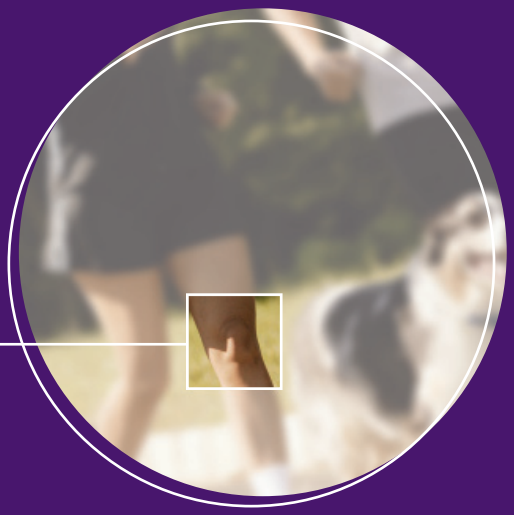
Inpatient Rehabilitation in Canada 2002–2003



NRS

National Rehabilitation Reporting System

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Sincere appreciation goes to the clients and rehabilitation teams at participating hospitals. Their role in the National Rehabilitation Reporting System (NRS) is paramount and a necessary precursor to CIHI's rehabilitation reporting activities.

Inpatient Rehabilitation in Canada, 2002–2003, was prepared by the NRS program area at CIHI. Core members of the project team providing analyses, report writing, and project management were Michelle Banting, Ian Joiner, Maureen Kelly, Krista Louie and Vidya Thuppal.

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Data used in this report are from the NRS database at CIHI. Necessary partners in the development and maintenance of the NRS database and related products are the Production Systems and Applications Development areas at CIHI.

Executive Summary

Inpatient Rehabilitation in Canada, 2002–2003, is the first public report based on data from the National Rehabilitation Reporting System (NRS). The NRS was developed in 2001–2002 by the Canadian Institute for Health Information (CIHI) to support rehabilitation services planning activities and policy development.

The intent of the report is to shed some light on rehabilitation services in participating hospitals and on the types of clients who receive them. As well, this report provides characteristics of various rehabilitation activities and clinical outcomes.

Participation in the NRS is voluntary and not comprehensive across Canada. Therefore, results are not generalizable at a provincial or national level.

The analyses contained within this report are based on data from 16,931 clients who were discharged from 71 participating hospitals in six provinces during 2002–2003 and for whom complete admission and discharge assessments were successfully submitted to CIHI.

Chapters 1 and 2 include a summary of the development of the NRS, an overview of the analytical methodology and some summary statistics on the types of rehabilitation clients. Administrative information, such as length of stay and referral patterns, is also presented.

Chapter 3 contains comparative information across the range of client groups reported in the NRS. Specific indicators include the distribution of clients across the client groups, functional outcomes and improvement in pain.

Chapters 4 through 8, respectively, provide more specific information on the groups that contain the largest numbers of records in the NRS. The largest client groups, in descending order of frequency, during 2002–2003, were orthopaedics, stroke, brain dysfunction, amputation of limb and spinal cord injury.

Administrative and clinical information described throughout the report include the number of days a client waits for admission to rehabilitation, reasons for discharge, improvement in functional status and demographic characteristics.

Chapter 9 contains a discussion on some of the concepts and data presented in the report. Potential directions for future NRS analytical activities and topics for subsequent annual reports are also highlighted in this final chapter.

Source tables containing aggregate data used to produce the figures in the report are available on the CIHI Web site at www.cihi.ca under "Quick Stats". Throughout this report, references to the relevant tables can be found at the end of each paragraph or section.

Some Findings From the Report

The following findings are based on the data submitted by sites participating in the NRS during 2002–2003.

Over nine out of every ten clients (91%) admitted to inpatient rehabilitation programs were referred by inpatient acute care facilities. (Chapter 2)

The average age of inpatient rehabilitation clients was 70 years. Overall, 57% of clients were female. (Chapter 2)

Among clients for whom a date ready for admission was known, 44% were admitted to inpatient rehabilitation the same day they were deemed clinically ready. (Chapter 2)

Orthopaedic and stroke clients accounted for two-thirds of all inpatient rehabilitation clients discharged from participating facilities. (Chapter 3)

While older women were most prominent in the orthopaedic client group, males aged under 45 years were the most predominant group in both the brain dysfunction and spinal cord dysfunction client groups. (Chapter 3)

Overall, the median length of stay for all clients was 22 days. The median for particular client groups varied from 13 days for arthritis clients to 44 days for clients with spinal cord dysfunction. (Chapter 3)

Compared with post knee replacement clients, post hip replacement clients had slightly lower functional abilities at admission, slightly longer lengths of stay and greater changes in functional status over their stay. (Chapter 4)

At admission, left-sided hemiplegia clients had a lower functional ability for motor activities, such as walking and eating, but higher functional ability for cognitive skills, such as memory and communication, than right-sided hemiplegia clients. (Chapter 5)

The National Rehabilitation Reporting System (NRS)

The NRS is primarily intended to support data collection by hospitals for rehabilitation clients who are aged 18 years or older. The rehabilitation services are provided in specialized rehabilitation hospitals and in general hospitals with rehabilitation units, programs or designated rehabilitation beds.

By facilitating the collection of standard information, the NRS provides an opportunity to enhance the knowledge surrounding inpatient rehabilitation services across the country. As a result of its voluntary nature, the NRS does not have comprehensive coverage of all inpatient rehabilitation services in Canada. Therefore, information derived from the NRS does not reflect the full picture of hospital-based inpatient rehabilitation in Canada.

More information on the NRS is available at www.cihi.ca/nrs or by contacting rehab@cihi.ca by e-mail.

The Canadian Institute for Health Information (CIHI)

CIHI is an independent, pan-Canadian, not-for-profit organization working to improve the health of Canadians and the health care system by providing quality health information. CIHI's mandate, as established by Canada's health ministers, is to coordinate the development and maintenance of a common approach to health information for Canada. To this end, CIHI is responsible for providing accurate and timely information that is needed to establish sound health policies, manage the Canadian health system effectively and create public awareness of factors affecting good heath.

Important Notice

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

Function Related Groups (FRG) are based on the Functional Independence Measure of the Function Related Groups (FIM-FRGs) Penn Ability Systems (PAS™). FIM-FRGs are reported using FIMware Software Version 5.20 with permission from UDS$_{MR}$.

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Chapter 1. Introduction and Background

Objectives of the Report

Inpatient Rehabilitation in Canada 2002–2003 is the first public report based on data from the National Rehabilitation Reporting System (NRS). The NRS was developed in 2001–2002 by the Canadian Institute for Health Information (CIHI) to support rehabilitation services planning activities and policy development.

The report provides information on hospital-based physical rehabilitation services that occurred between April 2002 and March 2003 in participating rehabilitation units or free-standing rehabilitation facilities. It was developed by CIHI to provide additional information for people involved with or interested in the provision of inpatient rehabilitation services, including clinicians, hospital managers, policy makers and organizations representing rehabilitation clients.

A goal of this report is to enhance knowledge about inpatient rehabilitation services in participating facilities across the country. In doing so, CIHI hopes to facilitate discussion on the current state of hospital-based rehabilitation in addition to commenting on future challenges and opportunities facing the sector.

Specific objectives for the report are:

- To provide background information on the NRS;
- To present aggregate data from the NRS;
- To introduce analyses on specific clinical and administrative topics, including the rehabilitation system, length of stay and clients' functional outcomes; and
- To stimulate discussion on the information needs for the inpatient rehabilitation sector and further enhancement of the NRS.

Organization of the Report

Inpatient Rehabilitation in Canada, 2002–2003 contains nine chapters.

This opening chapter, Chapter 1, provides an introduction to the report, including a summary of the development, content and processes of the NRS and an overview of the methodology for analysis. This chapter also focuses on the characteristics of the inpatient rehabilitation system and the role of the NRS in facilitating information collection, analysis and dissemination. Some contextual information on the hospital programs participating in the NRS is provided to support an enhanced understanding of the inpatient rehabilitation sector. No facilities that have submitted data to the NRS are identified by name in this report.

Chapter 2 provides characteristics of the people who were discharged from participating hospitals after receiving rehabilitation during fiscal year 2002–2003. Summary statistics on the types of rehabilitation clients, including demographic characteristics and living situation, are provided in order to shed some light on the populations served. Administrative information, such as length of stay and referral patterns, is also presented.

Next, the report compares characteristics across the range of client groups reported for the NRS. Chapter 3 includes various indicators relating to these broad client groups, including the number of days a client waits for admission to rehabilitation and potential reasons for their discharge. As well, this chapter introduces analyses on clinical outcomes assessed during inpatient rehabilitation. Clinicians, managers and policy makers may be interested in this section, which highlights some high-level outcomes and the potential influences affecting them.

Chapters 4 through 8 include more specific information on the client groups that contain the largest numbers of records in the NRS. Demographic information and outcome indicators are presented for client sub-groups. For example, Chapter 4 breaks down the largest client group, orthopaedics, into its constituent sub-groups, including knee replacement and hip fracture. Chapters 5 through 8 address the specific sub-groups within stroke, brain dysfunction, amputation of limb and spinal cord injury, respectively.

Chapter 9 contains a discussion on some of the concepts and data presented throughout the report. Potential directions for future NRS analytical activities and topics for subsequent annual reports are also highlighted in this final chapter.

A Glossary of Terms (Appendix A) is included at the end of the report. While many readers may be familiar with the concepts used within the report, others may be encountering NRS data and analyses for the first time. The glossary will assist readers in understanding the scope and limitations of the data collected for the NRS.

Methodological Notes

The following information provides an overview of the National Rehabilitation Reporting System (NRS), including background, development, scope, data collection processes, data quality and analyses used for this report. Additional commentaries on methodology and data quality are also included throughout the report.

Background to the NRS

Hospital-based inpatient rehabilitation is an important component in the continuum of health services in Canada. By facilitating the collection of standardized information on rehabilitation clients, the NRS provides an opportunity to enhance the knowledge surrounding inpatient rehabilitation services across the country.

The NRS was developed to support data collection by hospitals for rehabilitation clients who are aged 18 years or older. Since October 2002, NRS information is also collected on clients who are aged under 18 years if they received rehabilitation services. The rehabilitation services are provided in specialized rehabilitation hospitals, and in general hospitals with rehabilitation units, programs or designated rehabilitation beds.

Clients reported in the NRS include only those with a primary health condition that is physical in nature. As such, the term "rehabilitation" in the context of NRS reporting does not include rehabilitation services provided for a mental health condition or for drug or alcohol addiction. Most inpatient rehabilitation clients receive services provided by health professionals such as nurses, physiotherapists, occupational therapists and physicians specializing in physical medicine and rehabilitation. These professionals assist the rehabilitation clients in improving their physical abilities and preparing them to return home following an illness or injury. Often, rehabilitation clients will undertake strengthening and exercise programs or receive educational advice or assistive devices to assist them with the physical limitation that resulted from their injury or illness.

The information in the NRS includes clinical data on motor and cognitive functional status. These data are collected using the 18-item FIM™ instrument and additional assessment measures related to cognitive functioning. More details on the FIM™ instrument, which is a standardized assessment tool developed in the United States by the Uniform Data System for Medical Rehabilitation (UDS$_{MR}$) and recognized internationally, are available in Appendix B. Socio-demographic, administrative and health characteristics information is also collected for each rehabilitation client.

Rehabilitation clinicians in hospitals collect the data when a client is admitted to, and when they are discharged from, the inpatient rehabilitation program. As well, hospitals can choose to collect additional clinical information in an optional follow-up assessment, which is conducted between three and six months after a client completes their inpatient rehabilitation stay. Collection of this follow-up information provides an opportunity to assess sustainability of functional outcomes that were gained during rehabilitation.

NRS Development and Implementation

CIHI has been promoting health information standards for hospital-based inpatient rehabilitation services since 1995, when the organization initiated a national pilot study to develop and evaluate indicators, a minimum data set, and related case-mix grouping methodology. The CIHI study, involving more than 2,000 adult rehabilitation clients, collected information on the characteristics and effectiveness of rehabilitation services in six provinces.

Based on the results of the study and extensive consultation with professionals in the rehabilitation field, a national prototype reporting system for inpatient rehabilitation services was implemented in April 2000. The development was a component of the Health Information Roadmap Initiative, a collaborative effort among CIHI, Statistics Canada, Health Canada, provincial/territorial health departments and many others. The initial and subsequent Roadmap initiatives comprised an action plan designed to strengthen Canada's health information system.

Following the launch of the new National Rehabilitation Reporting System (NRS), CIHI began producing comparative reports for hospitals in February 2001, focusing on key indicators that were developed during the original CIHI pilot study. These comparative reports provide hospitals with information to assess client outcomes, to examine access to inpatient rehabilitation and to evaluate programs and services.

A cornerstone of the NRS is the concept of human function and the focus of rehabilitation in assisting individuals to achieve their maximum potential in daily living and community life. The NRS indicators and reports provide a source of information for defining and describing functional outcomes for groups of individuals who have received rehabilitation services. These groups, including conditions such as stroke, limb amputation and brain injury, form the basis for NRS reporting.

NRS Data Quality

The Canadian Institute for Health Information (CIHI) has incorporated five dimensions of data quality into its corporate *Data Quality Framework*, first implemented during the fiscal year 2000–2001. When used as a conceptual framework, these dimensions can facilitate the assessment of data quality in many types of system-level data holdings.

The framework implementation is part of the larger quality cycle in which problems are identified, addressed, documented and reviewed on a regular basis. It also standardizes information on data quality for users and helps to identify priority issues, which in turn is intended to trigger continuous improvements.

CIHI conducts regular data quality assessments on the NRS in order to assess areas for enhancement with respect to coding guidelines, data collection software edits and other validation procedures. Ongoing assessment of the relevance of the NRS and potential areas for expansion are shared with key inpatient rehabilitation stakeholders.

The five dimensions of data quality are:

1. *Accuracy*: that measures how well information within a database reflects what was supposed to be collected;
2. *Comparability*: that measures the extent to which a database can be properly integrated within broader health information systems;
3. *Timeliness*: that measures whether the data are available for user needs within a reasonable time period;
4. *Usability*: that measures how easily the storage and documentation of data allows users to utilize the data intelligently; and
5. *Relevance:* that measures incorporation of all of the above dimensions to some degree, but focuses specifically on value and adaptability.

The following sections include information relating to the *Accuracy* dimension of the CIHI data quality framework as applied to the data used for this report. The *Accuracy* dimension for the NRS data used in this report is measured using:

- Capture and Collection;
- Scope and Coverage; and
- Item Non-Response.

Capture and Collection

Rehabilitation clinicians and health records professionals in hospitals collect relevant clinical and administrative information during each client's stay in the rehabilitation program. At regular intervals, hospitals send this information in an electronic format to CIHI, where additional data validation occurs in order to ensure the records are consistent with the technical specifications for the NRS.

In its role of manager, CIHI stores the records in the NRS database located at CIHI and creates various management and comparative reports for each hospital. These reports are produced on a quarterly basis and sent to participating hospitals for their use in management and planning purposes.

In order to promote the standard collection of data by participating hospitals, CIHI provides various resources, including coding and interpretation guidelines and a series of educational workshops. These materials are used by the hospitals to train their staff in the assessments required for completing the NRS records for each rehabilitation client.

Scope of National Participation and Coverage

During the prototype phase of the NRS, hospitals participated on a voluntary basis, choosing the rehabilitation clients for which to collect and submit clinical and administrative data to CIHI. Currently, hospitals in most provinces that participate do so voluntarily and submit data for some or all of their rehabilitation clients.

Effective October 2002, the Ontario Ministry of Health and Long-Term Care mandated submission of NRS data for all designated adult inpatient rehabilitation beds in the province. No other provincial ministry of health or regional health authority has mandated NRS participation at this time.

As of February 2004, over 80 hospitals in Newfoundland and Labrador, Nova Scotia, New Brunswick, Ontario, Saskatchewan, Alberta, and British Columbia are licensed to participate in the NRS. Hospitals and other stakeholders in the other provinces have expressed interest in participating.

As a result of its voluntary nature, the NRS does not have comprehensive coverage of inpatient rehabilitation services within Canada. Therefore, the information presented in this report does not reflect the full picture of hospital-based inpatient rehabilitation in Canada. However, the information from the NRS provides a valuable opportunity to enhance the knowledge surrounding inpatient rehabilitation services across the country and to assist planning and management activities for this sector.

This report provides information from the NRS on clients who received inpatient rehabilitation services from 71 participating hospitals across Canada and who were discharged during fiscal year 2002–2003. Hospitals in Newfoundland and Labrador, Nova Scotia, Ontario, Saskatchewan, Alberta and British Columbia submitted data to the NRS for 2002–2003.

Clients admitted to rehabilitation facilities are not always discharged in the same fiscal year as they were admitted. In other words, some clients discharged from rehabilitation facilities in a given fiscal year may have been admitted in the preceding fiscal year(s), and some clients admitted in that fiscal year may be discharged in subsequent fiscal year(s).

Based on the client information that was submitted to CIHI by the time the data used for this report was copied in May 2003, the NRS contained 804 clients who were admitted in 2001–2002 and discharged in 2002–2003. Out of the 18,786 clients admitted in 2002–2003, CIHI had received discharge information for 16,511 clients (88%). Out of these 16,511 clients, 384 (2%) were discharged within three days of their admission; therefore, hospitals were not able to collect a full functional assessment on these clients for the purposes of the NRS prior to their discharge. These clients were usually discharged for various reasons, including emergency transfers to acute care, death, leaving the hospital against professional advice, or ineligibility to receive services due to funding reasons. As it is usually not feasible to conduct a full assessment for the purposes of the NRS during such a short stay, these clients were excluded from the analyses.

Many of the remaining clients who were admitted in 2002–2003 were still receiving rehabilitation services at the end of 2002–2003. As a result, their information will be included in the analyses for future fiscal years, once they are discharged from the rehabilitation program and their discharge record has been submitted to the NRS.

The analyses contained within this report are based on data for the 16,931 clients discharged in 2002–2003 with completed admission and discharge assessments: 16,127 clients who were admitted and discharged in 2002–2003, and 804 clients who were admitted in 2001–2002 and discharged in 2002–2003.

Data for other clients who were admitted and discharged during 2002–2003 were not included if, by the end of May 2003, their discharge assessment information had not been successfully submitted to CIHI. Analysis of future NRS data would help to assess the level and impact of these missing discharge assessments on whether the NRS data are representative of the rehabilitation population they aim to cover.

Item Non-Response

When interpreting the results presented in this report, readers need to be aware if the analysis relates only to a particular subset of clients or if there was a significant proportion of records where the information was missing. Wherever the analysis was conducted on a selected group of inpatient rehabilitation clients or where missing data may impact on the interpretation of the results, it has been documented with the appropriate analysis within the report. The section below describes the circumstances under which some of data are not collected or is recorded as unknown.

Rehabilitation clinicians in hospitals collect the NRS data within 72 hours of a client's admission and again within 72 hours of their discharge. In some instances, hospitals are unable to perform a full admission and/or discharge assessment on clients who stayed in their facilities. These clients typically stay at the facilities for a short period of time, generally between 1 and 3 days (less than 72 hours), or are discharged without notice due to reasons such as death, transfers to other hospitals, or withdrawal by the client from the services. Under these circumstances, the NRS has mandated the collection of some key data elements, including demographic and personal identifiers, dates of admission and discharge, Rehabilitation Client Group and most responsible and co-morbid health conditions. Other data elements are considered non-mandatory under the above circumstances, and may be left blank.

An example of the data elements that are allowed to be left blank when the hospitals are unable to collect non-mandated elements are the 18 FIM™ instrument items used to assess the client's functional status. Three percent of clients discharged from rehabilitation facilities during 2002–2003 with full admission assessments did not have a functional assessment at discharge due to the reasons mentioned above. For the purposes of this report, the analysis of functional status at discharge and change in functional assessment between admission and discharge relates only to those clients who had a functional assessment at both admission and discharge.

There are other circumstances where the hospitals are not able to collect the required information for some data elements. This may be because of time constraints, or the client is unable to respond due to health conditions (for example the client has aphasia), or because an alternative respondent, such as a family or informal carer, is unable to provide the information. In such cases, hospitals have the option of coding certain data elements with missing or unknown values. These responses include "unable to answer", "unable to test", "unknown", and "unknown temporarily" This missing information is referred to as "item non-response". Information on the level of non-response provides an indication of the representativeness of the data. The higher the level of non-response the greater the risk of data not being representative of the population as a whole indicating that the information may be significantly different if data were available for all clients.

In the current context, item non-response in data elements is measured only when hospitals are actually expected to submit information on clients for that field. For example, referral source is mandatory to submit only when the admission class is initial rehabilitation, short stay, re-admission, or continuing rehabilitation. Therefore the proportion of non-response is calculated only for clients admitted to rehabilitation facilities in the above admission classes.

As the table below shows, the proportion of non-response varied across data elements. In 2002–2003, the proportion of non-response in data elements collected for admission assessment was highest in pre-admission vocational status (49%), date ready for admission known (23%), and referral source facility number (5%). The proportion of non-response in data elements collected for discharge assessment was highest for referred to facility number (22%). The impact of pain, which is collected at admission and discharge, must be reported by the clients themselves. The proportion of clients who were unable to answer whether there was an impact of pain was 4% at admission and 3% at discharge. The majority of other data elements had proportions of non-response of less than 1%.

Proportion of Records with Missing or Unknown Values by Data Element, 2002–2003

Data Element	Admission		Discharge	
	%	# (1)	%	# (1)
Health Card Number	0.1	*16,931*		
Birth Date Estimated	0.1	*16,931*		
Date Ready for Admission Known	23.1	*16,931*		
Province Issuing Health Card Number	0.1	*16,931*		
Primary Language	0.1	*16,931*		
Postal Code of Residence	0.2	*16,931*		
Province of Residence	0.1	*16,931*		
Living Arrangement (Pre-Admission/Post-Discharge)	0.1	*16,931*	0.8	*15,426*
Living Setting (Pre-Admission/Post-Discharge)	0.2	*16,931*	1.2	*15,426*
Vocational Status (Pre-Admission/Post-Discharge)	49.0	*16,931*	2.1	*15,426*
Referral Source/Referred to	0.1	*16,931*	0.4	*16,676*
Referral Source/Referred to Province	0.0	*16,931*	0.0	*14,136*
Referral Source/Referred to Facility Number	5.5	*16,177*	21.6	*5,657*
Responsibility for Payment	0.1	*16,931*	0.1	*15,426*
Impact of Pain	3.9	*16,931*	3.0	*10,637*

A response of "not applicable" was considered a valid response and therefore excluded from the numerator in the calculation of item non-response.

(1) Number of clients for whom the data element was mandated to be collected. The corresponding percent is based on this number of clients.

For the purposes of this report, records with missing values were treated in two ways. First, when there was a large proportion of missing values the corresponding records were completely excluded from the analysis. Second, usually if the rate of non-response was small, the records were included in the analysis but were stated explicitly. An example of the first method of handling missing values is the days waiting for admission indicator. The calculation of days waiting for admission was based on the date ready for admission data element, and hence the 23% of clients for whom the date ready for admission was not known were excluded from the calculation. An example of the second method is the analysis of pre-admission and post-discharge living settings, where clients with unknown pre-admission or post-discharge living settings were included in the "other" living settings category.

It should also be noted that some data elements in the NRS are "optional", and it is up to the individual hospitals whether or not they submit information on these elements for any or all of their clients. The data element relating to whether or not rehabilitation clients received informal support (i.e. unpaid assistance provided by an individual such as a spouse, family member, friend or neighbour) during the seven days prior to their admission was optional for all facilities prior to October 1, 2002 but became a mandatory data element on that date. Due to the data element being optional for part of the year, information on informal support prior to admission was not available for 13% of clients discharged in 2002–2003, and those records were excluded from the analysis of this data element within this report.

Notes on Tables and Statistics

For readers who would like to access the aggregate data used to produce the charts and graphs presented in the report, source tables are available on the CIHI Web site at www.cihi.ca under "Quick Stats". These tables can be found under "Inpatient Rehabilitation" when searching "By Topic" or by "National Rehabilitation Reporting System (NRS)" when searching "By Source". All the tables are numbered. Throughout this report, references to the relevant tables can be found at the end of each paragraph or section.

Data Suppression

This publication adheres to CIHI's guidelines and policies that govern the publication and release of information, which were developed to safeguard the privacy and confidentiality of data entrusted to CIHI. In compliance with these guidelines, cell counts within data tables that are between one and four were combined with other cells, where appropriate. If such aggregation was inappropriate or unfeasible the counts and related statistics were suppressed. In certain circumstances, some cells with counts greater than four were also suppressed. This was done wherever the reader would have been able to determine the suppressed value through subtraction from other cells. Therefore, in each row and column containing a suppressed count of one to four, there is at least one additional suppressed cell.

The intent of cell suppression is to ensure anonymity and avoid disclosure of personal and identifiable information. In certain circumstances, the number of clients with missing information or who were coded as "Unknown", or "Not Stated" is between one and four. These were not necessarily suppressed, as there is minimal risk of disclosure.

Computations

The statistics within this report are usually presented as whole numbers, and percentages in the web-based tables are presented to one decimal place. As a result of rounding percentages may add to between 99% and 101%. The report also presents mean values of certain characteristics at admission, discharge and the mean change between admission and discharge. Again, due to rounding, the difference between the mean admission and discharge values and the mean change presented may range from -1 to +1.

This report uses two statistical measures to describe a distribution's centre point: the median and the (arithmetic) mean. The median is the point in a distribution that splits the distribution in two: half the values lie below this point and half lie above it. The mean is calculated by summing all the values of the distribution and dividing the total by the number of cases. A mean can be affected by extreme values; therefore, for highly skewed distributions the median is usually used, as it is less affected by such values. Throughout the report, the arithmetic mean has been referred to as the "average" and median is referred to as itself.

Chapter 2. Characteristics of Inpatient Rehabilitation Clients

Introduction

This chapter provides information on clients who received inpatient rehabilitation services in hospitals across Canada during the fiscal year 2002–2003. All of the information is drawn from the National Rehabilitation Reporting System (NRS). For 2002–2003, 71 facilities from Newfoundland and Labrador, Nova Scotia, Ontario, Saskatchewan, Alberta and British Columbia submitted data to the NRS. Approximately 85% of the data used for this report was submitted by participating NRS facilities in Ontario.

Participating rehabilitation programs submit data from clinical assessments they complete when rehabilitation clients are admitted to their facilities and from assessments carried out prior to each client's date of discharge. As mentioned in Chapter 1, the analyses throughout this report are based on information from just under 17,000 clients who were discharged from participating facilities during 2002–2003 and had complete admission and discharge assessments.

Type of Facility

For the NRS, participating facilities are classified as either general or specialty facilities. This classification is intended to facilitate comparative reporting and is not necessarily consistent with facility classification methods used in various provinces or regions. According to the NRS guidelines, a general rehabilitation facility is usually a rehabilitation unit or collection of beds designated for physical rehabilitation that is part of a general hospital, which offers multiple levels or types of care. In contrast, a specialty rehabilitation facility is one that provides more extensive inpatient rehabilitation services and specialized programs and is often a freestanding rehabilitation hospital or is a specialized unit within another type of hospital. The table below shows that 69% of facilities that submitted data to the NRS in 2002–2003 were general facilities. About two-thirds (65%) of the clients were admitted to general rehabilitation facilities and a third were admitted to specialty rehabilitation facilities.

	General Facilities		Specialty Facilities		All Facilities	
Facilities submitting to NRS in 2002–2003	49	69.0%	22	31.0%	71	100.0%
Clients*	11,010	65.0%	5,921	35.0%	16,931	100.0%

*Refers to clients discharged in 2002–2003 with completed admission and discharge assessments.

Type of Admission

Figure 2.1 shows that 91% of clients discharged from inpatient rehabilitation programs during 2002–2003 were classified as having received initial rehabilitation, which is their first inpatient rehabilitation stay in any hospital for their particular condition. Five percent were clients who met requirements for a short stay classification during their admission and stayed in the rehabilitation facility between 4 and 10 days. The remaining 4% of clients received inpatient rehabilitation services relating to a condition for which they had already received inpatient rehabilitation. The earlier inpatient rehabilitation may have taken place in the same facility or a different one; and the clients may have been admitted directly from another inpatient rehabilitation unit or program (referred to as continuing rehabilitation) or may have had some time between their previous stay in an inpatient rehabilitation program or unit (referred to as re-admission).

Figure 2.1 also shows that general and specialty facilities had similar proportions of initial rehabilitation clients (92% and 90% respectively). The majority of clients categorized as short stay were admitted to general facilities, accounting for over 6% of all admissions to general facilities. In contrast, the majority of clients classified as re-admission or continuing rehabilitation were admitted to specialty facilities, together they accounted for 8% of all admissions to these facilities. *(Quick Stats, Table 1)*

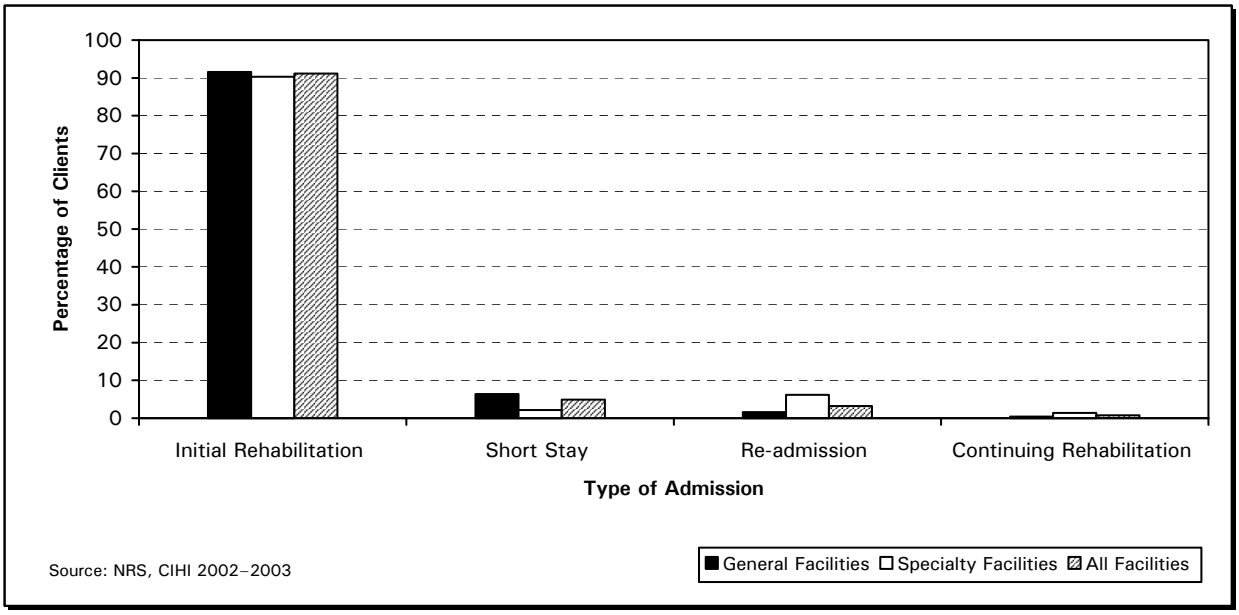

Figure 2.1 Type of Admission to Inpatient Rehabilitation by Type of Facility, 2002–2003

Source of Referral

The source of referral as coded in the NRS is the facility, agency or individual that initiated the referral of the client for rehabilitation services. Over nine out of every ten clients (91%) admitted to inpatient rehabilitation units were referred by inpatient acute care facilities; either the inpatient acute unit of the same facility (42%) or from a different facility (50%). Clients referred by a private medical practitioner (such as an individual family doctor or physiotherapist) accounted for 2% of admitted rehabilitation clients, as did those referred from facility-based ambulatory care services. The remaining 4% of clients were referred from a variety of different sources including: rehabilitation units in different facilities; residential care facilities, such as nursing homes, long-term or continuing care facilities; by a family member or they initiated the referral themselves.

