
Neurology at discharge from rehabilitation care is obtained from the last neurology exam where level of care is 'Rehab'.

Of 101 participants with complete records across both NZSCIR sites, 69 participants have missing neurology at discharge from rehab. Thus, the data analysed below is only for 32 participants.

		Participating Facility				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Neurology at Discharge from Rehab						
Non-Traumatic	AIS A-C, SNL C1-C4	0	0.0	0	0.0	0	0.0
	AIS A-C, SNL C5-C8	0	0.0	0	0.0	0	0.0
	AIS A-C, SNL T1-S5	0	0.0	0	0.0	0	0.0
	AIS D	8	13.1	0	0.0	8	7.9
	AIS E	2	3.3	0	0.0	2	2.0
	Missing	11	18.0	10	25.0	21	20.8
	All	21	34.4	10	25.0	31	30.7
	Traumatic	Neurology at Discharge from Rehab					
	AIS A-C, SNL C1-C4	5	8.2	1	2.5	6	5.9
	AIS A-C, SNL C5-C8	2	3.3	1	2.5	3	3.0
	AIS A-C, SNL T1-S5	6	9.8	1	2.5	7	6.9
	AIS D	3	4.9	1	2.5	4	4.0
	AIS E	2	3.3	0	0.0	2	2.0
	Missing	22	36.1	26	65.0	48	47.5
	All	40	65.6	30	75.0	70	69.3
	All	Neurology at Discharge from Rehab					
	AIS A-C, SNL C1-C4	5	8.2	1	2.5	6	5.9
	AIS A-C, SNL C5-C8	2	3.3	1	2.5	3	3.0
	AIS A-C, SNL T1-S5	6	9.8	1	2.5	7	6.9
	AIS D	11	18.0	1	2.5	12	11.9
	AIS E	4	6.6	0	0.0	4	4.0
	Missing	33	54.1	36	90.0	69	68.3
	All	61	100.0	40	100.0	101	100.0

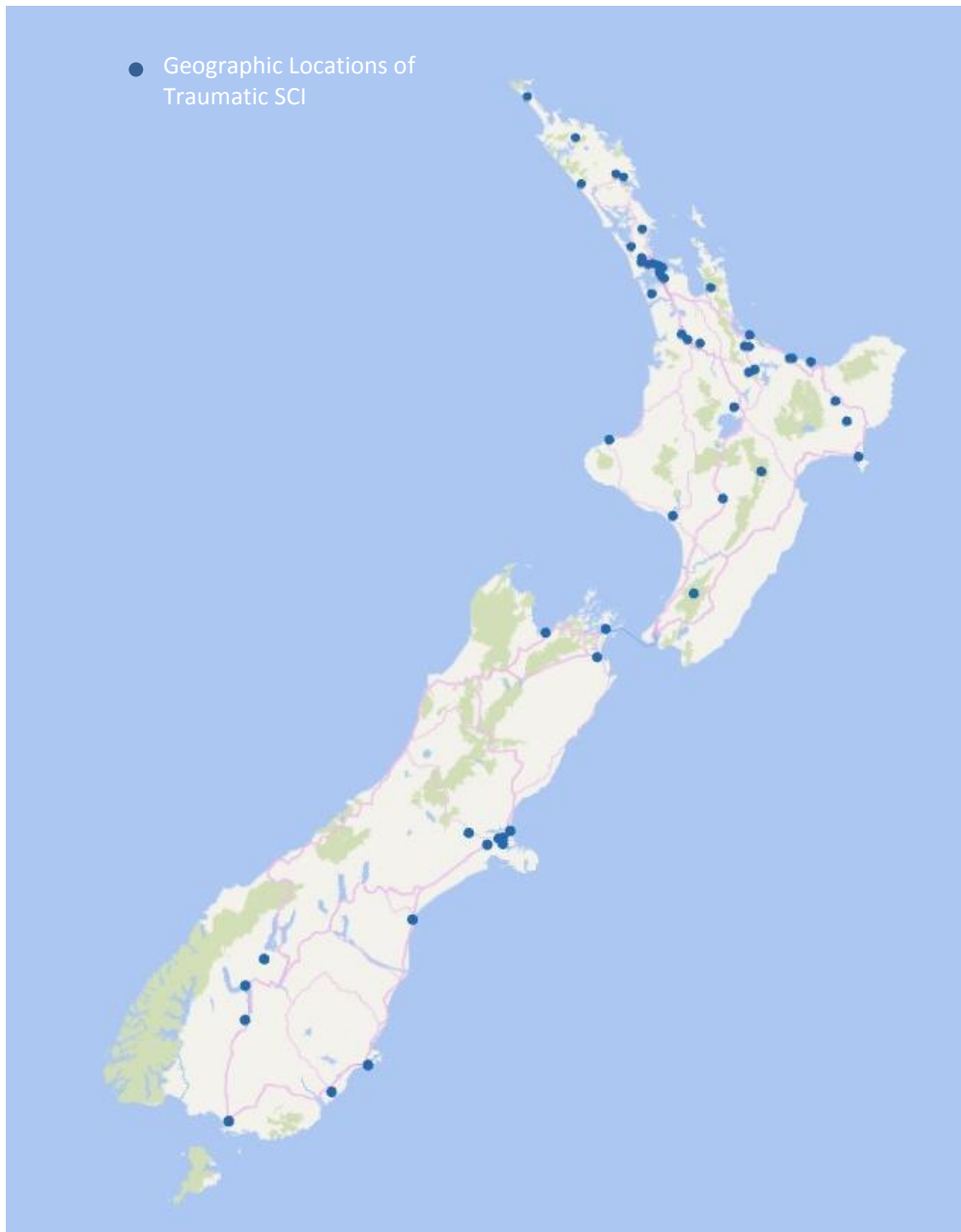
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.

Neurology at Participating Rehab Discharge



8.7 Geographic place of injury (postal code)

The following map shows the geographical location where consenting NZSCIR participants sustained their traumatic SCI (indicated by postal code).



- Geographic data are available for 60 traumatic participants.
- Data are not collected for participants who do not provide consent.
- Not shown on the map: 1 injury that occurred at an unknown location, 2 injuries that occurred outside of New Zealand.

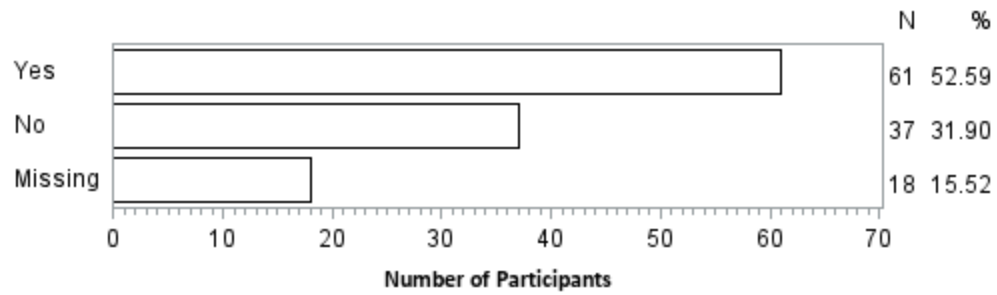
8.8 Employment

- 31.9% of consenting participants are unemployed. This may be attributed to the 56.8% of this group that identify as retired. Those from the CDHB catchment are more likely to be unemployed, with half of their participants unemployed yet CMH missing data makes this difficult to compare.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Employment						
Non-Traumatic	Yes	7	11.7	5	8.9	12	10.3
	No	4	6.7	11	19.6	15	12.9
	Missing	6	10.0	0	0.0	6	5.2
	All	17	28.3	16	28.6	33	28.4
Traumatic	Employment						
	Yes	27	45.0	22	39.3	49	42.2
	No	6	10.0	16	28.6	22	19.0
	Missing	10	16.7	2	3.6	12	10.3
	All	43	71.7	40	71.4	83	71.6
All	Employment						
	Yes	34	56.7	27	48.2	61	52.6
	No	10	16.7	27	48.2	37	31.9
	Missing	16	26.7	2	3.6	18	15.5
	All	60	100.0	56	100.0	116	100.0

- Data are not collected for participants who do not provide consent.
- Employment data are available for 98 participants across both sites
- (note: the 'not employed' category includes participants who are retired).
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.

Employment Status



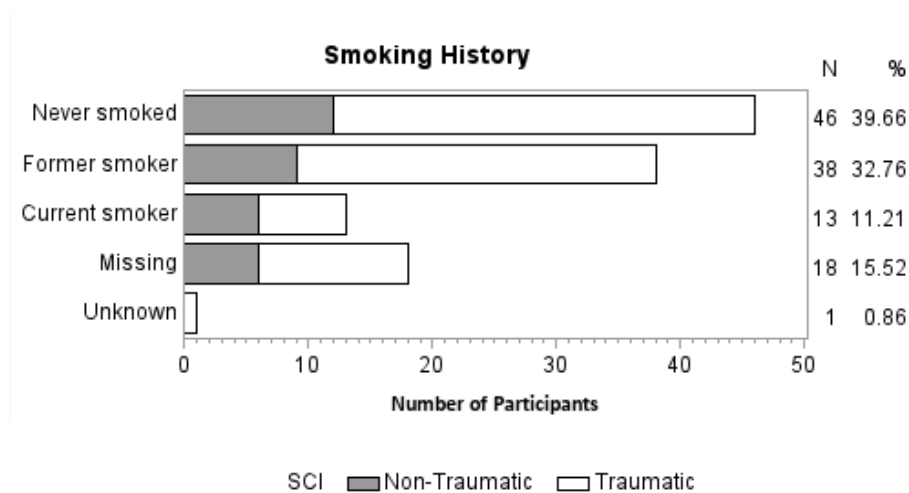
		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Unemployment Status						
Non-Traumatic	Retired	3	30.0	8	29.6	11	29.7
	Unemployed	1	10.0	2	7.4	3	8.1
	Student	0	0.0	0	0.0	0	0.0
	Other	0	0.0	0	0.0	0	0.0
	Homemaker	0	0.0	1	3.7	1	2.7
	Unknown	0	0.0	0	0.0	0	0.0
	All	4	40.0	11	40.7	15	40.5
Traumatic	Unemployment Status						
	Retired	2	20.0	8	29.6	10	27.0
	Unemployed	2	20.0	1	3.7	3	8.1
	Student	0	0.0	5	18.5	5	13.5
	Other	1	10.0	1	3.7	2	5.4
	Homemaker	1	10.0	0	0.0	1	2.7
	Unknown	0	0.0	1	3.7	1	2.7
	All	6	60.0	16	59.3	22	59.5
All	Unemployment Status						
	Retired	5	50.0	16	59.3	21	56.8
	Unemployed	3	30.0	3	11.1	6	16.2
	Student	0	0.0	5	18.5	5	13.5
	Other	1	10.0	1	3.7	2	5.4
	Homemaker	1	10.0	1	3.7	2	5.4
	Unknown	0	0.0	1	3.7	1	2.7
	All	10	100.0	27	100.0	37	100.0

8.9 Smoking history/use

- 11.2% of participants are current smokers which appears comparable with Ministry of Health data, where 15.7% of New Zealanders are reported to smoke. 32.8% were ex-smokers, whilst nearly 40% have never smoked. However, missing data may influence these statistics.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Smoking History						
Non-Traumatic	Never smoked	5	8.3	7	12.5	12	10.3
	Former smoker	4	6.7	5	8.9	9	7.8
	Current smoker	2	3.3	4	7.1	6	5.2
	Unknown	0	0.0	0	0.0	0	0.0
	Missing	6	10.0	0	0.0	6	5.2
	All	17	28.3	16	28.6	33	28.4
Traumatic	Smoking History						
	Never smoked	18	30.0	16	28.6	34	29.3
	Former smoker	12	20.0	17	30.4	29	25.0
	Current smoker	3	5.0	4	7.1	7	6.0
	Unknown	0	0.0	1	1.8	1	0.9
	Missing	10	16.7	2	3.6	12	10.3
	All	43	71.7	40	71.4	83	71.6
All	Smoking History						
	Never smoked	23	38.3	23	41.1	46	39.7
	Former smoker	16	26.7	22	39.3	38	32.8
	Current smoker	5	8.3	8	14.3	13	11.2
	Unknown	0	0.0	1	1.8	1	0.9
	Missing	16	26.7	2	3.6	18	15.5
	All	60	100.0	56	100.0	116	100.0

- Data are not collected for participants who do not provide consent.
- Smoking history data are available for 98 participants across both sites.



Daily average use of cigarettes for smokers is summarised as following:

		Daily Average Use of Cigarettes					
		N	Mean	Std	Median	Min	Max
SCI	Smoking History						
Non-Traumatic	Current smoker	5	10.6	3.0	10.0	7.0	15.0
	Former smoker	9	17.8	11.9	20.0	3.0	40.0
	All	14	15.2	10.1	12.0	3.0	40.0
Traumatic	Smoking History						
	Current smoker	6	11.7	6.6	12.5	1.0	20.0
	Former smoker	27	12.1	7.1	10.0	1.0	30.0
	All	33	12.1	6.9	10.0	1.0	30.0
All	Smoking History						
	Current smoker	11	11.2	5.1	10.0	1.0	20.0
	Former smoker	36	13.6	8.7	10.0	1.0	40.0
	All	47	13.0	8.0	10.0	1.0	40.0

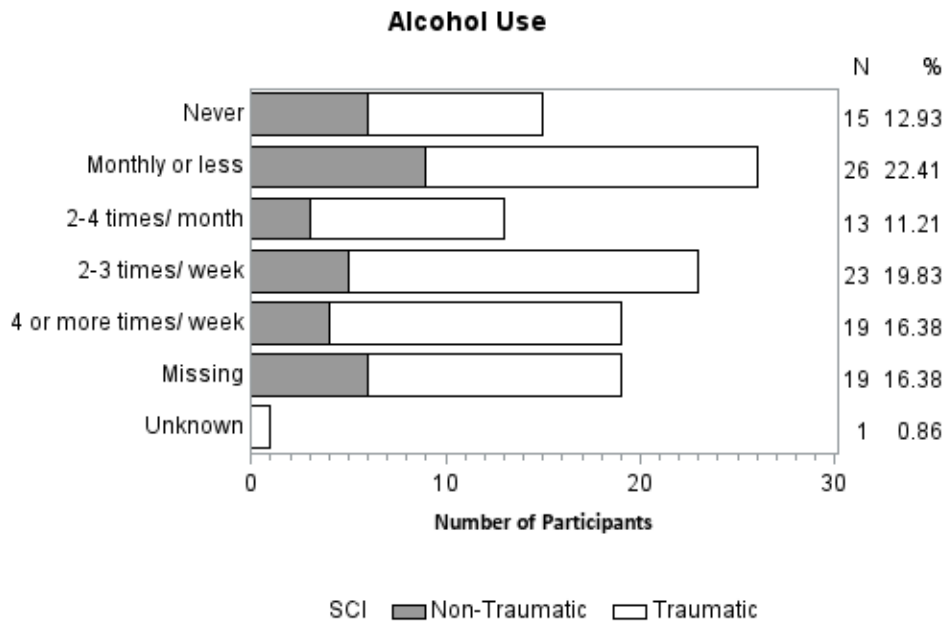
- Daily Average use of cigarettes data are available for 47 participants across both sites.

