



Data Quality Documentation, Continuing Care Reporting System, 2010–2011

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Our Vision

Better data. Better decisions.
Healthier Canadians.

Our Mandate

To lead the development and maintenance of comprehensive and integrated health information that enables sound policy and effective health system management that improve health and health care.

Our Values

Respect, Integrity, Collaboration,
Excellence, Innovation

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Summary

The Continuing Care Reporting System (CCRS) is a longitudinal database that captures clinical, demographic and administrative information on residents in residential and hospital-based continuing care facilities. The RAI-MDS 2.0®, an internationally validated clinical assessment instrument, forms the clinical data standard for CCRS.

In 2010–2011, data was received from 117 continuing care hospitals and 784 residential care facilities; 42 of these facilities began submitting to CCRS in 2010–2011. With the exception of one hospital in the Winnipeg Regional Health Authority (WRHA), all the hospitals submitting data to CCRS are complex continuing care facilities in Ontario, which have been mandated to submit data to CIHI since 1996. The majority of residential care facilities submitting data to CCRS are in Ontario; the rest are in Newfoundland and Labrador, Nova Scotia, Manitoba (WRHA), British Columbia and Yukon.

The RAI-MDS 2.0 has undergone significant reliability and validity testing, internationally and in Canada, which confirmed the RAI-MDS 2.0 has both high reliability and high validity. Analysis of the CCRS data also shows that the data is generally of high quality and exhibits expected patterns of consistency, both within and across assessment records. In addition, facilities must submit data that meets CIHI specifications, which ensure that each record is complete and contains only valid values.

Users should be aware of several key issues when using CCRS data:

- While CCRS coverage has expanded since its inception in 2003–2004, and will continue to increase in the future as jurisdictions continue to implement the RAI-MDS 2.0 assessment and submit their data to CIHI, CCRS data may not be representative of all continuing care facilities in Canada.
- In addition, as participation in CCRS has expanded over time, the population of reference for each year is different. Any changes in trends identified need to be interpreted carefully, as they may reflect changes in the underlying population rather than actual changes in resident characteristics and resource utilization.
- The structure of CCRS longitudinal data is complex; users need to familiarize themselves with what data is expected when and which data elements are available on which records (for example, on the full and quarterly versions of the RAI-MDS 2.0 assessments).
- Not all residents have assessment data available, primarily because some stay in the facility for less than 14 days. This proportion is highest among Ontario complex continuing care facilities, where only 72.4% of residents are assessed.
- A small number (0.3%) of resident episodes for 2010–2011 were classified as assumed discharges (where the submission of assessment records stopped and a discharge record was not submitted, indicating there is at least one expected record missing for that resident).
- A small proportion of records have inconsistencies and other issues with the demographic information that is used to identify unique residents across episodes. Users need to take these into account when attempting to link records longitudinally.

- When analyzing trends at the facility level, users should be aware of any potential organizational changes (such as closures, mergers or splits) that result in facility number changes. This may affect analysis, depending on how the transfer of data between the old and new facility numbers was managed.
- The proportion of residents in the Special Rehabilitation Resource Utilization Groups in Ontario long-term care (LTC) facilities has increased. CIHI and the Ontario Ministry of Health and Long-Term Care are currently investigating the reasons for these changes and whether they reflect real changes in the services provided in the facilities and/or measurement error.

1 Introduction

This report provides data quality and general reference information on data submitted to the Continuing Care Reporting System (CCRS) to help people understand and use CCRS data. It provides information on the structure of CCRS data, how the information is collected and processed, and the strengths and any major limitations of the data. Data limitations are detected and investigated through data processing and through data quality and analytical activities within the CCRS program area.

The focus of this report is data submitted to CCRS for 2010–2011 at the time of the annual data release.

The Canadian Institute for Health Information (CIHI) Data Quality Framework, implemented in 2000–2001 and revised in 2009, provides a common strategy for assessing data quality across CIHI databases and registries. It is built upon five dimensions of quality:

- Accuracy;
- Comparability;
- Timeliness;
- Usability; and
- Relevance.

The strengths and limitations of the CCRS data discussed in this report focus on aspects of accuracy (specifically, coverage, non-response and measurement error) and comparability.

For further information on the CIHI Data Quality Framework, please refer to the CIHI website (www.cihi.ca).

2 An Overview of the Continuing Care Reporting System

CCRS was launched by CIHI in 2003–2004 as a pan-Canadian reporting system to support standardized reporting in residential continuing care facilities that have 24-hour nursing available (referred to as long-term care homes, personal care homes and nursing homes) and hospital-based continuing care facilities and units (sometimes referred to as complex continuing care, chronic care or extended care). From 1996 to 2003, data from Ontario complex continuing care (CCC) facilities was submitted to the Ontario Chronic Care Patient System; it was subsequently incorporated into CCRS.

In subsequent years, residential continuing care facilities in Ontario, Nova Scotia, Newfoundland and Labrador, Manitoba, British Columbia and Yukon have begun submitting to CCRS. For information on the number of facilities by province or territory submitting data to CCRS, see Table 1; for which years' data is available for each province or territory, see tables 3, 4 and 5.

Saskatchewan also submits continuing care data to CIHI; however, this data has been excluded from this report because it is not submitted through the CCRS production system. For more information on Saskatchewan data, see Section 3.1.

CCRS contains longitudinal demographic, clinical, functional and resource utilization information on individuals receiving continuing care services in hospitals or residential care homes in Canada. Participating organizations also provide information on facility characteristics to support comparative reporting and benchmarking.

2.1 The RAI-MDS 2.0

The Resident Assessment Instrument–Minimum Data Set 2.0 (RAI-MDS 2.0©) forms the clinical data standard for CCRS. It is a validated clinical assessment developed by interRAI, an international research network, and was modified with permission by CIHI for Canadian use.

The RAI-MDS 2.0 is a comprehensive assessment that is used to identify the preferences, needs and strengths of residents of residential care homes and patients in continuing care hospitals; it also provides a snapshot of the services they receive. It includes measures of cognition, communication, vision, mood and behaviour, psychosocial well-being, physical functioning, continence, disease diagnoses, nutritional status, skin condition, medications and special treatments and procedures. A full list of data elements collected in the RAI-MDS 2.0 is provided in the appendix. The RAI-MDS 2.0 assessment is completed upon admission to the facility and every three months thereafter, or if the resident experiences a significant change in clinical status. The RAI-MDS 2.0 assessment data is supplemented with resident demographic and administrative information collected when the resident enters and leaves the facility.

The information, gathered electronically at the point of care, provides real-time decision support for front-line care planning and monitoring. The data from individual residents can be aggregated and used by clinical quality champions, managers and policy-makers for planning, quality improvement and accountability.

2.2 CCRS Record Types

As a longitudinal reporting system, facilities submit data to CCRS collected at key events during a resident's stay:

- **Admission:** An admission background form (ABF) that contains key demographic and administrative information is collected for all residents on admission. The ABF opens the resident episode and establishes the Unique Registration Identifier (URI) number associated with all assessments in that episode of care.
- **Assessment:** A full RAI-MDS 2.0 assessment is completed on each resident within 14 days of admission and is repeated annually within the same admission. Full assessments are also completed after a significant change in clinical status. For lengths of stay less than 14 days, completing an admission assessment is voluntary. A shorter quarterly RAI-MDS 2.0 assessment is completed every quarter (at three, six and nine months) between full assessments.

- **Medication:** A section of the RAI-MDS 2.0 assessment (Section U) captures detailed information about all medications the resident took during the assessment observation period. It is currently optional for facilities to submit this medication data to CIHI. A medication record is submitted for each individual medication captured in the RAI-MDS 2.0.
- **Discharge:** A discharge record is completed whenever a resident is discharged from the facility (including death). A discharge record may also be completed when the discharge is temporary (that is, when the resident's return is anticipated). It should be noted that any absences from the facility where the resident is not formally discharged (such as a medical or social leave of absence) are not recorded within CCRS.
- **Re-Entry:** A re-entry form is completed for residents who were discharged but returned to the facility before their next scheduled assessment. The re-entry allows the previous assessment cycle to continue under the same URI. If the resident misses his or her scheduled assessment while out of the facility, a new episode of care must be started with a new ABF and a new URI.
- **Update Record Elements:**
 - **Private Pay Resident Flag:** The intent of this element is to differentiate residents whose per diem cost for their stay is covered solely by private means from residents whose per diem rate is covered in whole or in part by public funds. The Private Pay Resident Flag is collected on admission (collected on the Admission/Re-entry [AD] record) but may change during the resident's stay. If the payment status changes, updated information can be submitted using the Update (UP) record.
 - **Bed Type:** The intent of this element is to enable reporting on the different bed types that residents may be placed in within an organization (facility). The valid values for Bed Type will be based on the organizational structures of the facilities within a jurisdiction and will be defined by the appropriate provincial ministry of health or regional health authority. The resident's Bed Type is collected on admission (submitted on the Admission/Re-entry [AD] record) but may change during the resident's stay. If the resident is moved to another type of bed during his or her stay at the same facility, updated information can be submitted in an Update (UP) record.
 - **Unit—MIS Functional Centre Account Code:** The intent of this element is to identify the MIS Functional Centre related to the unit in which the resident is placed. The resident's MIS Functional Centre is collected on admission (submitted on the Admission/Re-entry [AD] Record) but may change during the resident's stay if the resident is moved to a different unit that has a different MIS Functional Centre. If the resident's MIS Functional Centre changes during his or her stay at the same facility, updated information can be submitted in an Update (UP) record.

Due to the assessment schedule, data is expected for every resident on a quarterly basis for all residents active in the facility during that quarter.

2.3 Data Collection

The RAI-MDS 2.0 is implemented in jurisdictions primarily as a comprehensive assessment for front-line clinicians to help plan and monitor resident care. The data submitted to CCRS is therefore a by-product of the ongoing processes of care.