As Figure 2.2 shows, there were some differences among the referral sources of clients admitted to general and to specialty rehabilitation facilities. Fifty-seven per cent of rehabilitation clients admitted to general facilities were referred from the inpatient acute unit of the same facility and 38% were referred from inpatient acute care units of a different facility. In contrast, only 13% of those admitted to specialty facilities were admitted from an inpatient acute unit within the same facility and 71% were referred from inpatient acute care from a different facility. *(Quick Stats, Table 2)*

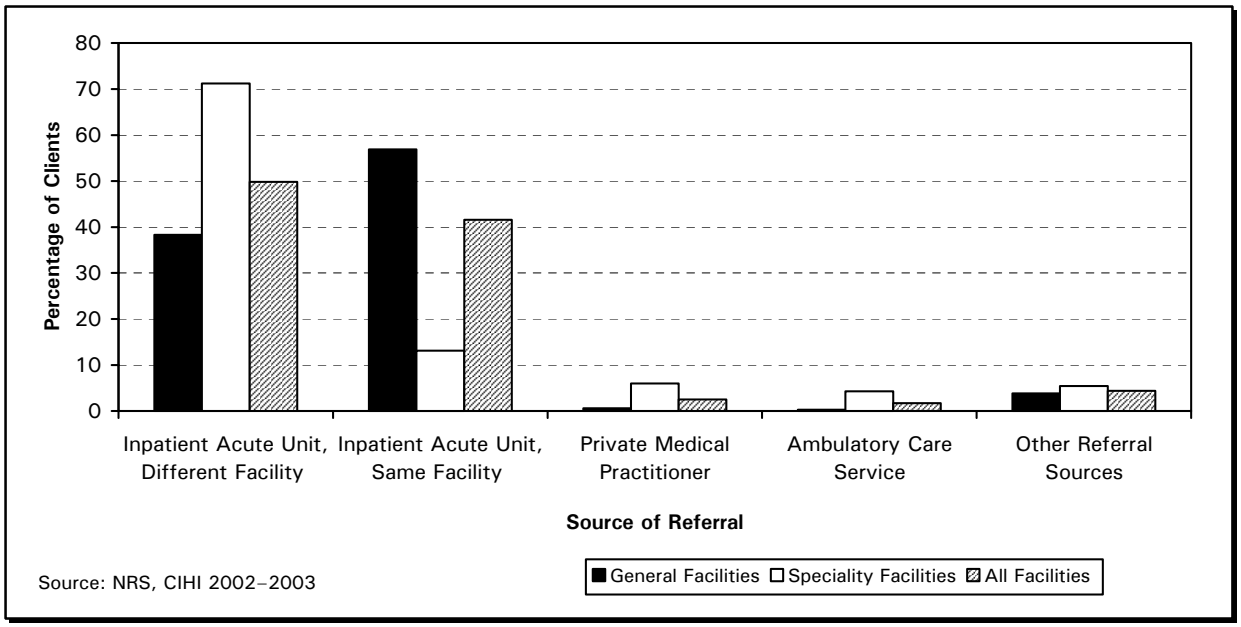

Figure 2.2 Source of Referral to Inpatient Rehabilitation by Type of Facility, 2002–2003

It was also noted that most clients who were referred by a private medical practitioner or by a facility-based ambulatory clinic were admitted to specialty rehabilitation facilities (84% and 89% respectively). In contrast, three-quarters (74%) of clients who initiated the referral to inpatient rehabilitation themselves or had family members who initiated the referral were admitted to general facilities.

Days Waiting for Admission

The NRS indicator "days waiting for admission" refers to the number of days from the date a client is deemed ready for inpatient rehabilitation to the date they were actually admitted. The initial date is determined by the rehabilitation program accepting the client for rehabilitation, or jointly with the referring program. It refers to the date that the client was clinically ready to start a rehabilitation program and met the criteria for admission to the rehabilitation facility. It does not refer to the date the client may have been put on a waiting list if this was done prior to when the client was clinically ready for rehabilitation.

The date ready for admission was not known for almost a quarter (23%) of clients discharged in 2002–2003. Since these clients were not included in the analysis of days waiting for admission, care should be taken when interpreting the data. Further research is required to ascertain whether or not clients with a known date ready for admission are representative of the entire inpatient rehabilitation population with regards to assessing days waiting for admission. As part of its ongoing data quality monitoring activities, CIHI has identified this as a potential issue requiring further investigation and action.

Figure 2.3 shows that 44% of the clients for whom a date ready for admission was available were admitted to inpatient rehabilitation the same day they were deemed clinically ready and a further 16% waited one day. Thirteen per cent of clients waited over a week before they were admitted and 2% had to wait over 30 days.
(Quick Stats, Table 3)

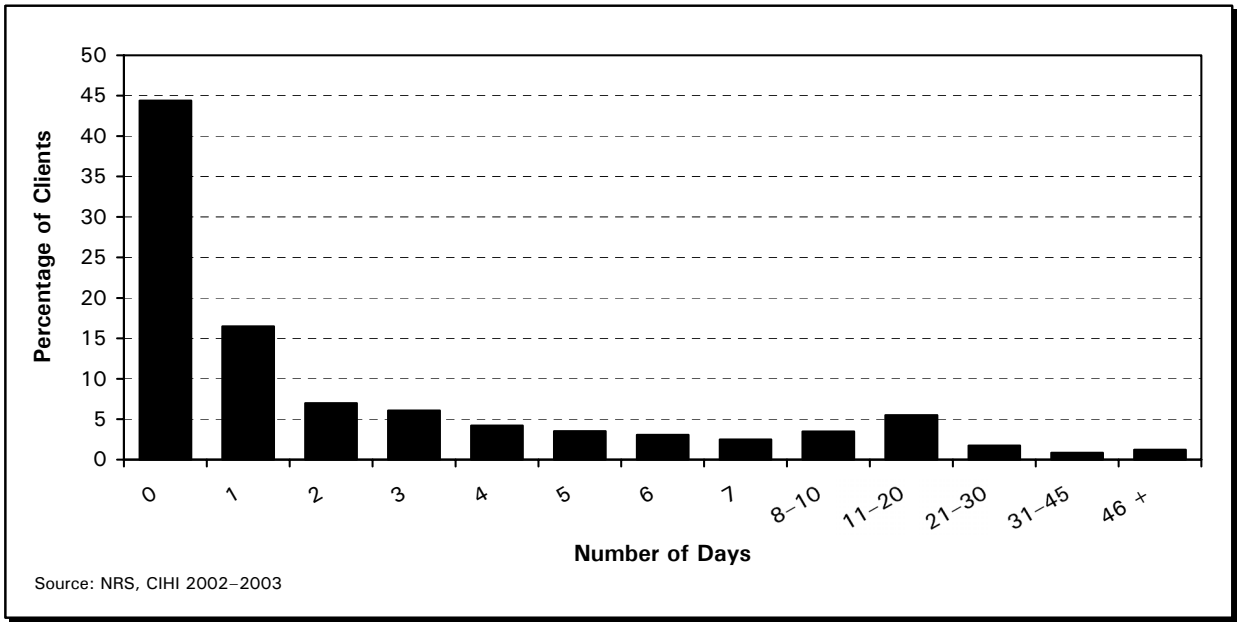

Figure 2.3 Distribution of Days Waiting for Admission to Inpatient Rehabilitation, 2002–2003

The median number of days that clients with a known date ready for admission had to wait for admission to the rehabilitation facility was one day (half of the clients had to wait one day or less). Figure 2.4 shows the median number of days clients waited for admission by the different sources of referral. It shows that clients referred by inpatient acute units of the same facilities, by themselves or their family had a median of zero days. In other words, at least half of these clients were admitted to the rehabilitation unit/program the same day they were deemed ready.

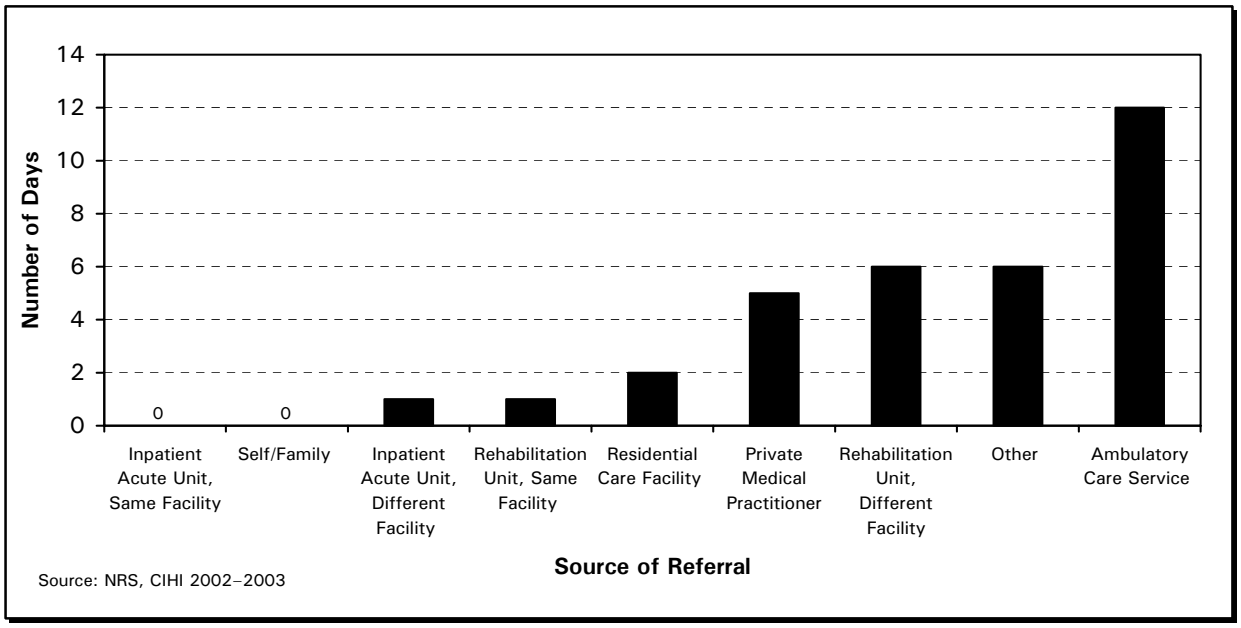

Figure 2.4 Median Days Waiting for Admission to Inpatient Rehabilitation by Source of Referral, 2002–2003

Clients referred from an inpatient acute care unit of a different facility, which accounted for half of all clients, had a median wait of one day before they were admitted, as did clients referred from another rehabilitation unit within the same facility. Other referral sources had longer median wait times: residential care facilities (2 days); private medical practitioners (5 days); rehabilitation units from different facilities and other/unknown referral sources (6 days); and ambulatory care services (12 days). It should be noted that these five referral sources combined accounted for only 6% of clients for whom a date ready for admission was known. *(Quick Stats, Table 4)*

Demographic Characteristics

Figure 2.5 shows that a third (33%) of all clients admitted to rehabilitation programs or units in 2002–2003 were aged between 75 and 84 years on admission and approximately a quarter (24%) were aged between 65 and 74 years. Thirteen per cent of clients were 85 years of age and over. The average age of inpatient rehabilitation clients was 70 years.

The data indicate that clients who were admitted to general facilities tended to be older than those admitted to speciality facilities. For example, about three-quarters (76%) of clients admitted to general rehabilitation facilities were aged 65 years and over compared with three-fifths (60%) of clients admitted to specialty rehabilitation facilities.

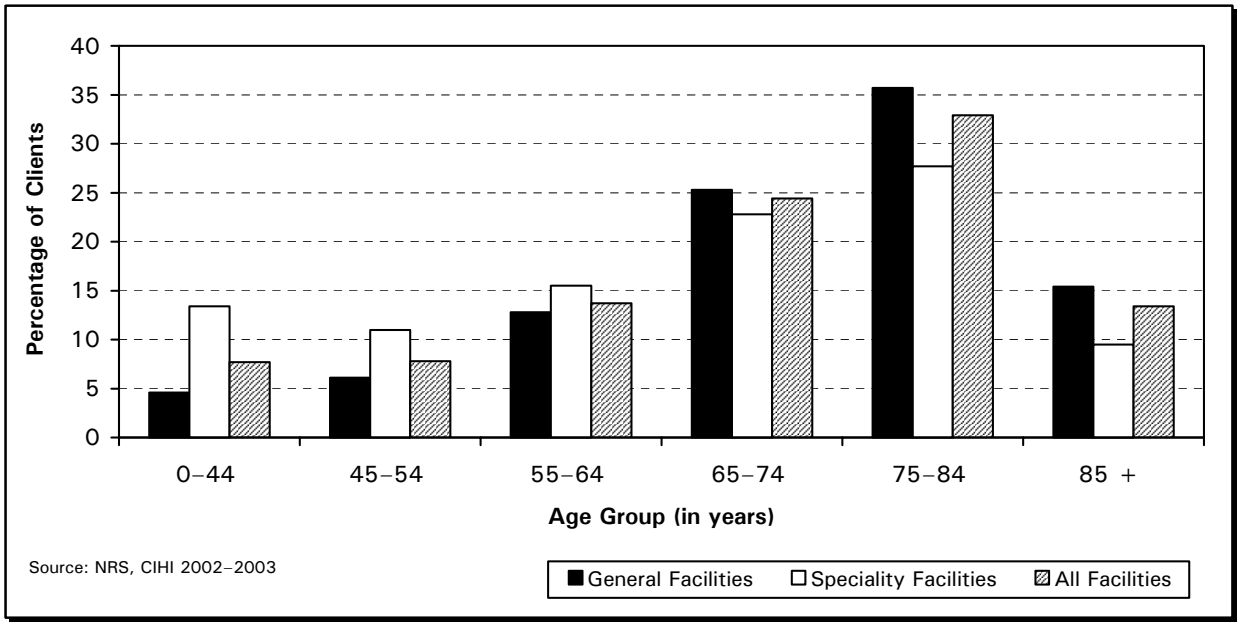

Figure 2.5 Age at Admission of Inpatient Rehabilitation Clients by Type of Facility, 2002–2003

Overall in 2002–2003, females accounted for a larger proportion of inpatient rehabilitation clients; 57% of clients were female compared with 43% who were male. The ratio of females to males was different in general and speciality facilities. In general facilities 60% of clients were female and 40% were males; in speciality facilities the proportions of female and male clients were almost equal (52% and 48% respectively).

Figure 2.6 shows that, in general, the ratio of female to male clients increased as clients got older. The youngest age group (those aged under 45 years) had the largest proportion of male clients and smallest proportion of female clients (61% and 39% respectively). Males and females accounted for approximately equal proportions of clients aged 55 to 64 years. In contrast, 71% of clients aged 85 and over were female and 29% were male. These differences were also reflected in the average age of male and female clients: 66 years and 72 years respectively. *(Quick Stats, Table 5)*

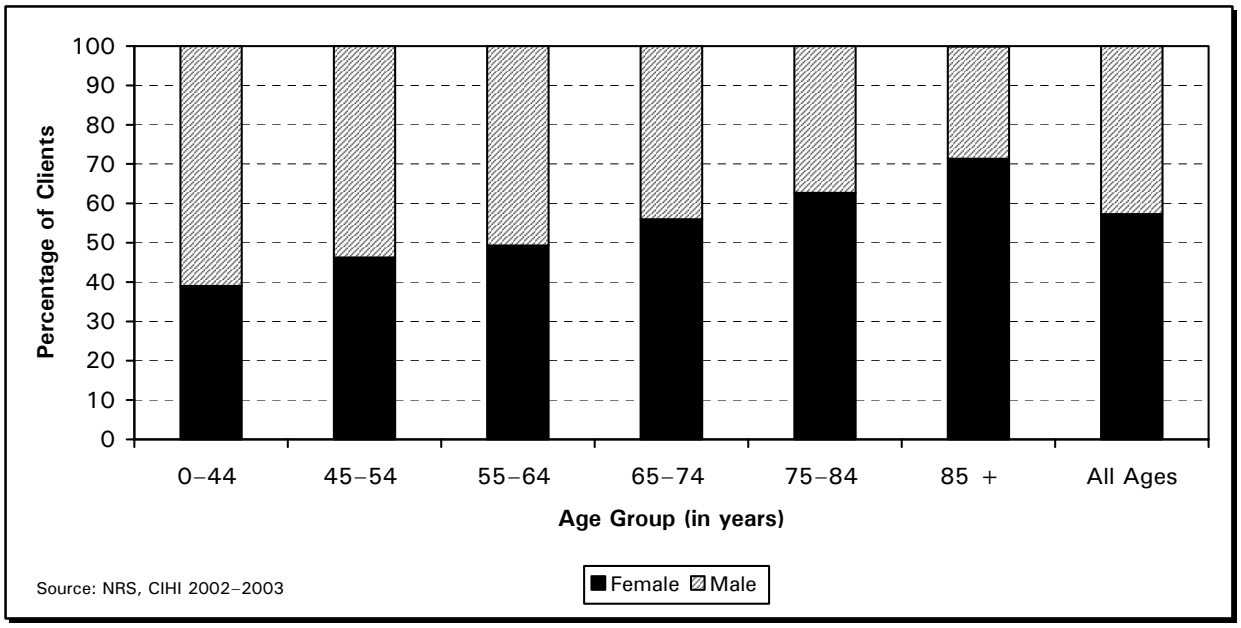

Figure 2.6 Proportion of Male and Female Inpatient Rehabilitation Clients by Age, 2002–2003

Pre-Admission Living Setting

In 2002–2003, 93% of clients admitted for inpatient rehabilitation lived in a private house or apartment prior to their admission. Four percent of clients lived in assisted living accommodation, such as group or retirement homes or supervised living settings and 2% of clients lived in residential care (for example, long-term care facilities or nursing homes) prior to their admission.

Among those clients who lived in a private house or apartment prior to their admission, 68% lived with a spouse, family or friends and 31% lived alone. Sixteen per cent of clients living in a private house or apartment had received paid health services prior to their admission (for example publicly or privately funded home health or home support services). It should be noted that these services may or may not have been related to the condition for which they were admitted to inpatient rehabilitation. *(Quick Stats, Table 6)*

Informal Support Received Prior to Admission

The NRS contains information on whether or not rehabilitation clients received informal support (i.e. unpaid assistance provided by an individual such as a spouse, family member, friend or neighbour) during the seven days prior to their admission. In 2002–2003, this information was not available for 13% of clients, as the collection of the data element was optional for all facilities prior to October 2002.

Among those clients for whom the information was collected, almost half (46%) received all the informal support they felt they required. A further 10% of clients received only some of the support they felt they required and 3% received none, even though it was required. Just over two-fifths (41%) of clients for whom the information was available did not require any informal support, either because the clients were able to care for themselves or because they received all their required support from formal service providers.

There could be various reasons why clients did not receive some or all of the informal support they felt they required. Although the NRS data provide a glimpse into the requirements for and availability of informal support for this population, more research is required in order to document and describe possible reasons.

Figure 2.7 shows that there appeared to be some variation in whether clients received all the required informal support according to the type of facility to which they had been admitted. Compared to clients in general facilities, a smaller proportion of clients admitted to speciality facilities received all the informal support they felt they required prior to admission (39% compared with 49% in general facilities), and a larger proportion received only some of the help they felt they required (19% compared with 5% of clients admitted to general facilities). Future NRS analytical activities may examine in more depth the potential variation in population characteristics between general and speciality facilities that may be influencing this indicator. *(Quick Stats, Table 7)*

Length of Stay

Figure 2.8 shows the distribution of clients' length of stay in inpatient rehabilitation. A client's length of stay was calculated as the number of days between their admission to and discharge from the rehabilitation facility, excluding any service interruptions. For a small proportion (3%) of clients, the rehabilitation services provided were temporarily suspended due to a change in the client's health status. In order to obtain a more accurate estimate of the number of days of rehabilitation received by the clients for the health condition for which they were admitted, these temporary suspensions, or service interruptions, were excluded from the calculation of length of stay. Excluding the service interruptions had only a marginal effect on the calculation of the median length of stay for all clients, which was 22 days including or excluding service interruptions.
(Quick Stats, Table 8)

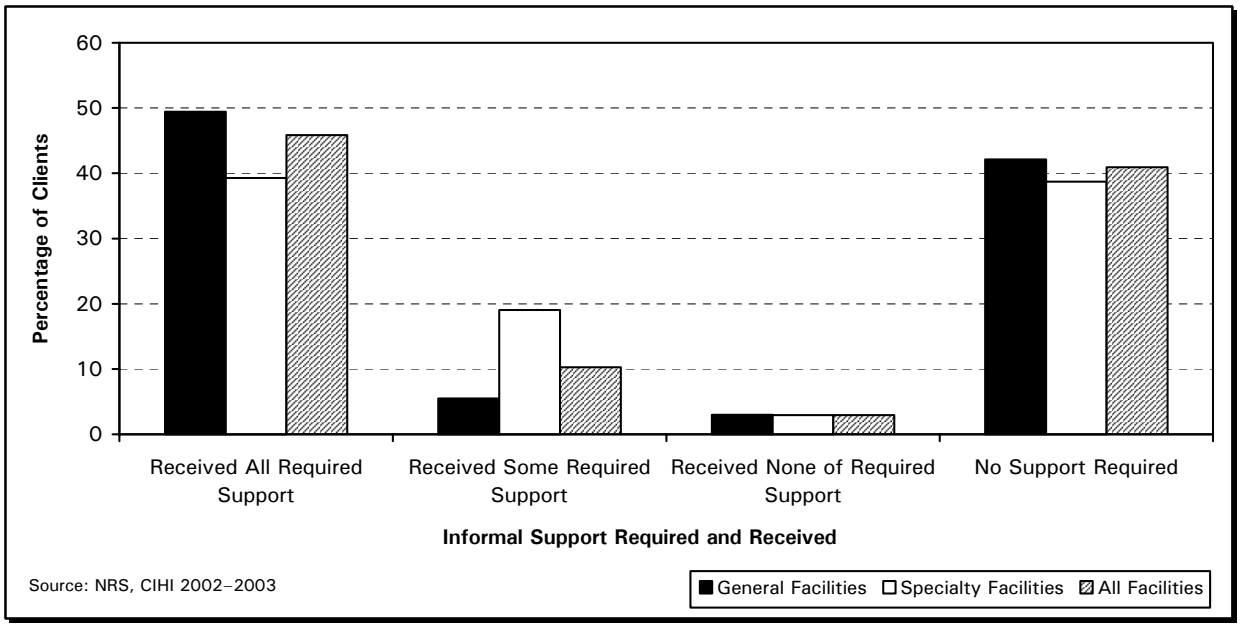

Figure 2.7 Inpatient Rehabilitation Clients Requiring and Receiving Informal Support Prior to Admission by Type of Facility, 2002–2003

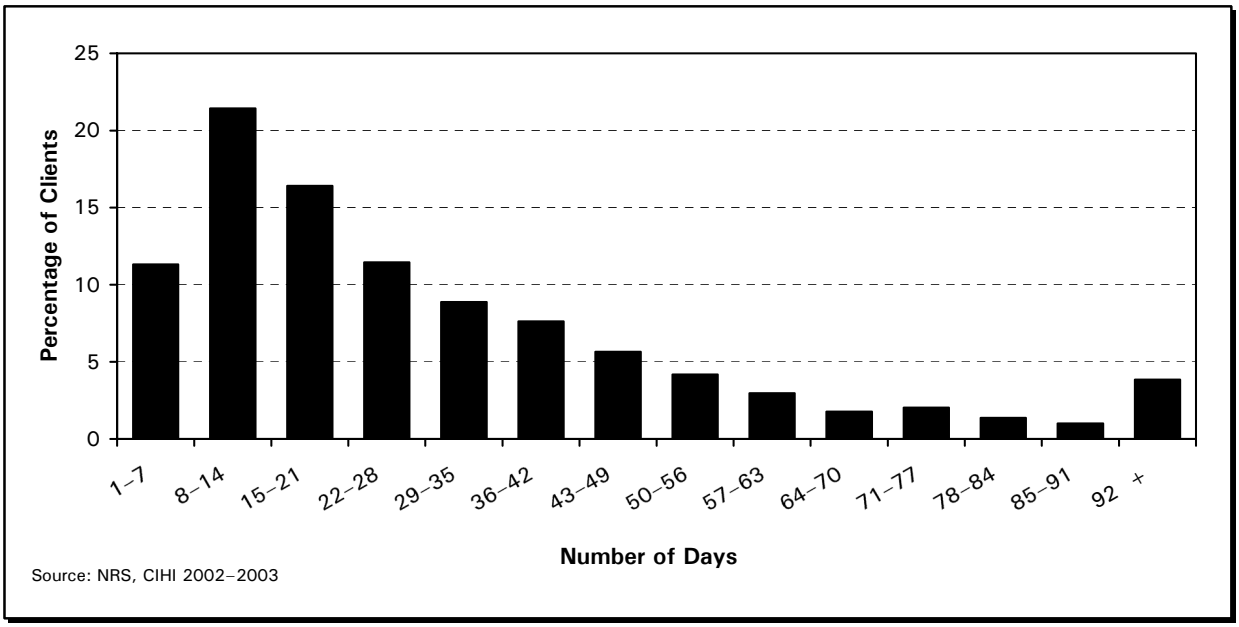

Figure 2.8 Distribution of Length of Stay in Inpatient Rehabilitation, 2002–2003

It should be noted that some clients who are admitted to participating facilities for less than three days do not have comprehensive NRS admission or discharge records. Therefore, they were excluded from this analysis.

The median length of stay for clients admitted to specialty facilities was longer than that of clients admitted to general facilities (29 days and 19 days respectively). For both types of facility, the median length of stay also varied among the different types of admission classes. Not surprisingly, clients classified as short stay admissions had the shortest median length of stay (6 days). Those classified as initial rehabilitation clients had a median stay of 23 days, while those who were receiving subsequent inpatient rehabilitation for their health condition had a median of more than 23 days. The median length of stay was 28 days for clients classified as re-admissions and 38 days for those classified as continuing rehabilitation. *(Quick Stats, Table 9)*

Reasons for Discharge

The NRS contains information on the reason for a client's discharge from a participating rehabilitation facility. The reasons for discharge provide information on whether or not the client's rehabilitation goals (that were determined and documented at their admission) were met, and whether the client was discharged to where he or she lived before their admission, or whether was transferred or referred to another unit or facility. Other potential reasons for discharge include the death of the client during the stay at the rehabilitation facility, or the withdrawal of the client from rehabilitation services against professional advice.

Over nine out of every 10 clients (91%) were coded as having met their service goals at discharge; 80% of all clients met their goals and returned to their permanent living setting (such as a private house or apartment, boarding house or assisted living setting), while 11% met their goals but were referred or transferred to other units within the same facility or to other facilities. Seven percent of clients did not meet their service goals. Clients not meeting their service goals may have been discharged to their permanent living setting or transferred to another unit or facility. *(Quick Stats, Table 10)*

Services Referred to After Discharge

Over four out of every five (83%) clients discharged from inpatient rehabilitation in 2002–2003 were referred or transferred to facilities or agencies in order to receive additional services pertaining to their rehabilitation condition. The remaining 17% of clients were not referred or transferred to any service, had died, or the information was not collected for other reasons, such as the client's withdrawal from the rehabilitation program.

Among those clients who were referred to services after discharge, 35% were referred to home care agencies; 19% were referred to facility-based ambulatory care services and 15% were referred to a private medical practitioner, such as a family doctor or physiotherapist. Some clients were referred or transferred to other facility-based care: 10% of clients were referred to residential care facilities; 7% to inpatient acute care units; and 4% to other inpatient rehabilitation units.

As Figure 2.9 shows, there were some differences in the services to which clients were referred upon discharge according to the type of facility from which they had been discharged. Clients discharged from general facilities were more likely to be referred to home care than those discharged from speciality facilities; 41% of clients discharged from general facilities were referred to home care agencies compared with 26% of clients discharged from specialty facilities. In contrast, clients from speciality facilities were more likely to have been referred to a private medical practitioner or an ambulatory care service. Among clients discharged from speciality facilities, 22% were referred to private medical practitioners and 21% were referred to ambulatory care services. The comparative figures for clients discharged from general facilities were 11% and 17% respectively. Future NRS reports may shed some light on the impact of client characteristics on the potential variation between specialty and general facility types. *(Quick Stats, Table 11)*

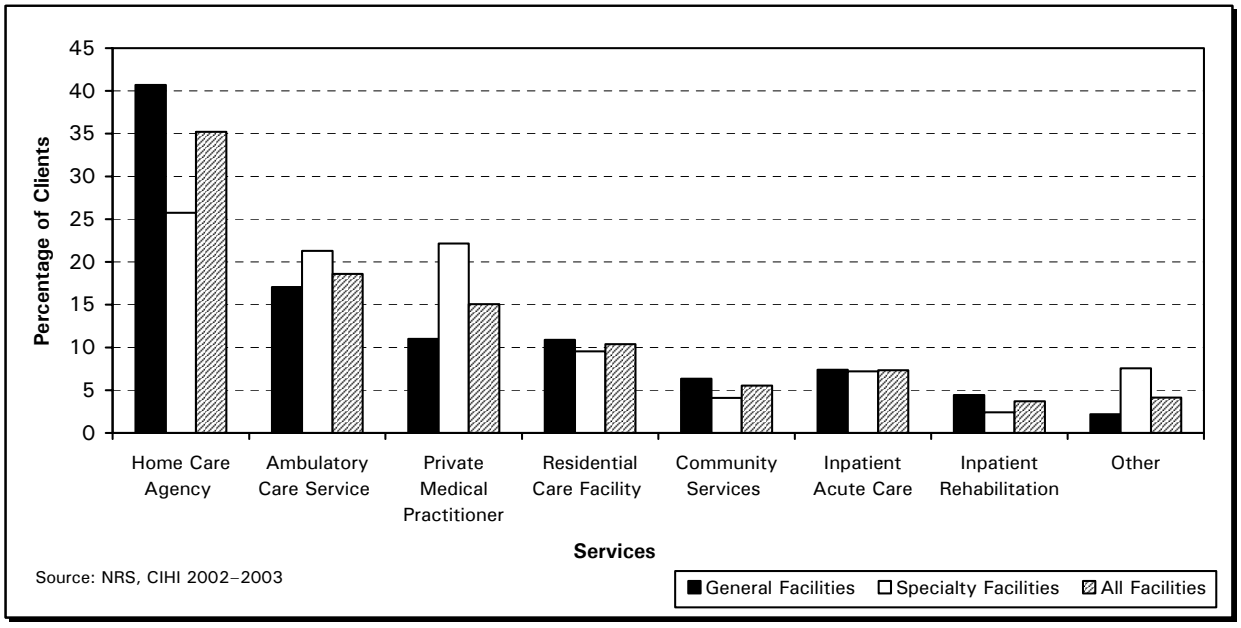

Figure 2.9 Services Referred to After Discharge From Inpatient Rehabilitation, 2002–2003

Pre-Admission and Post-Discharge Living Setting

Comparing where rehabilitation clients lived before their admission and after their discharge showed that most clients returned to their pre-hospital living setting. For example, 83% of all clients who had lived in a private house or apartment returned home after their stay in hospital, 3% moved into assisted living accommodation and 7% moved into residential care. The remaining 8% of clients had either died, moved into other types of accommodation or their post-discharge living setting was not known or recorded (for example, because they had been transferred to another hospital).