8.10 Alcohol use

- 69.8% of participants drank alcohol, which is slightly lower than the 2016/17 Ministry of Health Survey total of 79.3%.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Alcohol Use						
Non-Traumatic	Never	3	5.0	3	5.4	6	5.2
	Monthly or less	4	6.7	5	8.9	9	7.8
	2-4 times/ month	1	1.7	2	3.6	3	2.6
	2-3 times/ week	3	5.0	2	3.6	5	4.3
	4 or more times/ week	0	0.0	4	7.1	4	3.4
	Unknown	0	0.0	0	0.0	0	0.0
	Missing	6	10.0	0	0.0	6	5.2
	All	17	28.3	16	28.6	33	28.4
Traumatic	Alcohol Use						
	Never	3	5.0	6	10.7	9	7.8
	Monthly or less	11	18.3	6	10.7	17	14.7
	2-4 times/ month	3	5.0	7	12.5	10	8.6
	2-3 times/ week	8	13.3	10	17.9	18	15.5
	4 or more times/ week	7	11.7	8	14.3	15	12.9
	Unknown	1	1.7	0	0.0	1	0.9
	Missing	10	16.7	3	5.4	13	11.2
	All	43	71.7	40	71.4	83	71.6
All	Alcohol Use						
	Never	6	10.0	9	16.1	15	12.9
	Monthly or less	15	25.0	11	19.6	26	22.4
	2-4 times/ month	4	6.7	9	16.1	13	11.2
	2-3 times/ week	11	18.3	12	21.4	23	19.8
	4 or more times/ week	7	11.7	12	21.4	19	16.4
	Unknown	1	1.7	0	0.0	1	0.9
	Missing	16	26.7	3	5.4	19	16.4
	All	60	100.0	56	100.0	116	100.0

- Data are not collected for participants who do not provide consent.
- Alcohol Use data are available for 97 participants across both sites.



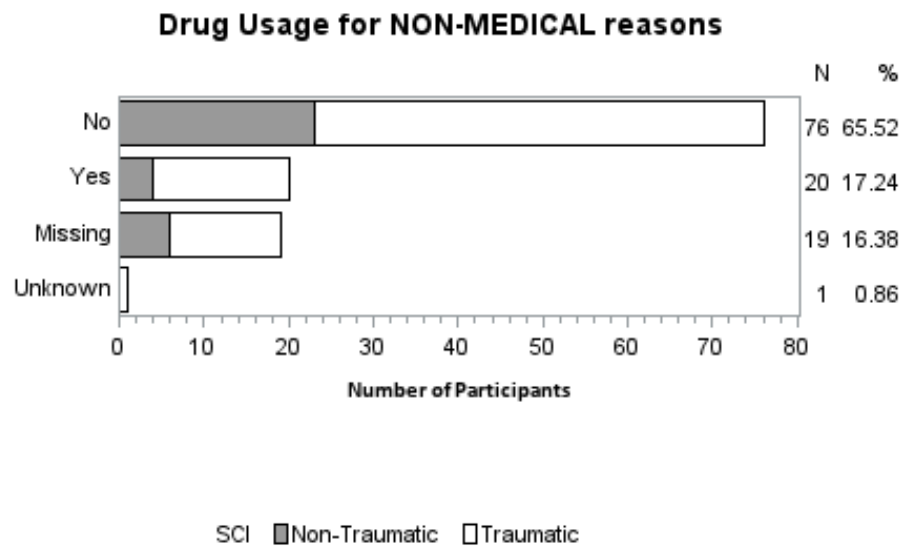
8.11 Drug use

- 17.2% of participants used prescribed medications or street drugs (including marijuana) for non-medical reasons prior to their SCI. This is higher than the MOH Health Survey 2016/17 calculation of 11.6%. Marijuana is the most common drug of choice.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Drug Use						
Non-Traumatic	No	9	15.0	14	25.0	23	19.8
	Yes	2	3.3	2	3.6	4	3.4
	Unknown	0	0.0	0	0.0	0	0.0
	Missing	6	10.0	0	0.0	6	5.2
	All	17	28.3	16	28.6	33	28.4
Traumatic	Drug Use						
	No	22	36.7	31	55.4	53	45.7
	Yes	10	16.7	6	10.7	16	13.8
	Unknown	1	1.7	0	0.0	1	0.9
	Missing	10	16.7	3	5.4	13	11.2
	All	43	71.7	40	71.4	83	71.6
All	Drug Use						
	No	31	51.7	45	80.4	76	65.5
	Yes	12	20.0	8	14.3	20	17.2
	Unknown	1	1.7	0	0.0	1	0.9

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
	Missing	16	26.7	3	5.4	19	16.4
	All	60	100.0	56	100.0	116	100.0

- Data are not collected for participants who do not provide consent.
- Drug Use data are available for 97 participants across both sites.



The drug type used is summarised as following:

		Enrolled at		All
		CMH	CDHB	
		N	N	N
SCI	Drug Type			
Non-Traumatic	Pot/marijuana	1	2	3
	Medications prescribed for you	2	1	3
	Other or unknown type	0	0	0
	Cocaine	0	0	0
	Hallucinogens	0	0	0
	Heroin/opiates	0	0	0
	Medications prescribed for someone else	0	0	0
	Speed/stimulants	0	0	0
	All	3	3	6
Traumatic	Drug Type			
	Pot/marijuana	6	6	12

	Medications prescribed for you	3	0	3
	Other or unknown type	1	0	1
	Cocaine	0	0	0
	Hallucinogens	0	0	0
	Heroin/opiates	0	0	0
	Medications prescribed for someone else	0	0	0
	Speed/stimulants	0	0	0
	All	10	6	16
All	Drug Type			
	Pot/marijuana	7	8	15
	Medications prescribed for you	5	1	6
	Other or unknown type	1	0	1
	Cocaine	0	0	0
	Hallucinogens	0	0	0
	Heroin/opiates	0	0	0
	Medications prescribed for someone else	0	0	0
	Speed/stimulants	0	0	0
	All	13	9	22

- Drug types are available for 20 participants across both sites.
- More than one drug type can be indicated for each participant.

9 What does a person's journey with SCI look like, in terms of facilities and length of stay, in NZ?

9.1 Participant flow by facility

- Participant flow data requires more analysis to understand the number of traumatic participants that did not receive initial acute services from a supra-regional spinal service. This includes removing non-traumatic data from the table below and reviewing files to classify those with multi-trauma that would have required acute care at the initial hospital. It is also possible that the first hospital destination was for staging prior to transfer of participants. Once analysed this will provide more useful data as to the implementation of the national destination policy.

The following table shows the unique patient flows from admission to discharge to community across both NZSCIR sites:

Facilities In Chronological Order	N	%
Auckland (Auckland City Hospital) Counties Manukau (ASRU-Rehab)	1	1.0
Auckland (Auckland City Hospital) Counties Manukau (Middlemore Hospital)	1	1.0
Auckland (Auckland City Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	2	2.0
Bay of Plenty (Tauranga Hospital) Counties Manukau (Middlemore Hospital)	1	1.0
Bay of Plenty (Tauranga Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	1	1.0
Bay of Plenty (Whakatane Hospital) Counties Manukau (Middlemore Hospital)	1	1.0
Bay of Plenty (Whakatane Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	1	1.0
Bay of Plenty (Whanganui Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Acute)	1	1.0
Bay of Plenty (Whanganui Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Acute) Canterbury (BSU-Rehab)	1	1.0
Canterbury (BSU) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	1	1.0
Canterbury (BSU-Rehab)	5	5.0
Canterbury (Christchurch Hospital) Canterbury (BSU) Canterbury (Christchurch Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	1	1.0
Canterbury (Christchurch Hospital) Canterbury (BSU-Acute)	1	1.0
Canterbury (Christchurch Hospital) Canterbury (BSU-Acute) Canterbury (BSU-Rehab)	8	7.9
Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	4	4.0
Canterbury (Christchurch Hospital) Other (Burwood Hospital, BIRS)	1	1.0
Capital & Coast (Wairau Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Acute) Canterbury (BSU-Rehab)	1	1.0
Capital & Coast (Wellington Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Acute) Canterbury (BSU-Rehab)	1	1.0
Counties Manukau (ASRU-Rehab)	14	13.9
Counties Manukau (Middlemore Hospital)	8	7.9
Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	19	18.8
Counties Manukau (Middlemore Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab) Counties Manukau (ASRU-Rehab)	1	1.0
Counties Manukau (Rarotonga Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	2	2.0
Hawke's Bay (Hawke's Bay Hospital) Canterbury (BSU-Rehab)	1	1.0
Hawke's Bay (Hawke's Bay Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Acute) Canterbury (BSU-Rehab)	1	1.0
Hutt (Hutt Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	1	1.0
Lakes (Rotorua Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	1	1.0
Nelson Marlborough (Nelson Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	1	1.0
Northland (Bay of Islands Hospital) Northland (Whangarei Hospital) Counties Manukau (Middlemore Hospital)	1	1.0
Northland (Whangarei Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	2	2.0
Other (Other International Site) Canterbury (BSU-Rehab)	1	1.0
Other (Other International Site) Other (Other International Site) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	1	1.0
South Canterbury (Timaru Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	2	2.0

Southern (Dunedin Hospital) Canterbury (BSU-Acute) Canterbury (BSU-Rehab)	1	1.0
Southern (Lakes District Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU)	1	1.0
Southern (Lakes District Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	2	2.0
Southern (Southland Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Acute) Canterbury (BSU-Rehab)	1	1.0
Southern (Southland Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	1	1.0
Tairāwhiti (Gisborne Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	2	2.0
Taranaki (Taranaki Base Hospital) Canterbury (Christchurch Hospital) Canterbury (BSU-Rehab)	1	1.0
Waikato (Waikato Hospital) Counties Manukau (ASRU-Rehab)	1	1.0
Waikato (Waikato Hospital) Counties Manukau (Middlemore Hospital) Counties Manukau (ASRU-Rehab)	1	1.0
Waitemata (Northshore Hospital) Counties Manukau (ASRU-Rehab)	1	1.0
All	101	100.0

- Data are shown for participants with complete records. 40 participants had a data collection point at the CDHB, and 61 participants had a data collection point at the CMH.

9.2 Acute facility – CMH (Middlemore), CDHB (BSU/Christchurch)

9.2.1 Time from injury to first spinal service acute admission

Time from injury to first spinal service acute admission is summarised below, and participants with injury date/time data not available or admission date/time data not available were excluded from the analysis.

- This data indicates how quickly participants are transferred from injury site to spinal service admission. The national destination policy aims to have people with traumatic SCI receive their acute care and rehabilitation from a SCI supra-regional service as quickly possible. Data indicates a median time of 2.4 hours for Counties Manukau Health and 11.3 hours for Canterbury District Health Board. The minimum time was 0.7 hour and maximum time was 217.8 hours.
- Hours to the first participating acute data for traumatic SCI participants are available for 29 participants among 50 consented traumatic SCI participants with complete records across both NZSCIR sites.

For Traumatic SCI participants	Hours from Injury to First Participating Acute					
	N	Mean	Std	Median	Min	Max
Participating Facility						
CMH (Middlemore)	13	11.4	24.4	2.4	0.7	90.3
CDHB (BSU/Christchurch)	16	30.5	54.2	11.3	1.2	217.8
All	29	22.0	43.8	5.4	0.7	217.8

9.2.2 Admission type

- If a traumatic SCI participant was admitted to a supra-regional spinal acute facility directly from the injury site, this participant is categorized as “Direct” in the following table. If a participant was admitted to a non-supra-regional SCI service centre, then this participant is categorised as “Indirect” in the table below.
- Just over half of traumatic SCI admissions to a supra-regional SCI service were direct admissions from the scene of an accident. This suggests there are opportunities to improve application of the national destination policy, although further data cleansing is required.

For Traumatic SCI participants	Participating Acute Facility				All	
	CMH (Middlemore)		CDHB (BSU/Christchurch)			
	N	%	N	%	N	%
Type of Admission						
Direct	20	33.3	11	18.3	31	51.7
Indirect	15	25.0	14	23.3	29	48.3
All	35	58.3	25	41.7	60	100.0

- First participating acute data are available for 60 traumatic SCI participants from 70 traumatic SCI participants with complete records across both NZSCIR sites.

For participants with an indirect admission to either CMH or CDHB, the district health boards (DHB) that they were admitted from are summarised below:

For Traumatic SCI participants with an indirect admission to CMH or CDHB	Participating Acute Facility				All	
	CMH (Middlemore)		CDHB (BSU/Christchurch)			
	N	%	N	%	N	%
First DHB Admitted To						
Auckland	3	10.3	0	0.0	3	10.3
Bay of Plenty	4	13.8	2	6.9	6	20.7
Canterbury	0	0.0	1	3.4	1	3.4
Capital & Coast	0	0.0	2	6.9	2	6.9
Counties Manukau	1	3.4	0	0.0	1	3.4
Hawke's Bay	0	0.0	1	3.4	1	3.4
Lakes	1	3.4	0	0.0	1	3.4
Northland	3	10.3	0	0.0	3	10.3
South Canterbury	0	0.0	2	6.9	2	6.9
Southern	0	0.0	5	17.2	5	17.2
Tairāwhiti	2	6.9	0	0.0	2	6.9

Taranaki	0	0.0	1	3.4	1	3.4
Waikato	1	3.4	0	0.0	1	3.4
All	15	51.7	14	48.3	29	100.0

9.2.3 Acute length of stay (LOS)

LOS for participants admitted is broken down by participants' first admission neurology value (neurology value used in this section is obtained from participants' first admission data collection point) in the table below.