The assessment is captured electronically, and the vendor software the facility uses can provide real-time feedback for facility staff to support care planning.

The *RAI-MDS 2.0 User's Manual* provides data element definitions and data collection standards. The *CCRS Specifications Manual* provides information on how the data is to be submitted to CCRS and includes data element specifications, valid code values, record layouts, data validation rules and error message descriptions. Both are made available to clients prior to the beginning of each fiscal year. Organizations participating in CCRS can access CIHI's products and services related to data quality and processing, client education and support, data access, national health information standards and select publications and reports. When clients submit data files to CCRS, data quality reports are made available to them immediately after the records are processed. Facilities must use software developed by vendors that meets CIHI's specifications to collect and submit CCRS information. These vendors incorporate CIHI submission specifications into their proprietary software systems. Data files are submitted to CIHI electronically through a secure, web-based application.

2.3.1 Completeness of Data Submissions

CIHI checks each record on submission to ensure the record is complete and the values are valid. Any records that do not meet these specifications are rejected, and data providers are given a report detailing the reasons for the rejection. It is expected that data providers will correct and resubmit records that were rejected.

Data quality audit reports are produced 45 days after the end of a data submission quarter. They identify potentially missing records and illogical or suspicious values in successfully submitted data. Data submitters then have an additional 15 days to submit corrections and/or missing data.

2.3.2 Data Submission Timeline

Quarterly data submission deadlines are published annually, prior to the beginning of the data submission year. As mentioned above, data providers have 45 days to submit data for a quarter, plus an additional 15 days to submit any corrections or additional data. Sixty days following the end of the quarter, a data cut of the submitted data is used for the creation of the CCRS eReports. While late data is accepted into CCRS after the data submission deadline, it is not incorporated into the eReports for that quarter.

2.4 Data Quality Control

Extensive quality control measures support the collection of high-quality data in CCRS. These include processes for software vendors to complete required testing of their software before data is submitted for each fiscal year, CCRS system edits and correction processes, a comprehensive education program and client support.

2.4.1 Vendor Support and Software Testing

CIHI maintains data capture quality control measures through the Vendor Relations and Production Systems sections of its Information Technology department. These areas offer vendor support, coordinate the annual release of system specifications to vendors and assist with vendor system testing. Files are processed in a test environment to ensure that the format and content of the files meet CCRS submission requirements for the fiscal year.

2.4.2 CCRS System Edits and Correction Processes

Data suppliers are encouraged to use electronic tools to complete assessments and to seek out vendors who implement edits and audits at data collection, which allow for corrections and verifications to occur at the time of data entry.

The edits built into the CCRS database are logical and consistent, and they are verified by both the CCRS team and the IT team prior to implementation. Several consistency edits exist within and between data elements and also between records to ensure the longitudinal integrity of the resident's information. For example, the Discharge Date submitted on the discharge record must be on or after the Admission Date submitted on the ABF, and a re-entry record cannot be submitted before a discharge record has been successfully submitted.

CIHI checks each record on submission to ensure completeness and valid values. Any records that do not meet these specifications are rejected, and data providers are given a report detailing the reasons for the rejection.

Submission reports are generated in a timely manner (within one or two days) when each submission file is processed in the database. These submission reports provide data suppliers with details regarding the number of records submitted, the number of records rejected and the specific reasons for each rejected record. Education sessions and direct client support are provided to assist with interpreting submission reports and correcting rejected records. As mentioned, data quality audit reports produced 45 days after the end of the quarter further identify potential errors that may require correction.

2.4.3 Education Program

Through a comprehensive program of education, instructional sessions are provided to data providers on using the RAI-MDS 2.0 assessment, submitting data, managing submission errors and corrections, and interpreting and using the CCRS information and eReports. These sessions are one mechanism to ensure standardized data collection coding practices and adherence to CIHI's data submission and collection requirements.

2.4.4 Client Support

The CCRS program area provides support for data collectors and submitters. The team answers questions related to the RAI-MDS 2.0 assessment and CCRS products, including the eReports, assists in the development and delivery of education programs, provides data submission expertise and builds relationships with provincial/territorial contacts, health organizations and data users.

In addition, CIHI's eQuery application allows clients to submit questions to a variety of program areas from a single place. With this shared knowledge base, clients can view answers to questions that have previously been asked about CCRS coding and can also submit new questions.

2.5 Imputation

As mentioned in Section 2.2, a full RAI-MDS 2.0 assessment is completed on each resident within 14 days of admission and is repeated annually within the same admission. Full assessments are also completed after a significant change in clinical status. A shorter quarterly RAI-MDS 2.0 assessment is completed every quarter (at three, six and nine months) between full assessments.

Some of the assessment items not collected on quarterly assessments are imputed using values from the last full assessment associated with the resident's admission. These items are considered relatively stable over time, such as diagnoses of chronic diseases. A list of imputed assessment items can be found in the appendix.

In some instances, a resident may not have a full assessment from which data can be imputed onto the quarterly assessment. This usually occurs when facilities first begin submitting to CCRS. When facilities first implement the RAI-MDS 2.0 assessments, they have a number of existing residents who were admitted to the facility prior to implementation and who need to be assessed. The facilities do not immediately complete admission full assessments on these residents; rather, they complete quarterly assessments until the anniversary of the residents' admissions and then complete full assessments. Therefore, it may be up to a year before a resident has a full assessment submitted to CCRS.

When using the RAI-MDS 2.0 assessment data, users should be aware of whether or not items they wish to use are available on all assessment records.

2.6 CCRS Outputs

The RAI-MDS 2.0 has embedded decision-support algorithms, which summarize information from the assessment and can be used to support both clinical and organizational decision-making. These include clinical scales, which summarize key clinical domains (such as cognitive performance, physical functioning, depression symptoms and pain), quality indicators, case mix methodology (Resource Utilization Group version III, or RUG-III) and triggers for care planning protocols.

CCRS provides participating organizations with access to comparative **eReports**, which include profiles of their populations, services and outcomes, including quality indicators. These reports are used by clinical quality champions, managers and policy-makers for planning, quality improvement and accountability. Standard tables of aggregate data are available to the public through CCRS Quick Stats.

3 Coverage and Response

Coverage and response are aspects of the accuracy dimension of the CIHI Data Quality Framework that relate to whether the appropriate data is available in the database.

Coverage refers to whether the population for which data should be submitted is known and accurate, while response refers to whether complete data was actually submitted for that population. Within CCRS, coverage is primarily measured at the facility level—whether the list of facilities that should be submitting (usually referred to as the “frame”) is known and accurate.

Response is measured at several levels:

- Facility: Was data received from all facilities on the frame?
- Record: Were all expected records received?
- Item: Was all expected data within individual items/data elements on a record received?

3.1 CCRS Population of Interest and Population of Reference

The **CCRS population of interest**—the group of units for which information is wanted—is all residents of all publicly funded continuing care facilities (hospital-based or residential) within Canada that have 24-hour nursing available. CCRS *does not have full coverage* of this population, although participation in CCRS has expanded considerably since its launch in 2003.

It should be noted that there are challenges in describing the population of interest for CCRS, as there is no standard terminology used in the residential care sector across Canada. Facilities of interest can be identified as nursing homes, long-term care homes or personal care homes, to name a few; as well, these terms may be used to refer to care settings that are outside the CCRS population of interest (that is, that do not have 24-hour nursing available).

The **CCRS population of reference** refers to the available group of units. For CCRS, this is all publicly funded continuing care facilities in Canada with 24-hour nursing from which data submissions can be expected (the frame). The CCRS frame for 2010–2011 included all open, mandated Ontario CCC and LTC facilities and other facilities that had submitted data to CIHI in 2009–2010 and were still open, and facilities that completed testing and submitted their first data to CIHI in 2010–2011.

The 2010–2011 frame included facilities in Newfoundland and Labrador, Nova Scotia, Ontario, Manitoba, British Columbia and Yukon.

Table 1 summarizes participation in CCRS since 2006–2007. As participation has expanded over time, the population of reference for each year is different. Due to this changing coverage and increases in data volumes from the residential care sector, any changes in trends identified need to be interpreted carefully, as they may reflect changes in the underlying population rather than actual changes in resident characteristics and resource utilization.

Table 1: CCRS Participation (Number of Facilities Submitting Data), by Province/Territory and Sector, 2006–2007 to 2010–2011

P/T and Sector		Year				
		2006–2007	2007–2008	2008–2009	2009–2010	2010–2011
N.L.	Res.			1	3	7
N.S.	Res.	5	5	6	6	6
Ont.	Hosp.*	123	123	120	116	116
	Res.	116	180	254	626	636
Man.	Hosp.	1	1	1	1	1
	Res.	2	7	37	38	38
B.C.	Res.	16	44	76	93	95
Y.T.	Res.		1	2	2	2
All		263	361	497	885	901

Notes

* Small Ontario complex continuing care (CCC) facilities sometimes do not submit to CCRS in a given year as they do not have any residents in their designated CCC beds. In addition, there have been several closures of CCC facilities, which have reduced the overall number of CCC facilities expected to submit to CCRS.

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

It should be noted that when facilities begin data submission, they submit some historical data related to fiscal years prior to the year they begin to submit to CIHI. This information includes admission records for residents who were in the facility at the time of CCRS/RAI-MDS 2.0 implementation and, occasionally, assessment records completed in fiscal year(s) before they were able to submit data to CIHI.