The likelihood of clients returning to their private house or apartment varied according to whether or not the clients had received paid health services prior to their admission—those who had received paid health services prior to their admission were less likely to return home and more likely to have moved into assisted living accommodation or residential care compared with those who had not received paid services. For example, 76% of clients with paid health services returned home and 10% moved into residential care. The comparative figures for clients who did not have paid health services prior to admission were 84% and 6% respectively.

Among those clients who returned to their private house or apartment after their inpatient rehabilitation and had received paid health services prior to admission, nine out of every ten clients continued to receive paid health services after their discharge. Figure 2.10 shows these clients accounted for 69% of all clients who had lived in a private house or apartment and received paid health services prior to admission. Among clients who lived in a private house or apartment and had not received paid health services prior to their admission, 37% returned home and began to receive some paid services following their hospital stay while 47% continued to live at home without receiving any paid health services.

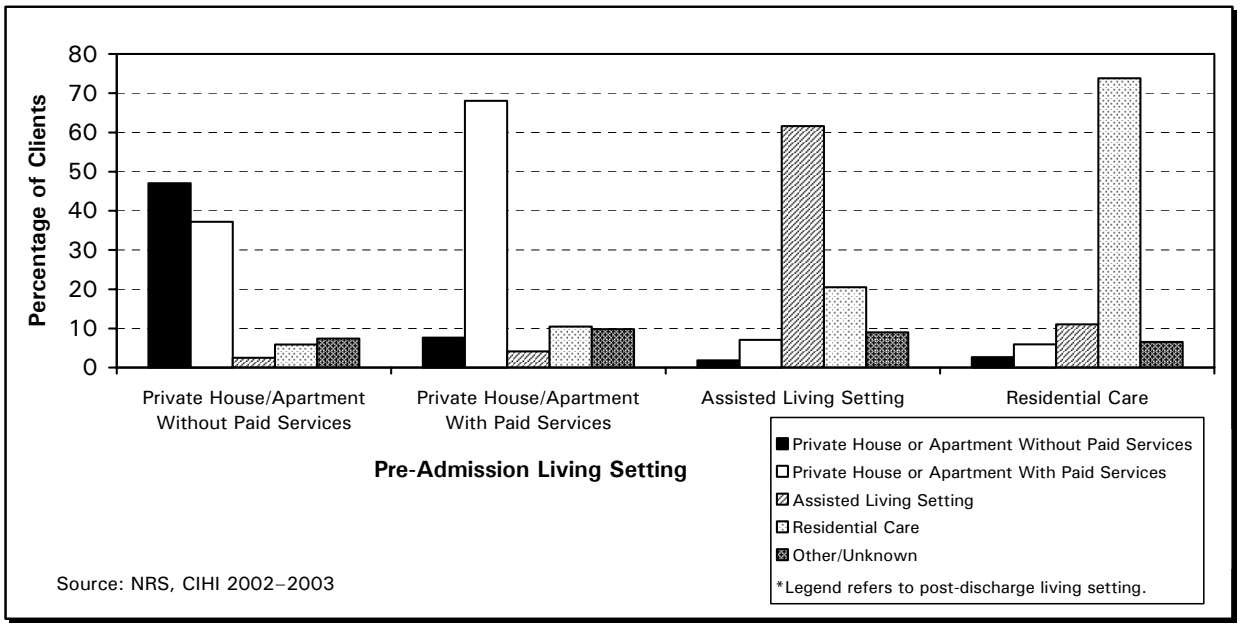

Figure 2.10 Pre-Admission and Post-Discharge Living Setting of Inpatient Rehabilitation Clients, 2002–2003

Figure 2.10 also shows that 62% of clients who lived in assisted living accommodation prior to admission to a rehabilitation facility returned to the same or similar living setting after discharge from the rehabilitation facility while 20% of these clients moved into residential care. Three-quarters (74%) of clients who lived in residential care settings returned to residential care settings after discharge. *(Quick Stats, Table 12)*

Summary

From a systems-level perspective, this chapter highlights some characteristics of the hospitals, clients, and rehabilitation episodes that are reflected in the NRS data. Some noteworthy differences and concepts across facility types, demographic characteristics and referral patterns are presented in order to provide a broad summary of the inpatient services in participating facilities across Canada.

Complete information for just under 17,000 clients discharged from inpatient rehabilitation facilities in 2002–2003 was submitted to the NRS. Around two-thirds of these clients had been admitted to general rehabilitation facilities and a third had been admitted to specialty rehabilitation facilities.

The vast majority of clients (91%) were receiving their first inpatient rehabilitation in any hospital for relating to their particular condition.

Over nine out of every ten clients (91%) admitted to inpatient rehabilitation units were referred by inpatient acute care facilities; either the inpatient acute unit of the same facility (42%) or from a different facility (50%).

Among clients for whom a date ready for admission was known, 44% were admitted to inpatient rehabilitation the same day they were deemed clinically ready, while only 2% had to wait over 30 days.

The average age of inpatient rehabilitation clients was 70 years. Overall, 57% of clients were female compared with 43% who were male. However, the ratio of female to male clients increased as the clients got older.

Overall, the median length of stay of clients in inpatient rehabilitation was 22 days. Clients admitted to specialty facilities tended to stay longer than clients admitted to general facilities (median of 29 days and 19 days respectively).

Over nine out of every 10 clients (91%) met their service goals at their rehabilitation discharge. The majority of clients, whether or not they met their service goals, were referred to other services or facilities following their discharge: just over a third of referrals were to home care agencies (35%) and around a fifth (19%) were to facility-based ambulatory care services.

Subsequent chapters in this report will build upon this introductory chapter and focus on particular client groups and outcome indicators.

Chapter 3. Rehabilitation Client Groups

Introduction

Inpatient rehabilitation clients are admitted to rehabilitation programs for various health conditions, such as orthopaedic conditions, stroke and arthritis. Grouping clients by these conditions and then comparing the data across the various groups provides information for understanding variation in rehabilitation service provision.

For the purpose of the NRS, a rehabilitation client is categorized into one of 17 health condition groups, known as Rehabilitation Client Groups (RCGs). The RCG selected for a particular client is the condition that best describes the primary reason for the client's admission to the inpatient rehabilitation unit or facility. Some of the RCGs are further sub-divided in order to facilitate more specific analysis of groups that contain large numbers of rehabilitation clients. A full list of RCGs used within this report can be found in Appendix C. For most of the figures in this chapter, RCGs are arranged in descending order of volume of clients.

Overall Distribution of RCGs

Two RCGs, orthopaedic conditions and stroke, accounted for two-thirds (67%) of all inpatient rehabilitation clients discharged from facilities in 2002–2003. Figure 3.1 shows that almost half of the clients (47%) received services relating to orthopaedic conditions, such as hip fracture, hip replacement and knee replacement, while a fifth of all clients (20%) received rehabilitation services following a stroke.

Among the less frequently seen RCGs were medically complex conditions, such as infections, circulatory disorders and skin disorders (6% of all clients); brain dysfunctions (5%); and limb amputations (4%). A further 4% of clients received rehabilitation services following spinal cord dysfunction, which includes non-traumatic or traumatic paraplegia and quadriplegia, as well as other traumatic spinal cord injuries. The remaining 14% of clients received inpatient rehabilitation for other conditions, such as arthritis, cardiac disease, debility, major multiple trauma, pain syndromes, and pulmonary disease. *(Quick Stats, Table 13)*

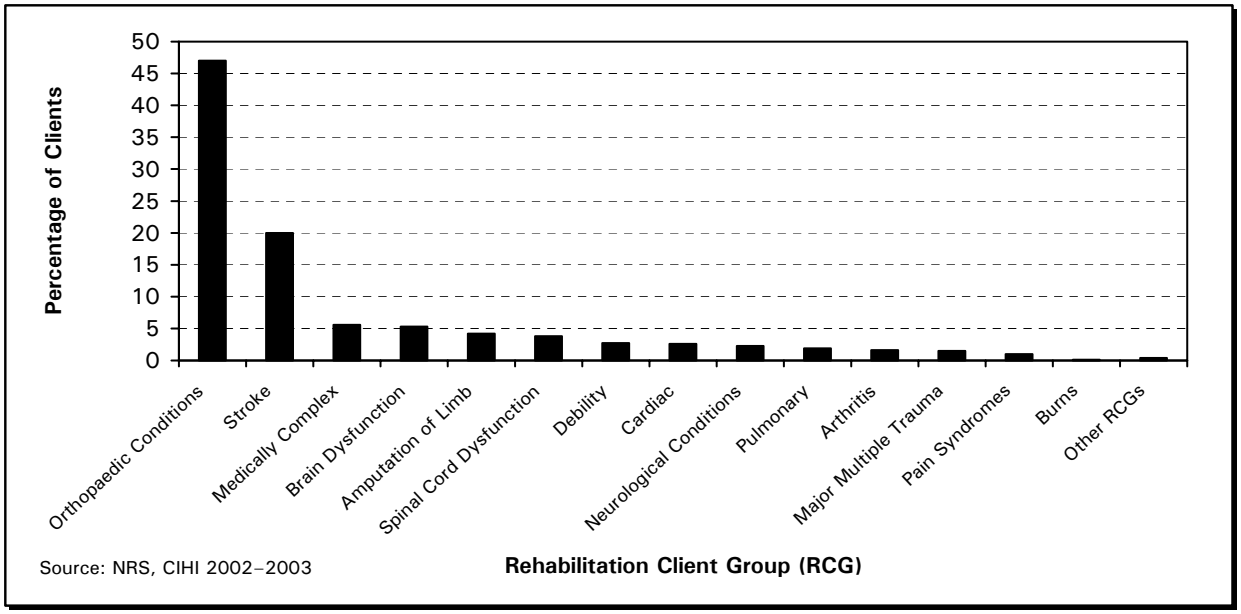

Figure 3.1 Distribution of Inpatient Rehabilitation Clients by RCG, 2002–2003

RCG by Type of Facility

Although orthopaedic and stroke clients were by far the two largest groups in both general and specialty rehabilitation facilities during 2002–2003, there were some differences in the distribution of clients across RCGs within the two facility types.

The orthopaedic and medically complex RCGs accounted for larger proportions of clients admitted to general facilities than to specialty facilities. For example, 52% of all clients admitted to general facilities were in the orthopaedic RCG compared with only 38% of all clients admitted to specialty facilities. In contrast, brain dysfunction, amputation of limb and spinal cord dysfunction RCGs accounted for larger proportions of clients in specialty facilities than in general facilities. For example, 2% of all admissions to general facilities were for spinal cord dysfunction, compared to 8% of all admissions to specialty facilities. General and specialty facilities had the same proportion of clients admitted for inpatient rehabilitation following a stroke (20%). *(Quick Stats, Table 13)*

The data can also be looked at another way—the proportion of clients within each RCG that were admitted to general and specialty facilities. As Figure 3.2 shows just under three-quarters (72%) of all orthopaedic clients were admitted to general facilities and just over a quarter (28%) to specialty facilities. The proportion of stroke clients in each type of facility reflected the overall distribution of clients between the two types: 65% in general facilities and 35% in specialty facilities. In contrast, the majority of clients admitted in the brain dysfunction, amputation of limb and spinal cord dysfunction RCGs were admitted to specialty facilities. For example, 74% of all spinal cord dysfunction clients were admitted to specialty facilities compared with 26% who were admitted to general facilities. *(Quick Stats, Table 14)*

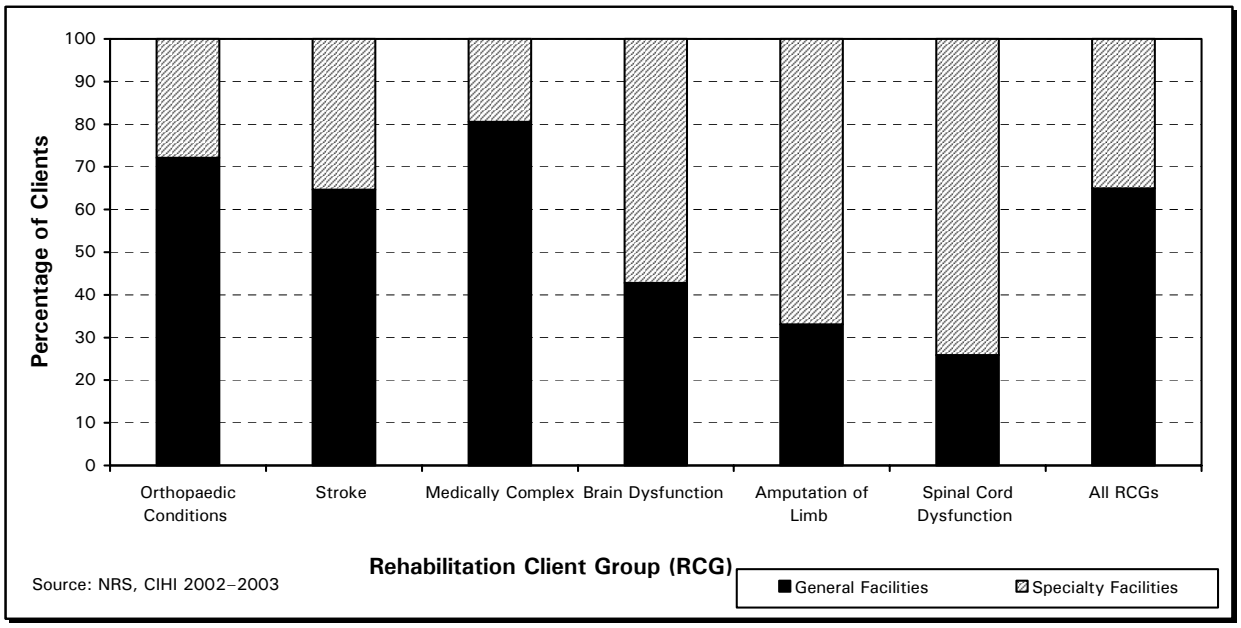

Figure 3.2 Distribution of Inpatient Rehabilitation Clients by Facility Type and RCG, 2002–2003

Days Waiting for Admission

As mentioned in the previous chapter, the date ready for admission was not known for almost a quarter (23%) of clients discharged in 2002–2003. These clients were therefore not included in the following analysis and this should be considered when interpreting the days waiting for admission indicator.

Overall, clients (for whom a date ready for admission was known) had a median wait of one day for admission to inpatient rehabilitation once they were deemed eligible for admission. As Figure 3.3 shows, orthopaedic clients had the shortest median wait of zero days (i.e. at least 50% of orthopaedic clients were admitted the same day they were deemed eligible), while the median wait for medically complex and spinal cord dysfunction clients was one day. Amputation of limb and neurological conditions client groups tended to wait the longest for admission to a rehabilitation facility with a median wait of three days. *(Quick Stats, Table 15)*

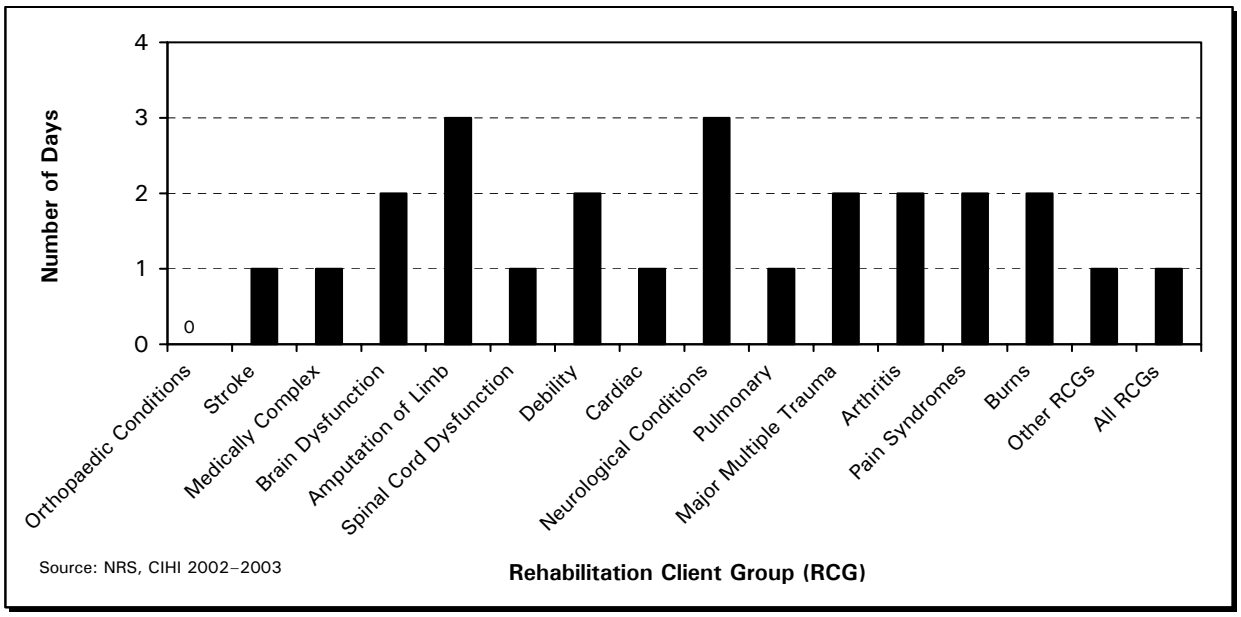

Figure 3.3 Median Days Waiting for Admission to Inpatient Rehabilitation by RCG, 2002–2003

Demographic Characteristics

Chapter 2 described the overall age and sex characteristics of clients who received inpatient rehabilitation in participating facilities in 2002–2003. In this chapter, the age and sex characteristics of clients within each of the six most frequently occurring groups are presented.

Figure 3.4 shows that the orthopaedic RCG had the highest proportion of female and lowest proportion of male clients: 69% and 31% respectively. Medically complex and stroke RCGs had more equal proportions of female and male clients. The medically complex RCG was comprised of 51% female and 49% male clients while the comparative figures for the stroke RCG were 47% and 53% respectively. In contrast, amputation of limb, brain dysfunction, and spinal cord dysfunction clients were more likely to be male; the proportion of male clients in these RCGs ranged from 61% to 68%. *(Quick Stats, Table 16)*

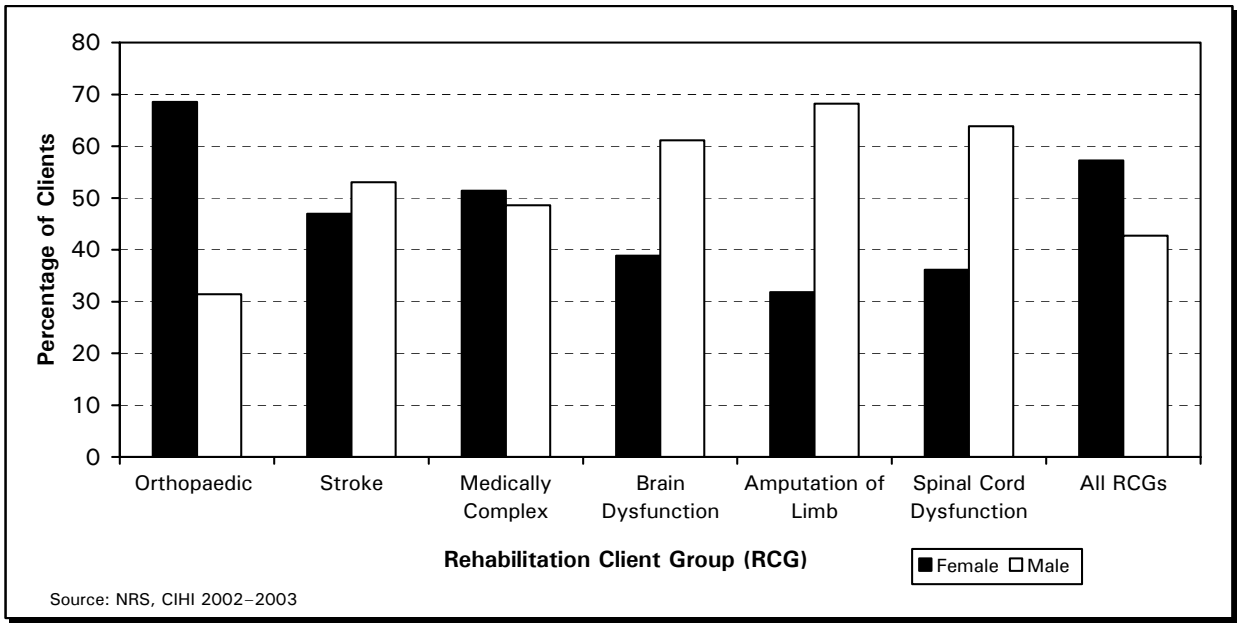

Figure 3.4 Sex of Inpatient Rehabilitation Clients by RCG, 2002–2003

Although the orthopaedic, stroke and medically complex RCGs had different proportions of male and female clients, Figure 3.5 shows that these RCGs had fairly similar age distributions—with a large proportion of clients aged 75 years and over. The medically complex RCG had the highest proportion of clients aged 75 years and over (57%), followed by the orthopaedic RCG (51%) and the stroke RCG (45%).

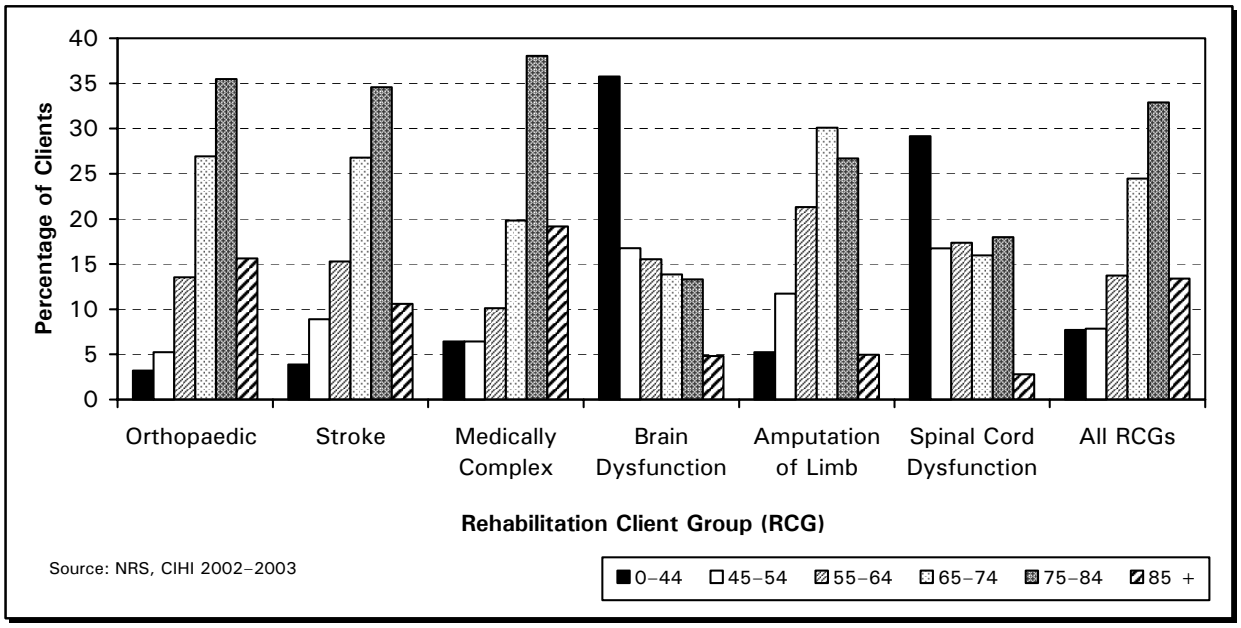

Figure 3.5 Age at Admission of Inpatient Rehabilitation Clients by RCG, 2002–2003

The brain dysfunction and spinal cord dysfunction RCGs also had similar age distributions, however, these RCGs had a high proportion of clients in the youngest age group (under 45 years): 36% and 29% respectively.

Amputation of limb clients tended to be slightly younger than orthopaedic or stroke clients, with the highest proportions of clients in the 65 to 74 and 75 to 84 age groups (30% and 27% respectively). *(Quick Stats, Table 17)*

Analyzing both age and sex of clients within each RCG showed that for orthopaedic, limb amputation, brain dysfunction and spinal cord dysfunction RCGs, either male or female clients in one or two age groups accounted for a substantial proportion of clients within that RCG. Figure 3.6 shows that orthopaedic clients tended to be older women; 38% of orthopaedic clients were females aged 75 years and over, while males of the same age group accounted for only 13% of orthopaedic clients. In contrast, among limb amputation clients, males aged between 65 and 84 years were the most predominant group, accounting for two-fifths (39%) of limb amputation clients. Females of the same age group accounted for 18% of clients in this RCG. Males aged under 45 years were the most predominant group in both brain dysfunction and spinal cord RCGs and accounted for 25% and 19% of these RCGs respectively.

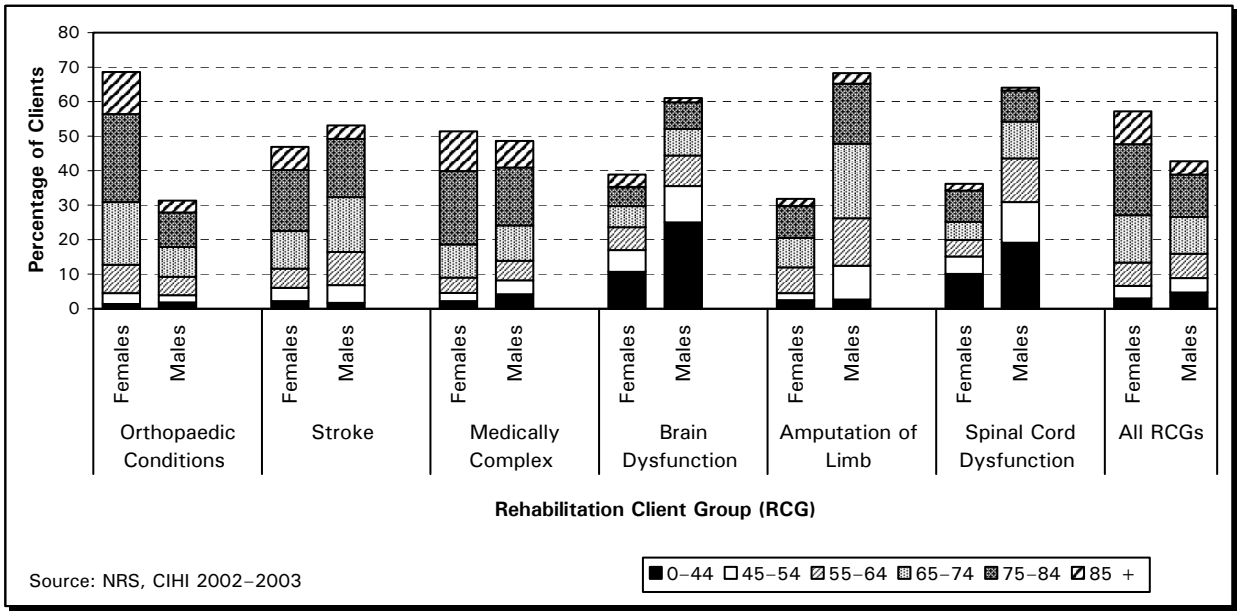

Figure 3.6 Age and Sex of Inpatient Rehabilitation Clients by RCG, 2002–2003

Among stroke and medically complex clients, the proportions of female and male clients within each age group were more similar. For example, the largest proportion of stroke clients were those aged between 75 and 84 years and had almost equal representation of males and females: accounting for 17% and 18% of all stroke clients respectively. *(Quick Stats, Table 18)*

Pre-Admission Living Setting

Over nine-tenths (93%) of inpatient rehabilitation clients lived in a private house or apartment prior to their admission. This proportion ranged from 88% of clients in the debility RCG to 97% of clients in the major multiple trauma RCG.

If a client lived in a private house or apartment, information is also collected on whether or not they received paid health services prior to their admission. Figure 3.7 shows that the proportion of clients who lived in a private house or apartment and received paid health services varied across the RCGs. This proportion was largest among clients in the amputation of limb and debility RCGs (37% and 32% respectively) and smallest among clients in the major multiple trauma RCG (4%). The brain dysfunction and stroke RCGs also had relatively small proportions of clients (10%) who received paid health services in their private house or apartment prior to admission. *(Quick Stats, Table 19)*

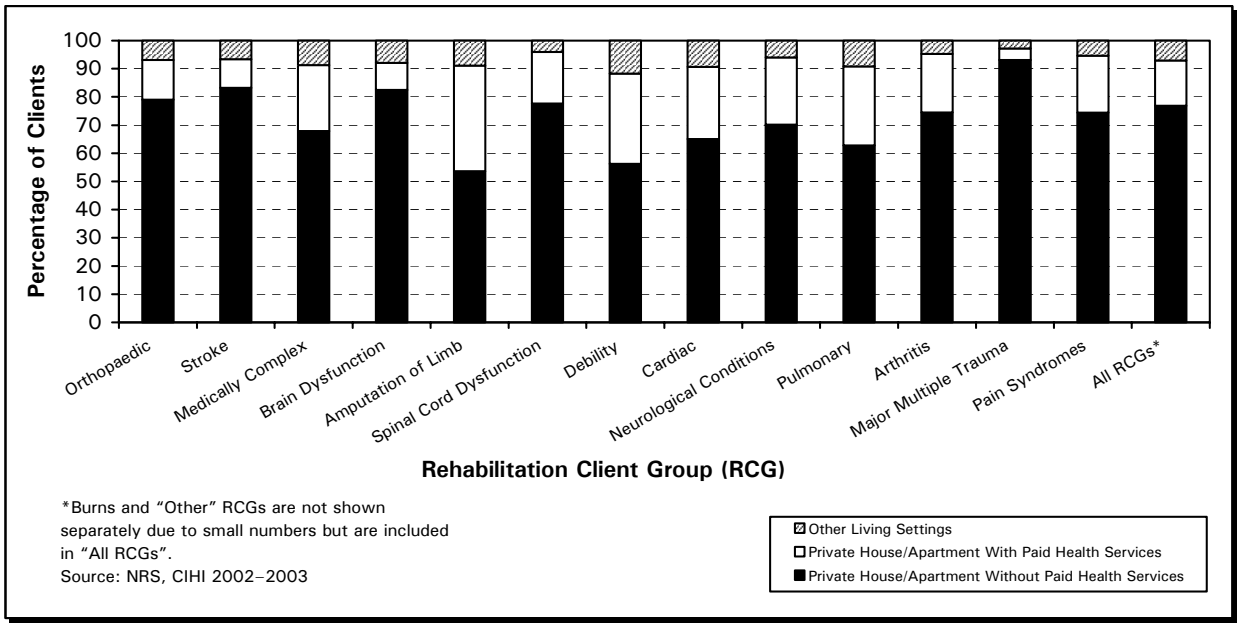

Figure 3.7 Pre-Admission Living Setting of Inpatient Rehabilitation Clients by RCG, 2002–2003

Functional Status at Admission

When clients are admitted to rehabilitation facilities that participate in the NRS, their motor and cognitive functional abilities are assessed at admission using the FIM™ instrument, developed by the Uniform Data System for Medical Rehabilitation (UDS$_{MR}$). A similar assessment is carried out, whenever possible, when the clients are discharged. The FIM™ instrument contains 18 elements: 13 of these elements assess the components of motor function, such as eating and walking (referred to as motor elements), and 5 elements assess cognitive characteristics such as communication and social interaction (referred to as cognitive elements). A full list of the elements can be found in Appendix B. Each of the 18 FIM™ instrument elements is rated on a scale from one to seven, with a higher rating indicating that the client has a higher functional ability. The ratings for the 18 elements can be added together to form a Total Function Score, which provides a summary measure of the clients' overall functional ability. The Total Function Score ranges from 18 (lowest functioning) to 126 (highest functioning).