For Traumatic SCI participants		Acute Length of Stay (Days)					
		N	Mean	Std	Median	Min	Max
Participating Facility	Neurology at Acute Admission						
CMH (Middlemore)	AIS A-C, SNL C1-C4	8	24.5	17.1	17.5	11.0	60.0
	AIS A-C, SNL C5-C8	6	33.8	22.5	25.5	10.0	63.0
	AIS A-C, SNL T1-S5	10	16.7	10.2	12.5	8.0	41.0
	AIS D	3	31.0	37.3	12.0	7.0	74.0
	Missing	6	10.2	5.0	10.5	4.0	17.0
	All	33	21.8	18.3	14.0	4.0	74.0
CDHB (BSU/Christchurch)	Neurology at Acute Admission						
	AIS A-C, SNL C1-C4	1	71.0	0	71.0	71.0	71.0
	AIS A-C, SNL C5-C8	4	24.0	18.3	22.0	4.0	48.0
	AIS A-C, SNL T1-S5	2	11.0	1.4	11.0	10.0	12.0
	AIS D	3	5.0	1.7	4.0	4.0	7.0
	Missing	15	21.0	34.6	8.0	2.0	141.0
	All	25	20.8	29.8	9.0	2.0	141.0
All	Neurology at Acute Admission						
	AIS A-C, SNL C1-C4	9	29.7	22.3	19.0	11.0	71.0
	AIS A-C, SNL C5-C8	10	29.9	20.4	22.5	4.0	63.0
	AIS A-C, SNL T1-S5	12	15.8	9.5	12.0	8.0	41.0
	AIS D	6	18.0	27.6	7.0	4.0	74.0
	Missing	21	17.9	29.5	9.0	2.0	141.0
	All	58	21.4	23.7	12.0	2.0	141.0

- Length of stay data for participating acute are available for 58 participants among 60 traumatic SCI participants who attended acute care across both NZSCIR sites.
- Neurology data are shown for participants with complete records.
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.

9.3 Rehabilitation facilities

CDHB provides its specialist spinal rehabilitation services from the Burwood Spinal Unit (BSU), whilst CMH provides its services through the Auckland Spinal Rehabilitation Unit (ASRU).

9.3.1 Time (days) from injury to first participating rehab admission

Time from injury to first NZSCIR participating rehab admission (ASRU/BSU) is summarised below, and participants with injury date data not available or admission date data not available were excluded from the analysis.

For Traumatic SCI participants	Injury to First Participating Rehab (Days)					
	N	Mean	Std	Median	Min	Max
Enrolled at						
CMH	30	22.5	16.3	17.5	6.7	73.1
CDHB	24	19.2	18.5	9.9	3.9	69.8
All	54	21.0	17.2	16.0	3.9	73.1

- Injury to first participating Rehab data are available for 54 traumatic participants among 70 traumatic participants with complete records across both NZSCIR sites.

9.3.2 Time (days) from first appearance of symptoms to first participating rehab admission

Time from first appearance of symptoms to first NZSCIR participating rehab admission (ASRU/BSU) is summarised below, and participants with first appearance date data not available or admission date data not available were excluded from the analysis.

For Non-Traumatic participants	First Appearance Date to First Participating Rehab (Days)					
	N	Mean	Std	Median	Min	Max
Enrolled at						
CMH	19	35.3	33.9	26.0	9.0	155.0
CDHB	8	40.2	50.3	19.1	2.0	139.0
All	27	36.7	38.5	25.0	2.0	155.0

- First appearance to first participating Rehab data are available for 27 non-traumatic participants from 31 non-traumatic participants with complete records across both NZSCIR sites.

9.3.3 Admission type

If a participant was admitted into a rehabilitation facility (for example, BURWOOD SPINAL UNIT (BSU)) directly from its corresponding acute facility (CHRISTCHURCH HOSPITAL) then

this participant is categorized as “Corresponding” in the following table. If a participant was admitted to BSU from another acute facility within the district, then this participant is categorized as “In District”. If a participant was admitted directly to the rehabilitation facility (for example, did not attend acute care) then this participant is categorized as “Direct” in the following table.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Admission Type						
Non-Traumatic	Corresponding	16	26.2	6	15.0	22	21.8
	Direct	5	8.2	1	2.5	6	5.9
	In District	0	0.0	3	7.5	3	3.0
	All	21	34.4	10	25.0	31	30.7
Traumatic	Admission Type						
	Corresponding	37	60.7	25	62.5	62	61.4
	Direct	1	1.6	1	2.5	2	2.0
	In District	2	3.3	4	10.0	6	5.9
	All	40	65.6	30	75.0	70	69.3
All	Admission Type						
	Corresponding	53	86.9	31	77.5	84	83.2
	Direct	6	9.8	2	5.0	8	7.9
	In District	2	3.3	7	17.5	9	8.9
	All	61	100.0	40	100.0	101	100.0

- Participating Rehab data are available for 101 participants with complete records across both NZSCIR sites.

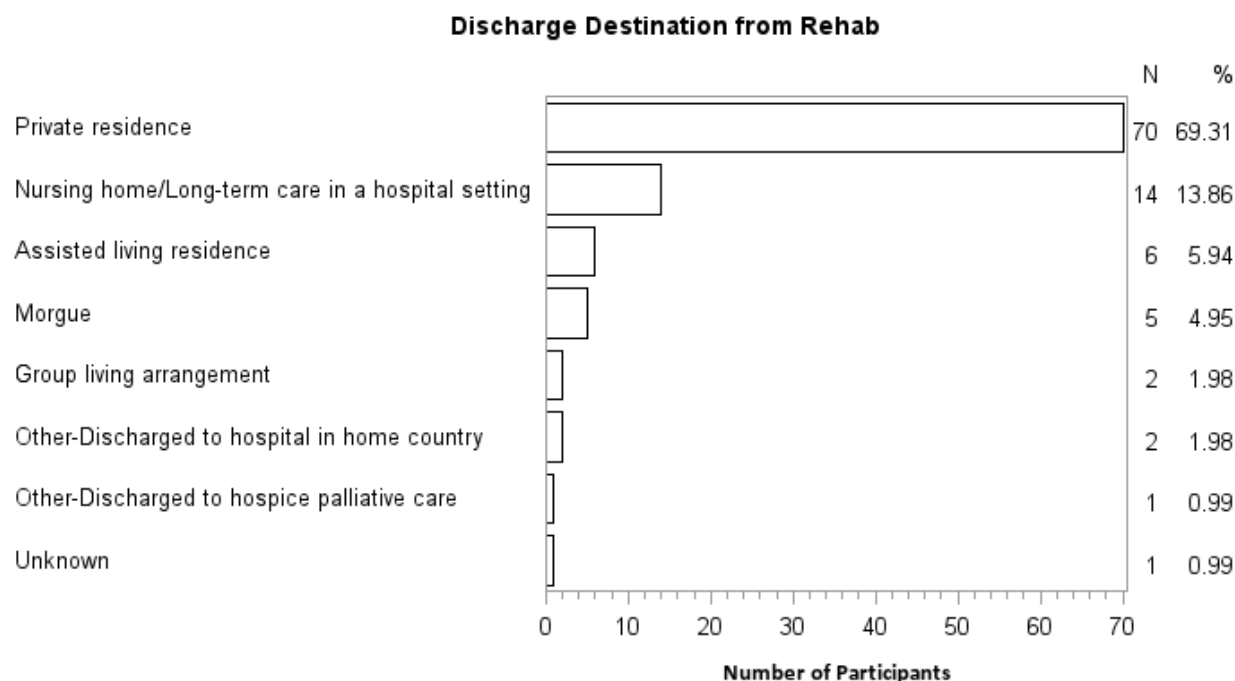
9.3.4 Discharge destination

If a participant was admitted to a facility more than once, then discharge destination was obtained from their last visit.

Discharge Destination from Rehab		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Last Discharge Destination						
Non-Traumatic	Private residence	16	26.2	8	20.0	24	23.8
	Nursing home/Long-term care in a hospital setting	2	3.3	1	2.5	3	3.0

Discharge Destination from Rehab		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
	Assisted living residence	1	1.6	0	0.0	1	1.0
	Morgue	0	0.0	0	0.0	0	0.0
	Group living arrangement	1	1.6	0	0.0	1	1.0
	Other-Discharged to hospital in home country	1	1.6	0	0.0	1	1.0
	Other-Discharged to hospice palliative care	0	0.0	1	2.5	1	1.0
	Unknown	0	0.0	0	0.0	0	0.0
	All	21	34.4	10	25.0	31	30.7
Traumatic	Last Discharge Destination						
	Private residence	20	32.8	26	65.0	46	45.5
	Nursing home/Long-term care in a hospital setting	9	14.8	2	5.0	11	10.9
	Assisted living residence	5	8.2	0	0.0	5	5.0
	Morgue	5	8.2	0	0.0	5	5.0
	Other-Discharged to hospital in home country	1	1.6	0	0.0	1	1.0
	Group living arrangement	0	0.0	1	2.5	1	1.0
	Other-Discharged to hospice palliative care	0	0.0	0	0.0	0	0.0
	Unknown	0	0.0	1	2.5	1	1.0
	All	40	65.6	30	75.0	70	69.3
All	Last Discharge Destination						
	Private residence	36	59.0	34	85.0	70	69.3
	Nursing home/Long-term care in a hospital setting	11	18.0	3	7.5	14	13.9
	Assisted living residence	6	9.8	0	0.0	6	5.9
	Morgue	5	8.2	0	0.0	5	5.0
	Group living arrangement	1	1.6	1	2.5	2	2.0
	Other-Discharged to hospital in home country	2	3.3	0	0.0	2	2.0
	Other-Discharged to hospice palliative care	0	0.0	1	2.5	1	1.0
	Unknown	0	0.0	1	2.5	1	1.0
	All	61	100.0	40	100.0	101	100.0

- Participating Rehab data are available for 101 participants with complete records across both NZSCIR sites.



9.3.5 Rehab length of stay (LOS)

LOS for participants admitted to rehab is broken down by participants' first admission neurology value (neurology value used in this section is obtained from participants' first admission data collection point) in the table below.

Enrolled at	SCI	Neurology at Rehab Admission	Length of Stay at Rehab Hospital (Days)					
			N	Mean	Std	Median	Min	Max
CMH	Non-Traumatic	AIS A-C, SNL C1-C4	0	0	0	0	0	0
		AIS A-C, SNL C5-C8	0	0	0	0	0	0
		AIS A-C, SNL T1-S5	3	42.0	12.2	36.0	34.0	56.0
		AIS D	11	34.3	17.6	33.0	10.0	59.0
		AIS E	0	0	0	0	0	0
		Missing	5	49.8	34.1	55.0	14.0	84.0
		All	19	39.6	22.2	34.0	10.0	84.0
	Traumatic	Neurology at Rehab Admission						
		AIS A-C, SNL C1-C4	8	86.5	24.1	83.5	48.0	132.0
		AIS A-C, SNL C5-C8	2	79.0	4.2	79.0	76.0	82.0
		AIS A-C, SNL T1-S5	4	50.5	28.8	52.0	14.0	84.0

		AIS D	4	45.0	18.0	41.5	27.0	70.0
		AIS E	1	88.0	0	88.0	88.0	88.0
		Missing	10	73.9	24.6	73.0	33.0	112.0
		All	29	71.0	26.6	76.0	14.0	132.0
	All	Neurology at Rehab Admission						
		AIS A-C, SNL C1-C4	8	86.5	24.1	83.5	48.0	132.0
		AIS A-C, SNL C5-C8	2	79.0	4.2	79.0	76.0	82.0
		AIS A-C, SNL T1-S5	7	46.9	22.0	48.0	14.0	84.0
		AIS D	15	37.1	17.7	34.0	10.0	70.0
		AIS E	1	88.0	0	88.0	88.0	88.0
		Missing	15	65.9	29.3	69.0	14.0	112.0
		All	48	58.6	29.2	56.5	10.0	132.0
CDHB	SCI	Neurology at Rehab Admission						
		AIS A-C, SNL C1-C4	0	0	0	0	0	0
	Non-Traumatic	AIS A-C, SNL C5-C8	0	0	0	0	0	0
		AIS A-C, SNL T1-S5	1	92.0	0	92.0	92.0	92.0
		AIS D	2	102.5	54.4	102.5	64.0	141.0
		AIS E	0	0	0	0	0	0
		Missing	6	67.5	59.3	53.5	14.0	176.0
		All	9	78.0	53.2	64.0	14.0	176.0
	Traumatic	Neurology at Rehab Admission						
		AIS A-C, SNL C1-C4	0	0	0	0	0	0
		AIS A-C, SNL C5-C8	2	129.0	35.4	129.0	104.0	154.0
		AIS A-C, SNL T1-S5	2	115.0	46.7	115.0	82.0	148.0
		AIS D	5	66.4	37.4	75.0	20.0	102.0
		AIS E	0	0	0	0	0	0
		Missing	18	59.6	39.9	52.0	7.0	141.0
		All	27	70.1	43.5	82.0	7.0	154.0
	All	Neurology at Rehab Admission						
		AIS A-C, SNL C1-C4	0	0	0	0	0	0
		AIS A-C, SNL C5-C8	2	129.0	35.4	129.0	104.0	154.0
		AIS A-C, SNL T1-S5	3	107.3	35.6	92.0	82.0	148.0

		AIS D	7	76.7	41.7	75.0	20.0	141.0
		AIS E	0	0	0	0	0	0
		Missing	24	61.6	44.2	52.5	7.0	176.0
		All	36	72.1	45.4	78.5	7.0	176.0
All	SCI	Neurology at Rehab Admission						
	Non-Traumatic	AIS A-C, SNL C1-C4	0	0	0	0	0	0
		AIS A-C, SNL C5-C8	0	0	0	0	0	0
		AIS A-C, SNL T1-S5	4	54.5	26.9	46.0	34.0	92.0
		AIS D	13	44.8	34.1	34.0	10.0	141.0
		AIS E	0	0	0	0	0	0
		Missing	11	59.5	48.1	55.0	14.0	176.0
		All	28	51.9	38.8	45.5	10.0	176.0
	Traumatic	Neurology at Rehab Admission						
		AIS A-C, SNL C1-C4	8	86.5	24.1	83.5	48.0	132.0
		AIS A-C, SNL C5-C8	4	104.0	35.4	93.0	76.0	154.0
		AIS A-C, SNL T1-S5	6	72.0	45.2	69.0	14.0	148.0
		AIS D	9	56.9	30.8	42.0	20.0	102.0
		AIS E	1	88.0	0	88.0	88.0	88.0
		Missing	28	64.7	35.4	66.5	7.0	141.0
		All	56	70.6	35.4	76.5	7.0	154.0
	All	Neurology at Rehab Admission						
		AIS A-C, SNL C1-C4	8	86.5	24.1	83.5	48.0	132.0
		AIS A-C, SNL C5-C8	4	104.0	35.4	93.0	76.0	154.0
		AIS A-C, SNL T1-S5	10	65.0	38.2	56.0	14.0	148.0
		AIS D	22	49.7	32.6	41.5	10.0	141.0
		AIS E	1	88.0	0	88.0	88.0	88.0
		Missing	39	63.2	38.8	58.0	7.0	176.0
		All	84	64.4	37.4	58.5	7.0	176.0

- Length of stay at rehab data are available for 84 participants among 101 consented participants with complete records across both NZSCIR sites.
- Neurology data are shown for participants with complete records.
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.