As the CCRS frame does not currently contain all facilities in all provinces and territories that make up the CCRS population of interest, users should be cautious when interpreting results from CCRS, as the population covered by CCRS may not be representative of all continuing care facilities across Canada. Reasons for this include the following:

- The admission criteria for residential care and the services provided within these facilities vary across the country. Depending on the availability of other services, such as home care and assisted-living settings to keep people living in the community, jurisdictions tailor their admission criteria and service provision for residential care toward the local needs of their populations. For some jurisdictions, where home care and other community support services are available, many people who would have previously been admitted to a residential care facility are now served at home or in other settings.

- Within jurisdictions, submission to CCRS can depend on the scope of mandate for the RAI MDS 2.0. Some jurisdictions submit data only if residents are mandated to have a RAI-MDS 2.0 (that is, their long-term residents), while others submit data for all residents in the facility (which can include residents in short-term or specialty beds).
- Hospital-based continuing care facilities/units submit to CCRS only if they have implemented the RAI-MDS 2.0, such as Ontario CCC facilities and units and one WRHA hospital. Other continuing care hospitals and units submit data to CIHI's Discharge Abstract Database. As with residential care, there may be significant differences in the types of patients and services provided in this level of care across different jurisdictions.

Continuous efforts are being made to include more facilities and jurisdictions in CCRS. CIHI is supporting implementation of CCRS and the RAI-MDS 2.0 in several jurisdictions across Canada:

- Newfoundland and Labrador is collecting RAI-MDS 2.0 data. Its first facility submitted data to CIHI in March 2010, and in 2010–2011 seven facilities submitted to CCRS.
- Ontario completed its implementation of CCRS in all of its long-term care facilities in 2010.
- Manitoba Health has indicated that it is interested in implementing CCRS in the rest of the province in the future.
- Saskatchewan Health uses a modified version of the RAI-MDS 2.0 assessment. It submits this data to CIHI outside of CCRS for use in analytical products. Saskatchewan is anticipated to move to the CCRS standard and begin regular submissions to CCRS in 2012.
- Alberta has mandated CCRS across all its residential care facilities (nursing homes and auxiliary hospitals) and anticipates submitting data to CIHI once completed in 2013.
- B.C. has mandated CCRS across all its residential care facilities. All B.C. residential care facilities will submit to CIHI. As of 2010–2011, 95 of the 314 facilities submitted to CCRS.

3.2 CCRS Facility-Level Non-Response

The CCRS team works with jurisdictions (ministries of health and regional health authorities) to determine which facilities will be submitting to CCRS, including openings, closures, mergers of facilities and changes to facility numbers, which enables the CCRS team to keep the CCRS frame up to date.

CCRS data submissions are monitored routinely, and CIHI staff follows up with facilities, regional health authorities or ministries of health when there are gaps in submissions or if there is a significant change in the total volume of records received. Table 2 provides facility-level non-response rates for jurisdictions submitting data to CCRS in 2010–2011. All facilities that were expected to submit data to CCRS (that is, facilities that submitted data in 2009–2010 and were still open and facilities that completed testing and submitted their first data to CIHI in 2010–2011) did so.

Table 2: CCRS Facility-Level Non-Response, by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of Facilities on Frame	7	6	116	636	1	38	95	2	901
Number of Non-Submitting Facilities	0	0	0	0	0	0	0	0	0
Non-Response Rate	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

3.3 Record-Level Coverage and Non-Response

This section describes the volumes and types of records submitted to CCRS and any issues with missing records (record-level non-response) and submission of potentially duplicate records (which are viewed as a source of over-coverage).

It should be noted that completely missing episodes—that is, when no ABF for a resident is submitted—are impossible to measure reliably without an external source of data with which to compare CCRS data. However, volumes of ABF records are monitored to detect any potential non-response at this level.

3.3.1 Increase in Record Volumes

With new facilities submitting to CCRS, the database has experienced growth. Tables 3, 4 and 5 provide summaries of the growth in the numbers of ABF records, RAI-MDS 2.0 assessment records and discharge records submitted to CCRS since 2006–2007.

Table 3: Number of Admission Background Form Records Submitted, by Province/Territory and Sector, 2006–2007 to 2010–2011

P/T and Sector		Year of Admission				
		2006–2007	2007–2008	2008–2009	2009–2010	2010–2011
N.L.	Res.	52	80	146	238	305
N.S.	Res.	189	230	236	294	316
Ont.	Hosp.	20,538	20,238	20,024	21,617	22,749
	Res.	17,204	23,034	31,314	46,565	56,285
Man.	Hosp.	20	33	97	91	67
	Res.	792	1,377	2,408	2,406	2,399
B.C.	Res.	1,634	2,705	3,797	3,516	3,593
Y.T.	Res.	24	42	87	161	217
All		40,453	47,739	58,109	74,888	85,931

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Includes historical records that relate to fiscal years prior to the year the facilities began submitting data to CIHI.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

Table 4: Number of RAI-MDS 2.0 Assessment Records Submitted, by Province/Territory and Sector, 2006–2007 to 2010–2011

P/T and Sector		Year of Assessment				
		2006–2007	2007–2008	2008–2009	2009–2010	2010–2011
N.L.	Res.			109	569	1,717
N.S.	Res.	1,630	1,556	1,642	2,102	2,323
Ont.	Hosp.	31,534	30,450	29,528	29,784	29,611
	Res.	48,544	82,177	131,196	286,219	345,378
Man.	Hosp.			366	530	542
	Res.		213	11,057	22,431	22,659
B.C.	Res.	768	6,209	12,778	29,217	31,468
Y.T.	Res.		36	498	508	519
All		82,476	120,641	187,174	371,360	434,217

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Includes historical records that relate to fiscal years prior to the year the facilities began submitting data to CIHI.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

Table 5: Number of Discharge Records Submitted, by Province/Territory and Sector, 2006–2007 to 2010–2011

P/T and Sector		Year of Discharge				
		2006–2007	2007–2008	2008–2009	2009–2010	2010–2011
N.L.	Res.			10	62	229
N.S.	Res.	162	187	161	270	284
Ont.	Hosp.	20,529	20,169	20,033	21,583	22,752
	Res.	7,038	12,359	19,937	41,693	55,395
Man.	Hosp.	2	6	56	91	67
	Res.	2	38	1,176	2,250	2,306
B.C.	Res.	29	643	1,416	2,724	3,165
Y.T.	Res.		1	82	140	208
All		27,762	33,403	42,871	68,813	84,406

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Includes historical records that relate to fiscal years prior to the year the facilities began submitting data to CIHI.

Includes temporary discharges where the resident subsequently returned to the facility.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

3.3.2 Assessed Residents

The CCRS standard expects that a full RAI-MDS 2.0 assessment be completed on each resident within 14 days of admission and that it be repeated annually within the same episode of care. Full assessments are also completed after a significant change in clinical status. For lengths of stay less than 14 days, completion of an admission assessment is voluntary. A shorter quarterly RAI-MDS 2.0 assessment is completed every quarter (at three, six and nine months) between full assessments.

Table 6 shows the proportion of 2010–2011 residents (URIs) that had assessments available in 2010–2011.

Table 6: Proportion of URIs With Assessments, by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
URIs With 2010–2011 Assessments	82.80%	90.10%	72.40%	91.90%	93.90%	93.20%	91.70%	70.60%	88.60%
Number of URIs	807	862	26,652	111,711	196	7,935	11,499	252	159,914

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

The main reason why residents do not have assessments, particularly in Ontario CCC facilities, is that they stayed in the facility less than 14 days. Other reasons include the following:

- They were discharged early in the fiscal year, before an assessment was due;
- They were admitted towards the end of the fiscal year, and an assessment was not scheduled for completion until the next fiscal year; and
- An assessment was due to be completed but was not completed or was not submitted to CIHI (which would be considered record-level non-response; see Section 3.3.4 for further details).

More than a quarter (27.6%) of residents in Ontario CCC facilities were not assessed in 2010–2011. Previous analysis¹ has shown that in Ontario CCC facilities, one characteristic of the non-assessed group clearly stands out in contrast to the assessed population. Those without assessments were much more likely to die in the hospital (49% of the non-assessed population) than those for whom assessments were available (25% of assessed hospital residents). This may represent a segment of the hospital population that is admitted for end-of-life or palliative care.

As no clinical information is available for the non-assessed group, users should be aware that there may be other key differences between assessed and non-assessed residents in CCC facilities.

3.3.3 Potential Duplicate Records

There are many edits within CCRS to prevent the submission of duplicate records. However, duplicates may still occur if the facilities change some of the information which is used to determine the uniqueness of the records (for example, resident identifiers or dates).

The initial record for a resident received by CCRS is an ABF, which contains demographic information and unique identifiers such as Health Card Number (HCN), Health Record Number (HRN), Date of Birth, Sex and Admission Date. Each ABF is assigned a URI by the facility's software. All subsequent records during the resident's stay are linked by this URI.

There could be situations where a mistake is made with the unique identifiers that results in duplicate records being submitted for residents.

Using unique HCNs (or HRNs if no HCN was available to identify residents within a facility), in 2010–2011, there were only 17 out of 79,619 instances where there were two ABFs with the same admission date for the same resident. There were also 152 episodes where the entry and discharge dates overlapped with other episodes for the same resident. While these are evidence of potential duplicate records or incorrect resident identifiers or dates, they are very small in number and will have minimal impact on results.

Once an ABF is received for a resident, a record is expected every quarter while the resident is in the facility (an assessment and/or, if the resident leaves the facility, a discharge record).

CCRS receives multiple assessments in a quarter if a significant change has occurred or significant corrections are made to a previously submitted assessment. Excluding these situations, there were an additional 2.8% of residents where the resident had more than

one assessment in the quarter (for example, two admission full assessments submitted in the same quarter with different dates), which may be indicative of duplicate records submitted. CIHI has a standard methodology for reporting, which is to select the latest assessment per quarter to represent the resident's clinical characteristics for that quarter.