Figure 3.8 shows the distribution of the Total Function Score on admission for all inpatient rehabilitation clients. The distribution of the Total Function Score shows that fewer clients had relatively low Total Function Scores and more clients had high Total Function Scores. The mean (average) and median admission Total Function Scores were 85 and 89 respectively.

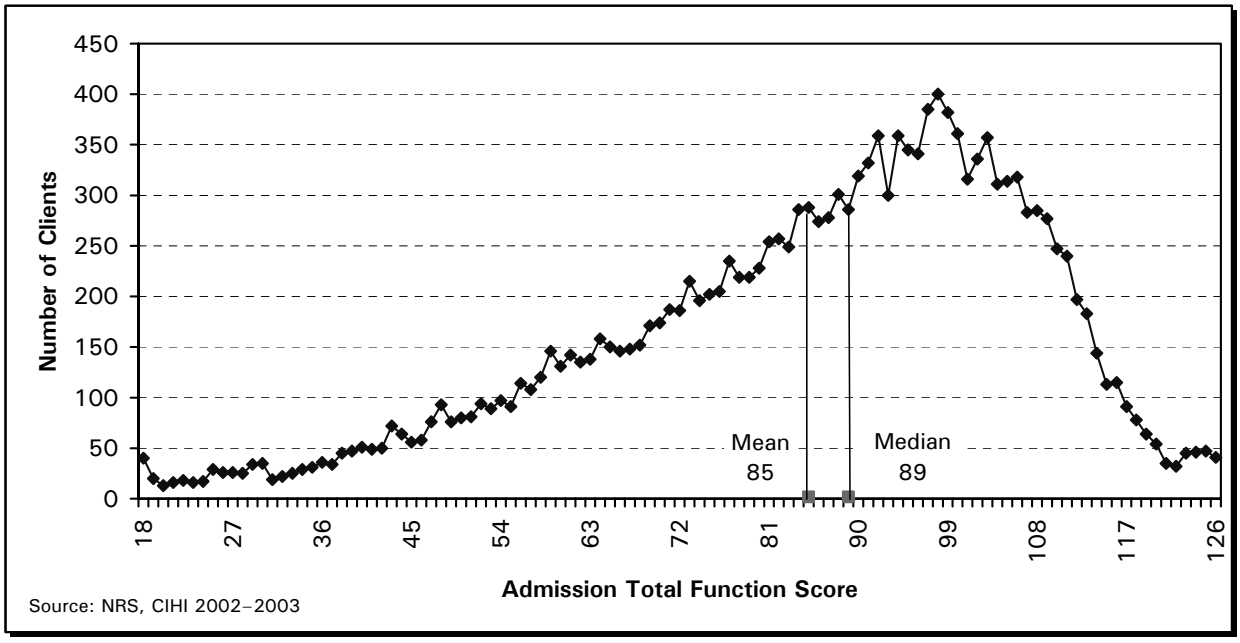

Figure 3.8 Distribution of Admission Total Function Score of Inpatient Rehabilitation Clients, 2002–2003

As Figure 3.9 shows, clients in the arthritis RCG had the highest average admission Total Function Scores (102). Five other RCGs had average admission Total Function Scores in the nineties: burns (97), amputation of limb (95), pain syndromes (94), pulmonary (92), and orthopaedic conditions (90). RCGs with the lowest average Total Function Scores were stroke (74), spinal cord dysfunction (76), brain dysfunction (76), and major multiple trauma (78). *(Quick Stats, Table 20)*

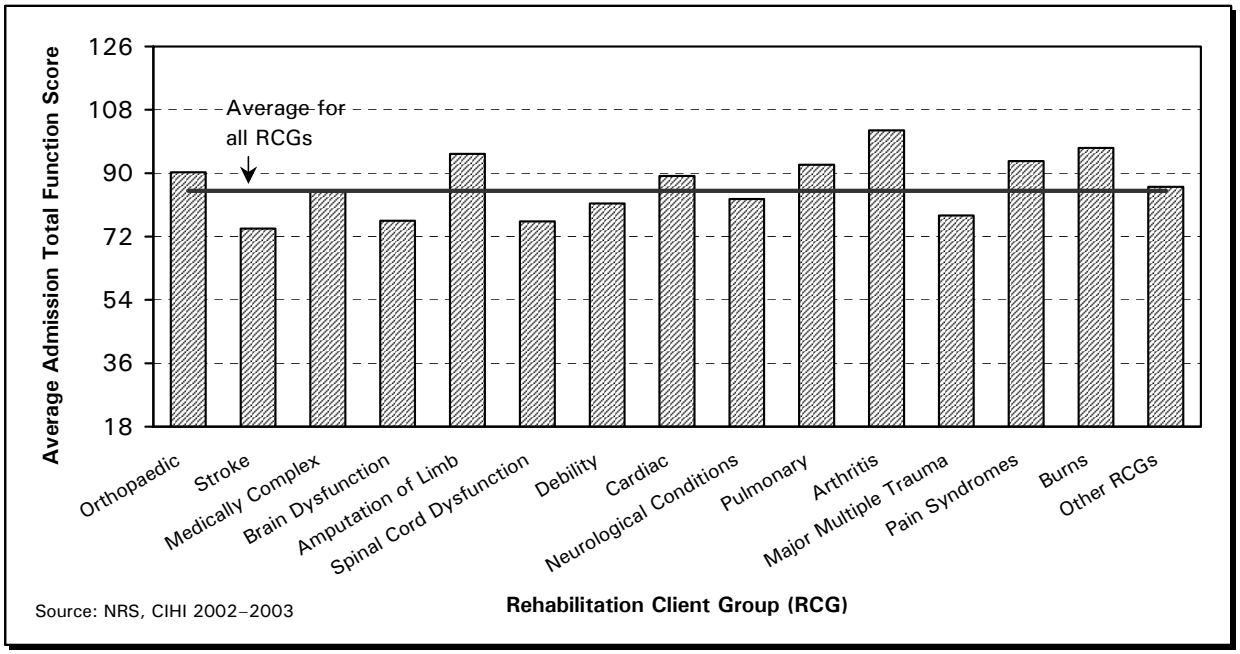

Figure 3.9 Average Admission Total Function Score for Inpatient Rehabilitation Clients by RCG, 2002–2003

Functional Status at Discharge

Not all inpatient rehabilitation clients are able to have a full functional assessment for the purposes of the NRS at their discharge due to reasons such as death or transfer to other units or facilities. Among the clients discharged in 2002–2003, 3% did not have a discharge FIM™ instrument assessment and therefore did not have a discharge Total Function Score. The proportion of clients without a discharge Total Function Score varied slightly across RCGs from 2% of clients in the orthopaedic conditions, amputation of limb, and major multiple trauma RCGs to 9% of clients in the cardiac RCG.

It was also noted that the admission Total Function Scores of clients who were assessed at both admission and discharge were higher, on average, than those who were assessed only at admission and therefore slightly higher than the average admission Total Function Score for all clients. The average admission Total Function Score among clients who were assessed only at admission was 70 compared with 86 for those who were assessed at both admission and discharge. As mentioned above, the average admission Total Function Score for all clients was 85. *(Quick Stats, Table 21)*

The analysis of the discharge Total Function Score relates only to those clients for whom functional ability was assessed using the FIM™ instrument at both admission and discharge, which should be considered when interpreting the results presented in this report.

Overall, clients discharged from participating rehabilitation facilities during 2002–2003 who had a discharge assessment conducted using the FIM™ instrument had an average discharge Total Function Score of 104. Clients who were admitted to facilities for rehabilitation relating to a burn or with arthritis had the highest average discharge Total Function Scores (117 and 113 respectively). The lowest average Total Function Score at discharge was observed among clients who were admitted to facilities following stroke (96), debility (97), and spinal cord dysfunction (97). *(Quick Stats, Table 22)*

Change in Functional Status

Figure 3.10 displays the change in average Total Function Score of clients for each RCG. Overall, the average Total Function Score increase was 18, from 86 at admission to 104 at discharge. Major multiple trauma clients had the largest average change in Total Function Score, of 30 points, increasing from 78 at admission to 108 at discharge. Stroke, spinal cord dysfunction, and burns clients all showed an average increase of 21 points. Arthritis clients had the smallest average change in Total Function Score: an increase of 10. However, these clients had the highest average admission Total Function Score (103) and the second highest average discharge Total Function Score (113). *(Quick Stats, Table 22)*

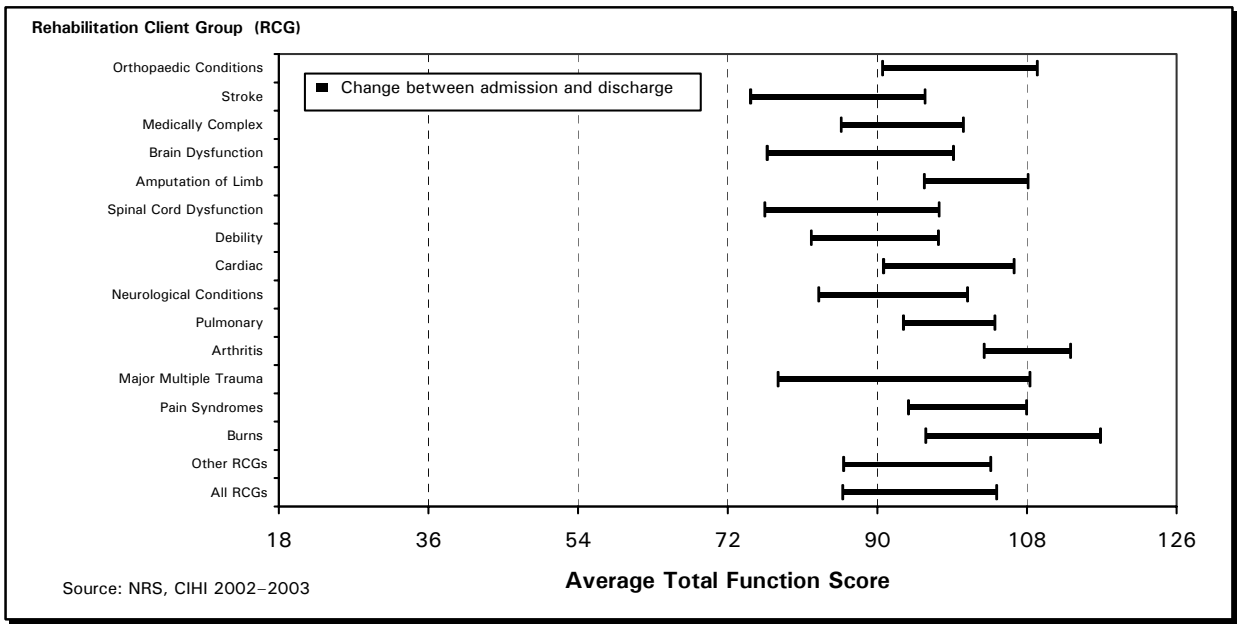

Figure 3.10 Change in Average Total Function Score of Inpatient Rehabilitation Clients by RCG, 2002–2003

Length of Stay

Figure 3.11 shows the median length of stay, excluding service interruptions, for clients in each RCG. Overall, the median length of stay of clients discharged from rehabilitation programs in 2002–2003 was 22 days. Clients with spinal cord dysfunction had the longest median length of stay (44 days) while clients with arthritis had the shortest median length of stay (13 days). Orthopaedic and cardiac disorder clients had the next shortest median length of stay (both with 16 days). *(Quick Stats, Table 23)*

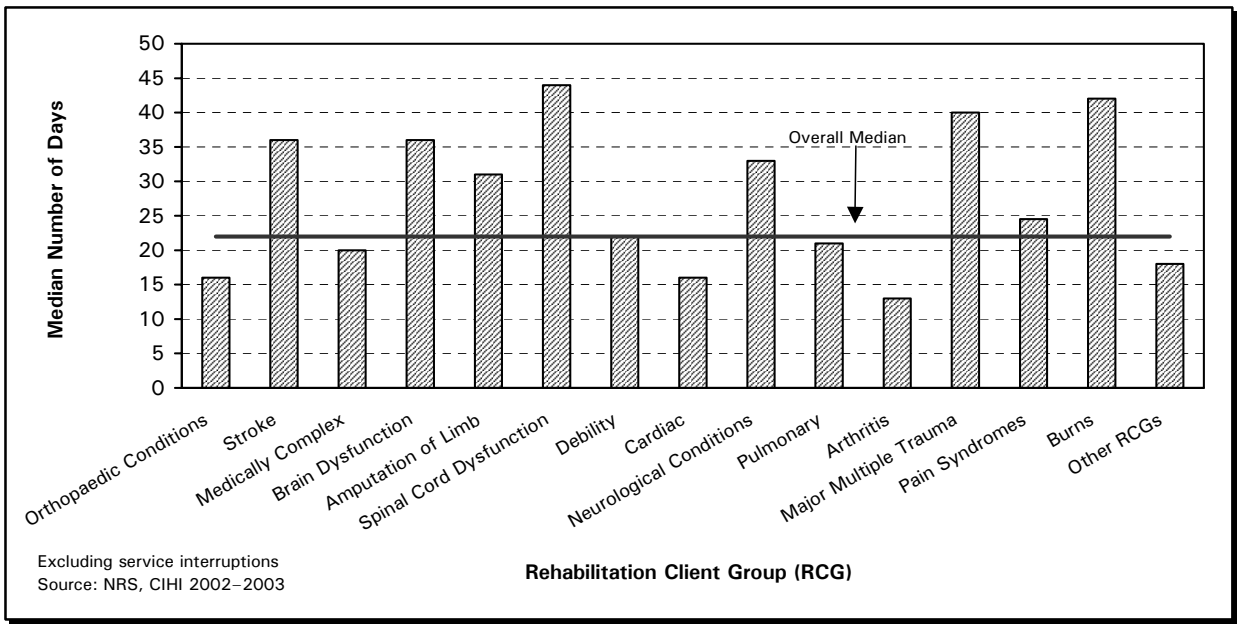

Figure 3.11 Median Length of Stay in Inpatient Rehabilitation Clients by RCG, 2002–2003

Length of Stay Efficiency

Assessing a concept in the NRS known as "length of stay efficiency" is one way of measuring functional status outcomes of inpatient rehabilitation programs. It is calculated by dividing the change in Total Function Score for each client by the length of stay (excluding service interruption days) for each client and taking the average of these ratios for all clients. As an NRS indicator, length of stay efficiency demonstrates the average change in Total Function Score per day of clients in rehabilitation programs. Generally, a high value for length of stay efficiency means that the clients' functional status improved in a relatively short period of time.

The average length of stay efficiency of clients discharged from rehabilitation facilities in 2002–2003 was 1.0. In other words, the Total Function Score of these clients, as measured using the FIM™ instrument, increased one point per day on average. The average length of stay efficiency ranged from 0.4 for amputation of limb clients to 1.3 for orthopaedic clients. In other words, on average, amputation of limb clients had an increase of less than half a point in their Total Function Score per day of rehabilitation compared with almost one and a half points per day for orthopaedic clients. *(Quick Stats, Table 23)*

Since the FIM™ instrument reflects a broad assessment of human functioning, comparing length of stay efficiency across RCGs should be undertaken with caution. Some client groups that have limitations in certain body functions, such as bladder and bowel function or cognition, appear to have more room for improvement in Total Function Score. The Total Function Score for client groups that have limitations isolated to one or two particular body functions may not increase as much, even though they may have made clinically significant gains in their rehabilitation program.

Clients Reporting Pain

In the NRS, clients aged 14 years or older are asked at admission to report whether or not they were experiencing pain. In 2002–2003, most clients (68%) reported they had pain at admission, and 28% reported they did not have pain at admission. For the remaining 4% of clients, the rehabilitation clinicians were not able to get a response directly from the client when they asked about pain.

Figure 3.12 shows that the proportion of clients who reported pain varied across the RCGs. The RCGs with the largest proportion of clients who reported pain were arthiritis (91%), pain syndromes (88%) and orthopaedic conditions (87%). In contrast, the RCGs with the lowest proportions were stroke (37%), brain dysfunction (45%) and pulmonary disorder (45%). It was noted that the stroke and brain dysfunction RCGs also had the highest proportions of clients who were unable to answer (7% and 10% respectively). *(Quick Stats, Table 24)*

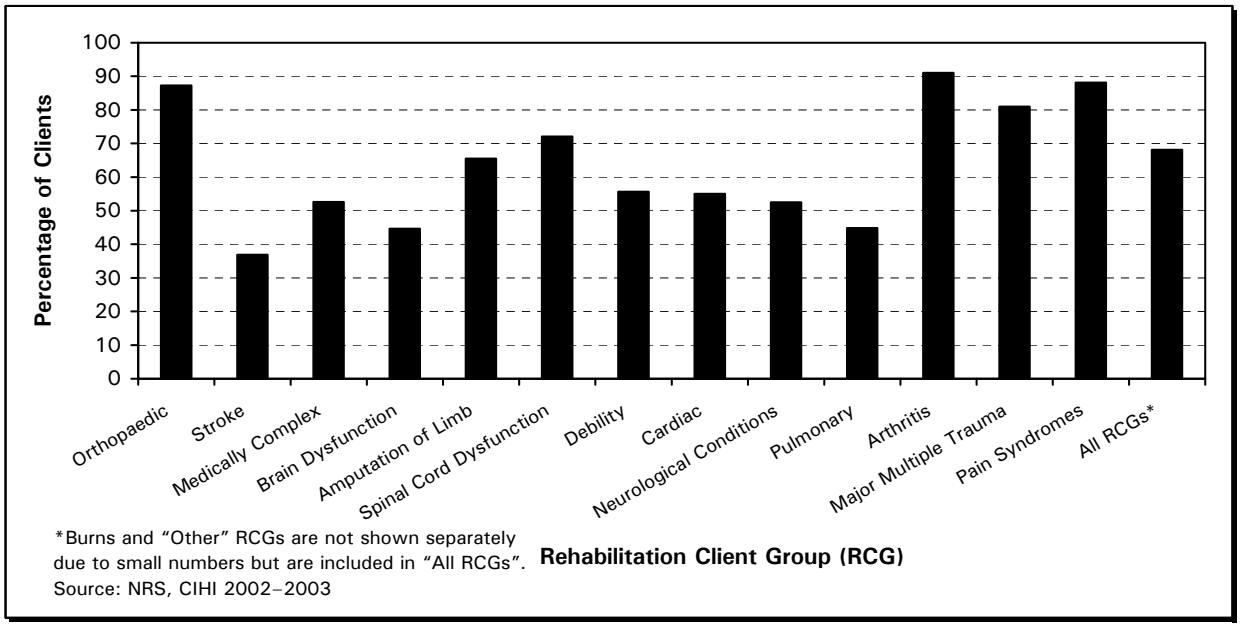

Figure 3.12 Inpatient Rehabilitation Clients Reporting Pain at Admission by RCG, 2002–2003

Clients who report pain at admission are also rated at admission and discharge for the intensity of their pain (mild, moderate or severe) and the number of activities that are impacted by their pain (none, a few, some or most). Clients are identified as having an improvement in pain if they had less pain at discharge than they had at the time of admission, or if they no longer had any pain.

During 2002–2003, among those clients who reported pain at admission and were able to rate their level of pain at discharge, 65% reported an improvement in pain at discharge. Figure 3.13 displays the proportion of clients reporting improvement in pain by RCG. The proportion of clients reporting improvement in their level of pain ranged from 50% among pulmonary disorder clients to 69% of orthopaedic clients. *(Quick Stats, Table 25)*

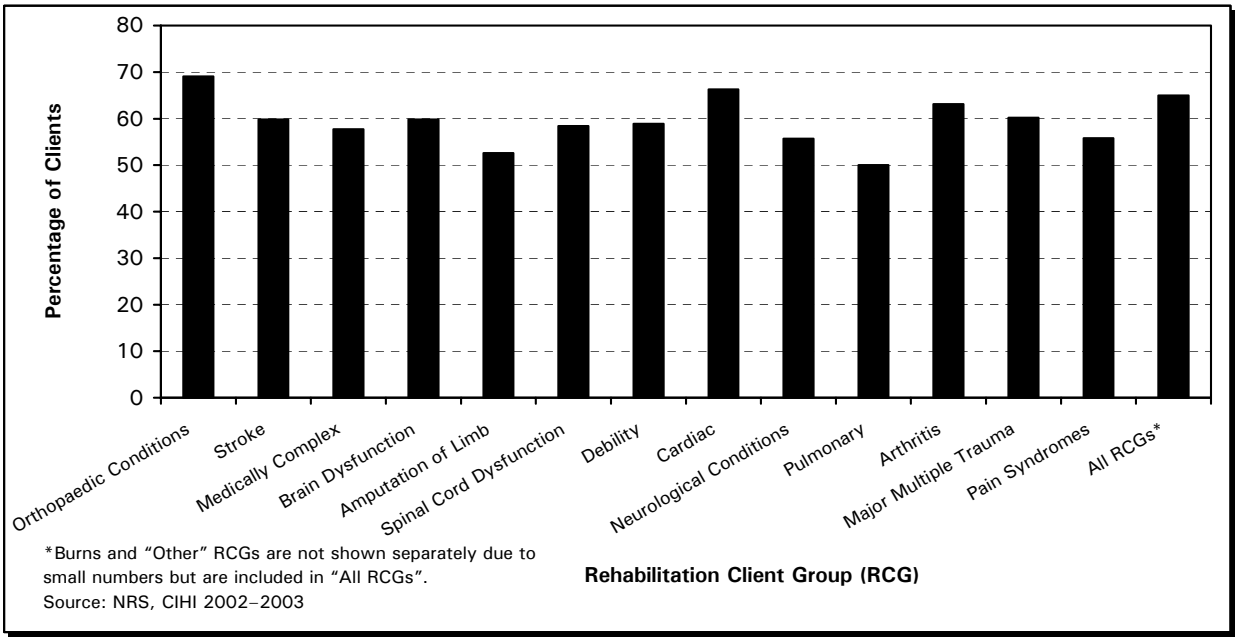

Figure 3.13 Inpatient Rehabilitation Clients Reporting an Improvement in Pain at Discharge by RCG, 2002–2003

Reasons for Discharge

In 2002–2003, 80% of rehabilitation clients met their goals for their rehabilitation as determined at their admission and returned to their permanent living setting. Eleven percent met their goals but were discharged or transferred to units within the same facility or to other facilities, while 7% had not met their service goals upon discharge.

Figure 3.14 shows that clients' reasons for discharge varied with respect to their RCG. Although the majority of clients within each RCG met their service goals and returned to their permanent living setting, the proportion doing so ranged from 70% to 87%. RCGs with the lowest proportions were stroke (70%), debility (71%), and burns (71%), while RCGs with the highest proportions were arthritis (87%), orthopaedic conditions (86%), major multiple trauma (86%).

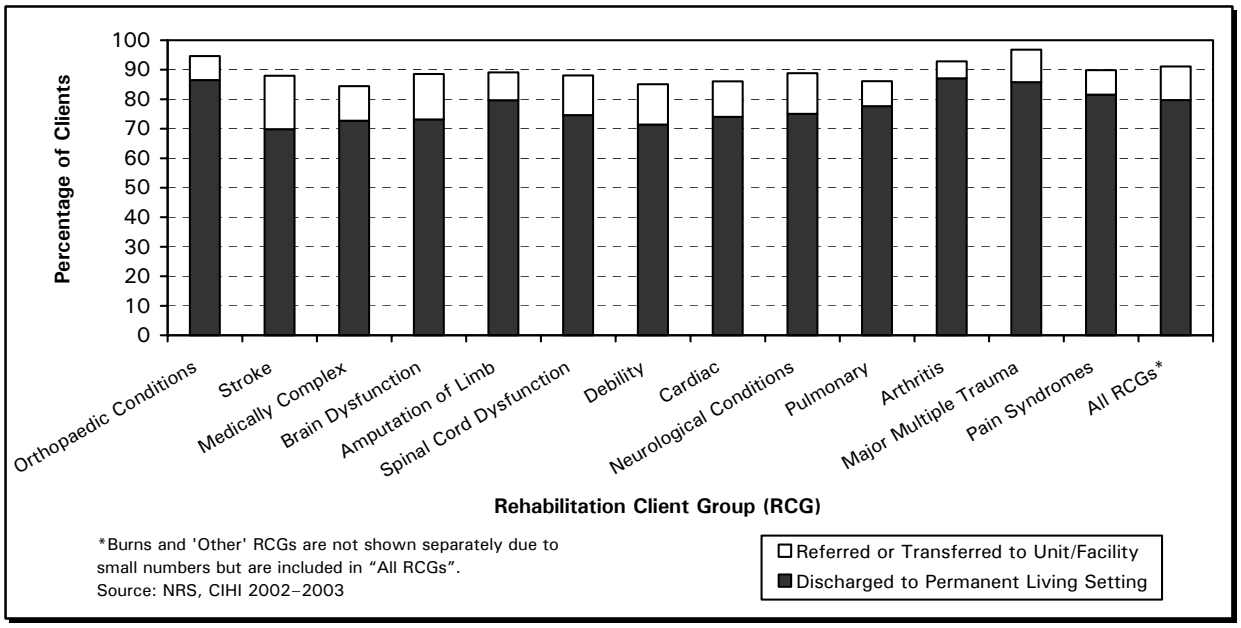

Figure 3.14 Inpatient Rehabilitation Clients Who Met Their Service Goals at Discharge by RCG, 2002–2003

Stroke and debility RCGs also had relatively high proportions of clients who met their service goals but were referred or transferred to another unit or facility (18% and 14% respectively). Other RCGs with similar proportions of clients with this reason for discharge were brain dysfunction (15%), neurological conditions (14%), and spinal cord dysfunction (13%). *(Quick Stats, Table 26)*

Pre-Admission and Post-Discharge Living Setting

The NRS data suggest that during 2002–2003, 83% of all clients who were living in a private house or apartment prior to their admission to a rehabilitation facility returned home following their discharge. However, this proportion varied across the RCGs. The arthritis and orthopaedic RCGs had the highest proportion of clients who returned to their private house or apartment upon discharge (92% and 90% respectively), while the stroke and debility RCG had the lowest proportion (both with 72%).

As mentioned in Chapter 2, many inpatient rehabilitation clients returned to their private house or apartment after their discharge and began or continued to receive paid health services at home. Among clients who lived in a private house or apartment prior to their admission, over four in ten (43%) received paid health services after their discharge. Just over one in ten (12%) of these had also received paid health services prior to their admission, while three in ten (31%) of these began to receive services only after their discharge.

Figure 3.15 shows that these proportions varied across the RCGs. At least half of the clients in the debility, medically complex and cardiac disorder RCGs received paid health services after they returned to their private house or apartment. The debility RCG also had one of the highest proportion of clients who received paid services both before and after their inpatient rehabilitation (25%). In contrast, only a third (33%) of clients who had received inpatient rehabilitation for brain dysfunction returned to their private house or apartment and received paid health services. The major multiple trauma RCG had the lowest proportion of clients who received paid health services before and after their inpatient rehabilitation (2%). However, a further 38% of these clients began to receive health services after they returned home following their stay in hospital. (Quick Stats, *Table 27)*

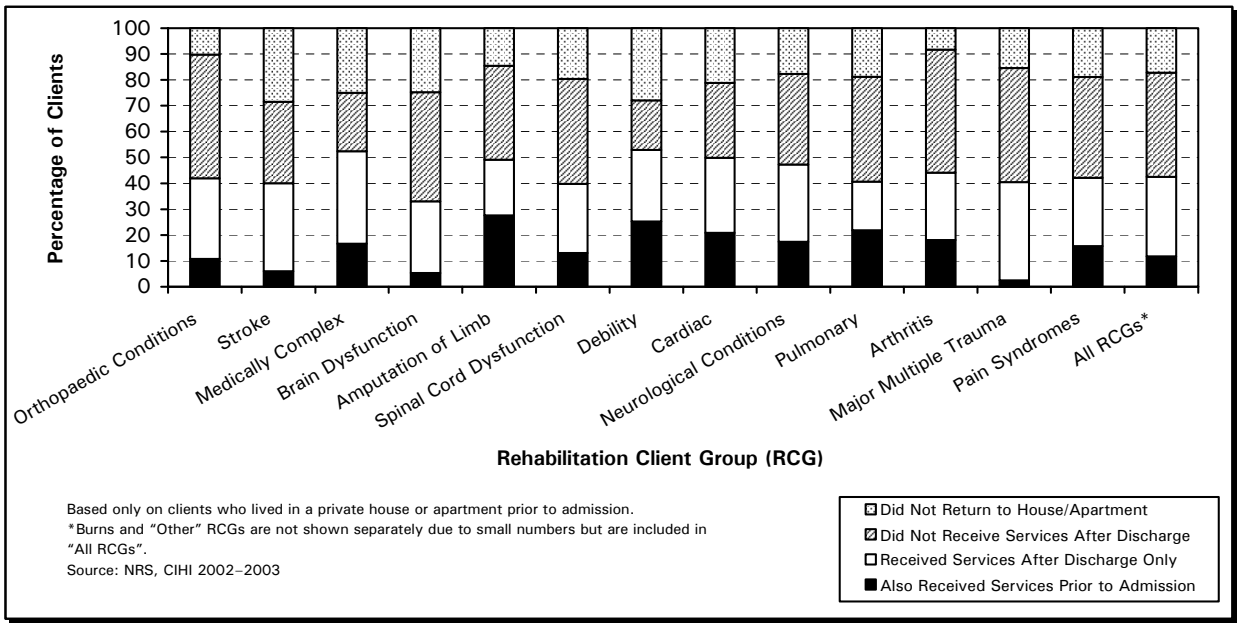

Figure 3.15 Receipt of Paid Health Services in a Private House or Apartment After Inpatient Rehabilitation by RCG, 2002–2003

Summary

Orthopaedic and stroke clients accounted for two-thirds of all inpatient rehabilitation clients discharged from participating facilities in 2002–2003.

There were some differences in the distribution of client groups across general and speciality facilities. For example, three-quarters of orthopaedic clients were admitted to general facilities whereas the majority of clients in the spinal cord dysfunction RCG were admitted to specialty facilities.

Differences were observed in the demographic characteristics of clients in the most frequently occurring RCGs. For example, orthopaedic clients tended to be older women, while brain dysfunction and spinal cord dysfunction clients tended to be younger males.

The functional status of clients as measured with the FIM™ instrument at admission and discharge varied by RCG. For example, major multiple trauma clients were among the lowest average admission Total Function Score, but showed the largest average change between admission and discharge.

Overall, the median length of stay for all clients was 22 days. The median for particular RCGs varied from 13 days for arthritis clients to 44 days for clients with spinal cord dysfunction.

Although the majority of clients within each RCG met their service goals and returned to their permanent living setting, the proportion doing so ranged from 70% for the stroke RCG to 87% for the arthritis RCG.

Chapter 4. Orthopaedic Conditions

Introduction

In 2002–2003, almost half (47%) of inpatient rehabilitation clients reported to the NRS by participating facilities received rehabilitation services for orthopaedic conditions. This chapter provides more details about the types of conditions for which these clients received rehabilitation and describes some key differences in the characteristics and outcomes of clients with these conditions.

Orthopaedic Rehabilitation

The Orthopaedic Rehabilitation Client Group (RCG) includes clients who receive rehabilitation following bone fractures, joint replacements or for orthopaedic-related diseases and conditions, for example osteoporosis, malignant neoplasms (cancer), scoliosis and osteomyelitis.