9.4 Time from injury to discharge to community

9.4.1 Time from injury to discharge to community for traumatic SCI participants

For traumatic SCI participants		Days from Injury to Discharge to Community					
		N	Mean	Std	Median	Min	Max
Enrolled at							
CMH		40	77.5	39.8	81.0	5.0	169.0
CDHB		30	89.3	57.7	88.0	14.0	193.0
All		70	82.5	48.3	85.5	5.0	193.0

- Data are shown for all 70 traumatic SCI participants with complete records.

9.4.2 Time from first admission to discharge to community for non-traumatic SCI participants

For non-traumatic SCI participants		Days from First Admission to Discharge to Community					
		N	Mean	Std	Median	Min	Max
Enrolled at							
CMH		21	54.0	50.2	42.0	7.0	240.0
CDHB		8	76.5	43.0	74.0	23.0	159.0
All		29	60.2	48.6	56.0	7.0	240.0

- Data are shown for 29/31 non-traumatic participants with complete records.

9.4.3 Time from injury to discharge to community by neurology at admission

			Days from Injury to Discharge to Community					
			N	Mean	Std	Median	Min	Max
Enrolled at	SCI	Neurology at Admission						
CMH	Non-Traumatic	AIS A, SNL C1-C4	0	0	0	0	0	0
		AIS A, SNL C5-C8	0	0	0	0	0	0
		AIS A, SNL T1-S5	1	98.0	0	98.0	98.0	98.0
		AIS B, SNL C1-C4	0	0	0	0	0	0
		AIS B, SNL C5-C8	0	0	0	0	0	0
		AIS B, SNL T1-S5	1	33.0	0	33.0	33.0	33.0
		AIS C, SNL C1-C4	0	0	0	0	0	0
		AIS C, SNL C5-C8	1	93.0	0	93.0	93.0	93.0
		AIS C, SNL T1-S5	2	82.0	1.4	82.0	81.0	83.0
		AIS D	12	58.6	27.7	51.5	19.0	113.0
		Missing	4	155.3	95.7	161.0	59.0	240.0
		All	21	81.5	57.8	59.0	19.0	240.0
	Traumatic	Neurology at Admission	4	111.8	16.1	112.0	94.0	129.0

		AIS A, SNL C1-C4						
		AIS A, SNL C5-C8	5	83.0	23.8	68.0	63.0	109.0
		AIS A, SNL T1-S5	7	78.1	24.5	88.0	37.0	108.0
		AIS B, SNL C1-C4	2	98.5	2.1	98.5	97.0	100.0
		AIS B, SNL C5-C8	1	169.0	0	169.0	169.0	169.0
		AIS B, SNL T1-S5	0	0	0	0	0	0
		AIS C, SNL C1-C4	4	116.5	21.4	122.0	87.0	135.0
		AIS C, SNL C5-C8	1	123.0	0	123.0	123.0	123.0
		AIS C, SNL T1-S5	3	51.3	23.1	61.0	25.0	68.0
		AIS D	5	57.8	30.5	63.0	9.0	90.0
		Missing	8	36.5	36.6	18.5	5.0	103.0
		All	40	77.5	39.8	81.0	5.0	169.0
	All	Neurology at Admission						
		AIS A, SNL C1-C4	4	111.8	16.1	112.0	94.0	129.0
		AIS A, SNL C5-C8	5	83.0	23.8	68.0	63.0	109.0
		AIS A, SNL T1-S5	8	80.6	23.7	88.5	37.0	108.0
		AIS B, SNL C1-C4	2	98.5	2.1	98.5	97.0	100.0
		AIS B, SNL C5-C8	1	169.0	0	169.0	169.0	169.0
		AIS B, SNL T1-S5	1	33.0	0	33.0	33.0	33.0
		AIS C, SNL C1-C4	4	116.5	21.4	122.0	87.0	135.0
		AIS C, SNL C5-C8	2	108.0	21.2	108.0	93.0	123.0
		AIS C, SNL T1-S5	5	63.6	23.4	68.0	25.0	83.0
		AIS D	17	58.4	27.6	53.0	9.0	113.0
		Missing	12	76.1	82.3	56.5	5.0	240.0
		All	61	78.9	46.3	75.0	5.0	240.0
CDHB	SCI	Neurology at Admission						
	Non-Traumatic	AIS A, SNL C1-C4	0	0	0	0	0	0
		AIS A, SNL C5-C8	0	0	0	0	0	0
		AIS A, SNL T1-S5	0	0	0	0	0	0
		AIS B, SNL C1-C4	0	0	0	0	0	0
		AIS B, SNL C5-C8	0	0	0	0	0	0
		AIS B, SNL T1-S5	0	0	0	0	0	0
		AIS C, SNL C1-C4	0	0	0	0	0	0
		AIS C, SNL C5-C8	0	0	0	0	0	0
		AIS C, SNL T1-S5	0	0	0	0	0	0
		AIS D	4	106.0	65.9	121.5	22.0	159.0
		Missing	6	127.2	75.0	112.5	44.0	228.0
		All	10	118.7	68.5	112.5	22.0	228.0
	Traumatic	Neurology at Admission	2	167.5	36.1	167.5	142.0	193.0

		AIS A, SNL C1-C4						
		AIS A, SNL C5-C8	1	180.0	0	180.0	180.0	180.0
		AIS A, SNL T1-S5	3	124.3	53.4	95.0	92.0	186.0
		AIS B, SNL C1-C4	0	0	0	0	0	0
		AIS B, SNL C5-C8	2	136.5	24.7	136.5	119.0	154.0
		AIS B, SNL T1-S5	0	0	0	0	0	0
		AIS C, SNL C1-C4	0	0	0	0	0	0
		AIS C, SNL C5-C8	1	95.0	0	95.0	95.0	95.0
		AIS C, SNL T1-S5	0	0	0	0	0	0
		AIS D	5	59.6	36.3	43.0	28.0	111.0
		Missing	16	70.3	54.7	44.0	14.0	193.0
		All	30	89.3	57.7	88.0	14.0	193.0
	All	Neurology at Admission						
		AIS A, SNL C1-C4	2	167.5	36.1	167.5	142.0	193.0
		AIS A, SNL C5-C8	1	180.0	0	180.0	180.0	180.0
		AIS A, SNL T1-S5	3	124.3	53.4	95.0	92.0	186.0
		AIS B, SNL C1-C4	0	0	0	0	0	0
		AIS B, SNL C5-C8	2	136.5	24.7	136.5	119.0	154.0
		AIS B, SNL T1-S5	0	0	0	0	0	0
		AIS C, SNL C1-C4	0	0	0	0	0	0
		AIS C, SNL C5-C8	1	95.0	0	95.0	95.0	95.0
		AIS C, SNL T1-S5	0	0	0	0	0	0
		AIS D	9	80.2	53.7	84.0	22.0	159.0
		Missing	22	85.8	64.4	59.0	14.0	228.0
		All	40	96.7	61.0	93.5	14.0	228.0
All	SCI	Neurology at Admission						
	Non-Traumatic	AIS A, SNL C1-C4	0	0	0	0	0	0
		AIS A, SNL C5-C8	0	0	0	0	0	0
		AIS A, SNL T1-S5	1	98.0	0	98.0	98.0	98.0
		AIS B, SNL C1-C4	0	0	0	0	0	0
		AIS B, SNL C5-C8	0	0	0	0	0	0
		AIS B, SNL T1-S5	1	33.0	0	33.0	33.0	33.0
		AIS C, SNL C1-C4	0	0	0	0	0	0
		AIS C, SNL C5-C8	1	93.0	0	93.0	93.0	93.0
		AIS C, SNL T1-S5	2	82.0	1.4	82.0	81.0	83.0
		AIS D	16	70.4	43.4	54.0	19.0	159.0
		Missing	10	138.4	79.9	112.5	44.0	240.0
		All	31	93.5	62.8	83.0	19.0	240.0
	Traumatic	Neurology at Admission						
			6	130.3	35.3	125.0	94.0	193.0

		AIS A, SNL C1-C4						
		AIS A, SNL C5-C8	6	99.2	45.0	88.5	63.0	180.0
		AIS A, SNL T1-S5	10	92.0	39.1	90.5	37.0	186.0
		AIS B, SNL C1-C4	2	98.5	2.1	98.5	97.0	100.0
		AIS B, SNL C5-C8	3	147.3	25.7	154.0	119.0	169.0
		AIS B, SNL T1-S5	0	0	0	0	0	0
		AIS C, SNL C1-C4	4	116.5	21.4	122.0	87.0	135.0
		AIS C, SNL C5-C8	2	109.0	19.8	109.0	95.0	123.0
		AIS C, SNL T1-S5	3	51.3	23.1	61.0	25.0	68.0
		AIS D	10	58.7	31.6	58.0	9.0	111.0
		Missing	24	59.0	51.3	35.5	5.0	193.0
		All	70	82.5	48.3	85.5	5.0	193.0
	All	Neurology at Admission						
		AIS A, SNL C1-C4	6	130.3	35.3	125.0	94.0	193.0
		AIS A, SNL C5-C8	6	99.2	45.0	88.5	63.0	180.0
		AIS A, SNL T1-S5	11	92.5	37.2	92.0	37.0	186.0
		AIS B, SNL C1-C4	2	98.5	2.1	98.5	97.0	100.0
		AIS B, SNL C5-C8	3	147.3	25.7	154.0	119.0	169.0
		AIS B, SNL T1-S5	1	33.0	0	33.0	33.0	33.0
		AIS C, SNL C1-C4	4	116.5	21.4	122.0	87.0	135.0
		AIS C, SNL C5-C8	3	103.7	16.8	95.0	93.0	123.0
		AIS C, SNL T1-S5	5	63.6	23.4	68.0	25.0	83.0
		AIS D	26	65.9	39.0	54.5	9.0	159.0
		Missing	34	82.4	70.1	58.0	5.0	240.0
		All	101	85.9	53.1	84.0	5.0	240.0

- Neurology data are presented for 67/101 participants with complete records.
- Missing data are due to data not being entered prior to extract, or ongoing data cleaning.

9.4.4 Time from injury to discharge to community by neurology at discharge to community

			Days from Injury to Discharge to Community					
			N	Mean	Std	Median	Min	Max
Enrolled at	SCI	Neurology at Discharge						
CMH		AIS A-C, SNL C1-C4	0	0	0	0	0	0

	Non-Traumatic	AIS A-C, SNL C5-C8	0	0	0	0	0	0
		AIS A-C, SNL T1-S5	0	0	0	0	0	0
		AIS D	8	48.9	16.2	45.0	33.0	83.0
		AIS E	2	94.0	5.7	94.0	90.0	98.0
		Missing	9	97.7	57.3	87.0	52.0	240.0
		Not Collected	2	127.0	152.7	127.0	19.0	235.0
		All	21	81.5	57.8	59.0	19.0	240.0
	Traumatic	Neurology at Discharge						
		AIS A-C, SNL C1-C4	5	110.0	14.1	103.0	97.0	129.0
		AIS A-C, SNL C5-C8	2	79.0	15.6	79.0	68.0	90.0
		AIS A-C, SNL T1-S5	6	62.8	7.1	63.5	53.0	72.0
		AIS D	3	73.3	49.9	87.0	18.0	115.0
		AIS E	2	86.0	32.5	86.0	63.0	109.0
		Missing	13	105.5	29.1	103.0	54.0	169.0
		Not Collected	9	27.8	25.3	19.0	5.0	74.0
		All	40	77.5	39.8	81.0	5.0	169.0
	All	Neurology at Discharge						
		AIS A-C, SNL C1-C4	5	110.0	14.1	103.0	97.0	129.0
		AIS A-C, SNL C5-C8	2	79.0	15.6	79.0	68.0	90.0
		AIS A-C, SNL T1-S5	6	62.8	7.1	63.5	53.0	72.0
		AIS D	11	55.5	28.5	46.0	18.0	115.0
		AIS E	4	90.0	19.6	94.0	63.0	109.0
		Missing	22	102.3	41.8	95.0	52.0	240.0
		Not Collected	11	45.8	66.8	19.0	5.0	235.0
		All	61	78.9	46.3	75.0	5.0	240.0
CDHB	SCI	Neurology at Discharge						
	Non-Traumatic	AIS A-C, SNL C1-C4	0	0	0	0	0	0
		AIS A-C, SNL C5-C8	0	0	0	0	0	0
		AIS A-C, SNL T1-S5	0	0	0	0	0	0
		AIS D	0	0	0	0	0	0
		AIS E	0	0	0	0	0	0
		Missing	10	118.7	68.5	112.5	22.0	228.0
		Not Collected	0	0	0	0	0	0
		All	10	118.7	68.5	112.5	22.0	228.0
	Traumatic	Neurology at Discharge						
		AIS A-C, SNL C1-C4	1	142.0	0	142.0	142.0	142.0
		AIS A-C, SNL C5-C8	1	180.0	0	180.0	180.0	180.0
		AIS A-C, SNL T1-S5	1	95.0	0	95.0	95.0	95.0

		AIS D	1	119.0	0	119.0	119.0	119.0
		AIS E	0	0	0	0	0	0
		Missing	25	84.7	57.8	65.0	14.0	193.0
		Not Collected	1	26.0	0	26.0	26.0	26.0
		All	30	89.3	57.7	88.0	14.0	193.0
	All	Neurology at Discharge						
		AIS A-C, SNL C1-C4	1	142.0	0	142.0	142.0	142.0
		AIS A-C, SNL C5-C8	1	180.0	0	180.0	180.0	180.0
		AIS A-C, SNL T1-S5	1	95.0	0	95.0	95.0	95.0
		AIS D	1	119.0	0	119.0	119.0	119.0
		AIS E	0	0	0	0	0	0
		Missing	35	94.4	62.0	85.0	14.0	228.0
		Not Collected	1	26.0	0	26.0	26.0	26.0
		All	40	96.7	61.0	93.5	14.0	228.0
All	SCI	Neurology at Discharge						
	Non-Traumatic	AIS A-C, SNL C1-C4	0	0	0	0	0	0
		AIS A-C, SNL C5-C8	0	0	0	0	0	0
		AIS A-C, SNL T1-S5	0	0	0	0	0	0
		AIS D	8	48.9	16.2	45.0	33.0	83.0
		AIS E	2	94.0	5.7	94.0	90.0	98.0
		Missing	19	108.7	62.6	93.0	22.0	240.0
		Not Collected	2	127.0	152.7	127.0	19.0	235.0
		All	31	93.5	62.8	83.0	19.0	240.0
	Traumatic	Neurology at Discharge						
		AIS A-C, SNL C1-C4	6	115.3	18.2	112.0	97.0	142.0
		AIS A-C, SNL C5-C8	3	112.7	59.3	90.0	68.0	180.0
		AIS A-C, SNL T1-S5	7	67.4	13.8	66.0	53.0	95.0
		AIS D	4	84.8	46.7	101.0	18.0	119.0
		AIS E	2	86.0	32.5	86.0	63.0	109.0
		Missing	38	91.8	50.4	93.0	14.0	193.0
		Not Collected	10	27.6	23.9	22.0	5.0	74.0
		All	70	82.5	48.3	85.5	5.0	193.0
	All	Neurology at Discharge						
		AIS A-C, SNL C1-C4	6	115.3	18.2	112.0	97.0	142.0
		AIS A-C, SNL C5-C8	3	112.7	59.3	90.0	68.0	180.0
		AIS A-C, SNL T1-S5	7	67.4	13.8	66.0	53.0	95.0
		AIS D	12	60.8	32.8	48.5	18.0	119.0
		AIS E	4	90.0	19.6	94.0	63.0	109.0

		Missing	57	97.5	54.8	93.0	14.0	240.0
		Not Collected	12	44.2	63.9	22.0	5.0	235.0
		All	101	85.9	53.1	84.0	5.0	240.0

- Neurology data are presented for 32/101 participants with complete records.
- Missing data are due to data not being entered prior to extract, or ongoing data cleaning.