3.3.4 Record-Level Non-Response

Two of the data quality indicators that are reported in the *Provincial/Territorial Data Quality Report* (which is provided to provincial and territorial deputy ministers each year) provide measures of records that are potentially missing from the CCRS database:

- Percentage of assumed discharges—URIs where the submission of assessments has stopped and no discharge was submitted (see Table 7); and
- Percentage of residents without a full assessment (see Table 8).

CCRS is a longitudinal reporting system, and facilities are expected to submit an assessment in each quarter the resident is in the facility until he or she is discharged. If the submission of assessments stops without the submission of a discharge record, this indicates there is at least one expected record missing for that resident. There may be several reasons why the expected assessment or discharge records are not in the CCRS database: they were never completed, they were completed but not submitted to CIHI or they were rejected and never resubmitted.

For 2010–2011 data, a resident was classified as an assumed discharge if some data was submitted for the resident in 2010–2011 and the submission of assessments stopped without the submission of a discharge record by the end of the fiscal year. This indicates that there is at least one expected record missing for that resident (a discharge record or an assessment). The table below shows that, overall, 0.3% of residents for whom there was data in 2010–2011 were classified as having an assumed discharge. (Users should note that assumed discharges also exist in previous years of CCRS data.)

For some analytical purposes (such as the calculation of RUG weighted patient day reports), these residents are assumed to have been discharged from the facility on the last day of the quarter for which a record was last submitted to CCRS.

Table 7: Proportion of Assumed Discharges, by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Assumed Discharges	0.20%	1.30%	0.40%	0.10%	0.00%	0.70%	1.40%	0.40%	0.30%
Number of URIs	807	862	26,652	111,711	196	7,935	11,499	252	159,914

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

The second record non-response indicator is the percentage of residents that were expected to have at least one full assessment submitted but for whom no full assessments were received.

A full assessment is expected within 14 days of admission and on the anniversary of the previous full assessment. In the intervening quarters, residents receive a shorter quarterly assessment. When facilities first implement the RAI-MDS 2.0 assessments, they have a number of existing residents who were admitted to the facility prior to implementation and who need to be assessed. Facilities do not immediately complete these admission full assessments; rather, they do quarterly assessments until the anniversary of the residents' admissions and then do full assessments. Therefore, it may be up to a year before a resident is expected to have a full assessment submitted to CCRS. These residents are therefore excluded from this indicator for the first year the facility submits to CCRS.

Table 8 presents the proportion of residents who were *expected* to have full assessments but for whom one was not submitted. As with missing discharge records, there may be several reasons why the expected full assessments are not in the CCRS database: they were never completed, they were completed but not submitted to CIHI or they were rejected and never resubmitted.

Table 8: Proportion of Applicable Residents With Missing Full Assessments, by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Percentage With Missing Full Assessment	19.20%	6.60%	0.60%	0.70%	4.00%	2.50%	4.50%	32.90%	1.10%
Number of URIs	214	362	17,202	43,980	99	3,378	3,432	149	68,816

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

Residents without full assessments are excluded from certain analyses, as key data elements that are collected only on the full assessment are not available (and therefore cannot be imputed onto the quarterly assessment, as described in Section 2.5). Therefore, when using the RAI-MDS 2.0 assessment data, users should be aware of whether or not items they wish to use are available on all assessment records.

3.4 Item Non-Response

Item non-response (or partial non-response, as it is sometimes known) occurs when a record is received with some missing or invalid data. The item response rate for CCRS depends largely on whether the data element is mandatory or optional.

The vast majority of data elements in CCRS are mandatory and therefore require a valid response for the system to accept the record; this includes all the elements that are used to derive the key outputs (outcome scales, quality indicators and the RUG case mix methodology) used for analysis. Details of the data elements submitted on each record to CCRS are provided in the appendix.

Some of these data elements have specific values to indicate that the information is unknown. The use of this code is most often allowed on the ABF and the admission full assessment, as information about the resident prior to his or her admission is more difficult to obtain. If an unknown code is used, it is included in the calculation of item non-response rates.

Other elements have an explicit not applicable code, usually an 8. For example, many data elements are not collected if the resident is comatose; these data elements must be submitted with an 8 for the record to be accepted by the system. Not applicable codes are not included in item non-response rates.

Other data elements are allowed to be left blank, as they are not applicable in certain situations; these are also excluded from any item non-response rates. Examples include assessment items that are not collected on the quarterly assessment and Facility Admitted From Number (AB2b) and Discharged to Facility Number (R3b), which can be left blank if the resident was not admitted from or discharged to facility-based care.

Non-mandatory elements are also allowed to be blank; the only optional elements on the main assessment are those in Section I3: Additional ICD-10-CA Diagnoses. Section U information (the detailed list of medications) is also optional, but this data is submitted as a separate record. If a facility is not collecting this section, it simply does not submit any medication records.

The *CCRS Specifications Manual* provides details of all the specific codes to be used to identify unknown and not applicable values.

The following four tables provide item non-response rates for ABFs and assessment-level data for elements that can have item non-response (the rest of the data elements are mandatory and do not have unknown options; they therefore have an item non-response rate of 0%):

- ABFs only;
- Admission full assessments only (as the unknown code is allowed to be submitted on these assessments only);
- All full assessments (as the items appear on the full assessment form only); and
- All assessments (as the items appear on both the full and quarterly assessment forms).

Table 9: Item Non-Response Rates for Admission Background Form Data Elements, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of ABF Records	305	293	21,571	37,106	67	2,395	3,564	122	65,423
AA5a Health Card Number*	0.7%	0.0%	0.9%	0.3%	0.0%	0.0%	0.3%	4.1%	0.5%
AA5b Province Issuing Health Card Number	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	4.1%	0.0%
AB2a Admission From Facility Type/ Level of Care[†]	0.7%	0.0%	0.2%	0.4%	0.0%	1.8%	1.2%	0.0%	0.4%
AB3 Lived Alone	1.3%	3.8%	9.2%	2.9%	17.9%	8.8%	3.7%	0.0%	5.3%
AB5a Prior Stay in Current Facility	0.3%	0.0%	2.2%	1.2%	0.0%	0.0%	3.1%	0.0%	1.5%
AB5b Prior Stay in Other Facility	0.3%	0.0%	5.8%	5.7%	0.0%	0.2%	9.3%	1.6%	5.7%
AB5c Prior Stay in Other Residential Care	0.7%	0.0%	5.6%	6.7%	0.0%	0.0%	12.5%	3.3%	6.3%
AB5d Prior Stay in Psychiatric Facility	0.3%	0.0%	5.1%	5.8%	0.0%	0.0%	12.5%	4.9%	5.6%
AB5e Previous Stay in Developmental Disability Facility	0.3%	0.0%	4.8%	4.6%	0.0%	0.0%	11.7%	1.6%	4.9%
AB7 Highest Level of Education	35.1%	33.8%	61.8%	36.9%	76.1%	42.0%	16.5%	12.3%	44.2%
AB8 Language[‡]	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
AC1a Stays up Late at Night	25.9%	0.0%	17.6%	8.5%	0.0%	0.4%	11.9%	4.1%	11.4%
AC1b Naps During Day	25.6%	0.0%	16.7%	8.9%	0.0%	0.3%	11.7%	5.7%	11.3%
AC1c Goes Out 1+ Days a Week	21.0%	0.0%	17.1%	10.7%	1.5%	0.3%	17.4%	1.6%	12.8%
AC1d Stays Busy With Hobbies	17.0%	0.0%	16.1%	9.7%	0.0%	0.3%	16.1%	2.5%	11.8%
AC1e Stays Alone	13.4%	0.0%	14.9%	8.8%	0.0%	0.5%	13.6%	2.5%	10.8%
AC1f Moves Independently Indoors	9.2%	0.0%	12.6%	5.2%	0.0%	0.3%	6.9%	0.0%	7.5%
AC1g Uses Tobacco Daily	13.1%	0.0%	16.2%	5.1%	0.0%	0.3%	7.3%	5.7%	8.7%
AC1i Distinct Food Preferences	32.8%	0.7%	18.1%	8.6%	0.0%	0.4%	13.2%	4.1%	11.7%
AC1j Eats Between Meals	38.7%	0.0%	21.5%	9.9%	0.0%	0.5%	16.6%	3.3%	13.8%
AC1k Uses Alcohol Weekly	24.3%	0.0%	18.8%	7.4%	1.5%	0.3%	13.6%	8.2%	11.3%

Table 9: Item Non-Response Rates for Admission Background Form Data Elements, 2010–2011 (cont'd)

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
AC1m In Bedclothes Most of Day	8.9%	0.0%	15.3%	5.4%	0.0%	0.2%	8.2%	3.3%	8.6%
AC1n Wakens to Toilet Most Nights	48.5%	0.0%	20.4%	13.0%	0.0%	0.7%	17.1%	9.0%	15.3%
AC1o Has Irregular Bowel Movements	73.8%	0.0%	21.1%	16.6%	0.0%	1.0%	18.5%	10.7%	17.8%
AC1p Showers for Bathing	46.9%	0.3%	20.3%	13.6%	0.0%	0.5%	17.5%	5.7%	15.6%
AC1q Bathes in P.M.	49.2%	0.0%	24.9%	20.5%	0.0%	0.7%	23.8%	7.4%	21.4%
AC1s Daily Contact With Relatives/ Friends	8.9%	0.3%	12.6%	6.7%	1.5%	0.4%	10.9%	1.6%	8.6%
AC1t Usually Attends Church, Synagogue, Temple	33.8%	0.0%	30.6%	22.1%	1.5%	0.3%	26.2%	17.2%	24.3%
AC1u Finds Strength in Faith	39.3%	0.0%	30.0%	26.4%	1.5%	0.5%	36.9%	19.7%	27.1%
AC1v Animal Companion	31.8%	0.0%	28.0%	16.4%	1.5%	0.3%	16.5%	13.9%	19.6%
AC1w Involved in Group Activities	29.8%	0.0%	22.2%	16.2%	1.5%	0.4%	19.5%	3.3%	17.7%

Notes

* Based on encrypted Health Card Number coded as *not available* or *not applicable*, as they are indistinguishable when encrypted.