Figure 4.1 shows that in 2002–2003, 31% of clients who received inpatient rehabilitation for orthopaedic conditions did so following knee replacements. This included clients who had received implants for one or both knees or those who had revisions to previous implants. A similar proportion (29%) received rehabilitation following hip replacements. Figure 4.1 also shows that 22% of clients received rehabilitation following hip fractures (either one or both hips) and the remaining 19% of clients received rehabilitation for other orthopaedic conditions, such as fractures of other bones (including multiple fractures), combination hip and knee replacements, and other orthopaedic conditions or diseases.
(Quick Stats, Table 28)

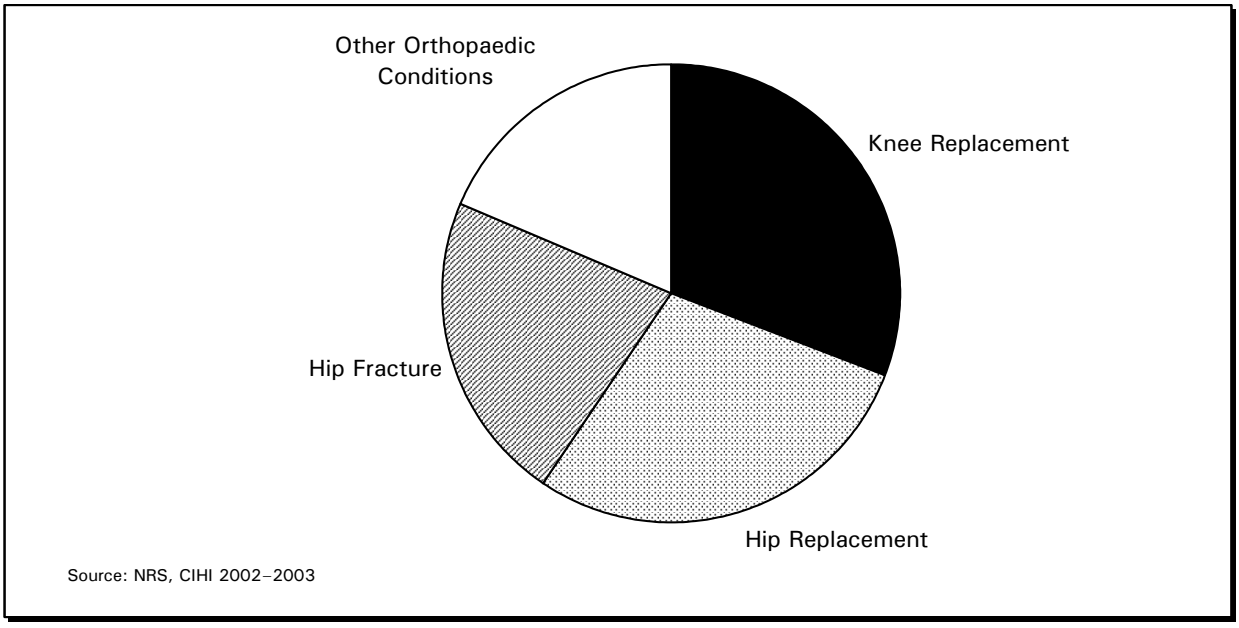

Figure 4.1 Distribution of Orthopaedic Inpatient Rehabilitation Clients, 2002–2003

Demographic Characteristics

Overall, 69% of orthopaedic rehabilitation clients were female. The proportion of female clients was slightly higher among those who had hip fractures compared with other orthopaedic conditions: 71% of hip fracture clients were female compared with 67% to 68% of joint replacement clients or clients with other orthopaedic conditions.

Hip fracture clients also tended to be older than other orthopaedic clients. For example, Figure 4.2 shows that just over three-quarters (76%) of hip fracture clients were aged 75 years and over compared with almost half (47%) of hip replacement clients and over a third of knee replacement clients (37%). Moreover, as most of hip fracture clients were female, females aged 75 years and over accounted for 57% of all hip fracture clients. The comparative figures for hip replacement and knee replacement clients were 34% and 25% respectively.

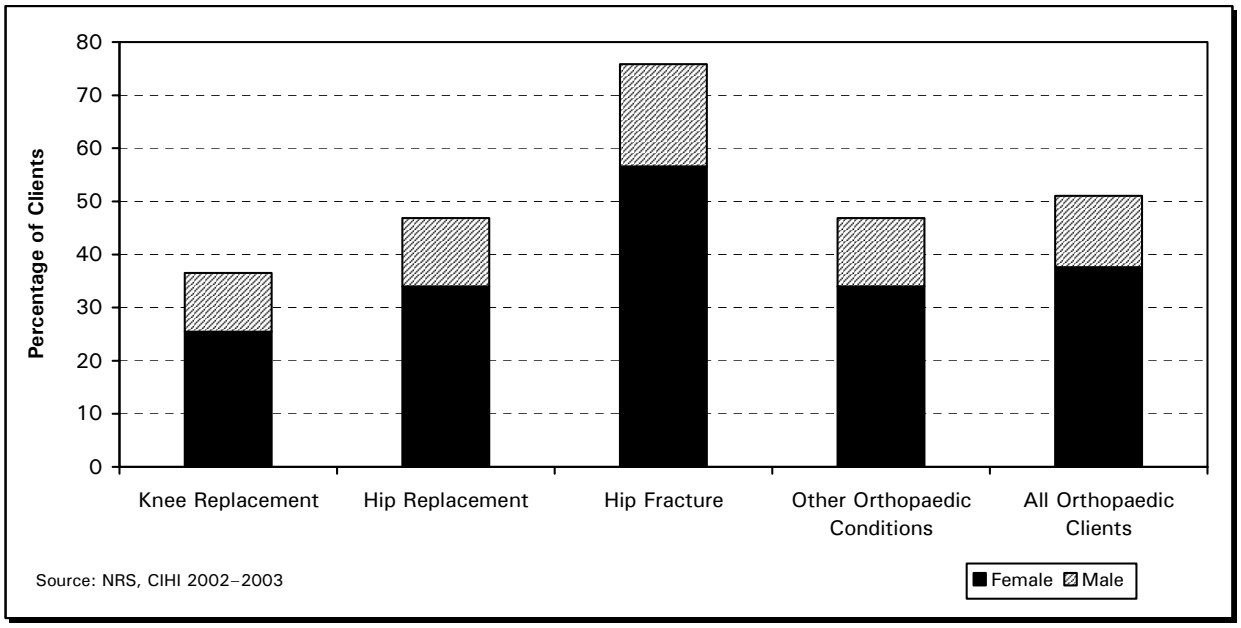

Figure 4.2 Orthopaedic Inpatient Rehabilitation Clients Aged 75 Years and Over by Sex, 2002–2003

These differences are reflected in the average age of clients in the different orthopaedic groups: 70 years for post knee replacement clients; 72 years for post hip replacement clients; and 80 years for post hip fracture clients. With the exception of post knee replacement clients, the average age of female orthopaedic clients was higher than that of male clients. For example, the average age of female post hip replacement clients was 73 years compared with 70 years for male clients. Both male and female post knee replacement clients had an average age of 70 years. *(Quick Stats, Tables 29 to 31)*

Functional Status at Admission

As mentioned in Chapter 3, the FIM™ instrument is used to measure the motor and cognitive functioning when clients are admitted to inpatient rehabilitation, and wherever possible, at their discharge.

The majority of rehabilitation needs for orthopaedic clients are physical in nature, which is reflected in their average Function Scores on admission, which are derived from the FIM™ instrument. Overall, orthopaedic clients had an average admission Total Function Score of 90 (out of a maximum 126). This consisted of an average Motor Function Score of 58 out of 91 and an average Cognitive Function Score of 33 out of 35.

Figure 4.3 shows that there were differences in the functional status of clients with the different orthopaedic conditions, which appear to be driven by differences in motor functioning. On average, post knee replacement clients had the highest levels of functioning with an average admission Motor Function Score of 64 and a Total Function Score of 98. Post hip replacement clients had slightly lower functioning on admission with an average Motor Function Score of 58, while post hip fracture clients had the lowest average functioning on admission with an average Motor Function Score of 51. *(Quick Stats, Table 32)*

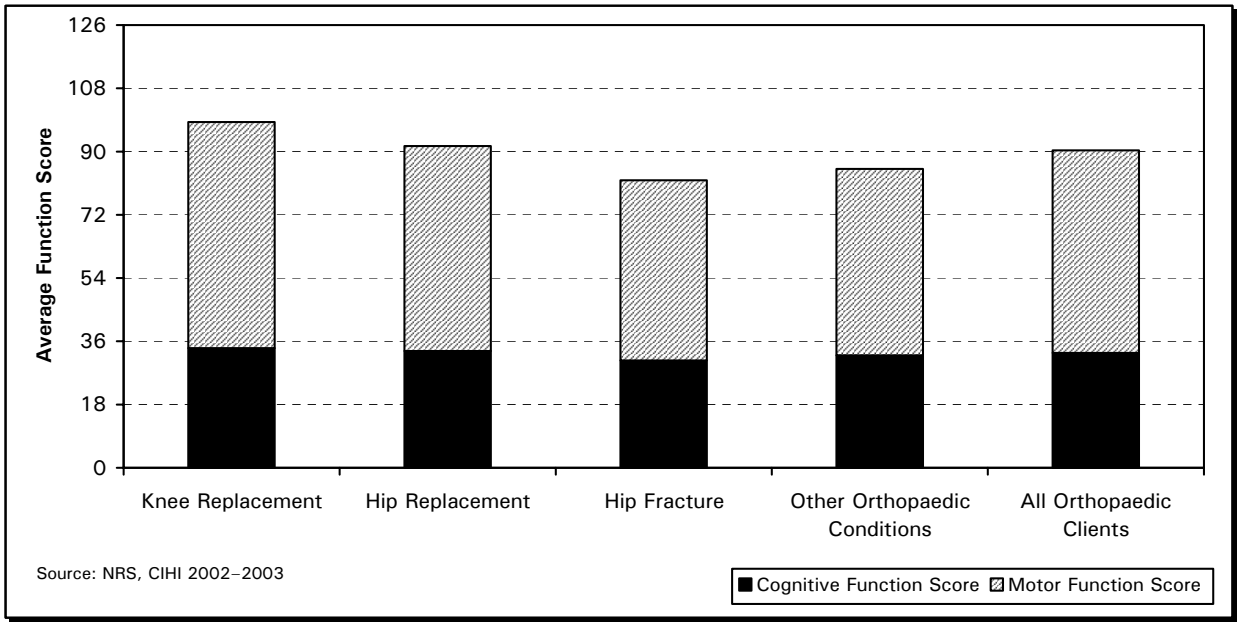

Figure 4.3 Average Admission Function Scores for Orthopaedic Inpatient Rehabilitation Clients, 2002–2003

Change in Functional Status

As mentioned in the previous chapter, not all clients who have their functional status measured at admission can be assessed when they are discharged. Overall, 2% of orthopaedic clients did not have a FIM™ instrument assessment carried out at their discharge and following the pattern observed in the previous chapter, had lower admission Total Function Scores than those with both admission and discharge functional assessments. The information on change in functional status relates only to those clients who had their functional status measured at both admission and discharge. *(Quick Stats, Table 33)*

Figure 4.4 shows the change in motor functioning for the different groups of orthopaedic clients. It shows that average improvement in Motor Function Score among all orthopaedic clients was 18 points, increasing from an average of 58 at admission to 76 at discharge. Post knee replacement clients had slightly lower average increase in functioning than the other orthopaedic groups (an average increase of 16 compared with 18 points for all orthopaedic clients) but still had the highest average discharge Motor Function Score (of 80). As a consequence of the much smaller changes in the cognitive functioning of orthopaedic clients during their rehabilitation, the changes in Total Function Score showed a similar pattern of change as the changes observed in Motor Function Score. This may be reflective of the physical nature of the rehabilitation required for orthopaedic conditions. *(Quick Stats, Table 34)*

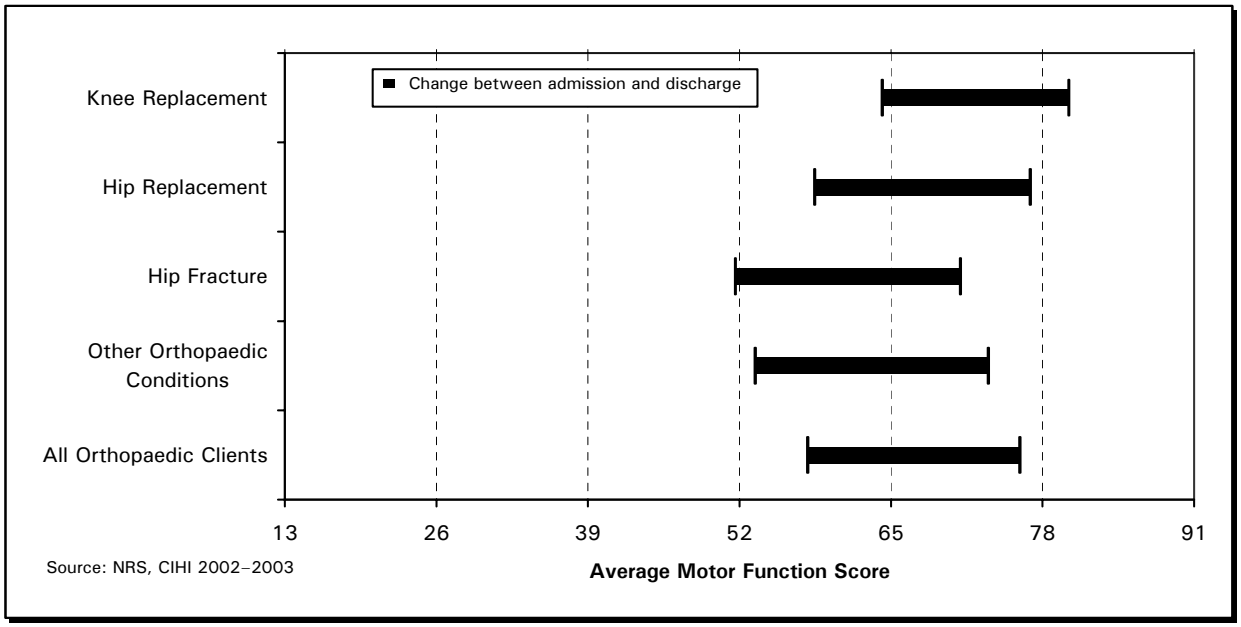

Figure 4.4 Change in Average Motor Function Score of Orthopaedic Inpatient Rehabilitation Clients, 2002–2003

Clients Reporting Pain

The vast majority (87%) of orthopaedic clients reported they felt pain when they were admitted to the rehabilitation unit or program; 10% reported that they did not feel any pain and the remaining 3% were unable to answer. There were some differences in the proportion of clients reporting pain at admission, across the different orthopaedic groups: from 82% of post hip fracture clients to 93% of post knee replacement clients. *(Quick Stats, Table 35)*

Almost seven in ten (69%) of those orthopaedic clients who reported pain at admission and were able to state whether or not they felt pain at discharge, reported an improvement in their level of pain between their admission and discharge. The proportions of clients reporting an improvement in pain were similar across the different orthopaedic grouping (the proportion ranged from 67% to 71%). *(Quick Stats, Table 36)*

Length of Stay

The median length of stay of orthopaedic rehabilitation clients in inpatient rehabilitation facilities, excluding any service interruptions was 16 days. Figure 4.5 shows that post knee replacement clients had the shortest median length of stay, of 13 days, and post hip replacement clients had a median length of stay of 15 days. Post hip fracture clients had a much longer median length of stay, of 24 days, as did those with other orthopaedic conditions (23 days). *(Quick Stats, Table 37)*

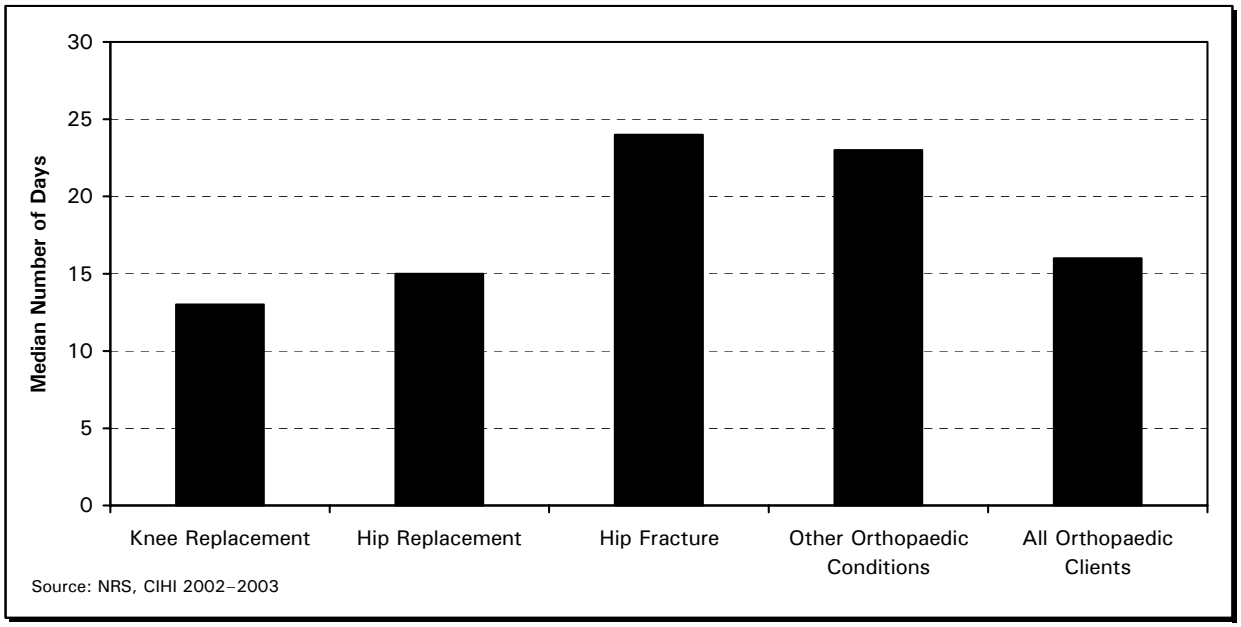

Figure 4.5 Median Length of Stay in Inpatient Rehabilitation for Orthopaedic Clients, 2002–2003

Reasons for Discharge

Overall, 86% of orthopaedic clients met their goals and were discharged to the community; 8% met their goals and were transferred or referred to another unit or facility; 4% did not meet their goals (and were either transferred or referred to another unit or facility or were discharged to the community); and the remaining 1% of clients had other reasons for their discharge, including withdrawal against professional advice and death.

Figure 4.6 shows that the reasons for discharge from inpatient rehabilitation program or unit varied among the orthopaedic groups. Post hip fracture clients were less likely than clients in other orthopaedic groups to have met their service goals and to be discharged to the community, and were more likely to have met their goals and to be transferred or referred to another facility, or not have met their goals. Seventy-seven percent of post hip fracture clients met their service goals and were discharged to the community and 14% met their goals but were transferred or referred to another unit or facility. The comparative figures for post hip replacement clients were 91% and 5%; and for post knee replacement clients were 93% and 5% respectively. *(Quick Stats, Table 38)*

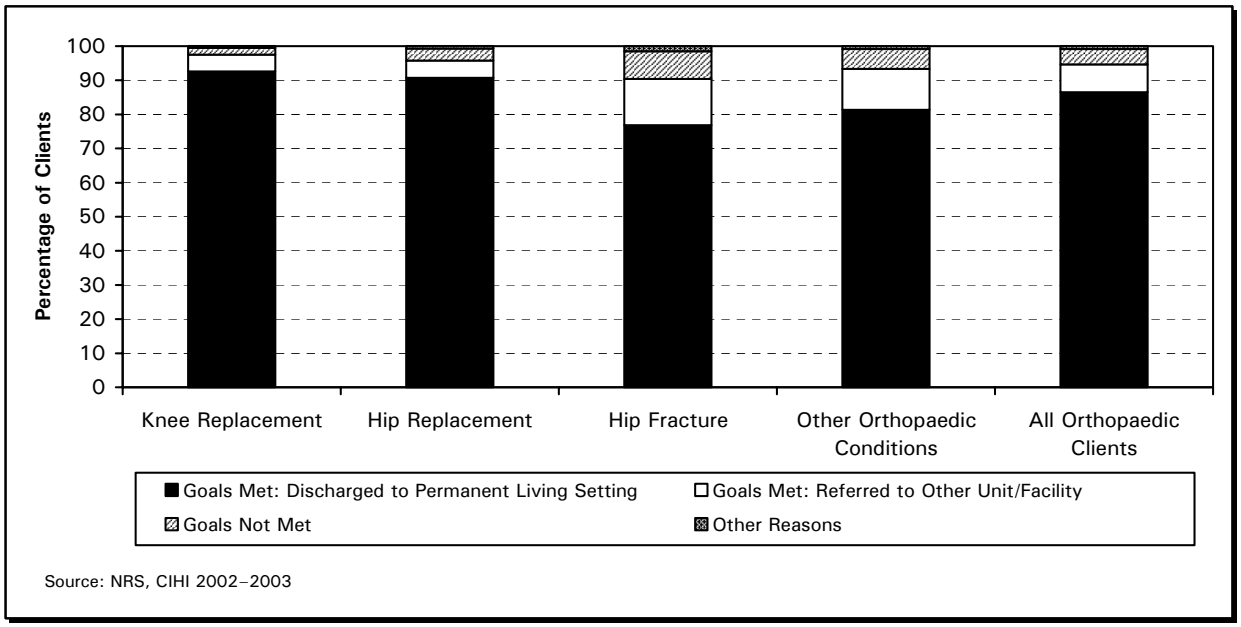

Figure 4.6 Reasons for Discharge from Inpatient Rehabilitation for Orthopaedic Clients, 2002–2003

Summary

On average, post knee replacement clients were the youngest orthopaedic clients, had the highest motor functioning at admission and discharge, but slightly lower than average improvement in functional status over their rehabilitation period. However, they had the shortest length of stay. This group had the highest proportion of clients reporting pain at admission, but were similar to the overall orthopaedic group in the proportion reporting improvement in pain.

Compared with post knee replacement clients, post hip replacement clients were, on average, slightly older and had slightly lower functioning at admission and discharge. They also had slightly longer lengths of stay and larger changes in functional status over their stay.

Post hip facture clients were, on average, the oldest and had the highest proportion of clients aged 75 years and over. They had a much longer average length of stay than either knee or hip replacement clients. They had the lowest levels of motor functioning at admission and discharge, and were more likely to be transferred or referred to another facility or unit after their stay in inpatient rehabilitation, or not to have met their service goals.

Chapter 5. Stroke

Introduction

As discussed in Chapter 3 of this report, a fifth (20%) of clients receiving inpatient rehabilitation services in NRS participating hospitals in 2002–2003 did so following a stroke. This chapter presents more detailed information about the type of clients within this Rehabilitation Client Group: their demographic characteristics, change in functional status, length of stay, improvement in pain, and reasons for discharge.

Stroke Rehabilitation

In 2002–2003, 44% of clients who received rehabilitation following a stroke had left-sided hemiplegia. Hemiplegia refers to weakness and loss of sensation, usually on one side of the body. A similar proportion (43%) of stroke clients had right-sided hemiplegia. The remaining 13% of stroke clients had other stroke conditions, perhaps affecting both sides of their body. *(Quick Stats, Table 28)*

Demographic Characteristics

The proportions of male and female clients were almost equal among both left-sided hemiplegia and right-sided hemiplegia. Among left-sided hemiplegia clients 53% were male and 47% were female; and among right-sided hemiplegia the comparative figures were 52% and 48% respectively. Clients who had other stroke conditions had a higher proportion of males (57%) and a lower proportion of females (43%) compared with the other two stroke groups. Overall, 53% of stroke clients were male and 47% were female.

Figure 5.1 shows that the age distributions for left-sided hemiplegia, right-sided hemiplegia and other stroke clients were similar. The age groups accounting for the largest proportions of clients were the 65 to 74 and 75 to 84 year age groups. For example, the 75 to 84 year age group accounted for 36% of right-sided hemiplegia clients, 34% of left-sided hemiplegia clients, and 33% of other stroke clients. The average age of clients in the three stroke groups was similar: 71 years for right-sided hemiplegia and 70 years for left-sided hemiplegia and other stroke clients.

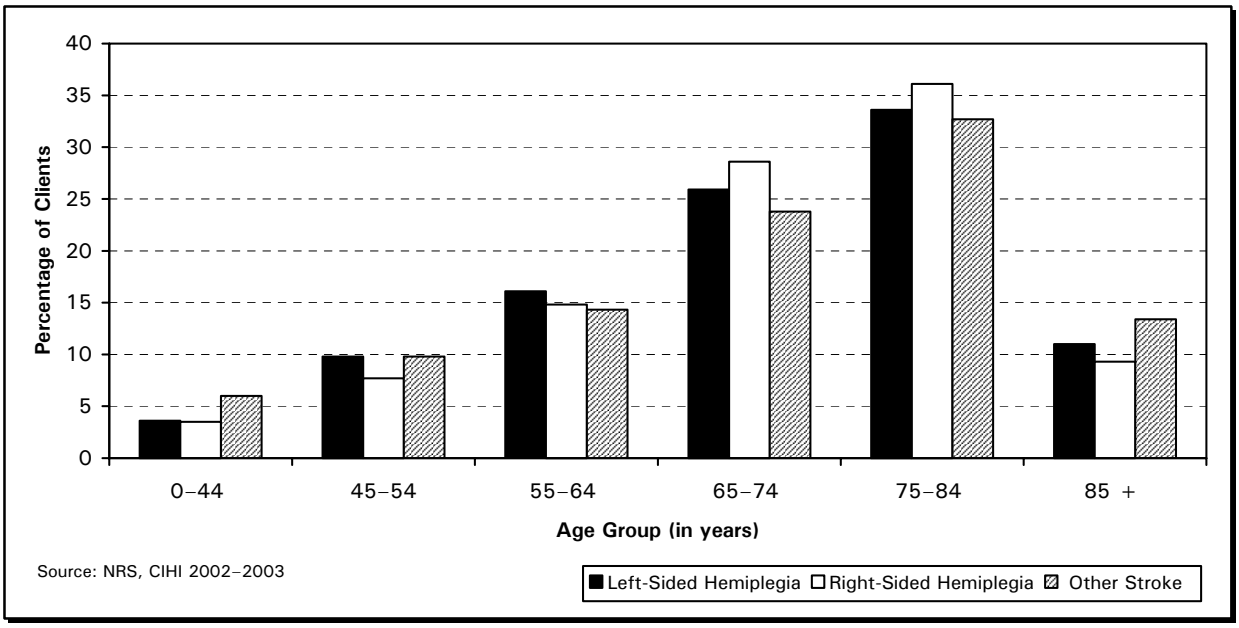

Figure 5.1 Age Distribution of Stroke Inpatient Rehabilitation Clients, 2002–2003

The average age of male stroke clients was lower than that of female stroke clients. In all three groups (and therefore overall), the average age of male clients was 69 years compared with either 71 or 72 years for female clients. *(Quick Stats, Tables 29 to 31)*

Functional Status at Admission

Overall, stroke clients had an average admission Total Function Score, as measured by the FIM™ instrument, of 74 out of a possible 126. This was comprised of an average Motor Function Score of 49 out of 91 and an average Cognitive Function Score of 25 out of 35.

Figure 5.2 shows that left and right-sided hemiplegia clients had the same average admission Total Function Score, of 73, while the average Total Function Score of clients with other stroke conditions was higher (80). Clients with left-sided hemiplegia had an average admission Motor Function Score on admission of 47 (out of a possible 91) compared with 50 for clients with right-sided hemiplegia. With respect to the cognitive status, clients with left-sided hemiplegia had an average admission Cognitive Function Score of 26 (out of a possible 35), compared to 23 for clients with right-sided hemiplegia. Other stroke clients had average admission Motor and Cognitive Function Scores of 54 and 25 respectively. *(Quick Stats, Table 32)*

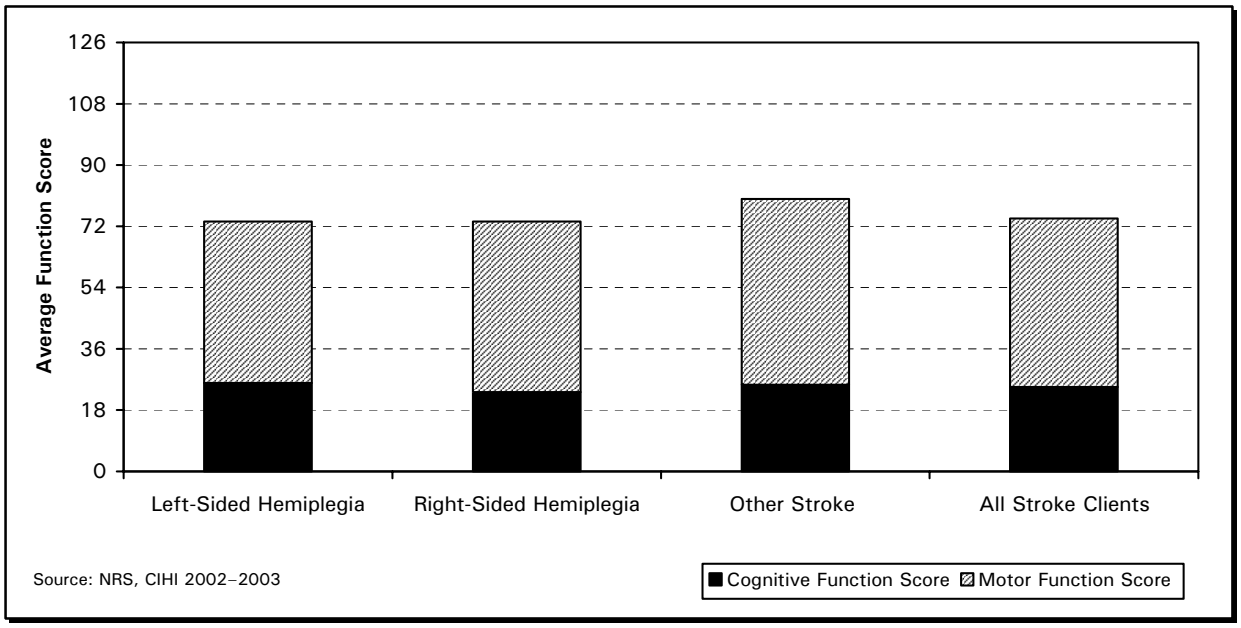

Figure 5.2 Average Admission Function Scores for Stroke Inpatient Rehabilitation Clients, 2002–2003

This suggests that, at admission, left-sided hemiplegia clients had a lower functional ability for motor activities, such as walking and eating, but higher functional ability for cognitive skills, such as memory and communication than the right-sided hemiplegia clients. Other stroke clients had higher motor function than both the left-sided and right-sided hemiplegia groups at admission, and were similar in cognitive functioning to the left-sided hemiplegia clients.

Change in Functional Status

Overall, 97% of stroke clients had their functional abilities measured using the FIM™ instrument upon discharge from a rehabilitation program in a participating hospital. As with other client groups, the average admission Total Function Score of stroke clients who did not have their functional status assessed at discharge was lower than those with such a discharge assessment. For example, left-sided hemiplegia clients had an average admission Total Function Score of 73. However, the average admission Total Function Score for left-sided hemiplegia clients with and without a functional assessment was 74 and 57 respectively. *(Quick Stats, Table 33)*

As mentioned in the previous chapters, change in functional status is measured only when clients have had their abilities measured using the FIM™ instrument on both admission and discharge. Figure 5.3 shows that the average Total Function Score for stroke clients increased by 21 points, from 75 at admission to 96 at discharge. The average change in Motor Function Score was 19, while the average change in Cognitive Function Score was 2.