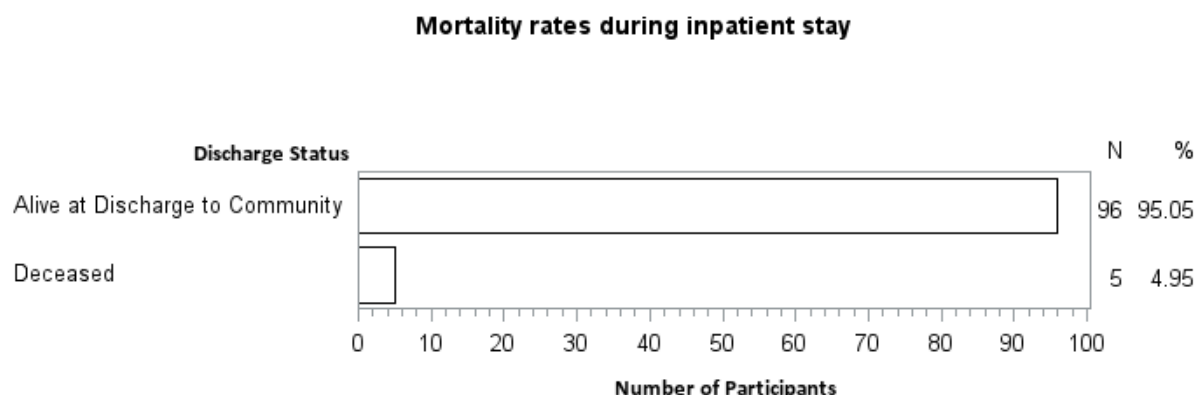
9.5 Mortality rates during inpatient stay

- Of the 101 participants with complete records across both NZSCIR sites, 5 (5.0%) died during their inpatient stay (including both acute and rehabilitation care); of the 61 participants at CMH, 5 (8.2%) of them died during their inpatient stay. Of the 40 participants at CDHB, none of them died during their inpatient stay.

Due to potential differences in participant population characteristics between the two sites, mortality rates may not be directly comparable.

Mortality rates during inpatient stay		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Discharge Status						
Non-Traumatic	Alive at Discharge to Community	21	34.4	10	25.0	31	30.7
	Deceased	0	0.0	0	0.0	0	0.0
	All	21	34.4	10	25.0	31	30.7
Traumatic	Discharge Status						
	Alive at Discharge to Community	35	57.4	30	75.0	65	64.4
	Deceased	5	8.2	0	0.0	5	5.0
	All	40	65.6	30	75.0	70	69.3
All	Discharge Status						
	Alive at Discharge to Community	56	91.8	40	100.0	96	95.0
	Deceased	5	8.2	0	0.0	5	5.0
	All	61	100.0	40	100.0	101	100.0

- Data are shown for 101 participants with complete records.



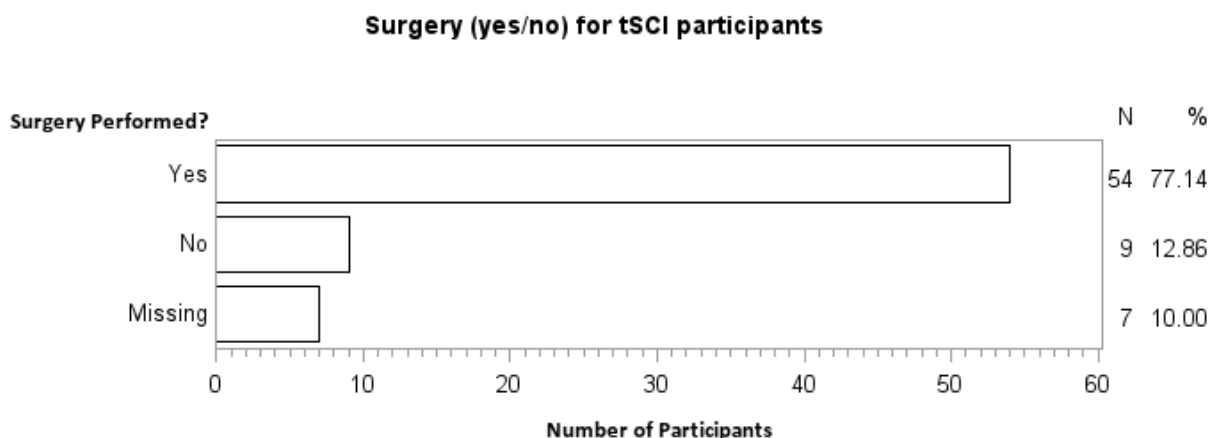
10 What are the timeframes from injury to decompression for someone admitted to a specialist spinal centre in NZ, and does this influence outcome?

10.1 Surgery (yes/no)

Surgery (yes/no) data are available for 63/70 traumatic participants across both NZSCIR sites with complete records, 22/30 (73.3%) participants at CDHB and 32/40 (80%) at CMH participants had surgery.

For tSCI participants	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
Surgery Performed or Not						
Yes	32	80.0	22	73.3	54	77.1
No	5	12.5	4	13.3	9	12.9
Missing	3	7.5	4	13.3	7	10.0
All	40	100.0	30	100.0	70	100.0

- Data are shown for 63/70 traumatic SCI participants with complete records.
- Surgeries performed at non-supra-regional spinal facilities were included.
- Missing data are due to data not being entered prior to extract, or ongoing data cleaning.



10.2 Time to decompression

Of the 54 traumatic participants with complete records across both NZSCIR sites who had surgery performed ('Consent': 39, 'No Consent': 15), 20 participants had time to decompression data available. Of the 34 participants who did not have time to decompression data available, 4 were marked as 'No decompression done' and 20 were 'No Consent' so time to decompression data were not collected. The remaining 10 participants had missing time to decompression data.

For tSCI participants	Time from Injury to Decompression (Hours)					
	N	Mean	Std	Median	Min	Max
Enrolled at						
CMH	9	14.8	9.8	12.0	6.0	36.0
CDHB	11	54.6	71.2	24.5	4.8	237.1
All	20	36.7	55.9	16.3	4.8	237.1

10.3 Time to first spinal surgery

Of 54 traumatic participants at both NZSCIR facilities ('Consent': 39, 'No Consent': 15) who had spinal surgery performed, time to first spinal surgery data are available for 27 participants (50%) and are not available for 27 ('No Consent': 15) (50%).

There are multiple clinical factors influencing time to first surgery. Surgical intervention becomes less time-sensitive dependent on the injury characteristics and treatment prior to surgery. However, current best practice internationally is for surgery to be undertaken within 24 hours (Dvorak et al, 2015; Fehlings et al, 2012).

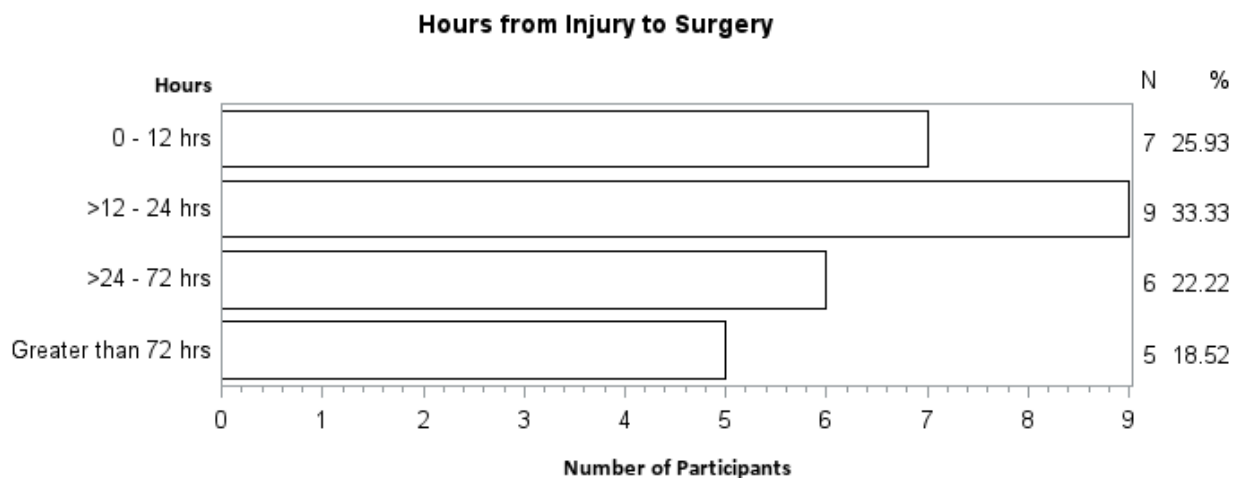
For tSCI participants	Time from Injury to First Surgery (Hours)
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	N	Mean	Std	Median	Min	Max
Enrolled at						
CMH	11	20.7	29.3	12.8	5.0	107.0
CDHB	16	54.8	59.5	27.4	3.8	235.8
All	27	40.9	51.6	22.3	3.8	235.8

Time from injury to first surgery was further grouped as follows:

For tSCI participants	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
Hours from Injury to First Surgery						
0 - 12 hrs	5	45.5	2	12.5	7	25.9
>12 - 24 hrs	4	36.4	5	31.3	9	33.3
>24 - 72 hrs	1	9.1	5	31.3	6	22.2
Greater than 72 hrs	1	9.1	4	25.0	5	18.5
All	11	100.0	16	100.0	27	100.0

- Data are shown for participants with complete records where both time of injury and time of surgery are available.



11 Does early tracheostomy reduce the time spent on a ventilator in people with SCI admitted to a specialist spinal centre in NZ?

- Due to the low numbers of consented, tracheostomied and/or ventilated participants conclusions cannot be drawn from such a small sample size.

11.1 Tracheostomy performed

For tSCI participants	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
Tracheostomy						
Yes	2	8.0	3	12.0	5	10.0
No	23	92.0	21	84.0	44	88.0
Missing	0	0.0	1	4.0	1	2.0
All	25	100.0	25	100.0	50	100.0

- Data are shown for all 50 traumatic SCI consented participants with complete records.

Of 50 consented traumatic SCI participants with complete records, 5 had tracheostomies. Time from injury to first tracheostomy was summarised as follows:

For tSCI participants	Days from Injury to First Tracheostomy					
	N	Mean	Std	Median	Min	Max
Enrolled at						
CMH	2	4.0	1.4	4.0	3.0	5.0
CDHB	3	14.0	1.0	14.0	13.0	15.0
All	5	10.0	5.6	13.0	3.0	15.0

11.2 Days on ventilator

For tSCI participants	Days on Ventilator					
	N	Mean	Std	Median	Min	Max
Enrolled at						
CMH	2	35.0	14.1	35.0	25.0	45.0
CDHB	3	45.0	22.9	40.0	25.0	70.0
All	5	41.0	18.5	40.0	25.0	70.0

- Data are shown for consented participants with complete records, for whom ventilator use was recorded.

11.3 Time from injury to decannulation

For tSCI participants	Days from injury to decannulation					
	N	Mean	Std	Median	Min	Max

Enrolled at						
CMH	2	38.5	13.4	38.5	29.0	48.0
CDHB	3	45.7	24.0	40.0	25.0	72.0
All	5	42.8	18.7	40.0	25.0	72.0

- Data are shown for consented participants with complete records, for whom a tracheostomy had been performed.

11.4 Ventilation at discharge to community

For tSCI participants	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
Ventilation at Discharge						
Yes, less than 24 hrs per day at discharge	1	4.0	0	0.0	1	2.0
No	20	80.0	23	92.0	43	86.0
Missing	4	16.0	2	8.0	6	12.0
All	25	100.0	25	100.0	50	100.0

- Data are shown for all 50 traumatic SCI consented participants with complete records.
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.

12 Change in AIS from admission to discharge to community

AIS change from admission to discharge to community is analysed for three single neurological levels (SNL) at admission categories: C1-C4, C5-C8 and T1-S5 separately. Tables below reflect data for the 101 participants with complete data, where neurological data are available.

12.1 Single neurological level (SNL) = C1 - C4 at admission

The following tables show how AIS changed from admission to discharge to community across both NZSCIR sites.

AIS at Discharge												All	
A		B		C		D		E		Missing			
N	%	N	%	N	%	N	%	N	%	N	%	N	%

Enrolled at	AIS at Admission														
CMH	A	2	50.0	1	25.0	0	0.0	0	0.0	0	0.0	1	25.0	4	100.0
	B	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0	2	100.0
	C	0	0.0	0	0.0	0	0.0	2	50.0	0	0.0	2	50.0	4	100.0
	D	0	0.0	0	0.0	1	14.3	2	28.6	2	28.6	2	28.6	7	100.0
	Missing	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	1	100.0
	All	3	16.7	2	11.1	1	5.6	5	27.8	2	11.1	5	27.8	18	100.0
CDHB	AIS at Admission														
	A	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0	1	50.0	2	100.0
	B	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	C	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	D	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	100.0	2	100.0
	Missing	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	All	1	25.0	0	0.0	0	0.0	0	0.0	0	0.0	3	75.0	4	100.0
All	AIS at Admission														
	A	3	50.0	1	16.7	0	0.0	0	0.0	0	0.0	2	33.3	6	100.0
	B	1	50.0	1	50.0	0	0.0	0	0.0	0	0.0	0	0.0	2	100.0
	C	0	0.0	0	0.0	0	0.0	2	50.0	0	0.0	2	50.0	4	100.0
	D	0	0.0	0	0.0	1	11.1	2	22.2	2	22.2	4	44.4	9	100.0
	Missing	0	0.0	0	0.0	0	0.0	1	100.0	0	0.0	0	0.0	1	100.0
	All	4	18.2	2	9.1	1	4.5	5	22.7	2	9.1	8	36.3	22	100.0

- Missing data are due to data not being entered prior to extract, or ongoing data cleaning.