† Admission From Facility Type/Level of Care coded as *other/unclassified service*.

‡ Language coded as *no linguistic content*; *not applicable*.

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

Table 10: Item Non-Response Rates for Admission Full Assessment Data Elements, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of Assessments	74	250	16,098	32,122	63	2,208	5,242	26	56,083
A9a Legal Guardian	0.0%	0.4%	1.3%	5.7%	0.0%	0.1%	10.1%	11.5%	4.6%
A9b Durable Power of Attorney/Finances	1.4%	0.4%	1.7%	6.8%	0.0%	0.4%	10.1%	15.4%	5.3%
A9c Other Legal Oversight	1.4%	0.0%	1.7%	7.1%	1.6%	0.0%	14.4%	7.7%	5.9%
A9d Family Responsible	1.4%	0.0%	1.0%	3.1%	0.0%	0.0%	5.1%	3.8%	2.5%
A9e Durable Power of Attorney/Health Care	0.0%	0.0%	1.6%	6.3%	0.0%	0.1%	12.8%	11.5%	5.3%
A9f Patient Responsible	0.0%	0.0%	0.9%	3.4%	0.0%	0.0%	6.7%	7.7%	2.8%
A10a Living Will	4.1%	0.0%	2.7%	11.8%	0.0%	0.4%	21.7%	11.5%	9.6%
A10b Do Not Resuscitate	0.0%	0.0%	0.8%	6.6%	0.0%	0.2%	9.8%	0.0%	4.9%

Table 10: Item Non-Response Rates for Admission Full Assessment Data Elements, 2010–2011 (cont'd)

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
A10c Do Not Hospitalize	4.1%	0.0%	1.1%	6.7%	0.0%	0.2%	12.6%	7.7%	5.4%
A10d Organ Donation	2.7%	0.0%	2.4%	11.5%	0.0%	0.2%	19.2%	26.9%	9.1%
A10e Autopsy Request	4.1%	0.0%	2.3%	11.1%	0.0%	0.3%	17.9%	34.6%	8.7%
A10f Feeding Restrictions	1.4%	0.0%	1.4%	7.0%	0.0%	0.2%	11.3%	34.6%	5.5%
A10g Medication Restrictions	1.4%	0.0%	1.4%	6.8%	0.0%	0.2%	11.3%	26.9%	5.4%
A10h Other Treatment Restrictions	2.7%	0.0%	1.4%	7.5%	0.0%	0.2%	13.0%	30.8%	5.9%
F3a Identifies With Past Roles	4.1%	0.8%	11.4%	17.8%	0.0%	0.1%	24.2%	19.2%	15.8%
F3b Sad Over Lost Roles	4.1%	0.0%	10.6%	17.0%	0.0%	0.1%	21.3%	15.4%	14.8%
F3c Perceives Daily Life as Different	4.1%	0.0%	10.9%	18.0%	0.0%	0.0%	21.6%	23.1%	15.5%
O2 New Medications	5.4%	36.8%	9.8%	17.5%	23.8%	39.6%	26.7%	3.8%	17.1%
K3a Weight Loss	12.2%	74.0%	25.6%	33.7%	41.3%	69.7%	41.9%	3.8%	33.7%
K3b Weight Gain	12.2%	74.0%	25.6%	33.7%	41.3%	69.7%	41.9%	3.8%	33.7%

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

Table 11: Item Non-Response Rates for All Full Assessments, by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of Assessments	639	718	19,227	156,365	169	8,191	9,558	163	195,030
A5 Marital Status	0.5%	3.8%	7.0%	1.8%	0.6%	1.1%	6.0%	16.0%	2.5%
A7k Unknown Responsibility for Payment	11.1%	6.0%	2.5%	1.5%	5.9%	2.8%	3.3%	0.0%	1.8%

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

Table 12: Item Non-Response Rates for All Assessments (Full and Quarterly), by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of Assessments	1,717	2,323	29,611	345,378	542	22,659	31,468	519	434,217
K2a Height*	2.0%	0.0%	3.8%	0.1%	0.0%	0.2%	0.3%	0.0%	0.4%
K2b Weight*	0.1%	0.0%	3.3%	0.2%	0.0%	0.2%	0.0%	0.0%	0.4%

Notes

* Resident coded as palliative and cannot be measured, or resident refused to be measured.

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

While some of the items listed have high levels of non-response (for example, AB7 Highest Level of Education, where it was unknown for almost half of all residents) these items are not frequently used in analysis. However, if users are planning to use any of these variables in their analysis, they should be aware of item non-response rates and assess their fitness for use.

In addition to item non-response in the resident information, there was also item non-response in the facility information available in CCRS. Facilities are expected to send in a facility profile record before they begin to submit data to CCRS and are encouraged to submit updates to ensure the contact information is kept up to date. In 2010–2011, one newly submitting facility had not submitted full facility profile information, resulting in key information, such as number of beds/facility size, being unavailable for reporting.

4 Measurement Error, Bias and Consistency

This section describes how well the data is reported to CIHI and reflects the reality it was designed to measure.

Measurement error relates to errors caused when a data element is coded or answered incorrectly. Bias assesses to what degree the difference between the reported values and the values that should have been reported occurs in a systematic way. Consistency assesses the amount of variation that would occur if repeated measurements were done.

4.1 Reliability and Validity of RAI-MDS 2.0 Assessment and Outputs

The RAI-MDS 2.0 has undergone significant reliability and validity testing, internationally and in Canada,^{2–11} which confirmed the RAI-MDS 2.0 has both high reliability and high validity.

In 2007, the Ontario Ministry of Health and Long-Term Care and CIHI funded an inter-rater reliability study and secondary data quality analysis within Ontario CCC hospitals and units carried out by Canadian interRAI researchers. An inter-rater reliability study is a way of measuring the consistency of assessment data, where a second assessment is completed on the same resident within a short period of time of the first and the consistency between the two assessments is measured, usually using Kappa statistics.

In the Ontario CCC study, there was good evidence of reliability (Kappa values greater than 0.40) for the majority of items tested, including those used to derive the key analytical outputs: the major outcome scales, RUG-III case mix methodology, quality indicators and Resident Assessment Protocols. Twenty percent of all of the clinical items on the RAI-MDS 2.0 had kappa values of 0.70 or greater, and 15% of the items had kappa values below the 0.40 threshold. The bulk of these latter items were either elements that are used infrequently in analysis or had highly skewed response distributions, which results in kappa instability. Some inter-facility variation in inter-rater reliability was observed, but at a regional level all regions achieved at least acceptable kappa values.

The secondary data quality analysis that was also carried out by interRAI analyzed the coding consistency between data elements and showed that major variables like cognition, activities of daily living, continence and behaviour are related in the expected directions and that the associations have been stable over time. This analysis was re-run on the 2008–2009 data for all jurisdictions submitting data at that time; results are shown below.

The elements that are used to derive the key clinical scales, such the Activities of Daily Living (ADL) Long-Form and the Depression Rating Scale (DRS), are expected to have internal consistency. Cronbach's alpha can be used to measure this consistency; these statistics are shown in Table 13.

Table 13: Cronbach's Alpha Statistics for ADL Long-Form and DRS, 2008–2009

	N.S.	Ont.		Man.		Y.T.	All
	Res.	Hosp.	Res.	Hosp.*	Res.	Res.	
ADL Long-Form	0.94	0.94	0.92	0.92	0.92	0.93	0.94
DRS	0.73	0.74	0.80	0.74	0.72	0.69	0.74

Notes

* Based on one facility.

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

The Cronbach's alpha statistics are consistent across jurisdictions and are at the expected levels. The elements that make up the ADL Long-Form are expected to have a very high internal consistency (above 0.9), whereas the DRS elements are more loosely associated with each other and have an expected range of around 0.7.

There are also expected relationships among a resident's clinical characteristics, such as cognition, ADL and continence. Correlation coefficients can be analysed to assess whether the magnitude of these associations is within the expected range (0.4 to 0.7). Spearman's rank coefficients for the Cognitive Performance Scale, ADL Hierarchy Scale and bowel continence are shown in Table 14.

Table 14: Spearman's Correlation Coefficients Between the Cognitive Performance Scale and Other Clinical Characteristics, 2008–2009

	N.S.	Ont.		Man.		Y.T.	All
	Res.	Hosp.	Res.	Hosp.*	Res.	Res.	
ADL Long-Form	0.59	0.54	0.54	0.74	0.48	0.53	0.52
ADL Hierarchy	0.58	0.57	0.51	0.73	0.50	0.52	0.52
Bowel Continence	0.55	0.61	0.48	0.60	0.49	0.54	0.53

Notes

* Based on one facility.

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2008–2009, Canadian Institute for Health Information.

The correlation coefficients are within the expected range, which reflected the expected relationships among the clinical variables. Note that the Manitoba hospital results are based on a single facility, which may reflect a more homogenous resident population, with a slightly higher-than-expected correlation between the ADL scales and the Cognitive Performance Scale.

The RAI-MDS 2.0 contains a number of derived scales, each of which has been validated against industry gold standards. For example, the Pain Scale was found to be highly predictive of pain, as reported on the Visual Analogue Scale,² and the Cognitive Performance Scale score was validated against the Mini-Mental State Examination and the Test for Severe Impairment.^{4, 7}

4.2 Consistency of Demographic Variables

Records within an episode of care are linked by the URI, which is assigned with each submitted ABF. As an individual resident may have multiple episodes of care, other variables need to be used to link records from different episodes. Resident names are not submitted to CCRS. CCRS collects numeric identifiers (HCN and HRN) and demographic information, such as Sex and Date of Birth, on the ABF to uniquely identify records belonging to the same individual.