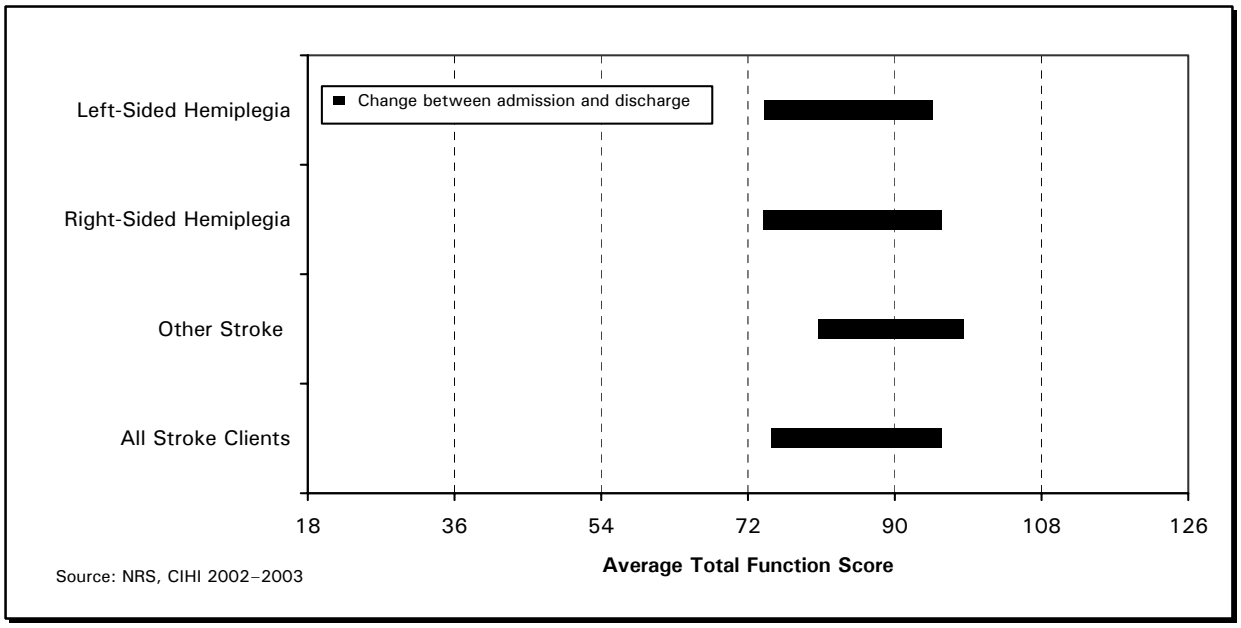

Figure 5.3 Change in Average Total Function Score for Stroke Inpatient Rehabilitation Clients, 2002–2003

These data suggest that there was an improvement in the daily functional activities of the stroke clients between admission to and discharge from the rehabilitation programs. The changes in functional status of the left-sided and right-sided hemiplegia clients were similar. The average Total Function Score increased from 74 at admission to 95 at discharge for left-sided hemiplegia clients (21 points) and from 74 to 96 (22 points) for right-sided hemiplegia. Both client groups showed an average increase of 19 points in their Motor Function Score. The average change in Cognitive Function Score was two for left-sided hemiplegia and three for right-sided hemiplegia clients.

The Total Function Score of other stroke clients increased by an average of 18 points, which was slightly lower than the change observed in the other two groups described above. However, the other stroke clients had a relatively higher average admission Total Function Score and also had a higher average discharge Total Function Score despite the smaller average improvement. The increase in their average Motor Function Score and Cognitive Function Score was 16 and 2, respectively.

Additional Cognitive Status Information

Along with the 18 activities assessed using the FIM™ instrument, the NRS also includes six other elements that provide additional information on the cognitive functioning of some rehabilitation clients. Four of the six data elements assess the client's ability to communicate: verbal or non-verbal expression, written expression, auditory or non-auditory comprehension and reading comprehension. The other two collect information on the client's ability to manage their personal finances and whether or not they are oriented to time, place and person.

These six elements are collected for clients if the client is classified in any of the RCGs that involve head injury, including stroke and brain dysfunction. The RCGs (or sub-groups of RCG) for which hospitals must collect the additional CIHI cognitive elements are:

- Stroke
- Brain Dysfunction
- Brain and Spinal Cord Injury (a sub-group of the Major Multiple Trauma RCG)
- Brain Injury and Multiple Fracture or Amputation (a sub-group of the Major Multiple Trauma RCG)
- Developmental Disability

The CIHI cognitive elements are also collected if the client received a score of six or less (indicating some dependence) for any of the five cognitive elements on the FIM™ instrument; or if the client was recorded to have impaired cognitive abilities on admission.

Some analysis relating to one of these additional cognitive items is provided below in this chapter relating to stroke. As a potential addition to future reports, CIHI will continue to investigate and analyze the data relating to these additional cognitive items.

For the rehabilitation clients described above, information is available in the NRS on their ability to manage finances, such as payment of bills and management of household expenses. An improvement in the financial management ability of clients is suggested if they are rated higher on their abilities to manage finances at discharge assessment than on their admission assessment. Similar to the measurement of change in Total Function Score, an improvement in this additional cognitive data element can be determined only for clients who had their functional status assessed at both admission and discharge.

In 2002–2003, the ability to manage finances was assessed for all stroke clients at admission, and was assessed for 97% of stroke clients at discharge. Overall, the data suggest that 25% of stroke clients assessed at discharge had an improvement in their financial management abilities between admission and discharge while 69% had no change in their abilities. There was little difference in these proportions across the three stroke groups.

Clients Reporting Pain

In 2002–2003, the majority (57%) of all stroke clients reported that they did not have pain at admission to a rehabilitation facility, while 37% reported that they had pain, and 7% were unable to answer. Figure 5.4 shows that there was some variation in the proportion of clients reporting pain across the different stroke groups: 44% of left-sided hemiplegia clients reported pain at admission compared with 32% of right-sided hemiplegia and 30% of other stroke clients. The proportion of clients who were unable to answer was highest in the right-sided hemiplegia clients (9%), which parallels the data suggesting that these clients had lower abilities in cognitive activities. *(Quick Stats, Table 35)*

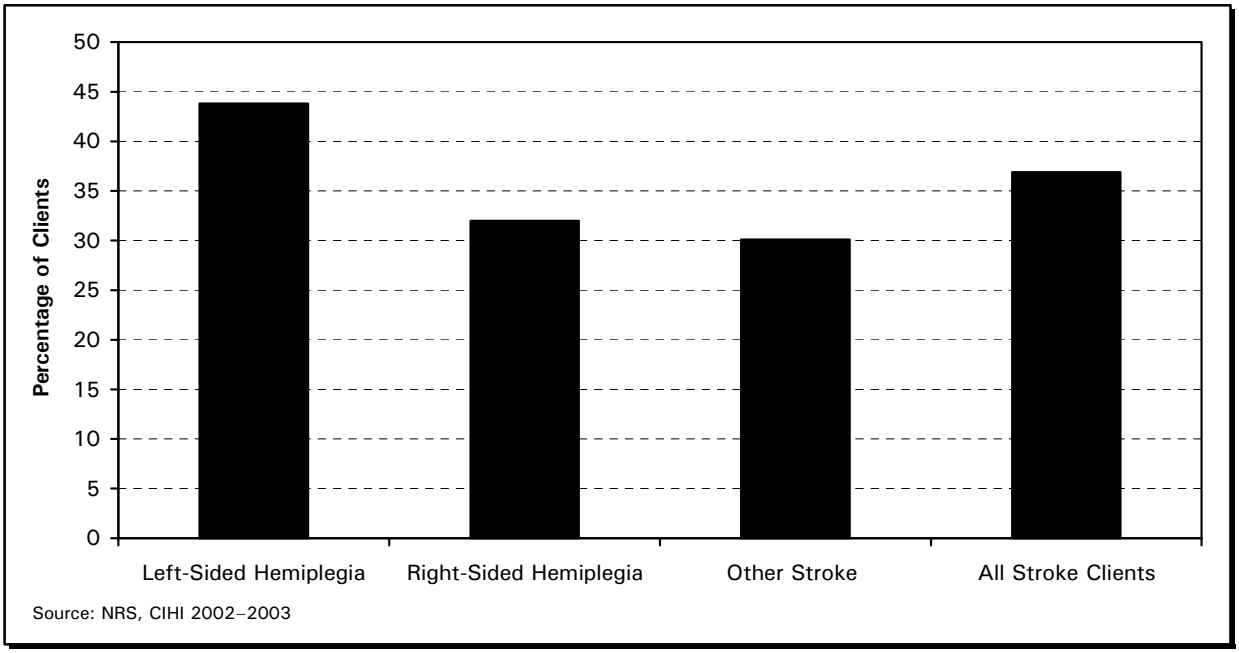

Figure 5.4 Stroke Inpatient Rehabilitation Clients Reporting Pain at Admission, 2002–2003

Overall, three-fifths (60%) of stroke clients who reported pain at admission and who were able to report whether or not they had pain at discharge, felt that there was an improvement in their pain at the time of discharge. The proportion of clients who reported improvement in pain was similar in left-sided and right-sided hemiplegia clients: 57% and 61% respectively. This proportion was highest in clients with other stroke conditions (68%). *(Quick Stats, Table 36)*

Length of Stay

The median length of stay for all stroke clients discharged from rehabilitation programs during 2002–2003 was 36 days excluding service interruption days. The median length of stay (excluding service interruption days) of left-sided and right-sided hemiplegia clients was similar: 37 and 36 days respectively, while that of the other stroke clients was lower (29 days). *(Quick Stats, Table 37)*

Reasons for Discharge

Overall, 70% of stroke clients met their service goals and were discharged to community, 18% met their service goals and were discharged or transferred to another unit within the same facility or other facilities, and 10% did not meet their service goals. Figure 5.5 shows there was little variation in the reasons for discharge across the three stroke groups. *(Quick Stats, Table 38)*

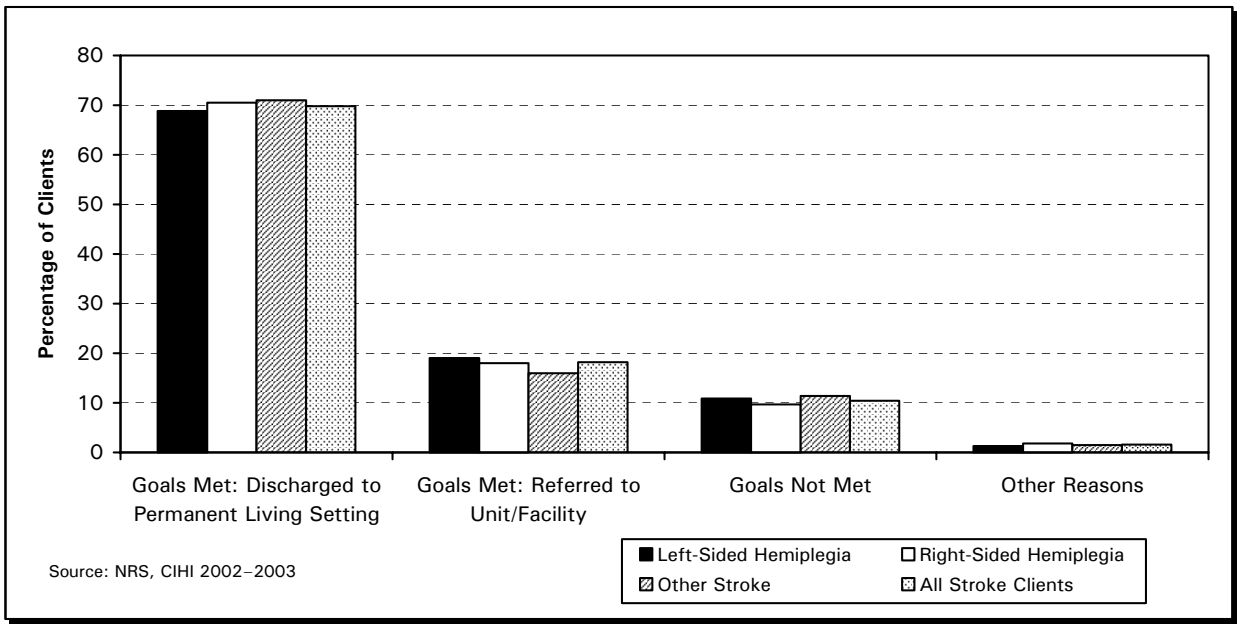

Figure 5.5 Reasons for Discharge From Inpatient Rehabilitation for Stroke Clients, 2002–2003

Summary

Overall, the NRS data show that there was little difference in the general characteristics of clients in the two largest stroke sub-groups in participating inpatient rehabilitation programs: left-sided and right-sided hemiplegia clients.

These clients had similar age and sex distribution, function scores at admission, change in functional status, improvement in financial management abilities, lengths of stay and reasons for discharge. Although there was a small difference in the proportion of clients who felt pain at admission, the proportion of clients who reported improvement in pain was similar in these two stroke groups.

Some of the characteristics of clients in the other stroke group were different from the clients in the left-sided and right-sided hemiplegia groups. Although these clients had similar age and sex distribution, improvement in financial abilities, and reasons for discharge as that of the left-sided and right-sided hemiplegia clients, clients in the other stroke group had higher admission function scores, lower change in total function scores, and had shorter lengths of stay.

Chapter 6. Brain Dysfunction

Introduction

In 2002–2003, 5% of clients in NRS participating facilities received inpatient rehabilitation services as a result of brain dysfunction. Some general characteristics of these clients were presented in Chapter 3 of this report. This chapter presents more detailed information about the types of clients within this Rehabilitation Client Group (RCG)—their demographic characteristics and their rehabilitation outcomes.

Brain Dysfunction Rehabilitation

The brain dysfunction RCG contains two main sub-categories: non-traumatic and traumatic brain dysfunction. Non-traumatic brain dysfunction includes conditions such as neoplasms, metastases and encephalitis. Traumatic brain dysfunction includes conditions such as skull fractures, cerebral laceration and concussions.

In 2002–2003, 47% of clients classified in the brain dysfunction RCG received rehabilitation for conditions relating to a traumatic event. A similar proportion (45%) received rehabilitation for non-traumatic conditions and the remaining 7% received rehabilitation for other types of brain dysfunction that were not classified in the other two main categories.
(Quick Stats, Table 28)

Demographic Characteristics

Three-fifths (61%) of all brain dysfunction clients were male and two-fifths (39%) were female. Figure 6.1 shows that the ratio of male to female clients varied across the three brain dysfunction client groups. Seventy-three percent of traumatic brain dysfunction clients were male and 27% were female. There were almost equal proportions of male and female non-traumatic brain dysfunction clients: 52% and 48% respectively. In contrast, the clients classified with other types of brain dysfunction were the only group that had a lower proportion of male than female clients: 42% and 58% respectively.

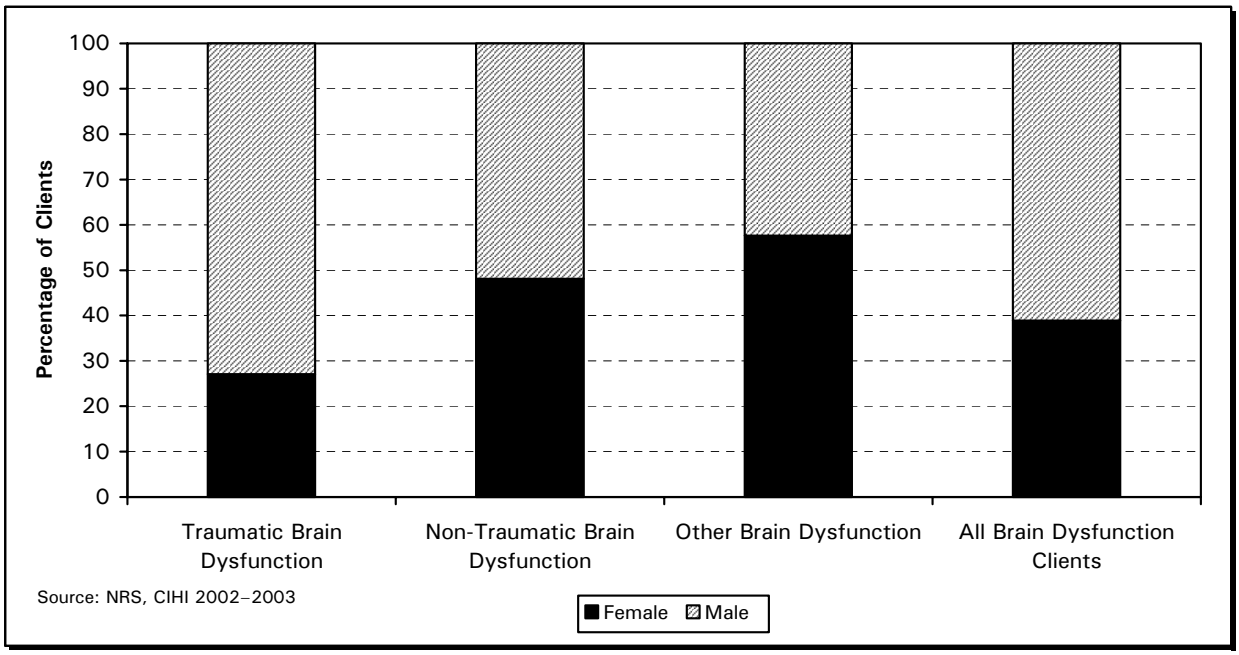

Figure 6.1 Male and Female Inpatient Rehabilitation Clients With Brain Dysfunction, 2002–2003

As shown in Chapter 3, clients in the youngest age group (those aged under 45 years) accounted for the highest proportion (36%) of all brain dysfunction clients. However, comparisons of clients in the different sub-categories of brain dysfunction showed that there were differences in the distributions of their age. Clients aged under 45 years accounted for the highest proportion of traumatic brain dysfunction clients (54%). In contrast, the non-traumatic and other brain dysfunction categories had a more even distribution of clients in all age groups; the under 45 years age group accounted for only 20% and 17% of the non-traumatic and other brain dysfunction client groups respectively. The different age distributions are reflected in the average age of clients in the three groups: 45 years for traumatic brain dysfunction clients; 59 years for non-traumatic brain dysfunction clients; and 63 years for other brain dysfunction clients.

On average, female brain dysfunction clients were slightly older than the male brain dysfunction clients: the average ages were 57 and 50 years respectively. Figure 6.2 shows that the average ages of male and female clients varied across the three brain dysfunction client groups. Male clients in the traumatic brain dysfunction group were on average younger than female clients in that group: 44 and 50 years respectively. Male non-traumatic brain dysfunction clients were also younger than female clients in that group, however their average ages were more similar: 58 and 61 years respectively. In contrast, male clients with other brain dysfunctions were on average older than the female clients in that group with average ages of 67 and 60 years respectively.
(Quick Stats, Tables 29 to 31)

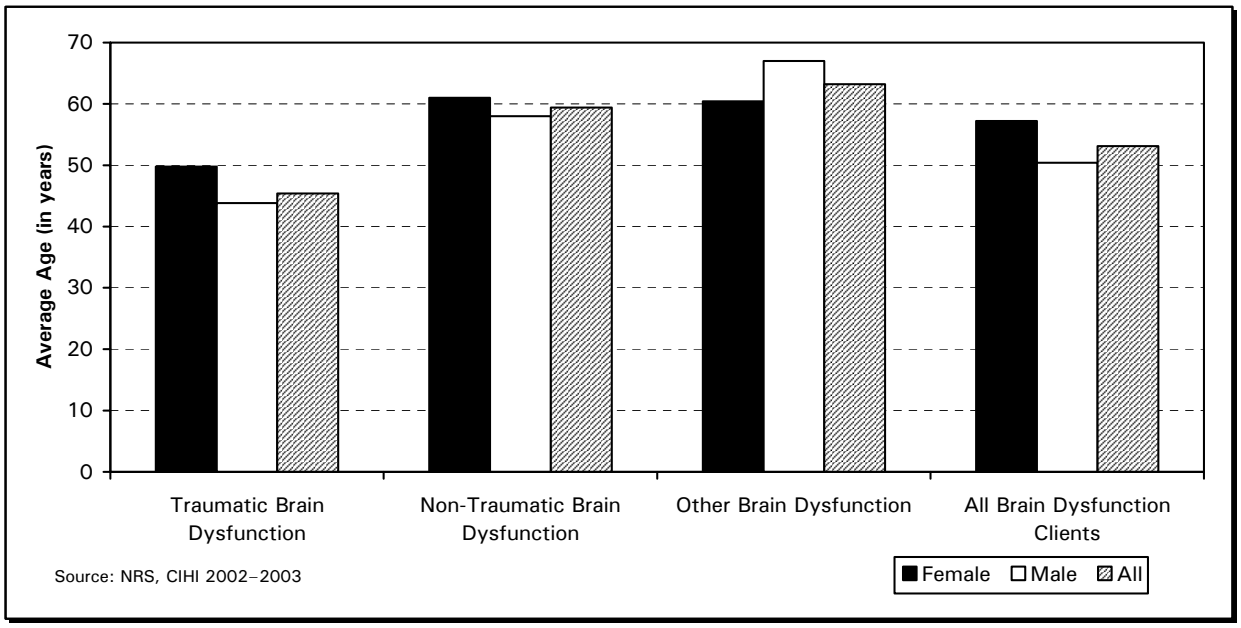

Figure 6.2 Average Age of Inpatient Rehabilitation Clients With Brain Dysfunction by Sex, 2002–2003

Functional Status at Admission

The NRS data suggest that the physical and cognitive functional abilities of brain dysfunction clients were affected by their conditions. Also, their Motor and Cognitive Function Scores, and consequently their Total Function Score at admission were among the lowest observed in any of the RCGs. Overall, brain dysfunction clients had an average admission Total Function Score of 76 out of a possible of 126 on admission, which was comprised of 56 out of 91 for their average admission Motor Function Score and 21 out of 35 for the average admission Cognitive Function Score.

The average admission Total Function Scores of traumatic and non-traumatic brain dysfunction clients were similar: 77 and 76, respectively, as were their average admission Motor and Cognitive Function Scores. The Motor Function Scores for the traumatic and non-traumatic brain dysfunction clients were 57 and 55 respectively, while the average admission Cognitive Function Scores for the two groups were 20 and 21 respectively. The average admission Total Function Score of other brain dysfunction clients was higher than the traumatic and non-traumatic brain dysfunction clients (80). Their average admission Motor Function Score was similar to the clients in the other two brain dysfunction groups (55) while their average admission Cognitive Function Score was slightly higher (25). *(Quick Stats, Table 32)*

Change in Functional Status

The discharge Total Function Score was available for 97% of all brain dysfunction clients. The proportion of clients with data collected using the FIM™ instrument on discharge was lower in the other brain dysfunction group than the traumatic and non-traumatic brain dysfunction groups. Ninety-nine percent of traumatic brain dysfunction clients, and 96% of non-traumatic brain dysfunction clients had discharge Total Function Scores, compared with 91% of other brain dysfunction clients. The average admission Total Function Score of those without a discharge assessment using the FIM™ instrument was lower than those with an assessment in all three brain dysfunction groups. The largest difference was found in the traumatic brain dysfunction clients, who had an average admission Total Function Score with and without discharge Total Function Scores of 77 and 55, respectively. *(Quick Stats, Table 33)*

Figure 6.3 displays the average change in Total Function Score of the brain dysfunction clients who had their functional abilities assessed at admission and discharge. The NRS data suggest that, on average, there was an improvement in the functional status of the brain dysfunction clients during their stay in a rehabilitation facility. The average change in Total Function Score of these clients was 22, increasing from 77 at admission to 99 at discharge.

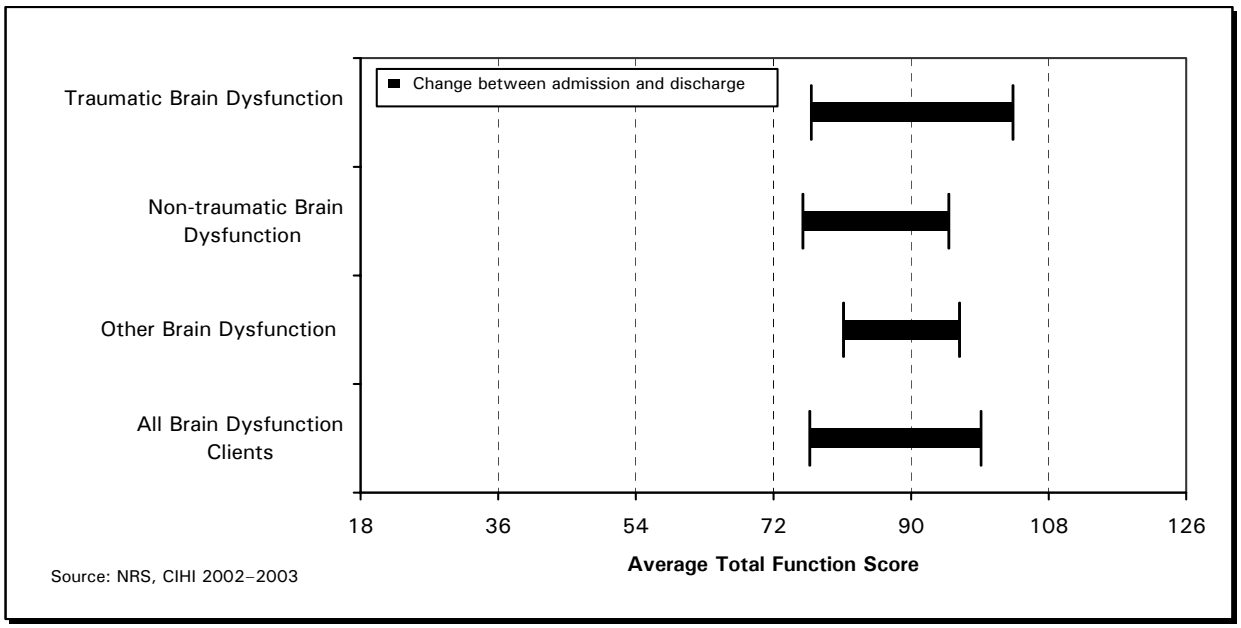

Figure 6.3 Change in Average Total Function Score for Inpatient Rehabilitation Clients With Brain Dysfunction, 2002–2003

Differences were noted in the average change in Total Function Scores of clients in the three brain dysfunction groups. The largest change in Total Function Score was observed in traumatic brain dysfunction clients and increased by 26 points (from 77 to 103). The smallest change was seen in the other brain dysfunction clients: an increase of 15 (from 81 to 96). The change in Motor and Cognitive Function Scores was higher in traumatic brain dysfunction clients than in the non-traumatic and other brain dysfunction clients. For example, change in Motor Function Score for traumatic, non-traumatic and other brain dysfunction clients was 21,16 and 13 respectively. Differences were also seen in the average change in Cognitive Function Score for the three groups. Traumatic brain dysfunction clients had an average increase in Cognitive Function Score of six; while the average Cognitive Function Score of non-traumatic brain dysfunction group increased by three and the other brain dysfunction group increased by two. *(Quick Stats, Table 34)*

Clients Reporting Pain

For those clients discharged during 2002–2003, 45% of brain dysfunction clients reported that they did not feel pain at admission. The same proportion reported that they felt pain at admission and 10% were unable to answer. It was noted that the proportion of clients who were unable to answer was highest among the brain dysfunction clients compared with the other RCGs highlighted in this report.

Figure 6.4 shows that there was a difference in the proportion of clients who reported pain at admission in the three brain dysfunction groups. Fifty-two percent of traumatic brain dysfunction clients reported pain at admission compared with 47% of other brain dysfunction clients and 37% of non-traumatic brain dysfunction clients.
(Quick Stats, Table 35)

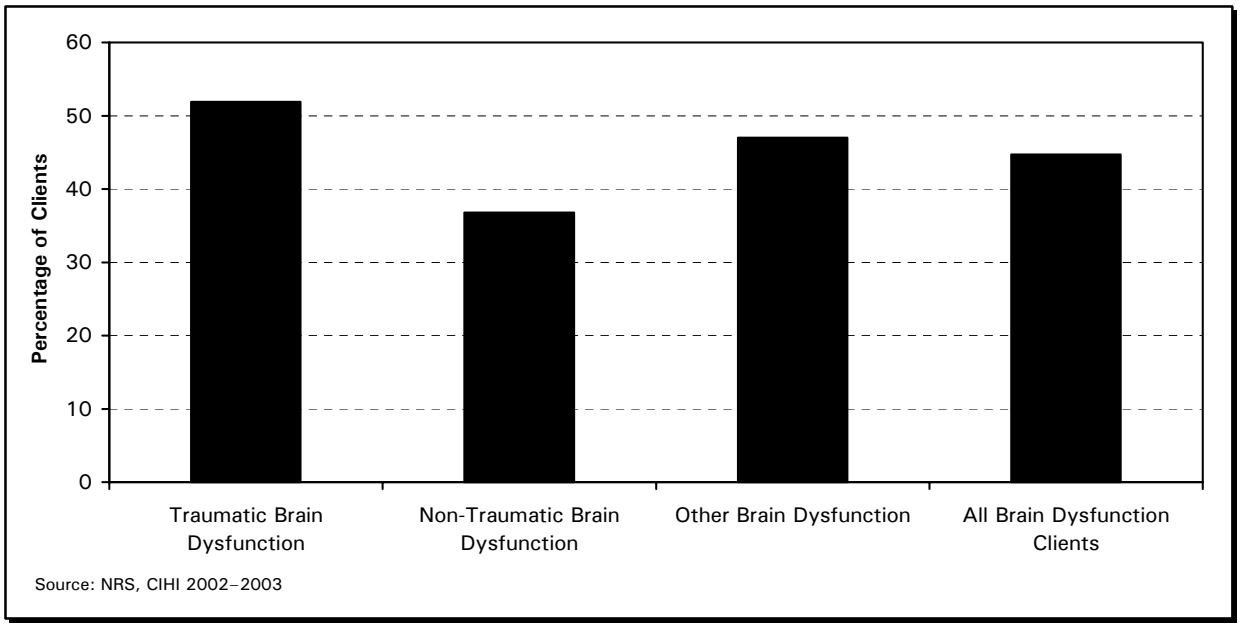

Figure 6.4 Inpatient Rehabilitation Clients With Brain Dysfunction Reporting Pain at Admission, 2002–2003

Three-fifths (60%) of brain dysfunction clients, who reported pain at admission and were able to report whether or not they had pain at discharge, felt that there was an improvement in their pain at the time of discharge. The proportion of clients who reported improvement in pain was similar in the traumatic and other brain dysfunction clients: 62% and 64% respectively. This proportion was lower in non-traumatic brain dysfunction clients (56%). *(Quick Stats, Table 36)*

Length of Stay

In 2002–2003, brain dysfunction clients had a median length of stay of 36 days excluding service interruption days. The median length of stay (excluding service interruption days) of the traumatic and non-traumatic brain dysfunction clients was similar: 35 and 38 days respectively. The median length of stay of other brain dysfunction clients was shorter, at 22 days. *(Quick Stats, Table 37)*

Reasons for Discharge

Overall, 73% of brain dysfunction clients met their service goals and were discharged to their community living setting, 15% met their service goals but were discharged or transferred to another unit within the same facility or to other facilities, and 9% did not meet their goals. The remaining 2% of clients were discharged from facilities for other reasons including the client's withdrawal from the rehabilitation program against professional advice or the client's death.