The following tables show time from injury to first neurology examination and time from injury to last neurology examination:

Single Neurological Level (SNL) = C1 - C4 at admission							
		Days from Injury to First Neurology Exam					
		N	Mean	Std	Median	Min	Max
Enrolled at	SCI	4	24.8	6.4	26.0	17.0	30.0

		Days from Injury to First Neurology Exam					
		N	Mean	Std	Median	Min	Max
CMH	Non-Traumatic						
	Traumatic	13	6.3	5.1	5.0	1.0	21.0
	All	17	10.6	9.6	7.0	1.0	30.0
CDHB	SCI						
	Non-Traumatic	0	0	0	0	0	0
	Traumatic	4	2.5	2.4	1.5	1.0	6.0
	All	4	2.5	2.4	1.5	1.0	6.0
All	SCI						
	Non-Traumatic	4	24.8	6.4	26.0	17.0	30.0
	Traumatic	17	5.4	4.8	4.0	1.0	21.0
	All	21	9.1	9.2	6.0	1.0	30.0

Single Neurological Level (SNL) = C1 - C4 at Discharge

		Days from Injury to Last Neurology Exam					
		N	Mean	Std	Median	Min	Max
Enrolled at	SCI						
CMH	Non-Traumatic	2	48.0	5.7	48.0	44.0	52.0
	Traumatic	7	91.1	37.4	95.0	18.0	128.0
	All	9	81.6	37.6	90.0	18.0	128.0
CDHB	SCI						
	Non-Traumatic	0	0	0	0	0	0
	Traumatic	1	142.0	0	142.0	142.0	142.0
	All	1	142.0	0	142.0	142.0	142.0
All	SCI						
	Non-Traumatic	2	48.0	5.7	48.0	44.0	52.0
	Traumatic	8	97.5	39.0	105.0	18.0	142.0
	All	10	87.6	40.3	92.5	18.0	142.0

- Time from injury to first/last neurology examination was calculated by rounding up the value to the closest integer. For example, for participants who had their first neurology examination done on the day of injury, time from injury to first neurology examination is 1 day.

12.2 Single neurological level (SNL) = C5 – C8 at admission

For participants with a SNL at admission of C5-C8, AIS change from admission to discharge to community was analysed in the following table:

		AIS at Discharge												All	
		A		B		C		D		E		Missing			
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
Enrolled at	AIS at Admission														
CMH	A	1	20.0	0	0.0	1	20.0	0	0.0	1	20.0	2	40.0	5	100.0
	B	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	1	100.0
	C	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	2	100.0	2	100.0
	D	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	1	100.0
	All	1	11.1	0	0.0	1	11.1	0	0.0	1	11.1	6	66.7	9	100.0
CDHB	AIS at Admission														
	A	0	0.0	1	100.0	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0
	B	0	0.0	0	0.0	0	0.0	1	50.0	0	0.0	1	50.0	2	100.0
	C	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	1	100.0	1	100.0
	D	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	100.0	3	100.0
	All	0	0.0	1	14.3	0	0.0	1	14.3	0	0.0	5	71.4	7	100.0
All	AIS at Admission														
	A	1	16.7	1	16.7	1	16.7	0	0.0	1	16.7	2	33.4	6	100.0
	B	0	0.0	0	0.0	0	0.0	1	33.3	0	0.0	2	66.7	3	100.0
	C	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	3	100.0	3	100.0
	D	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	4	100.0	4	100.0
	All	1	6.3	1	6.3	1	6.3	1	6.3	1	6.3	11	68.8	16	100.0

- Missing data are due to data not being entered prior to extract, or ongoing data cleaning.

Time from injury to first neurology examination and time from injury to last neurology examination are summarised as follows:

Single Neurological Level (SNL) = C5 - C8 at admission							
Enrolled at	SCI	Days from Injury to First Neurology Exam					
		N	Mean	Std	Median	Min	Max
CMH	Non-Traumatic	2	31.5	37.5	31.5	5.0	58.0
	Traumatic	7	2.7	2.9	2.0	1.0	9.0
	All	9	9.1	18.5	2.0	1.0	58.0
CDHB	SCI						
	Non-Traumatic	1	20.0	0	20.0	20.0	20.0
	Traumatic	6	1.3	0.5	1.0	1.0	2.0
	All	7	4.0	7.1	1.0	1.0	20.0
All	SCI	3	27.7	27.3	20.0	5.0	58.0

		Days from Injury to First Neurology Exam					
		N	Mean	Std	Median	Min	Max
	Non-Traumatic						
	Traumatic	13	2.1	2.2	1.0	1.0	9.0
	All	16	6.9	14.5	2.0	1.0	58.0

Single Neurological Level (SNL) = C5 - C8 at discharge
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		Days from Injury to Last Neurology Exam					
		N	Mean	Std	Median	Min	Max
Enrolled at	SCI						
CMH	Non-Traumatic	1	93.0	0	93.0	93.0	93.0
	Traumatic	4	101.5	49.5	88.0	61.0	169.0
	All	5	99.8	43.1	93.0	61.0	169.0
CDHB	SCI						
	Non-Traumatic	0	0	0	0	0	0
	Traumatic	2	148.5	44.5	148.5	117.0	180.0
	All	2	148.5	44.5	148.5	117.0	180.0
All	SCI						
	Non-Traumatic	1	93.0	0	93.0	93.0	93.0
	Traumatic	6	117.2	49.6	112.5	61.0	180.0
	All	7	113.7	46.2	108.0	61.0	180.0

12.3 Single neurological level (SNL) = T1 – S5 at admission

For participants with SNL at admission between T1-S5, AIS change from admission to discharge to community was analysed in the following table:

		AIS at Discharge								All	
		A		D		E		Missing			
		N	%	N	%	N	%	N	%	N	%
Enrolled at	AIS at Admission										
CMH	A	1	33.3	0	0.0	0	0.0	2	66.7	3	100.0
	B	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	C	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	D	0	0.0	0	0.0	0	0.0	4	100.0	4	100.0
	Missing	0	0.0	0	0.0	0	0.0	4	100.0	4	100.0
	All	1	9.1	0	0.0	0	0.0	10	90.9	11	100.0
CDHB	AIS at Admission										
	A	2	25.0	0	0.0	0	0.0	6	75.0	8	100.0
	B	0	0.0	1	100.0	0	0.0	0	0.0	1	100.0
	C	2	40.0	1	20.0	0	0.0	2	40.0	5	100.0
	D	1	12.5	4	50.0	1	12.5	2	25.0	8	100.0

		AIS at Discharge								All	
		A		D		E		Missing			
		N	%	N	%	N	%	N	%	N	%
	Missing	0	0.0	0	0.0	0	0.0	1	100.0	1	100.0
	All	5	21.7	6	26.1	1	4.3	11	47.8	23	100.0
All	AIS at Admission										
	A	3	27.3	0	0.0	0	0.0	8	72.7	11	100.0
	B	0	0.0	1	100.0	0	0.0	0	0.0	1	100.0
	C	2	40.0	1	20.0	0	0.0	2	40.0	5	100.0
	D	1	8.3	4	33.3	1	8.3	6	50.0	12	100.0
	Missing	0	0.0	0	0.0	0	0.0	5	100.0	5	100.0
	All	6	17.6	6	17.6	1	2.9	21	61.8	34	100.0

Time from injury to first neurology examination and time from injury to last neurology examination are summarised as follows:

Single Neurological Level (SNL) = T1-S5 at admission

		Days from Injury to First Neurology Exam					
		N	Mean	Std	Median	Min	Max
Enrolled at	SCI						
CMH	Non-Traumatic	4	27.5	41.6	10.0	1.0	89.0
	Traumatic	7	8.4	15.4	2.0	1.0	43.0
	All	11	15.4	27.5	2.0	1.0	89.0
CDHB	SCI						
	Non-Traumatic	11	15.8	12.6	13.0	1.0	40.0
	Traumatic	12	6.3	9.0	3.0	1.0	33.0
	All	23	10.8	11.7	6.0	1.0	40.0
All	SCI						
	Non-Traumatic	15	18.9	22.7	13.0	1.0	89.0
	Traumatic	19	7.1	11.4	3.0	1.0	43.0
	All	34	12.3	18.0	3.5	1.0	89.0

Single Neurological Level (SNL) = T1-S5 at Discharge

		Days from Injury to Last Neurology Exam					
		N	Mean	Std	Median	Min	Max
Enrolled at	SCI						
CMH	Non-Traumatic	0	0	0	0	0	0

		Days from Injury to Last Neurology Exam					
		N	Mean	Std	Median	Min	Max
	Traumatic	2	64.0	42.4	64.0	34.0	94.0
	All	2	64.0	42.4	64.0	34.0	94.0
CDHB	SCI	5	47.0	19.7	40.0	33.0	81.0
	Non-Traumatic						
	Traumatic	6	60.7	5.9	60.5	52.0	68.0
	All	11	54.5	14.9	57.0	33.0	81.0
All	SCI	5	47.0	19.7	40.0	33.0	81.0
	Non-Traumatic						
	Traumatic	8	61.5	16.9	60.5	34.0	94.0
	All	13	55.9	18.7	57.0	33.0	94.0

- Time from injury to first/last neurology examination was calculated by rounding up the value to the closest integer. For example, for participants who had their first neurology examination done on the day of injury, time from injury to first neurology examination is 1 day.

13 What are the functional changes in SCIM between admission and discharge of a specialist spinal centre in NZ?

13.1 SCIM outcomes from admission to discharge

The Spinal Cord Independence Measure (SCIM) is an outcome measure that assesses various activities of daily living. It has been specifically designed for the SCI population. The SCIM is composed of 19 items that assess three domains: Self-care, Respiration and sphincter management; and Mobility. Clinicians (nurses, occupational therapists and physiotherapists) complete relevant sections for each participant at rehab admission and rehab discharge. An improvement of at least four points of the total SCIM is needed to obtain a small significant improvement and of 10 points to obtain a substantial clinical improvement (Scivoletto, 2013).

The SCIM score change from rehab admission to rehab discharge was available for 23 of a potential 64 consented participants. Mean score change was 39.2 with a median score change of 42, indicating substantial clinical improvements.

Changes from a baseline for consented participants with complete records from admission to discharge shown as following:

		SCIM Total Change from Baseline					
		N	Mean	Std	Median	Min	Max
Enrolling at	SCI						
CMH	Non-Traumatic	1	49.0	-	49.0	49.0	49.0
	Traumatic	9	31.2	19.5	30.0	5.0	61.0
	All	10	33.0	19.3	36.0	5.0	61.0
CDHB	SCI						
	Non-Traumatic	3	37.0	13.5	36.0	24.0	51.0
	Traumatic	10	46.1	22.5	48.0	12.0	73.0
	All	13	44.0	20.7	44.0	12.0	73.0
All	SCI						
	Non-Traumatic	4	40.0	12.6	42.5	24.0	51.0
	Traumatic	19	39.1	21.9	42.0	5.0	73.0
	All	23	39.2	20.4	42.0	5.0	73.0

- Participant SCIM total score change from baseline data are available for 23/64 consented participants across both NZSCIR sites. Total SCIM scores are combined self-care, respiratory/sphincter management, and mobility sections. Total scores range from 0 to 100.

		Self-Care Change from Baseline					
		N	Mean	Std	Median	Min	Max
Enrolling at	SCI						
CMH	Non-Traumatic	4	4.8	5.0	4.5	0.0	10.0
	Traumatic	14	7.1	3.2	8.0	0.0	11.0
	All	18	6.6	3.7	8.0	0.0	11.0
CDHB	SCI						
	Non-Traumatic	4	6.0	6.5	4.5	0.0	15.0
	Traumatic	19	10.2	5.2	12.0	1.0	17.0
	All	23	9.5	5.6	8.0	0.0	17.0
All	SCI						
	Non-Traumatic	8	5.4	5.4	4.5	0.0	15.0
	Traumatic	33	8.9	4.7	8.0	0.0	17.0
	All	41	8.2	5.0	8.0	0.0	17.0

- Participant SCIM self-care section change from baseline data are available for 41/64 consented participants across both NZSCIR sites. Self-care covers feeding, bathing, dressing and grooming data points and has a total subscore range of 0-20.

		Resp/Sphincter Change from Baseline					
		N	Mean	Std	Median	Min	Max
Enrolling at	SCI						
CMH	Non-Traumatic	1	29.0	-	29.0	29.0	29.0
	Traumatic	11	14.6	11.5	19.0	0.0	29.0
	All	12	15.8	11.7	21.0	0.0	29.0
CDHB	SCI						
	Non-Traumatic	3	11.7	2.5	12.0	9.0	14.0
	Traumatic	14	13.9	9.5	17.0	0.0	25.0
	All	17	13.5	8.7	14.0	0.0	25.0
All	SCI						
	Non-Traumatic	4	16.0	8.9	13.0	9.0	29.0
	Traumatic	25	14.2	10.2	18.0	0.0	29.0
	All	29	14.4	9.9	16.0	0.0	29.0

- Participant SCIM resp/sphincter section change from baseline data are available for 29/64 consented participants across both NZSCIR sites. SCIM respiratory and sphincter section covers respiration, use of toilet, bladder and bowel management. It has a total subscore range of 0-40.

		Mobility Change from Baseline					
		N	Mean	Std	Median	Min	Max
Enrolling at	SCI						
CMH	Non-Traumatic	1	10.0	-	10.0	10.0	10.0
	Traumatic	9	11.4	6.3	12.0	3.0	23.0
	All	10	11.3	5.9	11.0	3.0	23.0
CDHB	SCI						
	Non-Traumatic	4	16.3	8.9	16.0	6.0	27.0
	Traumatic	12	20.3	9.3	17.5	8.0	32.0
	All	16	19.3	9.1	17.5	6.0	32.0
All	SCI						
	Non-Traumatic	5	15.0	8.2	13.0	6.0	27.0
	Traumatic	21	16.5	9.1	15.0	3.0	32.0
	All	26	16.2	8.8	14.5	3.0	32.0

- Participant SCIM mobility section change from baseline data are available for 26/64 consented participants across both NZSCIR sites. SCIM mobility section covers pressure relief, mobility indoors, outdoors, stairs, and transfers (bed to chair, chair to toilet chair, from chair to car, from ground). It has a total subscore range of 0-40.

14 What percentage of patients in NZ discharge from a specialist spinal centre as community ambulators (defined as “mobility outdoors more than 100 metres”)?