HCNs are assigned to individuals by provincial ministries of health and territorial governments. CIHI receives a complete HCN on CCRS records and applies a standard algorithm to scramble this number. Because the numbers are unique only within each province and territory, CCRS captures a variable representing the province or territory that issued the HCN. A small proportion of residents do not have a provincial/territorial HCN submitted to CCRS, either because they do not have one or because it was unavailable at the time of data collection (see Section 3.4: Item Non-Response).

The HRN is defined as any number that an organization assigns to uniquely identify a person within the organization over time, other than the person's HCN. In many facilities this is the chart number.

CIHI creates a Resident ID, which is a meaningless but unique number so that unique individuals can be identified within CCRS while they remain anonymous. This variable is based on the combination of the encrypted HCN and the province/territory responsible for issuing the HCN or, if the HCN is unavailable, on the combination of the HRN and facility code.

The CCRS analytical data files have a series of data quality flags that identify records that have issues with the demographic variables:

- Residents without an HCN;
- Inconsistent Dates of Birth across admissions (within a particular facility or across facilities);
- Inconsistent Sex across admissions (within a particular facility or across facilities);
- Age is outside the expected range (younger than 16 or older than 115);
- Birthdate Was Estimated; and
- Format of the HCN was inconsistent with the specifications of the province/territory issuing the health card.

Table 15 shows the rates of these issues for 2010–2011. While the volume of issues is small, users need to take these into account when attempting to link records longitudinally and include or exclude the records, depending on their needs.

Previously, many of the age issues were the result of the Admission Date being entered as the birthdate (resulting in the resident's age being calculated as 0). An edit was added to the system (for 2010–2011) to prevent this issue from occurring.

Table 15: Inconsistency in Demographic Data Elements Submitted to CCRS, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of ABF Records	305	293	21,571	37,106	67	2,395	3,564	122	65,423
Inconsistent Sex in Prior ABF Submitted	0.0%	0.0%	0.0%	0.2%	0.0%	0.0%	0.1%	1.6%	0.1%
Inconsistent Birthdate in Prior ABF Submitted	0.0%	0.0%	0.3%	0.5%	0.0%	0.0%	0.1%	0.8%	0.4%
Age Outside Expected Range (<16 or >115)*	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	1.6%	0.1%
Estimated Birthdate	0.0%	0.7%	0.6%	0.2%	0.0%	0.0%	0.3%	0.0%	0.3%
Inconsistent HCN Format†	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.6%	0.8%	0.1%

Notes

* Except Bloorview Kids' Hospital, where the expected age is less than 18.

† Excludes non-unique Health Card Numbers.

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

ABF: admission background form.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

4.3 Consistency of Clinical Variables

In addition to the assessment of clinical consistency described in Section 4.1, there are checks on the clinical consistency of the data within each assessment record. These checks, referred to as data quality audits, are performed on submitted data 45 days after the end of the quarter and reflect unusual combinations of data elements that may be errors that require correction. However, they may also accurately reflect the residents' clinical status. Facilities then have an opportunity to correct records prior to the data submission deadline. Table 16 shows the rates at which the clinical data quality audits were triggered in the 2010–2011 assessment data.

Table 16: Trigger Rates for Clinical Data Quality Audits, by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of Assessments	1,717	2,323	29,611	345,378	542	22,659	31,468	519	434,217
Speech Therapy exceeded 840 minutes	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Occupational Therapy exceeded 840 minutes	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Physical Therapy exceeded 840 minutes	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Respiratory Therapy exceeded 840 minutes	0.1%	0.2%	0.5%	0.0%	0.4%	0.0%	0.0%	0.0%	0.0%
Psychological Therapy exceeded 840 minutes	0.0%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Recreation Therapy exceeded 840 minutes	0.0%	0.1%	0.0%	0.0%	0.0%	0.1%	0.4%	0.0%	0.1%
Eating was coded as <i>did not occur</i>	0.2%	0.0%	0.3%	0.1%	0.6%	0.0%	0.1%	0.2%	0.1%
Toilet Use was coded as <i>did not occur</i>	1.2%	1.2%	0.9%	0.5%	3.5%	2.1%	0.7%	0.0%	0.7%
Resident was coded as having an indwelling catheter and being incontinent of urine	0.8%	0.7%	2.6%	1.0%	8.5%	0.8%	1.1%	0.4%	1.1%
Resident was coded as using pads/briefs and being continent of urine	4.3%	6.5%	16.7%	6.8%	8.5%	6.3%	6.9%	8.1%	7.5%
Resident was coded as being bedfast, but no pressure-relieving devices or turning/ repositioning program were coded	0.6%	0.6%	0.8%	0.2%	7.2%	0.4%	0.9%	0.0%	0.3%
Resident was coded as having frequent bowel incontinence, but no pressure-relieving devices or turning/ repositioning program were coded	1.5%	11.3%	1.5%	6.6%	14.4%	11.7%	11.5%	5.2%	6.9%

Table 16: Trigger Rates for Clinical Data Quality Audits, by Province/Territory and Sector, 2010–2011 (cont'd)

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Resident was coded as having an ulcer or a history of an ulcer, but no pressure-relieving devices or turning/repositioning program were coded	0.5%	2.9%	0.8%	1.9%	5.0%	2.8%	2.4%	9.8%	1.9%
Resident was coded as having a Stage 3 or 4 ulcer, but no ulcer care was coded	0.1%	0.6%	0.4%	0.2%	0.4%	0.3%	0.2%	0.0%	0.3%
Resident was coded as having a Stage 2 to 4 ulcer but had no monitoring for an acute medical condition	0.5%	5.2%	2.6%	1.7%	8.9%	4.5%	2.8%	1.3%	2.0%

Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

4.4 Longitudinal Consistency

As CCRS is longitudinal, certain checks are performed to assess the consistency of the clinical information submitted across multiple assessment records.

Two sets of checks are performed. First, key disease diagnoses that are not expected to change over time are compared; as expected, they show very high consistency across assessments (inconsistency rates of 1% or less). The next set of checks looks at the change in functioning in ADL and bladder incontinence. In the assessment, there are specific data elements where the assessor documents whether there was any change in the resident's status since the last assessment (G9 Change in ADL Function and H4 Change in Urinary Continence). These specific change data elements were compared with the actual change in the level of functioning calculated from the current and previous assessments (for ADL self-performance—G1a Bed Mobility, G1b Transfer, G1h Eating and G1i Toilet Use—and for urinary continence—H1b Bladder Continence). Assessments were flagged for ADL Change Issue if G9 was coded as *no change* and at least one of G1a, G1b, G1h or G1i changed (increased or decreased) by two types or levels of assistance provided to the resident (for example, from *independent* to *limited assistance*). Assessments were flagged for Bladder Incontinence Change Issue if H4 was coded as *no change* and H1b changed by one level of assistance. The results show that clinicians are under-reporting the level of changes that occur within the specific change data elements. Feedback from CIHI clinical educators and data providers indicates that assessors tend to find these data elements challenging when they first begin using the assessment, but

that their accuracy in measuring change increases over time. This phenomenon is visible in the high percentages for Newfoundland and Labrador in Table 17, where most facilities present were newly submitting in 2010–2011.

Table 17: Rates of Longitudinal Inconsistency, by Province/Territory and Sector, 2010–2011

	N.L.	N.S.	Ont.		Man.		B.C.	Y.T.	All
	Res.	Res.	Hosp.	Res.	Hosp.	Res.	Res.	Res.	
Number of Assessments*	1,301	1,982	12,635	296,645	479	20,020	27,275	461	360,798
Cerebral Palsy	1.1%	0.1%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Multiple Sclerosis	0.3%	0.0%	0.2%	0.0%	0.2%	0.0%	0.2%	0.0%	0.0%
Quadriplegia	0.4%	0.0%	1.3%	0.0%	0.0%	0.0%	0.2%	0.2%	0.1%
ADL Change Issue	31.3%	2.4%	5.5%	11.0%	3.3%	5.9%	8.9%	3.7%	10.4%
Bladder Incontinence Change Issue	29.0%	3.9%	8.9%	14.3%	5.8%	7.6%	9.0%	4.6%	13.3%

Notes

* Assessments with a previous assessment to compare with in 2010–2011 or Q4 of 2009–2010.

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

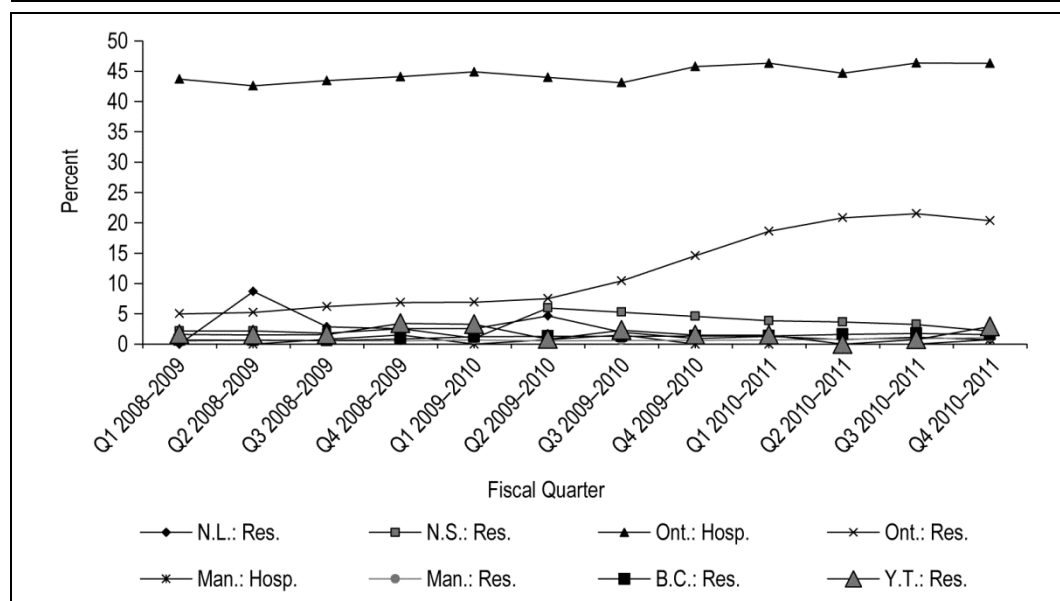
Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

4.5 Special Rehabilitation in Ontario Long-Term Care Facilities

The proportion of residents in the Special Rehabilitation RUGs within Ontario LTC facilities increased in 2010–2011. RUG-III is the CCRS case mix methodology, and the Special Rehabilitation groups are assigned the highest relative weights within the methodology.