Figure 6.5 shows that the proportion of clients who had met and not met their goals was different in the brain dysfunction groups. Seventy-nine percent of traumatic brain dysfunction clients met their service goals and were discharged to the community, compared with 69% of non-traumatic and 65% of other brain dysfunction clients. The proportion of clients whose goals were not met or had other reasons for discharge was highest in the other brain dysfunction group and lowest in the traumatic brain dysfunction group: 20% and 9% respectively. *(Quick Stats, Table 38)*

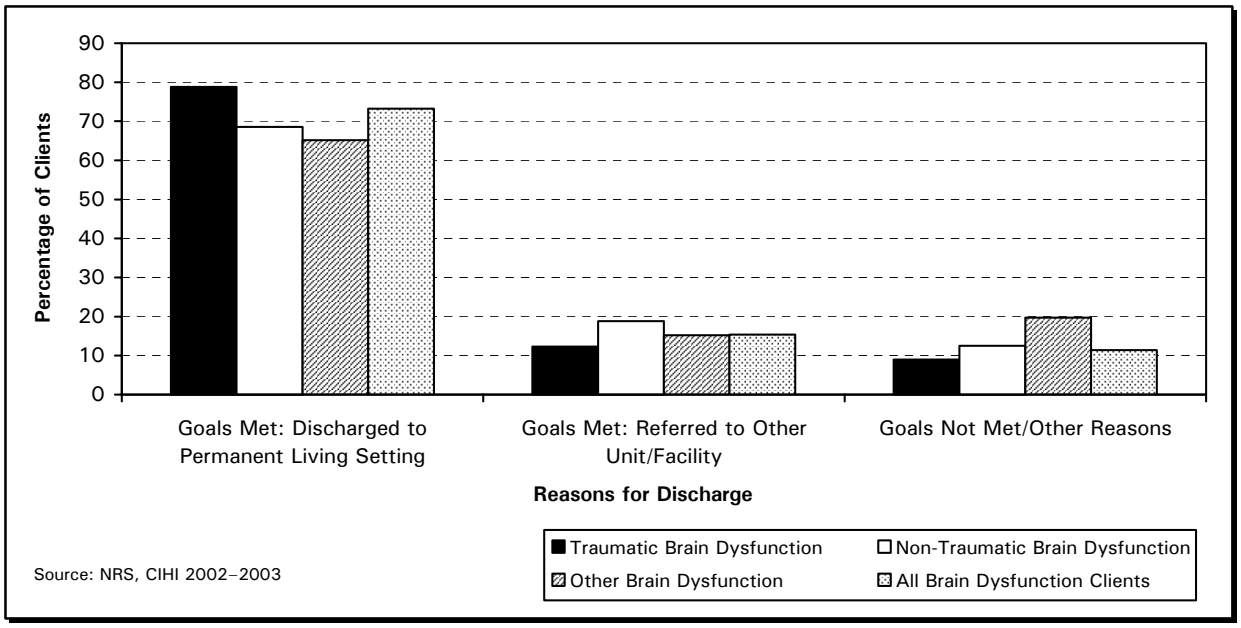

Figure 6.5 Reasons for Discharge from Inpatient Rehabilitation for Brain Dysfunction Clients, 2002–2003

Summary

Similar proportions of clients received rehabilitation services for traumatic and non-traumatic brain dysfunction in 2002–2003. Traumatic brain dysfunction clients were more likely to be younger males (aged under 45 years) while non-traumatic dysfunction clients tended to be older and almost equally likely to be male or female. Clients with other types of brain dysfunction were the oldest group of clients, on average, and had a higher proportion of females than males.

The NRS data suggest that brain dysfunction clients had relatively low physical functioning abilities compared to other types of rehabilitation clients. The Motor Function Scores at admission of the brain dysfunction groups were similar; however, the Cognitive Function Score of other brain dysfunction clients was higher than the remaining two groups. On average, traumatic brain dysfunction clients showed the largest change in the Total Function Score. This client group had the highest proportions of clients that reported pain at admission; reported improvement in pain at discharge; and had met their service goals when they were discharged.

Chapter 7. Amputation of Limb

Introduction

As discussed in Chapter 3 of this report, in 2002–2003, 4% of inpatient rehabilitation clients received services following amputation of a limb (arm or leg). This chapter provides detailed information about the types of clients within this Rehabilitation Client Group (RCG), their demographic characteristics, functional status, improvement in pain, lengths of stay and their reasons for discharge.

Amputation of Limb Rehabilitation

Clients in the amputation of limb RCG can be classified into different groups based on which of their limbs and which part of the limb(s) was amputated. For instance, distinctions can be made between sub-groups of clients who had a leg amputated above or below the knee or who had an arm amputated above or below the elbow.

In 2002–2003, the majority (60%) of amputation of limb clients received rehabilitation following amputation of one of their legs below the knee and 25% had an amputation of one of their legs above the knee. The remaining 15% of the limb amputation clients received rehabilitation following other types of amputation such as single arm amputation and multiple limb amputations. The comparisons in this chapter are based on the clients in these three limb amputation groups. *(Quick Stats, Table 28)*

Demographic Characteristics

Figure 7.1 shows that 68% of all limb amputation clients were male. The proportion of males was lowest among clients who received rehabilitation services following amputation of their leg above the knee: 62% compared with 70% males in the other two groups.

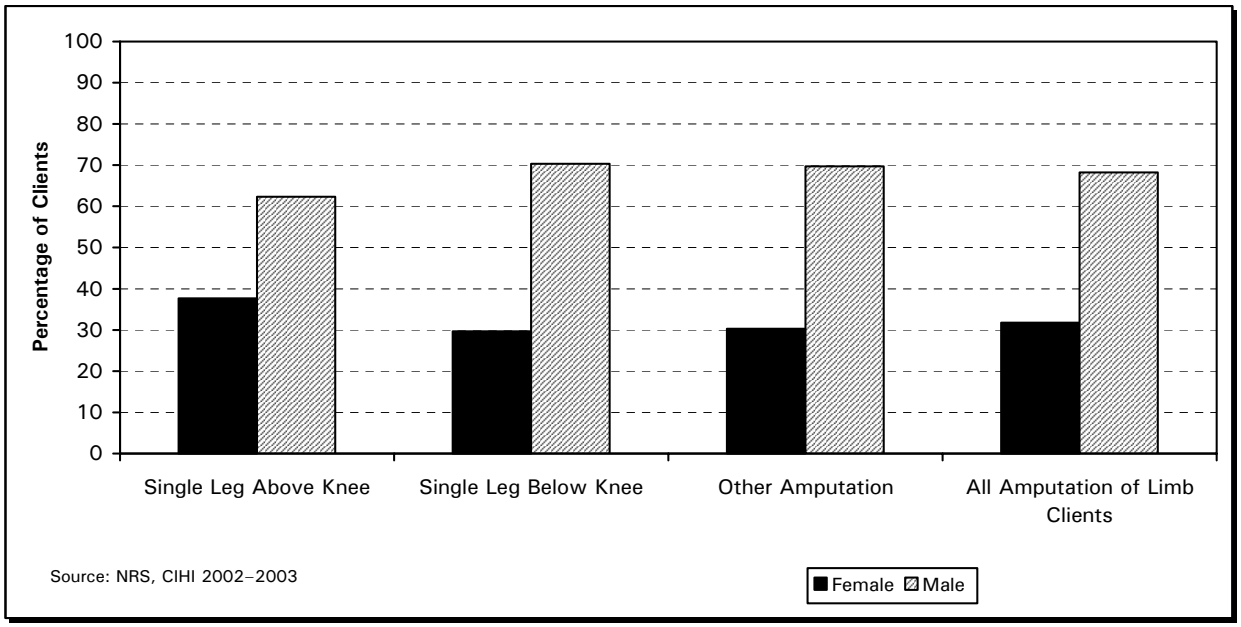

Figure 7.1 Male and Female Limb Amputation Inpatient Rehabilitation Clients, 2002–2003

Limb amputation clients were most likely to be aged 65 years and over; 30% of clients were aged between 65 and 74 years and 32% were aged 75 years and over. Only 5% of clients were aged under 45 years and 12% were aged between 45 and 54 years. The three limb amputation groups showed similar age distributions, however there was a higher proportion of clients aged 65 years and over in the above knee amputation group (70%) compared with 60% of below knee clients and 56% of other amputation clients. The above knee clients also had the highest average age: 69 years compared with 66 years for below knee amputation clients and 64 years for other amputation clients.

The distribution of age within sex of amputation of limb clients was fairly similar among the three groups. Males aged between 65 and 74 years accounted for around a fifth of clients in each of the amputation groups (between 21% and 23%), as did males aged 75 years and over (19% to 21%). As Figure 7.2 shows, the proportion of above knee clients who were female aged 75 years and over was similar to the proportion of male clients of the same age (17% and 19%) and was larger than the proportion of females aged 75 and over in the other two amputation groups: 17% compared with 10% and 7% of below knee and other amputation clients, respectively. *(Quick Stats, Tables 29 to 31)*

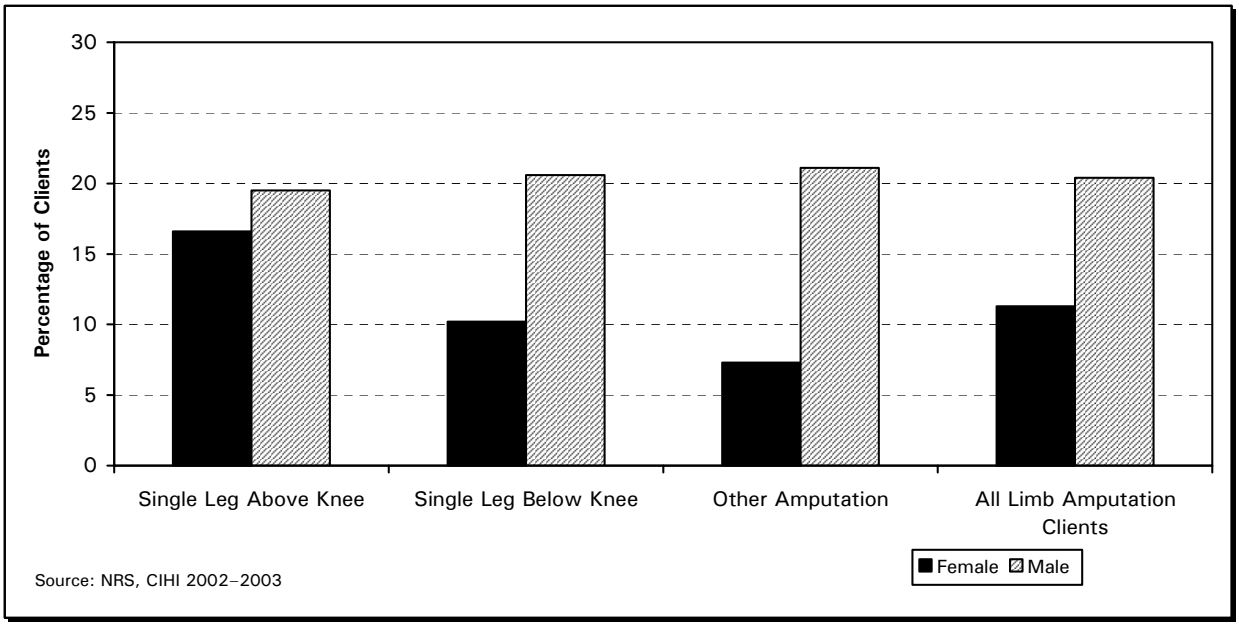

Figure 7.2 Limb Amputation Inpatient Rehabilitation Clients Aged 75 and Over by Sex, 2002–2003

Functional Status at Admission

The average admission Total Function Score of amputation of limb clients was 96 (out of a maximum of 126), and consisted of an average of 63 out of 91 for Motor Function Score and 33 out of 35 for Cognitive Function Score. Figure 7.3 shows that the average admission Total Function Scores of above knee and below knee amputation clients were similar: 97 and 96, respectively. Moreover, both client groups had the same average admission Motor Function Score, of 64, and similar average admission Cognitive Function Scores (33 and 32 for above knee and below knee clients respectively). However, the average admission Total Function Score of other amputation clients was lower (91) than the above knee and below knee amputation groups, as was their Motor Function Score (59). However, these clients had a similar average admission Cognitive Function Score as the other two limb amputation clients (32). *(Quick Stats, Table 32)*

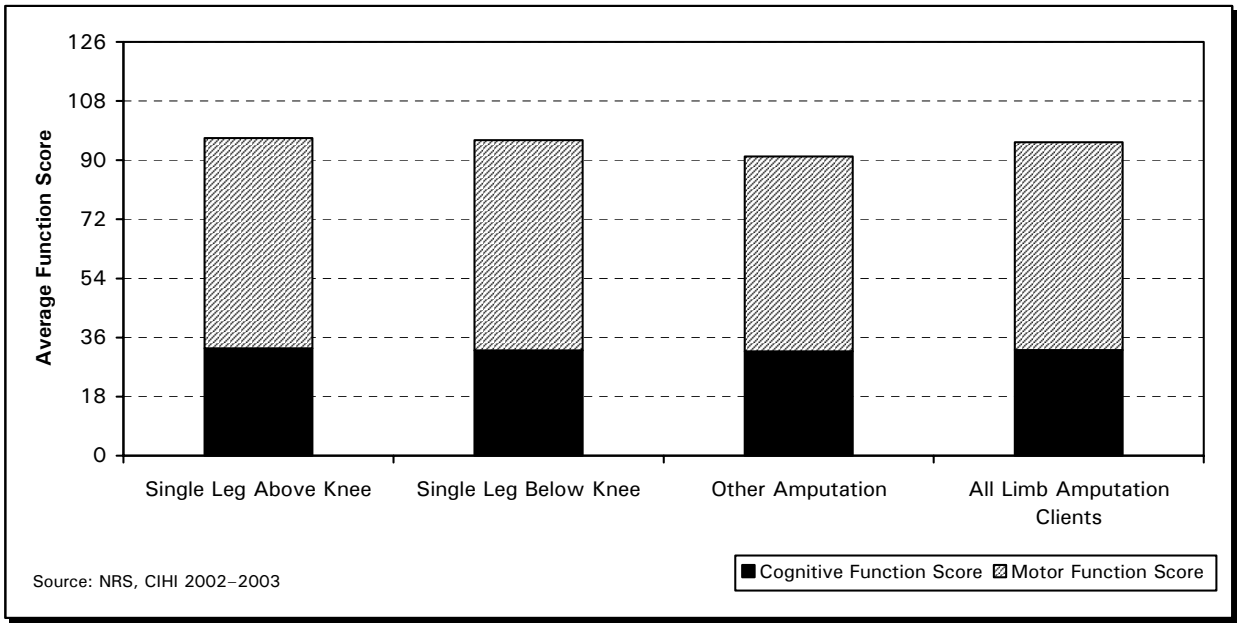

Figure 7.3 Average Admission Function Scores for Limb Amputation Inpatient Rehabilitation Clients, 2002–2003

Change in Functional Status

As Figure 7.4 shows, the Total Function Score of limb amputation clients who had an assessment using the FIM™ instrument at admission and discharge, changed by an average of 12 points: increasing from 96 at admission to 108 at discharge. The data show that the average change in Total Function Score of clients in the three limb amputation groups was similar: an increase of either 12 or 13. However, the other amputation clients had, on average, a lower admission Total Function Score (92 compared with 96 and 97 in the other two groups) and subsequently a lower discharge Total Function Score (104 compared with 109 in the other two groups). These data suggest that the other amputation clients had lower levels of overall physical functioning on admission and discharge than the other two groups, but improved a similar amount during their rehabilitation stay. It is noted that the change in the Total Function Scores of amputation of limb clients between admission and discharge was reflected primarily in the changes in their Motor Function Scores. *(Quick Stats, Tables 33 and 34)*

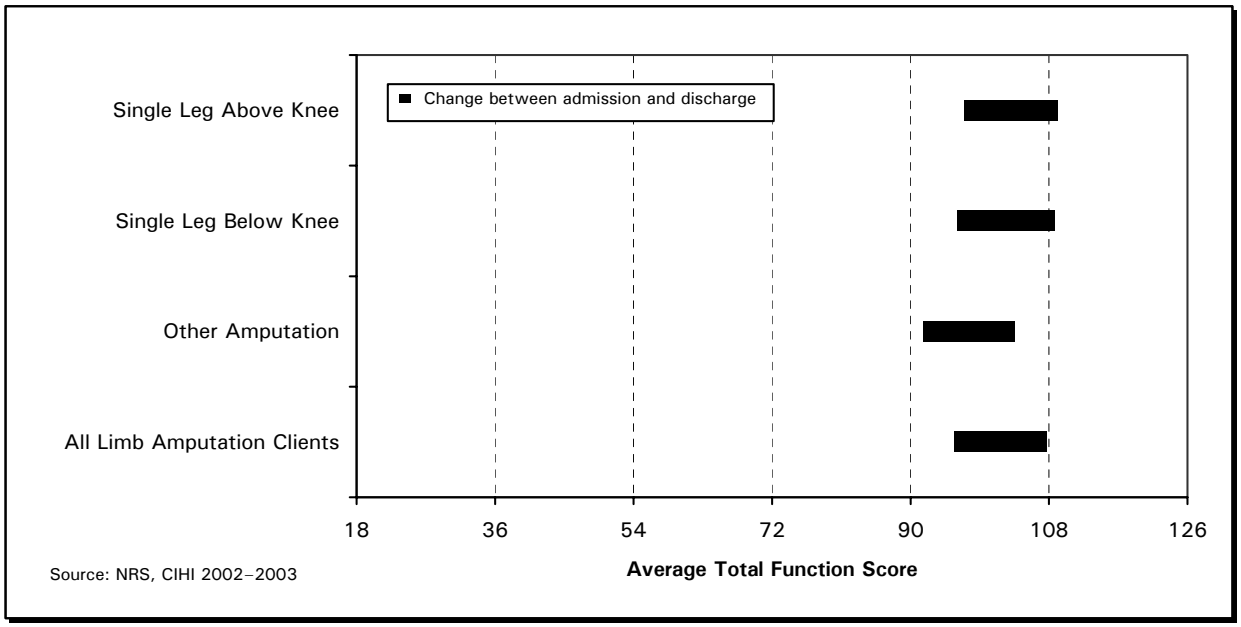

Figure 7.4 Change in Average Total Function Score for Limb Amputation Inpatient Rehabilitation Clients, 2002–2003

Clients Reporting Pain

Two-thirds (66%) of amputation of limb clients who were admitted to participating rehabilitation facilities reported that they felt pain when assessed on admission to their rehabilitation program; a third (33%) reported that they did not feel any pain; and the remaining 2% were unable to answer.

The proportion of clients who reported pain at admission was lowest among below knee amputation clients (63%). The comparative figures for above knee and other amputation clients were 69% and 70% respectively. *(Quick Stats, Table 35)*

About half (53%) of amputation of limb clients who reported pain at admission and who were able to report whether or not they had pain at discharge, reported an improvement in their pain at the time of discharge. The proportion of clients who reported an improvement in pain was higher among above knee amputation clients (57%) than the below knee (53%) and other amputation clients (45%). *(Quick Stats, Table 36)*

Length of Stay

In 2002–2003, amputation of limb clients had a median length of stay of 31 days, excluding service interruption days. Above knee amputation clients had the longest median length of stay: 35 days compared with 30 days for below knee and 29 days for other amputation clients. *(Quick Stats, Table 37)*

Reasons for Discharge

Overall, 8 out of 10 (80%) amputation of limb clients met their service goals and were discharged to their permanent living setting in the community; 1 in 10 (10%) met their service goals and were discharged or transferred to rehabilitation units within the same facility or other facilities; and about 1 in 10 (9%) did not meet their service goals.

Figure 7.5 shows the reasons for discharge for each group of amputation clients. In all the three groups, a majority of the clients met their service goals and were discharged to the community: 81% of above knee amputation clients; 80% of below knee amputation clients; and 75% of other amputation clients. Between 7% and 12% of clients in the three groups met their service goals and were either transferred or referred to units within the same facility or to other facilities upon completion of their rehabilitation program. *(Quick Stats, Table 38)*

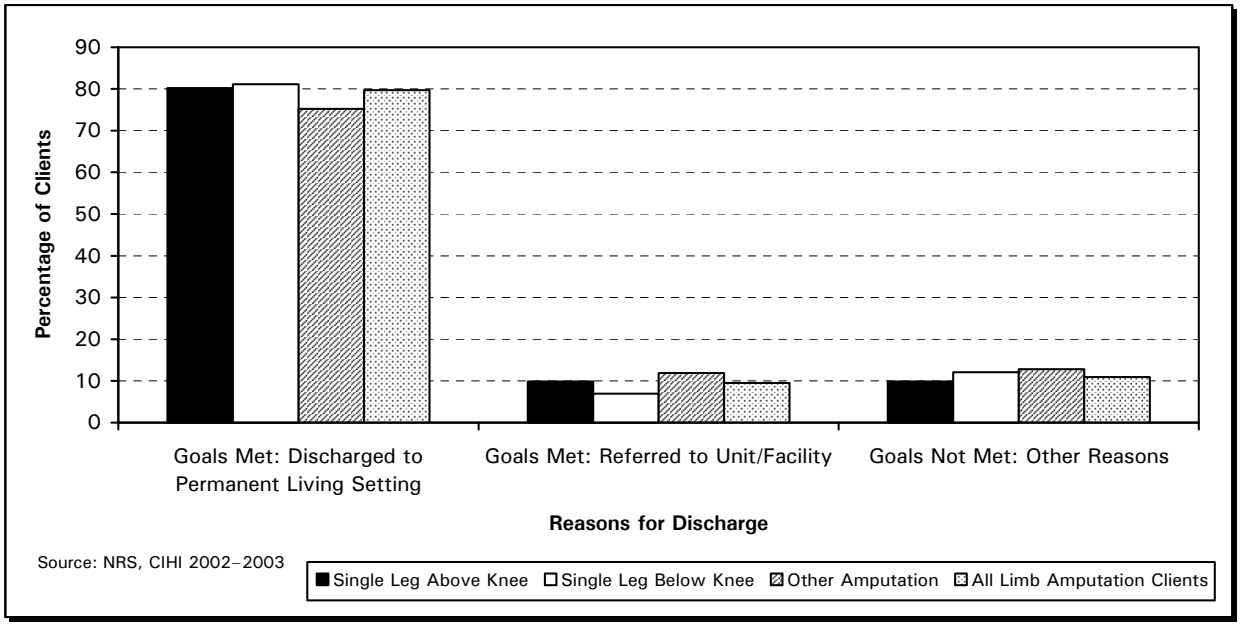

Figure 7.5 Reasons for Discharge From Inpatient Rehabilitation for Limb Amputation Clients, 2002–2003

Summary

For clients discharged from participating inpatient rehabilitation programs during 2002–2003, amputation of a leg below the knee was the most common type among amputation of limb clients, accounting for three-fifths of all amputation of limb clients. Males aged 65 years and over accounted for a large proportion (42%) of limb amputation clients.

The average Total Function Score at admission and the average change in Total Function Score were similar in the below knee and above knee amputation clients. Although the clients in the three groups showed similar average changes in Total Function Score, the admission and discharge Total Function Scores was lower for other amputation clients when compared to the clients in the other two limb amputation groups.

The proportion of clients who reported pain at admission in the above knee and other amputation groups was higher than the proportion of clients in the below knee amputation group. The above knee amputation clients stayed longer at the rehabilitation facilities than the below knee and other limb amputation clients and were more likely to report an improvement in pain during their rehabilitation stay.

Chapter 8. Spinal Cord Dysfunction

Introduction

In 2002–2003, the spinal cord dysfunction Rehabilitation Client Group (RCG) accounted for 4% of all inpatient rehabilitation discharges from participating facilities. These clients can be divided into two groups based on whether their spinal cord dysfunction was traumatic or non-traumatic. This chapter provides more details about the characteristics and rehabilitation outcomes of clients who had spinal cord dysfunction, with comments on any similarities or differences between the two subgroups.

Spinal Cord Dysfunction Rehabilitation

Spinal cord dysfunction RCG is comprised of two main categories: non-traumatic and traumatic spinal cord dysfunctions. Non-traumatic spinal cord dysfunction includes conditions such as cancer and degenerative disc disease in the lumbar spine, which causes an impingement of the spinal cord. Traumatic spinal cord dysfunction includes impairment following a fracture to the vertebral column and resulting injury to the spinal cord. These two main categories, traumatic and non-traumatic, can be further divided by the extent of the injury (complete or incomplete) and the resulting level of neurological impairment (quadriplegia or paraplegia). Analyses for this report relate to the two main categories of spinal cord dysfunction RCG.

Figure 8.1 shows that three-fifths (59%) of spinal cord dysfunction clients were admitted to inpatient rehabilitation for non-traumatic spinal cord conditions while two-fifths (41%) were admitted due to traumatic spinal cord conditions. *(Quick Stats, Table 28)*

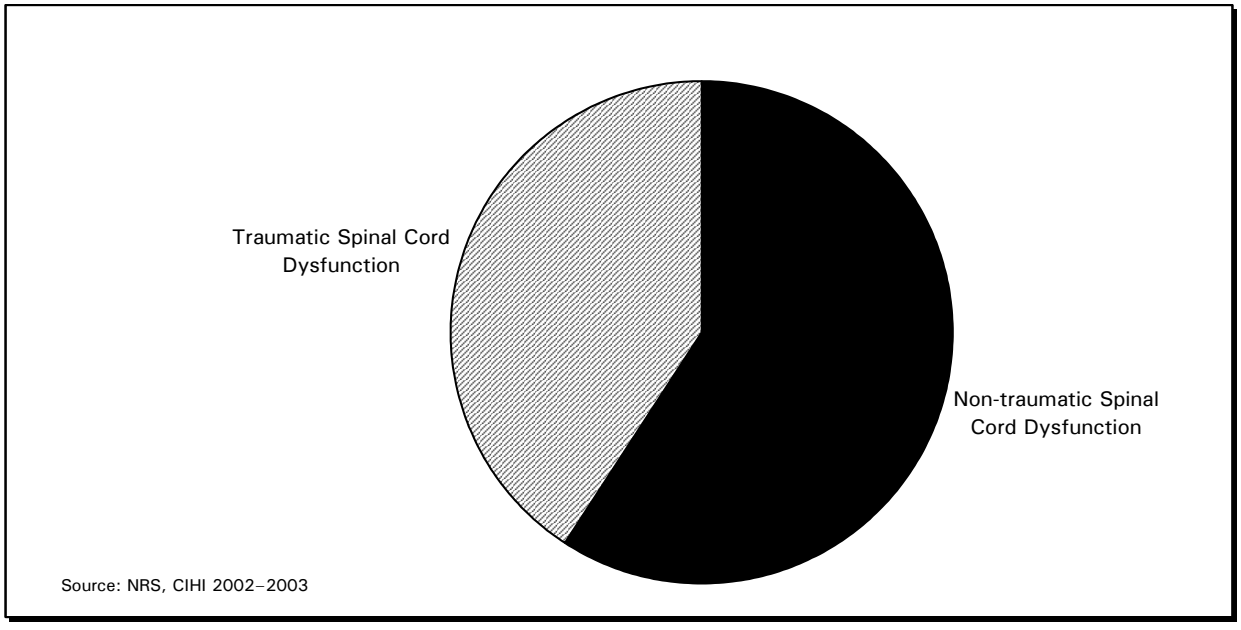

Figure 8.1 Distribution of Inpatient Rehabilitation Clients With Spinal Cord Dysfunction, 2002–2003

Demographic Characteristics

There were differences in the demographic characteristics of clients in the traumatic and non-traumatic groups. Three-quarters (75%) of the traumatic spinal cord dysfunction clients were male compared with over half (57%) of the non-traumatic group.

Figure 8.2 shows the age distribution of the two spinal cord groups. The majority (51%) of the traumatic spinal cord dysfunction clients were aged under 45 years. In contrast, non-traumatic clients were more evenly distributed across the age groups, with the proportions increasing in the older age groups: from 14% who were aged under 45 years to 28% who were aged 75 years and over.

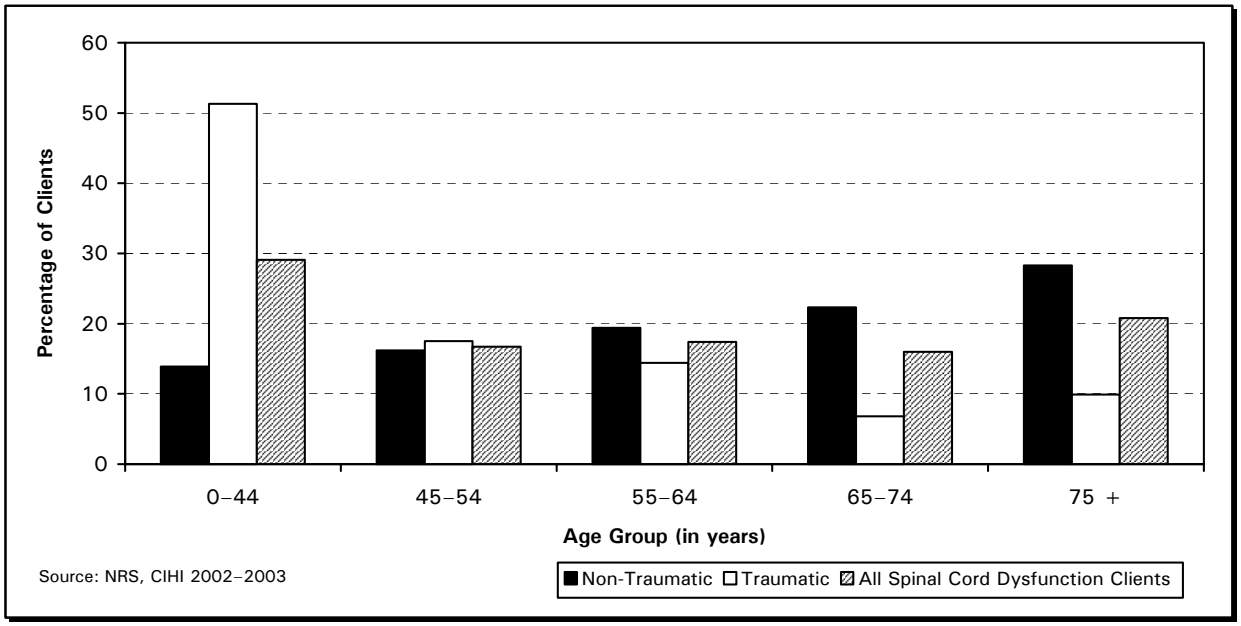

Figure 8.2 Age Distribution of Inpatient Rehabilitation Clients With Spinal Cord Dysfunction, 2002–2003

The average age of both male and female non-traumatic spinal cord dysfunction clients was 62 years. In contrast, the average age of traumatic spinal cord dysfunction clients was 45 years: male clients were, on average, slightly younger than female clients, with average ages of 44 and 47 respectively. As Figure 8.3 shows, one major difference in the age distributions was in the proportion of male and female clients aged under 45 years. Males aged under 45 years accounted for 38% of all traumatic spinal cord clients, with female clients accounting for 13%. In contrast, males and females aged under 45 years accounted for only 6% and 8% of non-traumatic clients respectively.