14.1 SCIM mobility section

Mobility Outdoors more than 100 metres?		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Community Ambulators						
Non-Traumatic	No	1	5.9	3	10.7	4	8.9
	Yes	2	11.8	3	10.7	5	11.1
	All	3	17.6	6	21.4	9	20.0
Traumatic	Community Ambulators						
	No	13	76.5	9	32.1	22	48.9
	Yes	1	5.9	13	46.4	14	31.1
	All	14	82.4	22	78.6	36	80.0
All	Community Ambulators						
	No	14	82.4	12	42.9	26	57.8
	Yes	3	17.6	16	57.1	19	42.2
	All	17	100.0	28	100.0	45	100.0

- Participant SCIM mobility section data are available for 45/64 consented participants with complete records across both NZSCIR sites.
- 42.2% of participants discharged as community ambulators. This type of rehabilitation is likely to influence length of stay. There is however is a high level of missing data making interpretation difficult.

15 What is the incidence of clinical health complications e.g. pressure injuries, pain, secondary health complications, identified in the acute, rehabilitation and community phases of SCI in NZ?

15.1 Complications

Complication data currently collected in the acute and rehab phases include pressure injuries, urinary tract infections, delirium, respiratory infection and pain.

15.1.1 Pressure injury (PI) data

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Any Pressure Injuries During Entire Stay?						
Non-Traumatic	Yes	0	0.0	2	7.1	2	3.4
	No	7	22.6	3	10.7	10	16.9
	Unknown	0	0.0	0	0.0	0	0.0
	All	7	22.6	5	17.9	12	20.3
Traumatic	Any Pressure Injuries During Entire Stay?						
	Yes	4	12.9	2	7.1	6	10.2
	No	19	61.3	20	71.4	39	66.1
	Unknown	1	3.2	1	3.6	2	3.4
	All	24	77.4	23	82.1	47	79.7
All	Any Pressure Injuries During Entire Stay?						
	Yes	4	12.9	4	14.3	8	13.6
	No	26	83.9	23	82.1	49	83.1
	Unknown	1	3.2	1	3.6	2	3.4
	All	31	100.0	28	100.0	59	100.0

- Data are available for 59/64 consented participants with complete records.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Any Pressure Injuries Present at Admission to Rehab?						
Non-Traumatic	Yes	0	0.0	1	3.4	1	1.7
	No	7	23.3	5	17.2	12	20.3
	All	7	23.3	6	20.7	13	22.0
Traumatic	Any Pressure Injuries Present at Admission to Rehab?						
	Yes	1	3.3	2	6.9	3	5.1
	No	22	73.3	21	72.4	43	72.9
	All	23	76.7	23	79.3	46	78.0
All	Any Pressure Injuries Present at Admission to Rehab?	1	3.3	3	10.3	4	6.8

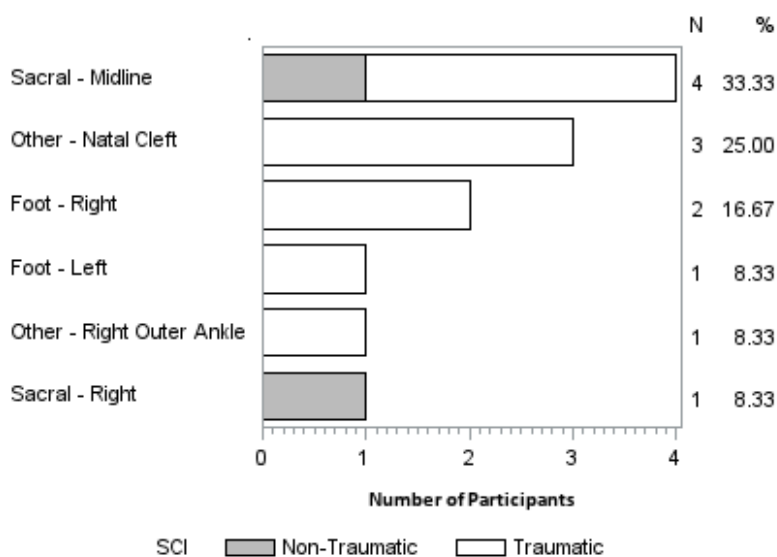
	Yes						
	No	29	96.7	26	89.7	55	93.2
	All	30	100.0	29	100.0	59	100.0

- Data are available for 59/64 consented participants with complete records.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Any Pressure Injuries During Rehab?						
Non-Traumatic	Yes	1	3.3	1	3.4	2	3.4
	No	6	20.0	5	17.2	11	18.6
	All	7	23.3	6	20.7	13	22.0
Traumatic	Any Pressure Injuries During Rehab?						
	Yes	4	13.3	1	3.4	5	8.5
	No	19	63.3	22	75.9	41	69.5
	All	23	76.7	23	79.3	46	78.0
All	Any Pressure Injuries During Rehab?						
	Yes	5	16.7	2	6.9	7	11.9
	No	25	83.3	27	93.1	52	88.1
	All	30	100.0	29	100.0	59	100.0

- Data are available for 59/64 consented participants with complete records.

Frequency of Pressure Injury Locations



- Location data was available for 10 participants (12 pressure injuries).

15.1.2 Urinary tract infection (UTI)

UTI incidence at acute and rehab was analysed in the following tables:

	UTI at Acute?								All	
	Yes		No		Missing		Not Collected			
	N	%	N	%	N	%	N	%	N	%
SCI										
Non-Traumatic	0	0.0	4	10.3	4	33.3	6	75.0	14	21.9
Traumatic	5	100.0	35	89.7	8	66.7	2	25.0	50	78.1
All	5	100.0	39	100.0	12	100.0	8	100.0	64	100.0

- Data are shown for 44/64 consented participants with complete records.
- Not Collected indicates that data were only collected at Rehab for these participants.

	UTI at Rehab?								All	
	Yes		No		Unknown		Missing			
	N	%	N	%	N	%	N	%	N	%
SCI										
Non-Traumatic	4	20.0	6	21.4	0	0.0	4	26.7	14	21.9
Traumatic	16	80.0	22	78.6	1	100.0	11	73.3	50	78.1
All	20	100.0	28	100.0	1	100.0	15	100.0	64	100.0

- Data are shown for 49/64 consented participants with complete records.

		UTI at Rehab								All	
		Yes		No		Unknown		Missing			
		N	%	N	%	N	%	N	%	N	%
SCI	UTI at Acute										
Non-Traumatic	Yes	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
	No	2	10.0	2	7.1	0	0.0	0	0.0	4	6.3
	Missing	1	5.0	1	3.6	0	0.0	2	13.3	4	6.3
	Not Collected	1	5.0	3	10.7	0	0.0	2	13.3	6	9.4
	All	4	20.0	6	21.4	0	0.0	4	26.7	14	21.9
Traumatic	UTI at Acute										
	Yes	2	10.0	1	3.6	0	0.0	2	13.3	5	7.8
	No	13	65.0	19	67.9	1	100.0	2	13.3	35	54.7
	Missing	1	5.0	1	3.6	0	0.0	6	40.0	8	12.5
	Not Collected	0	0.0	1	3.6	0	0.0	1	6.7	2	3.1
	All	16	80.0	22	78.6	1	100.0	11	73.3	50	78.1

		UTI at Rehab								All	
		Yes		No		Unknown		Missing			
		N	%	N	%	N	%	N	%	N	%
All	UTI at Acute										
	Yes	2	10.0	1	3.6	0	0.0	2	13.3	5	7.8
	No	15	75.0	21	75.0	1	100.0	2	13.3	39	60.9
	Missing	2	10.0	2	7.1	0	0.0	8	53.3	12	18.8
	Not Collected	1	5.0	4	14.3	0	0.0	3	20.0	8	12.5
	All	20	100.0	28	100.0	1	100.0	15	100.0	64	100.0

- Data are shown for 44/64 consented participants with complete records.
- Not Collected indicates that data were only collected at Rehab for these participants.

15.1.3 Delirium

Delirium incidence at acute and rehab was analysed in the following tables:

	Delirium at Acute?								All	
	Yes		No		Missing		Not Collected			
	N	%	N	%	N	%	N	%	N	%
SCI										
Non-Traumatic	0	0.0	4	10.5	4	36.4	6	75.0	14	21.9
Traumatic	7	100.0	34	89.5	7	63.6	2	25.0	50	78.1
All	7	100.0	38	100.0	11	100.0	8	100.0	64	100.0

- Data are shown for 55/64 consented participants with complete records.
- Not Collected indicates that data were only collected at Rehab for these participants.

		Delirium at Rehab?						All	
		Yes		No		Missing			
		N	%	N	%	N	%	N	%
SCI									
Non-Traumatic		0	0.0	10	20.8	4	26.7	14	21.9
Traumatic		1	100.0	38	79.2	11	73.3	50	78.1
All		1	100.0	48	100.0	15	100.0	64	100.0

- Data are shown for 49/64 consented participants with complete records.

		Delirium at Rehab						All	
		Yes		No		Missing			
		N	%	N	%	N	%	N	%
SCI	Delirium at Acute								
Non-Traumatic	Yes	0	0.0	0	0.0	0	0.0	0	0.0
	No	0	0.0	4	8.3	0	0.0	4	6.3
	Missing	0	0.0	2	4.2	2	13.3	4	6.3
	Not Collected	0	0.0	4	8.3	2	13.3	6	9.4
	All	0	0.0	10	20.8	4	26.7	14	21.9
Traumatic	Delirium at Acute								
	Yes	1	100.0	4	8.3	2	13.3	7	10.9
	No	0	0.0	32	66.7	2	13.3	34	53.1
	Missing	0	0.0	1	2.1	6	40.0	7	10.9
	Not Collected	0	0.0	1	2.1	1	6.7	2	3.1
	All	1	100.0	38	79.2	11	73.3	50	78.1
All	Delirium at Acute								
	Yes	1	100.0	4	8.3	2	13.3	7	10.9
	No	0	0.0	36	75.0	2	13.3	38	59.4
	Missing	0	0.0	3	6.3	8	53.3	11	17.2
	Not Collected	0	0.0	5	10.4	3	20.0	8	12.5
	All	1	100.0	48	100.0	15	100.0	64	100.0

- Data are shown for 49/64 consented participants with complete records.
- Not Collected indicates that data were only collected at Rehab for these participants.

15.1.4 Pulmonary complications and conditions

The presence of a pulmonary complication/condition in the acute or rehabilitation phase is displayed in the following tables. Pulmonary complications and conditions include: pneumonia, venothromboembolic events (including pulmonary embolus and DVT), obstructive sleep apnea and other respiratory conditions.

		Pulmonary complications and conditions at Acute?							All	
		Yes		No		Missing		Not Collected		
		N	%	N	%	N	%	N	%	
SCI										
Non-Traumatic		0	0.0	6	18.8	2	28.6	6	66.7	14
Traumatic		16	100.0	26	81.3	6	75.0	2	25.0	50
All		16	100.0	32	100.0	8	100.0	8	100.0	64

- Data are shown for 48/64 consented participants with complete records.
- Not Collected indicates that data were only collected at Rehab for these participants.

	Pulmonary complications and conditions at Rehab?						All	
	Yes		No		Missing			
	N	%	N	%	N	%	N	%
SCI								
Non-Traumatic	2	25.0	8	18.6	4	30.8	14	21.9
Traumatic	6	75.0	35	81.4	9	69.2	50	78.1
All	8	100.0	43	100.0	13	100.0	64	100.0

- Data are shown for 51/64 consented participants with complete records.

		Pulmonary complications and conditions at Rehab						All	
		Yes		No		Missing			
		N	%	N	%	N	%	N	%
SCI	Pulmonary complications and conditions at Acute								
Non-Traumatic	Yes	0	0.0	0	0.0	0	0.0	0	0.0
	No	2	33.3	3	50.0	1	16.7	6	100.0
	Missing	0	0.0	1	50.0	1	50.0	2	100.0
	Not Collected	0	0.0	4	66.7	2	33.3	6	100.0
	All	2	14.3	8	57.1	4	28.6	14	100.0
Traumatic	Respiratory at Acute								
	Yes	1	6.3	13	81.3	2	12.5	16	100.0
	No	5	19.2	20	76.9	1	3.8	26	100.0
	Missing	0	0.0	1	16.7	5	83.3	6	100.0
	Not Collected	0	0.0	1	50.0	1	50.0	2	100.0
	All	6	12.0	35	70.0	9	18.0	50	100.0
All	Respiratory at Acute								
	Yes	1	6.3	13	81.3	2	12.5	16	100.0
	No	7	21.9	23	71.9	2	6.3	32	100.0
	Missing	0	0.0	2	25.0	6	75.0	8	100.0
	Not Collected	0	0.0	5	62.5	3	37.5	8	100.0
	All	8	12.5	43	67.2	13	20.3	64	100.0

- Data are shown for 48/64 consented participants with complete records.
- Not Collected indicates that data were only collected at Rehab for these participants.

15.1.5 Pain

Pain presence at discharge to community was analysed in the following table:

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Any Pain? (From Rehab Final Review)						
Non-Traumatic	Yes	3	33.3	6	66.7	9	100.0
	No	3	75.0	1	25.0	4	100.0
	Unknown	0	0.0	0	0.0	0	0
	Missing	1	100.0	0	0.0	1	100.0
	All	7	50.0	7	50.0	14	100.0
Traumatic	Any Pain? (From Rehab Final Review)						
	Yes	18	58.1	13	41.9	31	100.0
	No	2	20.0	8	80.0	10	100.0
	Unknown	1	50.0	1	50.0	2	100.0
	Missing	4	57.1	3	42.9	7	100.0
	All	25	50.0	25	50.0	50	100.0
All	Any Pain? (From Rehab Final Review)						
	Yes	21	52.5	19	47.5	40	100.0
	No	5	35.7	9	64.3	14	100.0
	Unknown	1	50.0	1	50.0	2	100.0
	Missing	5	62.5	3	37.5	8	100.0
	All	32	50.0	32	50.0	64	100.0

- Data are shown for 56/64 consented participants with complete records.

16 What are patient self-efficacy levels on discharge from a specialist spinal centre in NZ, and do they change once in the community?

- The 10 question General Efficacy Scale is performed at discharge from a specialist spinal centre with consented participants. The higher the score, the higher the participants generalised sense of self-efficacy. This data has not been compared internationally or interpreted currently. Community data (and comparisons/interpretations) will be available in future reports.