The percentage of residents in the Special Rehabilitation group has greatly increased since the first quarter of 2008–2009 (see Figure 1). The percentage of residents in this group increased from 5.0% at the beginning of 2008–2009 to a peak of 21.5% in third quarter of 2010–2011. While some of these changes may reflect underlying population changes, as the number of facilities submitting to CCRS increased over the course of the year, this increase also coincides with the introduction of case mix–based funding for Ontario LTC facilities.

Figure 1: Percentage of Residents in Special Rehabilitation RUG-III Group, Q1 2008–2009 to Q4 2010–2011



Notes

Hosp.: hospital-based continuing care.

Res.: residential continuing care.

Source

Continuing Care Reporting System, 2010–2011, Canadian Institute for Health Information.

The underlying data elements that are contributing to the increase in the Special Rehabilitation group are the number of minutes of physical, occupational and speech therapy captured in Section P1 and the nursing restorative care time captured in Section P3.

CIHI and the Ontario Ministry of Health and Long-Term Care are currently investigating the reasons why these changes have occurred and whether they reflect real changes in the services provided in the facilities and/or measurement error. Users should exercise caution when using this data.

5 Comparability

Comparability refers to the extent to which databases are consistent over time and use standard conventions (such as data elements or reporting periods) that make them similar to other databases.

5.1 Conventions

5.1.1 Facility

A standard code assigned by provinces and territories is used for the unique identification of facilities in CCRS. Each unique facility number may represent an entire health facility (for example, all beds in a nursing home) or a particular level of care within a health facility that provides multiple levels of care and that may submit to multiple CIHI data holdings (for example, the CCC unit within a large general hospital). A particular organization/health facility may use multiple numbers to submit data to CCRS if it has both residential and hospital-based beds or for operational reasons (for example, two Ontario facilities have beds that are funded by Veterans Affairs Canada; they submit data for these beds under a different facility number from their regular provincially funded beds).

The list of facilities that submits to CCRS (the CCRS frame) changes over time as the organizations providing continuing care services change: new facilities open, while others close. In addition, the organizations that own and run the facilities may change over time, which may result in changes to the numbers that the facility uses to submit data to CIHI. When analyzing trends at the facility level, users should be aware of any potential organizational changes (such as closures, mergers or splits) that may affect their results.

While facility mergers and splits are tracked in CCRS, comparing data over time for an individual facility that has undergone a merger or split poses challenges. When an organization undergoes a facility number change, the longitudinal integrity of resident and facility information may be affected. Depending on the vendor systems available to clients, one of two things can happen:

- Facilities discharge all their active residents from the old facility number and admit them under the new facility number. This breaks the longitudinal record of the active residents (as they all begin new episodes of care) and also affects admission and discharge volumes and length-of-stay calculations.
- Facilities transfer all their active residents to the new facility number, maintaining the longitudinal integrity of individual resident records. However, all historical records for residents are transferred to the new facility number, which affects the analysis of historical data under the previous facility number.

CIHI will generally require third parties who request facility information by name from CIHI to obtain prior authorization from the data providers. (For further details, please see CIHI's Policy on Health Facility Identifiable Information, available on CIHI's website.)

5.1.2 Person

As mentioned in Section 4.2, CCRS collects the data elements HCN, Province/Territory Issuing HCN and HRN to uniquely identify records belonging to the same individual.

The resident's HCN, HRN and full birthdate are not normally made available to third-party users. Access to these and other restricted data elements requires prior approval by CIHI's Privacy, Confidentiality and Security Committee, in line with CIHI's Privacy Policy.¹² For third-party data releases, CIHI creates a Resident ID, which is a meaningless but unique number specific to that release so that unique individuals can be identified within CCRS while they remain anonymous. This variable is based on the combination of the encrypted HCN and the province/territory responsible for issuing the HCN or, if the HCN is unavailable, on the combination of the HRN and facility code. Instead of the full birthdate, the age of the resident (in years) at admission, assessment and/or discharge is provided.

The CCRS database also contains data quality flags (listed in Section 4.2) that check the consistency of birthdate and sex of all the admissions for a particular Resident ID and also whether it is based on the HCN or HRN, so that users can include or exclude these records depending on their needs.

5.1.3 Time

CCRS data is usually reported by fiscal quarter (April 1 to June 30, July 1 to September 30, October 1 to December 31 and January 1 to March 31) and fiscal year (April 1 to March 31) based on the date on the record. Full admission, assessment and discharge dates are captured, enabling data users to group data within and across fiscal years, depending on the need of the study.

5.1.4 Geography

Postal Code is a common variable in almost all CIHI databases. CCRS captures two postal codes—that of the facility and that of the resident's prior primary residence (before his or her entry into a facility). The six-digit postal codes are mapped to standard geographical classifications and regional health authority boundaries (and are based on data provided in Statistics Canada's Postal Code Conversion File). The forward sortation area—the first three digits of a postal code—is typically the lowest level of aggregation available to external users under CIHI's Privacy Policy.¹² The release of information for small geographical areas may also be restricted to ensure confidentiality. Special requests must be approved by the CIHI Privacy and Legal Services Department. Note that for rural areas that use post office box numbers, postal code data does not necessarily provide an accurate picture of patient residence. This is because box numbers can be located in a region different from the place of residence. In addition, when rural postal codes include more than one enumeration area, it becomes difficult to determine a specific place of residence.

6 Conclusion

CCRS is a longitudinal database that captures clinical, demographic and administrative information on residents in residential and hospital-based continuing care facilities. The RAI-MDS 2.0, an internationally validated clinical assessment instrument, forms the clinical data standard for CCRS.

In 2010–2011, data was received from 117 continuing care hospitals and 784 residential care facilities; 42 of these facilities began submitting to CCRS in 2010–2011. With the exception of one hospital in the WRHA, which began to submit in 2008–2009, all the hospitals submitting to CCRS are Ontario CCC facilities, which have been mandated to submit to CIHI since 1996. Most residential care facilities submitting to CCRS are in Ontario; the rest are in Newfoundland and Labrador, Nova Scotia, Manitoba (WRHA), British Columbia and Yukon.

While CCRS coverage has expanded since its inception in 2003–2004, and will continue to increase in the future as jurisdictions continue to implement the RAI-MDS 2.0 assessment and submit their data to CIHI, CCRS data may not be representative of all continuing care facilities in Canada. In addition, as participation in CCRS has expanded over time, the population of reference for each year is different. Any changes in trends identified need to be interpreted carefully, as they may reflect changes in the underlying population rather than actual changes in resident characteristics and resource utilization.

The RAI-MDS 2.0 has undergone significant reliability and validity testing, internationally and in Canada, which confirmed the RAI-MDS 2.0 has both high reliability and high validity. Analysis of the CCRS data also shows that the data is generally of high quality and exhibits expected patterns of consistency both within and across assessment records. Some data quality issues have been identified in this report covering different aspects of data quality, including non-response, measurement error and consistency and historical comparability.

The structure of CCRS longitudinal data is complex; users need to familiarize themselves with what data is expected when and which data elements are available on which records (for example, when full and quarterly assessments are expected to be submitted and what data elements are available on which records).

Appendix: Full and Quarterly Assessment Data Elements

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
A7a	Provincial/Territory Government Plan	X			
A7b	Other Province/Territory	X			
A7c	Federal Government—Department of Veterans Affairs	X			
A7d	Federal Government—First Nations and Inuit Health Branch (FNIHB)	X			
A7e	Federal Government—Other	X			
A7f	Worker's Compensation Board (WCB)	X			
A7g	Canadian Resident—Private Insurance Pay	X			
A7h	Canadian Resident—Public Trustee Pay	X			
A7i	Canadian Resident—Self Pay	X			
A7j	Other Country—Self Pay	X			
A7k	Responsibility for Payment Unknown/Unavailable	X			
A9a	Legal Guardian	X	X		
A9b	Durable Power of Attorney/Financial	X	X		
A9c	Other Legal Oversight	X	X		
A9d	Family Member Responsible	X	X		
A9e	Durable Power of Attorney/Health Care	X	X		
A9f	Resident Responsible for Self	X	X		
A10a	Living Will	X	X		
A10b	Do Not Resuscitate	X	X		
A10c	Do Not Hospitalize	X	X		
A10d	Organ Donation	X	X		
A10e	Autopsy Request	X	X		
A10f	Feeding Restrictions	X	X		
A10g	Medication Restrictions	X	X		
A10h	Other Treatment Restrictions	X	X		
B1	Comatose	X	X		
B2a	Short-Term Memory OK	X	X		
B2b	Long-Term Memory OK	X	X		
B3a	Current Season	X	X		
B3b	Location of Own Room	X	X		
B3c	Staff Names/Faces	X	X		
B3d	That He/She Is in a Facility	X	X		
B4	Cognitive Skills/Daily Decision-Making	X	X		
B5a	Easily Distracted	X	X		
B5b	Periods of Altered Perception or Awareness of Surroundings	X	X		