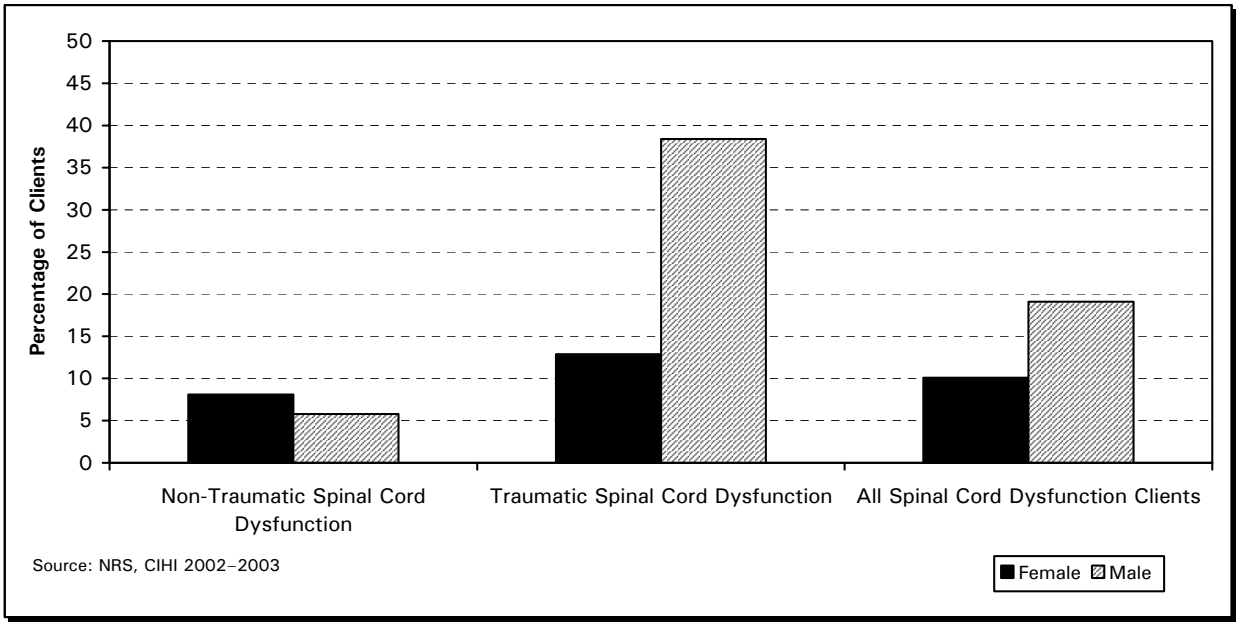

Figure 8.3 Spinal Cord Dysfunction Clients Aged Under 45 Years by Sex, 2002–2003

It was also noted that the demographic profiles of the two spinal cord groups were similar to the traumatic and non-traumatic groups of the brain dysfunction clients, highlighted in Chapter 6. *(Quick Stats, Tables 29 to 31)*

Functional Status at Admission

Compared to several other RCGs, spinal cord dysfunction clients were, on average, admitted to inpatient rehabilitation with lower Total Function Scores: 80 for non-traumatic spinal cord dysfunction clients and 71 for traumatic spinal cord dysfunction clients. This suggests that traumatic spinal cord dysfunction clients have slightly lower overall functional abilities on admission as measured using the FIM™ instrument than non-traumatic spinal cord dysfunction clients. Figure 8.4 shows that the difference in the average admission Total Function Score between the traumatic and non-traumatic clients appeared to be related primarily to the Motor Function Score component. Clients in the traumatic group had a lower average admission Motor Function Score compared with clients in the non-traumatic group (39 and 47 respectively). Both groups had the same average admission Cognitive Function Score (33). *(Quick Stats, Table 32)*

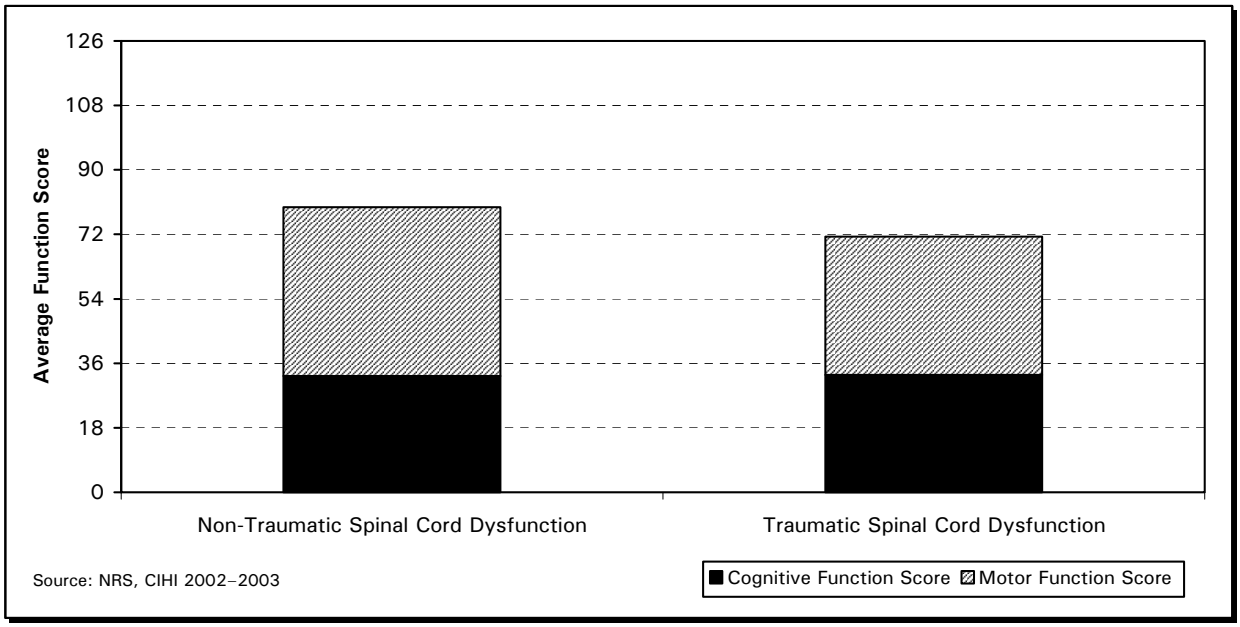

Figure 8.4 Average Admission Function Scores for Inpatient Rehabilitation Clients With Spinal Cord Dysfunction, 2002–2003

Change in Functional Status

As mentioned in previous chapters the analysis of change in functional status relates only to those clients for whom functional ability was assessed using the FIM™ instrument at both admission and discharge; 96% of spinal cord dysfunction clients had a functional assessment at admission and discharge. The average increase in Total Function Score of these spinal cord dysfunction clients was 21. As shown in Figure 8.5, traumatic spinal cord dysfunction clients had an average increase of 23, from 72 at admission to 95 at discharge. Whereas non-traumatic spinal dysfunction cord clients showed an average increase of 19, from 80 at admission to 99 at discharge. While there was negligible change in the average Cognitive Function Score for both groups (less than one point), the average Motor Function Score showed the same increases as observed in the Total Function Score, 23 and 19 for traumatic and non-traumatic clients respectively.
(Quick Stats, Tables 33 and 34)

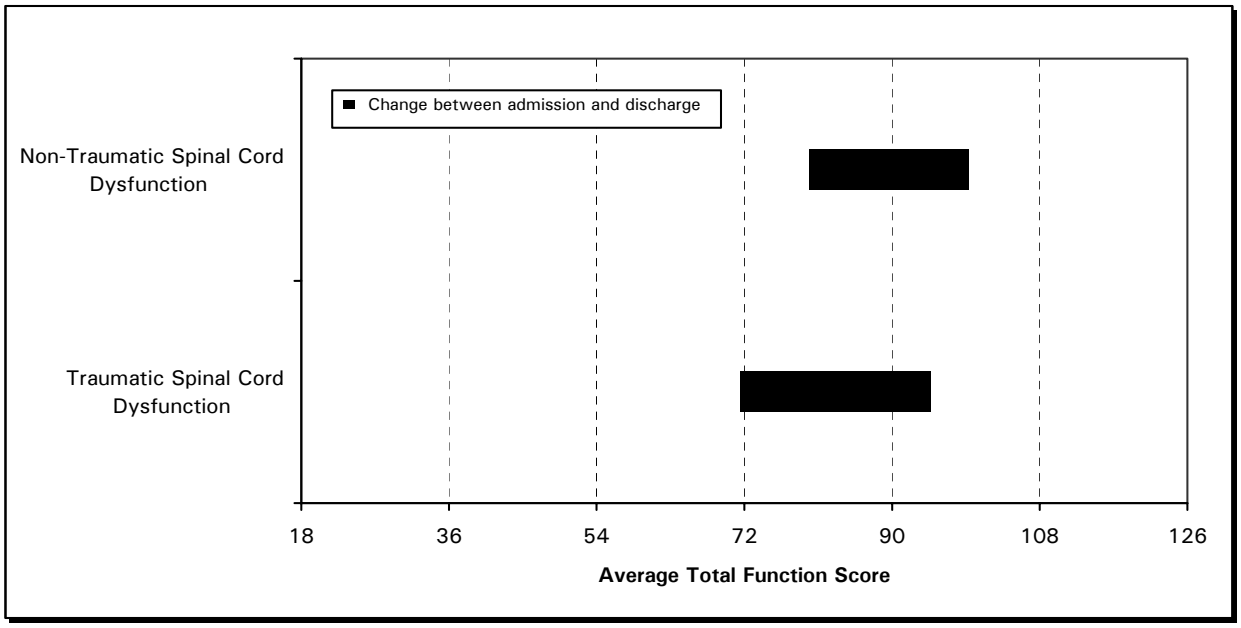

Figure 8.5 Change in Average Total Function Score for Inpatient Rehabilitation Clients With Spinal Cord Dysfunction, 2002–2003

Clients Reporting Pain

Seventy-two percent of all spinal cord dysfunction clients reported some level of pain on admission to rehabilitation facilities; 27% reported that they felt no pain; and 1% were unable to answer. The proportion of clients who reported pain on admission was similar in traumatic and non-traumatic spinal cord dysfunction sub-groups (71% and 73% respectively). *(Quick Stats, Table 35)*

For those spinal cord dysfunction clients who reported pain at admission and were able to report their level of pain at discharge, almost three-fifths (58%) reported an improvement in pain. A larger proportion of traumatic spinal cord dysfunction clients reported an improvement in pain, 64% compared with 55% of non-traumatic spinal cord dysfunction clients. *(Quick Stats, Table 36)*

Length of Stay

The median length of stay, excluding service interruption days, for non-traumatic spinal cord dysfunction clients was 38 days. Clients who had been admitted for traumatic spinal cord dysfunction stayed in the rehabilitation program for a longer period of time (median of 54 days). The overall median length of stay for all spinal cord dysfunction clients was 44 days. *(Quick Stats, Table 37)*

Reasons for Discharge

Figure 8.6 shows the reasons for discharge for the spinal cord rehabilitation clients. The majority of both the traumatic and non-traumatic clients met their service goals and were discharged to their permanent living setting, although the proportion was slightly higher for the traumatic group: 77% and 73% respectively.

A slightly larger proportion of non-traumatic spinal cord dysfunction clients did not meet their service goals; 11% compared with 7% of traumatic spinal cord dysfunction clients. However, both groups had a similar proportion of clients who met their service goals and were referred or transferred to another unit or facility (13% and 14% for traumatic and non-traumatic clients respectively). *(Quick Stats, Table 38)*

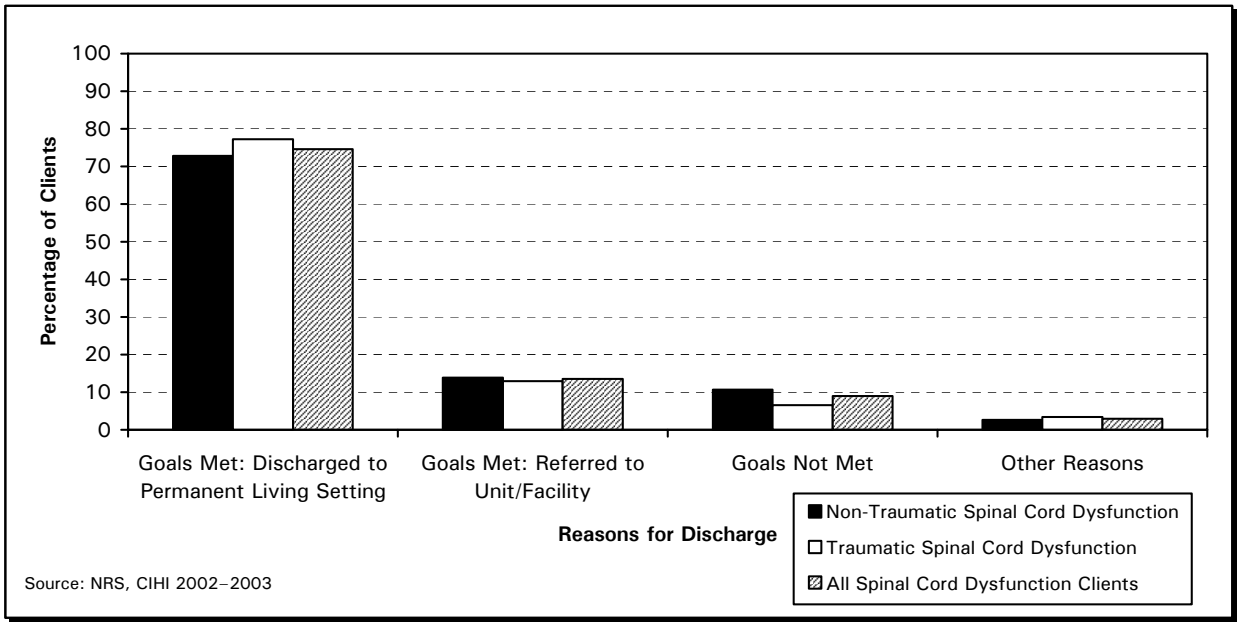

Figure 8.6 Reasons for Discharge From Inpatient Rehabilitation for Spinal Cord Dysfunction Clients, 2002–2003

Summary

There were differences in the demographic characteristics of traumatic and non-traumatic spinal cord dysfunction clients who were discharged from participating NRS facilities in 2002–2003. One major difference was that a large proportion of the traumatic spinal cord dysfunction clients were young males. The demographic profiles of the two groups show some similarities with the clients in the brain dysfunction RCG.

Differences among all the clients in the spinal cord dysfunction RCG were noted in the functional ability, lengths of stay, and the proportion of clients who reported pain at admission in the subgroups. Clients in the traumatic spinal cord dysfunction group had a lower average Total Function Score and a longer median length of stay when compared to clients in the non-traumatic spinal cord dysfunction sub-group. Overall, both groups in the spinal cord dysfunction RCG showed similar increases in Total Function Score during their rehabilitation stay, which were mainly the result of improvements in their motor functioning.

Chapter 9. Discussion

Inpatient Rehabilitation in Canada, 2002–2003 is the first public report based on data from the National Rehabilitation Reporting System (NRS). The NRS was developed in 2001–2002 by the Canadian Institute for Health Information (CIHI) to support rehabilitation services planning activities and policy development.

The report provides information on hospital-based physical rehabilitation services that occurred between April 2002 and March 2003 in participating rehabilitation units or freestanding rehabilitation facilities.

The intent of this report is to shed some light on the scope and selected outcomes of inpatient rehabilitation services across the country. Although this report is based only on data from 71 participating facilities across Canada that reported to the NRS, it provides a snapshot of rehabilitation activity from which further exploration can continue. By facilitating the standard collection of data regarding inpatient rehabilitation services and the people who receive them, the NRS provides an opportunity for discussion and further analysis in the field of rehabilitation.

For participating hospitals, this report provides a summary of some of the information that is contained in the comparative reports, which were already provided by CIHI. The comparative reports, which are produced four times a year, provide hospital-specific and peer group information to facilitate planning and management decisions.

For provincial and territorial health departments and regional health authorities across the country, this report provides a bird's eye view of characteristics and selected outcomes of clients in participating facilities. Although inpatient rehabilitation is only one component of the continuum of the physical rehabilitation sector, the report may provide another mechanism for considering future policy directions.

Inpatient Rehabilitation in Canada, 2002–2003 is one of the first Canadian publications that describes characteristics of hospital-based rehabilitation services and clients in Canada. This allows people who have participated in rehabilitation programs themselves, or who know of family or friends who have, to gain a better understanding on how rehabilitation services information can support decisions and insight in this area of health care.

Focusing on Function

A cornerstone of the NRS is the concept of human function. As a reporting system, it focuses of the role of rehabilitation in assisting individuals to achieve their maximum potential in daily living and community life. This focus is supported by a range of clinical information on motor and cognitive functional status of rehabilitation clients and the impact of pain on their daily activities.

The functional data are primarily collected using the 18-item FIM™ instrument, which is a standardized assessment tool developed in the United States by the Uniform Data System for Medical Rehabilitation (UDS$_{MR}$) and recognized both nationally and internationally.

Together with other socio-demographic, administrative and health characteristics, the NRS and this report provide some insight into the activity limitations experienced by clients and the extent to which rehabilitation programs assist in overcoming these limitations.

As familiarity with the NRS in hospitals and other organizations across the country grows, CIHI will explore new analytical themes and methods to present more specific information on functional status for the range of client groups seen in this reporting system. Where sufficient volumes of records exist in the NRS, further questions about functional status and related outcomes can be explored in subsequent annual reports:

- How do the Rehabilitation Client Groups (RCGs) differ on the various sub-domains of the FIM™ instrument, including locomotion and social cognition?
- What client characteristics have a strong correlation with higher levels of increased Total Function Score on discharge?
- How do functional outcomes vary across different types of facilities, as defined by variables such as client demographics, facility size or the level of services provided?
- How do the other measures of function collected in the NRS compare with the Total Function Score as determined using the FIM™ instrument?
- What trends or variation in functional status or clinical outcomes within a fiscal year or across several years are evident in the NRS data?
- How do the interventions provided in rehabilitation programs impact on functional status and other outcome measures in the NRS?

Expanding the View

As a result of its partly voluntary nature, the NRS does not have comprehensive coverage of all inpatient rehabilitation services within Canada. Therefore, the information presented in this report is limited in the extent to which the characteristics, indicators and outcomes can be assumed to be representative of all inpatient rehabilitation services.

In the future, as more hospitals implement the NRS to support their management and quality improvement activities, the snapshot of rehabilitation services may become clearer. A vision for the NRS is to have comprehensive reporting for all inpatient physical rehabilitation services across Canada: a vision that would certainly enhance the findings released through the various NRS reporting activities.

By enhancing the information contained in the NRS through consultation with various hospital and government partners and through further development, future reports may address additional topics of interest to rehabilitation stakeholders. As well, incorporating additional sources of information, such as published research and recognized data sources, numerous other questions can be explored, including:

- How do outcomes vary across different groups of clients who receive services in different types of programs, such as geriatric rehabilitation and short-stay units?
- How do additional data about diagnoses facilitate the comparison of various groups of rehabilitation clients?
- Do limitations in the information contained in the NRS provide additional direction for the collection of other data elements relating to socio-demographic characteristics, functional status and related clinical outcomes?
- How can NRS information be combined with information from other sources, such as financial and health human resources information, to shed more light on the inpatient rehabilitation sector?
- How do inpatient rehabilitation services relate to other parts of the continuum of settings in which rehabilitation occurs, such as acute care, ambulatory care, home care and continuing care?

Reporting on NRS Case-Mix Information

The NRS contains a case-mix grouping methodology known as Function Related Groups (FRGs), which is based on the Functional Independence Measure of the Function Related Groups (FIM-FRGs) and was developed in the United States. The FRGs facilitate the grouping of clients into a manageable number of groups based on RCG, age and functional characteristics determined using the FIM™ instrument. These groups can be used by rehabilitation policy-makers and payers in various ways, including funding formulae. Since the FRGs provide a more precise grouping of the clients than using the RCGs alone, they are more closely related to other variables of interest, such as length of stay.

Provinces, territories and regions that choose to mandate participation in the NRS, such as Ontario, will increasingly be interested in the value-added case-mix capabilities in the NRS. It is expected that future reports will respond to this interest and include analyses based on the FRGs. This will allow for additional questions to be asked, including:

- How does length of stay and various functional outcomes compare across the FRGs?
- To what extent do the FRGs explain the variance in key indicators and how can these be used to inform comparative reporting and other planning activities?
- How does the distribution of FRGs vary across facilities and regions?

Conclusion

In recent years there have been several key discussions on the future of the health care in Canada, including the Romanow Report and the Kirby Commission. As this future unfolds, there may be many changes to the scope and organization of traditional health services, including inpatient rehabilitation. As a reporting system, the NRS will continue to provide an opportunity for hospitals, policy-makers and other stakeholders to measure activity, to monitor outcomes and to respond to the new demands and opportunities presented by these changes.

As one component of the rehabilitation reporting activities at CIHI, subsequent annual versions of *Inpatient Rehabilitation in Canada* will investigate areas of relevance and importance for hospital-based rehabilitation by providing analysis based on input and feedback from across the country.

CIHI looks forward to assisting in meeting those rehabilitation information needs. For more information, e-mail the NRS team at rehab@cihi.ca or visit www.cihi.ca/nrs, the Web site of the National Rehabilitation Reporting System.

Appendix A—Glossary of Selected NRS Terms

Terms related to the National Rehabilitation Reporting System (NRS) are taken from the Rehabilitation Minimum Data Set Manual, which is distributed by the Canadian Institute for Health Information (CIHI) to licensed and participating facilities, researchers, ministries/departments of health and submission software vendor companies.

The FIM™ Instrument referenced herein is the property of Uniform Data System for Medical Rehabilitation, a division of UB Foundation Activities, Inc.

Activities of Daily Living (ADL)—Basic daily activities such as eating, grooming, bathing, transferring from a bed to a chair and dressing.

Admission FIM™ Instrument Assessment—The baseline functional assessment conducted using the FIM™ instrument at the time of admission to the rehabilitation program. The FIM™ instrument should be administered within 72 hours after admission. See Appendix B for a listing of activities assessed using the FIM™ instrument.

CIHI Cognitive Items—Six additional clinical data elements collected for some clients in the NRS in order to provide more information about their level of cognitive functioning. These data elements are Communication (verbal or non-verbal expression), Communication (written expression), Communication (auditory or non-auditory comprehension), Communication (reading comprehension), Financial Management and Orientation.

Cognitive Function Score—The sum of the scores for the 5 cognitive elements on the FIM™ instrument, ranging from 5 to 35. A higher Cognitive Function Score suggests a higher level of independent functioning in cognitive activities. See *Cognitive Subscale* below. This can be calculated on admission and on discharge.

Cognitive Subscale—The last five items of the FIM™ instrument: Comprehension, Expression, Social Interaction, Problem Solving and Memory.

Complete Independence—All of the tasks described as making up an activity on the FIM™ instrument are typically performed by the client safely without a helper. They are performed without modification, assistive devices, or aids, and within a reasonable amount of time.

Continuing Rehabilitation—One of the available options for Admission Class in the NRS. This is part of a rehabilitation inpatient stay that began in another rehabilitation unit or facility. The client was admitted directly from a rehabilitation program in another unit or facility.

Date Ready for Admission—The date on which the client meets criteria for admission to the rehabilitation facility and is considered ready to start a rehabilitation program. It does not refer to the date the client is put on a waiting list if this is done prior to when the client is clinically ready for rehabilitation.

Days Waiting for Admission—Measured in days, the date on which the client is admitted to the rehabilitation facility minus the Date Ready for Admission.

Discharge FIM™ Instrument Assessment—The assessment of the patient's functional status using the FIM™ instrument at discharge. The FIM™ instrument should be administered within 72 hours before discharge from the rehabilitation program. See Appendix B for a listing of activities assessed using the FIM™ instrument.

Episode—For the purposes of the NRS, an inpatient rehabilitation stay that is recorded by both an admission NRS record and a discharge NRS record. The analyses in this report are based on rehabilitation episodes.

Facility—The level at which hospitals submit data for the NRS. Often, "facility" is synonymous with "hospital". For hospitals with more than one site or location, there may be more than one NRS facility for a hospital corporation. Primarily, the term hospital is used in this report to represent an actual NRS facility.

FIM™ Instrument—A functional assessment instrument developed by the Uniform Data System for Medical Rehabilitation (UDS_{MR}). It is composed of 18 items assessing various cognitive and motor activities. The activities are scored using a seven-level scale representing gradations from independent (7) to dependent (1) function. See Appendix B for a listing of activities assessed using the FIM™ instrument.

Financial Management (CIHI Cognitive Item)—Includes the ability to manage finances (e.g. how bills are paid, checkbook is balanced, household expenses are balanced, and purchases are made). Excludes ability to use transportation to get to and from financial institution.

Follow-up FIM™ Instrument Assessment—The assessment of the client's functional status using the FIM™ instrument that is collected between 80 and 180 days after discharge from the rehabilitation program.

General Rehabilitation Facility—For the purposes of the NRS, usually a facility that provides inpatient rehabilitation services in rehabilitation units, programs or designated beds in a general hospital that has multiple levels of care (i.e. rehabilitation, acute care, chronic care, emergency). Rehabilitation clients receive multi-dimensional (physical, cognitive, psychosocial) diagnostic, assessment, treatment and service planning interventions.

Independence—The ability to perform a task without physical or cognitive assistance or supervision, within a reasonable amount of time.

Initial Rehabilitation—One of the available options for Admission Class in the NRS. This is the client's first admission to an inpatient rehabilitation facility for this rehabilitation condition (see *Rehabilitation Client Group*).

Length of Stay (LOS)—The number of days between the date on which the client is admitted to the rehabilitation facility and the date they are discharged from the rehabilitation facility. Any days on which the client could not participate in the rehabilitation program for a health reason are subtracted from the total number of days (see *Service Interruption*).

Length of Stay (LOS) Efficiency—The change in functional independence (see *Total Function Score*) per day of client participation in the rehabilitation program. To calculate this, a client requires a FIM™ Instrument assessment on admission and discharge.

Motor Function Score—The sum of the scores for the 13 motor elements on the FIM™ instrument, ranging from 13 to 91. A higher Motor Function Score suggests a higher level of independent functioning in motor activities (see *Motor Subscale)*. This can be calculated on admission and on discharge.

Motor Subscale—The first thirteen items of the FIM™ instrument, including: Eating; Grooming; Bathing; Dressing—Upper Body; Dressing—Lower Body; Toileting; Bladder Management; Bowel Management; Transfers: Bed, Chair, Wheelchair; Transfers: Toilet; Transfers: Tub or Shower; Locomotion: Walk, Wheelchair; and Locomotion: Stairs.

NRS Assessor—This individual is a member of the rehabilitation team in a participating hospital who provides evaluation and treatment to inpatient rehabilitation clients and is responsible for collecting clinical NRS data. They have been trained by in-house NRS Trainers/Coordinators and have successfully completed two case studies based on the FIM™ instrument. They are also familiar with relevant clinical data elements including CIHI Cognitive and Communication items and Rehabilitation Client Groups.

NRS Facility Coordinator—This individual is usually a rehabilitation clinician or manager and is responsible for the coordination of all NRS activities in a participating hospital. NRS activities include training of facility staff, facilitating processes for data collection, entry and submission of data, disseminating NRS materials and reports to facility staff, ensuring completeness and accuracy of data, and participating in data quality checks and processes to ensure accuracy of recording.

NRS Trainer—This individual is usually a member of the rehabilitation team in a participating hospital who has attended the CIHI two-day Trainer workshop and successfully qualified to use the FIM™ instrument. They have a broad understanding of NRS data set. They are a member of the implementation team at their facility and are responsible for providing training to other clinicians on the rehabilitation team.

Pain Score—Information is collected directly from the client. If a client has pain, they are asked about the intensity and impact of the pain. The resulting Pain Score ranges from 4 to 9, where 4 is severe pain with most activities restricted and 9 is mild pain with no activity restrictions.

Permanent Living Setting—Also referred to as the Community Living Setting, where the client was living before their admission to hospital for this rehabilitation condition. It is also where the client will be living after discharge from the rehabilitation program. It does not refer to another hospital or hospital unit if the client is transferred from the rehabilitation facility or unit.

Private Medical Practitioner—For the purpose of this NRS report, one of the available options for coding the Referred To data element. This is the person to which the client is referred at time of discharge for services to occur following the rehabilitation episode, for example, a physician, physiotherapist or social worker.

Readmission—One of the available options for Admission Class in the NRS. The client is admitted to an inpatient rehabilitation facility or unit and this admission is related to a previous admission for the same rehabilitation condition (see Rehabilitation Client Group). There is no time limit for length of time since the previous admission.

Rehabilitation Client Group (RCG)—The rehabilitation condition that best describes the primary reason for admission to the rehabilitation program. The RCG for each client is determined by the service provider(s) or rehabilitation team at the time of the NRS admission assessment and at discharge (if the assigned group is different). See Appendix C for a listing of Rehabilitation Client Groups used in this report.

Self-Care Activities—Basic activities necessary for daily personal care, including eating, grooming, bathing, dressing and toileting.

Service Goals—The objectives, or target, set by the rehabilitation client in partnership with the team providing rehabilitation services in an inpatient rehabilitation facility or unit. These are determined shortly after admission to the rehabilitation facility and assist in determining the activities that will be included in their rehabilitation.

Service Interruptions—Occur when a client is unable to participate in their rehabilitation program due to health conditions that may or may not result in their transfer out of the rehabilitation bed or unit. This does not include weekend passes to visit family at home.

Short Stay—One of the available options for Admission Class in the NRS. This is an inpatient rehabilitation episode that lasts between 4 and 10 days. It is known or expected on admission that the client will not be in the rehabilitation facility for more than 10 days.

Specialty Rehabilitation Facility—For the purposes of the NRS, a facility that provides comprehensive inpatient rehabilitation services and specialized programs. This is often a freestanding rehabilitation hospital, but can also be a specialized unit another type of hospital (i.e. acute care, chronic). In addition to interventions provided in a General Rehabilitation Facility, clients also have access to more comprehensive services such as surgical specialists, orthotics and prosthetics.

Total Function Score—The sum of the scores for all 18 elements on the FIM™ instrument, ranging from 18 to 126. A higher Total Function Score suggests a higher level of independent functioning in activities of daily living and communication. This can be calculated on admission and on discharge.

Appendix B—Elements in the FIM™ Instrument

Motor Skills

Eating
Grooming
Bathing
Dressing—upper body
Dressing—lower body
Toileting
Bladder management
Bowel management
Transfers: bed, chair, wheelchair
Transfers: toilet
Transfers: tub or shower
Locomotion: walk/wheelchair
Locomotion: stairs

Cognitive Skills

Comprehension
Expression
Social interaction
Problem solving
Memory

Appendix C—Rehabilitation Client Groups (RCGs)

The level of RCGs as referenced in this report are provided below. This is not an exhaustive listing of RCGs available for coding in the NRS.

Orthopaedic Conditions • Knee Replacement • Hip Replacement • Hip Fracture • Other Orthopaedic Conditions **Stroke** • Left-Sided Hemiplegia • Right-Sided Hemiplegia • Other Stroke Conditions **Brain Dysfunction** • Traumatic Brain Dysfunction • Non-Traumatic Brian Dysfunction • Other Brain Dysfunction **Amputation of Limb** • Single Leg Above Knee • Single Leg Below Knee • Other Amputation **Spinal Cord Dysfunction** • Non-Traumatic Spinal Cord Dysfunction • Traumatic Spinal Cord Dysfunction	**Medically Complex** **Debility** **Cardiac** **Neurological Conditions** **Pulmonary** **Arthritis** **Major Multiple Trauma** **Pain Syndromes** **Burns** **Congenital Deformities*** **Other Disabling Impairments*** **Developmental Disabilities***

* Due to small numbers of records in the NRS, these three RCGs were grouped together and referred to as "Other RCGs" within this report.

Appendix D—List of Tables

The source tables for this report are available on the CIHI Web site at www.cihi.ca under "Quick Stats". These tables can be found under "Inpatient Rehabilitation" when searching "By Topic" or by "National Rehabilitation Reporting System (NRS)" when searching "By Source".

Chapter 2

Chapter 3

Chapter 3 (continued)

Chapters 4–8

Chapters 4–8 (continued)


ten
years
dix
ans
taking health information further
à l'avant-garde de l'information sur la santé