		General Efficacy Scale Mean Score					
		N	Mean	Std	Median	Min	Max
Enrolled at	SCI						
CMH	Non-Traumatic	4	3.3	0.6	3.5	2.5	3.9
	Traumatic	19	3.4	0.5	3.4	2.1	4.0
	All	23	3.4	0.5	3.4	2.1	4.0
CDHB	SCI	7	3.4	0.5	3.3	2.6	4.0

	Non-Traumatic						
	Traumatic	21	3.3	0.4	3.2	2.5	3.9
	All	28	3.3	0.4	3.3	2.5	4.0
All	SCI						
	Non-Traumatic	11	3.3	0.5	3.3	2.5	4.0
	Traumatic	40	3.3	0.4	3.4	2.1	4.0
	All	51	3.3	0.4	3.4	2.1	4.0

- Data are available for 51/64 consented participants with complete records.
- Mean score was calculated as the mean of the 10 individual items in the General Efficacy Scale, where no more than 3 responses were missing, as per the official documentation: http://userpage.fu-berlin.de/health/faq_gse.pdf.

17 Discharge to Community

All data analysed in this section was collected at discharge to community from the last participating NZSCIR site.

17.1 Participant assistive equipment type at discharge

- Those with traumatic SCI were more likely to receive assistive equipment on discharge than those with non-traumatic SCI (230 equipment aids for 50 traumatic participants versus 36 equipment aids for 12 non-traumatic participants). Bathroom aids (e.g., aids used to perform personal care activities in the bathroom, e.g., commode, bath bench, grab bars) were the most common equipment allocated on discharge. Activities of daily living (ADL) aids (e.g., long handled reacher, adapted utensils, adapted clothing, modified work environment) were the second most prescribed equipment group. 40 wheelchairs (25 manual and 15 power) and 18 walking aids (e.g., cane, crutches, walker, etc.) were allocated over both sites.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Assistive Equipment						
Non-Traumatic	Activities of daily living aids	4	2.6	2	1.8	6	2.3
	Bathroom aids	5	3.2	4	3.6	9	3.4
	Bedroom aids	1	0.6	1	0.9	2	0.8
	Cervical orthosis	0	0.0	0	0.0	0	0.0
	Communication devices	0	0.0	0	0.0	0	0.0
	Environmental controls	0	0.0	0	0.0	0	0.0
	Exercise equipment-FES bike	0	0.0	0	0.0	0	0.0

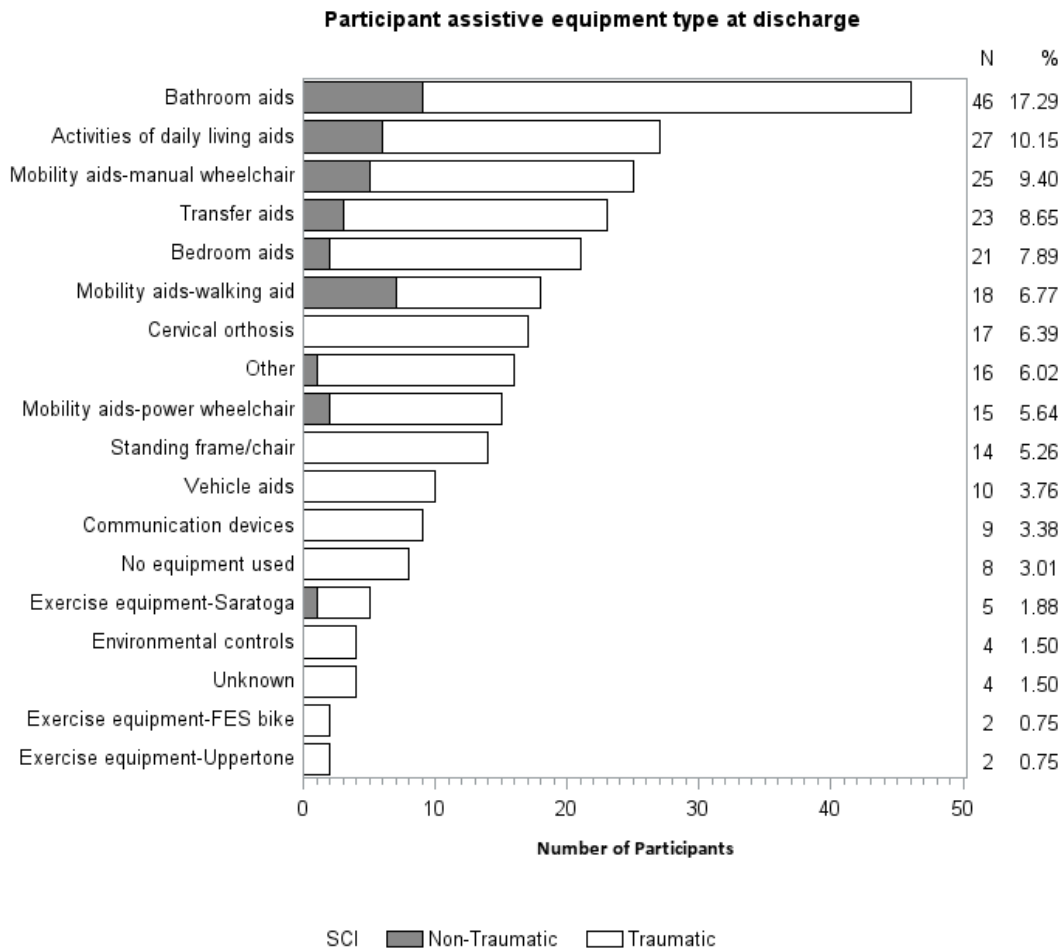
		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
	Exercise equipment-Saratoga	1	0.6	0	0.0	1	0.4
	Exercise equipment-Uppertone	0	0.0	0	0.0	0	0.0
	Mobility aids-manual wheelchair	3	1.9	2	1.8	5	1.9
	Mobility aids-power wheelchair	0	0.0	2	1.8	2	0.8
	Mobility aids-walking aid	4	2.6	3	2.7	7	2.6
	Standing frame/chair	0	0.0	0	0.0	0	0.0
	Transfer aids	2	1.3	1	0.9	3	1.1
	Vehicle aids	0	0.0	0	0.0	0	0.0
	Other	0	0.0	1	0.9	1	0.4
	No equipment used	0	0.0	0	0.0	0	0.0
	Unknown	0	0.0	0	0.0	0	0.0
	All	20	12.9	16	14.4	36	13.5
	Traumatic	Assistive Equipment					
Activities of daily living aids		14	9.0	7	6.3	21	7.9
Bathroom aids		19	12.3	18	16.2	37	13.9
Bedroom aids		10	6.5	9	8.1	19	7.1
Cervical orthosis		10	6.5	7	6.3	17	6.4
Communication devices		6	3.9	3	2.7	9	3.4
Environmental controls		4	2.6	0	0.0	4	1.5
Exercise equipment-FES bike		1	0.6	1	0.9	2	0.8
Exercise equipment-Saratoga		3	1.9	1	0.9	4	1.5
Exercise equipment-Uppertone		1	0.6	1	0.9	2	0.8
Mobility aids-manual wheelchair		10	6.5	10	9.0	20	7.5
Mobility aids-power wheelchair		10	6.5	3	2.7	13	4.9
Mobility aids-walking aid		1	0.6	10	9.0	11	4.1
Standing frame/chair		9	5.8	5	4.5	14	5.3
Transfer aids		13	8.4	7	6.3	20	7.5
Vehicle aids		6	3.9	4	3.6	10	3.8
Other		13	8.4	2	1.8	15	5.6
No equipment used		1	0.6	7	6.3	8	3.0
Unknown		4	2.6	0	0.0	4	1.5
All		135	87.1	95	85.6	230	86.5
All	Assistive Equipment						
	Activities of daily living aids	18	11.6	9	8.1	27	10.2
	Bathroom aids	24	15.5	22	19.8	46	17.3
	Bedroom aids	11	7.1	10	9.0	21	7.9
	Cervical orthosis	10	6.5	7	6.3	17	6.4
	Communication devices	6	3.9	3	2.7	9	3.4
	Environmental controls	4	2.6	0	0.0	4	1.5

	Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
Exercise equipment-FES bike	1	0.6	1	0.9	2	0.8
Exercise equipment-Saratoga	4	2.6	1	0.9	5	1.9
Exercise equipment-Uppertone	1	0.6	1	0.9	2	0.8
Mobility aids-manual wheelchair	13	8.4	12	10.8	25	9.4
Mobility aids-power wheelchair	10	6.5	5	4.5	15	5.6
Mobility aids-walking aid	5	3.2	13	11.7	18	6.8
Standing frame/chair	9	5.8	5	4.5	14	5.3
Transfer aids	15	9.7	8	7.2	23	8.6
Vehicle aids	6	3.9	4	3.6	10	3.8
Other	13	8.4	3	2.7	16	6.0
No equipment used	1	0.6	7	6.3	8	3.0
Unknown	4	2.6	0	0.0	4	1.5
All	155	100.0	111	100.0	266	100.0

- Participant assistive equipment type data are available for 62/64 consented participants with complete records across both NZSCIR sites.
- Assistive equipment data are not collected if a participant did not provide consent to NZSCIR participation.
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.
- Participants may have multiple Assistive Equipment Type types; for example, one participant may have both 'Mobility aids - manual wheelchair' and 'Mobility aids - power wheelchair' types of equipment.

The number of unique participants included in the table above are summarised below:

	Participants Enrolled at				All	
	CMH		CDHB			
	N	%	N	%	N	%
SCI						
Non-Traumatic	6	9.7	6	9.7	12	19.4
Traumatic	25	40.3	25	40.3	50	80.6
All	31	50.0	31	50.0	62	100.0



17.2 Funding type at discharge

- The Funding at Discharge Data point was changed during the year to reflect the number of participants who had applied for ACC during admission, but outcome was unknown at discharge. As a result these numbers will be under-reported, but will be reflected fully in following reports.

		Enrolled at				All	
		CMH		CDHB			
		N	%	N	%	N	%
SCI	Funding Type						
Non-Traumatic	ACC	0	0.0	0	0.0	0	0.0
	Applied for ACC; under review, outcome unknown at time of discharge	0	0.0	2	4.8	2	1.9
	Other disability insurance	1	1.6	0	0.0	1	1.0
	Other insurance	0	0.0	2	4.8	2	1.9

	Unknown compensation type	1	1.6	0	0.0	1	1.0
	Other compensation - Superannuation	1	1.6	0	0.0	1	1.0
	None	2	3.3	3	7.1	5	4.9
	Unknown	2	3.3	0	0.0	2	1.9
	Missing	14	23.0	3	7.1	17	16.5
	All	21	34.4	10	23.8	32	30.1
Traumatic	Funding Type						
	ACC	17	27.9	18	42.9	35	34.0
	Applied for ACC; under review, outcome unknown at time of discharge	0	0.0	2	4.8	2	1.9
	Other disability insurance	1	1.6	1	2.4	2	1.9
	Other insurance	0	0.0	1	2.4	1	1.0
	Unknown compensation type	0	0.0	0	0.0	0	0.0
	Other compensation - Superannuation	0	0.0	0	0.0	0	0.0
	None	2	3.3	2	4.8	4	3.9
	Unknown	5	8.2	0	0.0	5	4.9
	Missing	15	24.6	8	19.0	23	22.3
	All	40	65.6	32	76.2	72	69.9
All	Funding Type						
	ACC	17	27.9	18	42.9	35	34.0
	Applied for ACC; under review, outcome unknown at time of discharge	0	0.0	4	9.5	4	3.9
	Other disability insurance	2	3.3	1	2.4	3	2.9
	Other insurance	0	0.0	3	7.1	3	2.9
	Unknown compensation type	1	1.6	0	0.0	1	1.0
	Other compensation - Superannuation	1	1.6	0	0.0	1	1.0
	None	4	6.6	5	11.9	9	8.7
	Unknown	7	11.5	0	0.0	7	6.8
	Missing	29	47.5	11	26.2	40	38.8
	All	61	100.0	42	100.0	103	100.0

- Participant funding type data are available for 61/101 participants with complete records across both NZSCIR sites.
- Missing data are due to data not being entered prior to extract or ongoing data cleaning.
- Participants may have multiple funding types; for example, one participant may have both 'ACC' and 'Other insurance' types of funding.

The number of unique participants included in the table above are summarised below:

Participants Enrolled at		All
CMH	CDHB	

	N	%	N	%	N	%
SCI						
Non-Traumatic	21	20.8	10	9.9	31	30.7
Traumatic	40	39.6	30	29.7	70	69.3
All	61	60.4	40	39.6	101	100.0

Appendix 1: Glossary

Terms

Specialist supra-regional spinal facility

Data is collected for an eligible participant when they are admitted to a specialist supra-regional spinal facility (Middlemore Hospital, Auckland Spinal Rehabilitation Unit, Christchurch Hospital, Burwood Spinal Unit) whether they have come from one or more other non-specialist facilities or not.

Admission

Reflects data collected at the first specialist supra-regional spinal facility the participant is admitted to, regardless of level of care provided.

Discharge

Reflects data collected at the last specialist supra-regional spinal facility the participant is admitted to regardless of level of care provided.

Missing data

Throughout the report, when data is not available, when it has been classified as not collected (data was not collected as per the consent status of the participant or the level of care) or is missing (the data were expected but have not been provided).

Phase definitions

Emergency phase

Early recognition and treatment usually provided by first responder paramedics at an accident scene and on-route to a hospital (preferably to a supra-regional spinal facility unless the person is a multi-trauma patient).

Acute phase

In hospital emergency, intensive care, surgical management ensuring the person is stable ready to actively participate in a rehabilitation programme.

Rehabilitation phase

Rehabilitation provided in a specialist spinal centre as an inpatient, once participant is clinically and surgically stable.

Data collection points

A data collection point refers to a defined scope of data that is collected by a discipline at an identified time interval for a given period. Data collection points reflect the movement of the individual through the health care system from the time of injury until return to community living. Data collection points allow for organised collection of data by specifying: what data to collect, from which period of time, and when it should be collected.

A fully consented participant will have the following data collection points collected:

- Enrollment - Coordinator
- Consent Status - Coordinator
- Acute - Coordinator
- Acute - Medical Team
- Acute - Trauma Nurse
- Acute - Physiotherapist
- Acute - Surgeon
- Rehab - Medical Team
- Rehab - Nursing
- Rehab - Occupational Therapist
- Rehab - Physiotherapist
- Rehab - Coordinator
- Community Follow-Up - Coordinator/Participant

If a participant does not provide consent or is missed at the facility and determined later, is a non-resident or has a terminal diagnosis/poor prognosis, the following data collection points are collected, during the acute and rehab phases only:

- Minimal Data Set - Medical Team & Coordinator

The Minimal Data Set collects the following data:

- Country of residence
- Ethnicity
- Facility admission and discharge dates
- SCI aetiology
- Vertebral injury level
- Associated injury (Y/N)
- Spinal surgery performed (Y/N)
- Ventilation status
- Discharge destination
- Neurological assessment (available ASIA Impairment Scales at initial, rehab admission and rehab discharge)

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