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
B5c	Episodes of Disorganized Speech	X	X		
B5d	Periods of Restlessness	X	X		
B5e	Periods of Lethargy	X	X		
B5f	Mental Function Varies During Day	X	X		
B6	Change in Cognitive Status	X	X		
C1	Hearing	X			X
C2a	Hearing Aid Present/Used Regularly	X			
C2b	Hearing Aid Present/Not Used Regularly	X			
C2c	Other Receptive Communication Techniques Used	X			
C3a	Speech	X			
C3b	Writing Messages	X			
C3c	American Sign Language/Braille	X			
C3d	Signs/Gestures/Sounds	X			
C3e	Communication Board	X			
C3f	Other Mode of Expression	X			
C4	Making Self Understood	X	X		
C5	Speech Clarity	X			
C6	Ability to Understand Others	X	X		
C7	Change in Communication/Hearing	X	X		
D1	Vision	X			X
D2a	Side Vision Problems	X			X
D2b	Sees Halos/Rings/Flashes/Curtains	X			
D3	Visual Appliances	X			
E1a	Negative Statements	X	X		
E1b	Repetitive Questions	X	X		
E1c	Repetitive Verbalizations	X	X		
E1d	Persistent Anger With Self/Others	X	X		
E1e	Self Deprecation	X	X		
E1f	Expression of Unrealistic Fears	X	X		
E1g	Recurrent Statements That Something Terrible Is Going to Happen	X	X		
E1h	Repetitive Health Complaints	X	X		
E1i	Repetitive Anxious Complaints/Concerns	X	X		
E1j	Unpleasant Mood in Morning	X	X		
E1k	Insomnia/Change in Usual Sleep Pattern	X	X		
E1l	Sad/Pained/Worried Facial Expressions	X	X		
E1m	Crying/Tearfulness	X	X		
E1n	Repetitive Physical Movements	X	X		
E1o	Withdrawal From Activities of Interest	X	X		
E1p	Reduced Social Interaction	X	X		
E2	Mood Persistence	X	X		
E3	Change in Mood	X	X		
E4aA	Wandering—Frequency	X	X		

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
E4aB	Wandering—Alterability	X	X		
E4bA	Verbally Abusive—Frequency	X	X		
E4bB	Verbally Abusive—Alterability	X	X		
E4cA	Physically Abusive—Frequency	X	X		
E4cB	Physically Abusive—Alterability	X	X		
E4dA	Socially Inappropriate or Disruptive Behaviour—Frequency	X	X		
E4dB	Socially Inappropriate or Disruptive Behaviour—Alterability	X	X		
E4eA	Resists Care—Frequency	X	X		
E4eB	Resists Care—Alterability	X	X		
E5	Change in Behavioural Symptoms	X	X		
F1a	At Ease Interacting With Others	X	X		
F1b	At Ease Doing Planned/ Structured Activities	X	X		
F1c	At Ease Doing Self-Initiated Activities	X	X		
F1d	Establishes Own Goals	X	X		
F1e	Pursues Involvement in Life of Facility	X	X		
F1f	Accepts Invitations Into Most Group Activities	X	X		
F2a	Covert/Open Conflict With or Repeated Criticism of Staff	X			X
F2b	Unhappy With Roommate	X			X
F2c	Unhappy With Other Residents	X			X
F2d	Open Conflict/Anger With Family or Friends	X			X
F2e	Absence of Personal Contact With Family or Friends	X			
F2f	Recent Loss of Family or Friend	X			
F2g	Does Not Easily Adjust to Change in Routines	X			
F3a	Strong Identification With Past Roles and Life Status	X			X
F3b	Expressed Sadness/Anger Over Lost Roles and Life Status	X			X
F3c	Resident Perceives That Daily Life (Customary Routine) Is Very Different From Prior Pattern in the Community	X			X
G1aA	Bed Mobility—Self-Performance	X	X		
G1aB	Bed Mobility—Support Provided	X	X		
G1bA	Transfer—Self-Performance	X	X		
G1bB	Transfer—Support Provided	X	X		
G1cA	Walk in Room—Self-Performance	X	X		
G1cB	Walk in Room—Support Provided	X	X		
G1dA	Walk in Corridor—Self-Performance	X	X		
G1dB	Walk in Corridor—Support Provided	X	X		

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
G1eA	Locomotion on Unit—Self-Performance	X	X		
G1eB	Locomotion on Unit—Support Provided	X	X		
G1fA	Locomotion off Unit—Self-Performance	X	X		
G1fB	Locomotion off Unit—Support Provided	X	X		
G1gA	Dressing—Self-Performance	X	X		
G1gB	Dressing—Support Provided	X	X		
G1hA	Eating—Self-Performance	X	X		
G1hB	Eating—Support Provided	X	X		
G1iA	Toilet Use—Self-Performance	X	X		
G1iB	Toilet Use—Support Provided	X	X		
G1jA	Personal Hygiene—Self-Performance	X	X		
G1jB	Personal Hygiene—Support Provided	X	X		
G2a	Bathing—Self-Performance	X	X		
G2b	Bathing—Support Provided	X		X	
G3a	Balance While Standing	X	X		
G3b	Balance While Sitting	X	X		
G4aA	Neck Range of Motion	X	X		
G4aB	Neck Voluntary Movement	X	X		
G4bA	Arm Range of Motion	X	X		
G4bB	Arm Voluntary Movement	X	X		
G4cA	Hand Range of Motion	X	X		
G4cB	Hand Voluntary Movement	X	X		
G4dA	Leg Range of Motion	X	X		
G4dB	Leg Voluntary Movement	X	X		
G4eA	Foot Range of Motion	X	X		
G4eB	Foot Voluntary Movement	X	X		
G4fA	Other Limitation or Loss—Range of Motion	X	X		
G4fB	Other Limitation or Loss—Voluntary Movement	X	X		
G5a	Cane/Walker/Crutch	X			
G5b	Wheeled Self	X			
G5c	Other Person Wheeled	X			
G5d	Wheelchair for Primary Locomotion	X			
G6a	Bedfast All or Most of the Time	X	X		
G6b	Bed Rails for Bed Mobility/Transfer	X	X		
G6c	Lifted Manually	X			
G6d	Lifted Mechanically	X			
G6e	Transfer Aid	X			
G7	Task Segmentation	X	X		
G8a	Resident Believes Self to Be Capable of Increased Independence in at Least Some ADLs	X		X	

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
G8b	Staff Believes Resident to Be Capable of Increased Independence in at Least Some ADLs	X		X	
G8c	Resident Able to Perform Tasks/Activity but Is Very Slow	X			
G8d	Difference in ADL Self-Performance or ADL Support, Comparing Mornings to Evenings	X			
G9	Change in ADL Function	X	X		
H1a	Bowel Continence	X	X		
H1b	Bladder Continence	X	X		
H2a	Bowel Elimination Pattern Regular	X			
H2b	Constipation	X		X	
H2c	Diarrhea	X	X		
H2d	Fecal Impaction	X	X		
H3a	Any Scheduled Toileting Plan	X	X		
H3b	Bladder Retraining Program	X	X		
H3c	External (Condom) Catheter	X	X		
H3d	Indwelling Catheter	X	X		
H3e	Intermittent Catheter	X		X	
H3f	Did Not Use Toilet/Commode/Urinal	X		X	
H3g	Pads/Briefs Used	X		X	
H3h	Enemas/Irrigation	X		X	
H3i	Ostomy Present	X	X		
H4	Change in Urinary Continence	X	X		
I1a	Diabetes Mellitus	X	X		
I1b	Hyperthyroidism	X		X	
I1c	Hypothyroidism	X		X	
I1d	Arteriosclerotic Heart Disease	X		X	
I1e	Cardiac Dysrhythmias	X		X	
I1f	Congestive Heart Failure	X		X	
I1g	Deep Vein Thrombosis	X		X	
I1h	Hypertension	X		X	
I1i	Hypotension	X		X	
I1j	Peripheral Vascular Disease	X		X	
I1k	Other Cardiovascular Disease	X		X	
I1l	Arthritis	X		X	
I1m	Hip Fracture	X	X		
I1n	Missing Limb	X		X	
I1o	Osteoporosis	X		X	
I1p	Pathological Bone Fracture	X		X	
I1q	Amyotrophic Lateral Sclerosis (ALS)	X	X		
I1r	Alzheimer's Disease	X		X	
I1s	Aphasia	X	X		
I1t	Cerebral Palsy	X	X		

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
I1u	Cerebrovascular Accident (Stroke)	X	X		
I1v	Dementia Other Than Alzheimer's	X	X		
I1w	Hemiplegia/Hemiparesis	X	X		
I1x	Huntington's Chorea	X	X		
I1y	Multiple Sclerosis (MS)	X	X		
I1z	Paraplegia	X		X	
I1aa	Parkinson's Disease	X		X	
I1bb	Quadriplegia	X	X		
I1cc	Seizure Disorder	X		X	
I1dd	Transient Ischemic Attack (TIA)	X		X	
I1ee	Traumatic Brain Injury	X		X	
I1ff	Anxiety Disorder	X		X	
I1gg	Depression	X	X		
I1hh	Manic Depressive (Bipolar)	X	X		
I1ii	Schizophrenia	X	X		
I1jj	Asthma	X		X	
I1kk	Emphysema/COPD	X		X	
I1ll	Cataracts	X		X	
I1mm	Diabetic Retinopathy	X		X	
I1nn	Glaucoma	X		X	
I1oo	Macular Degeneration	X		X	
I1pp	Allergies	X		X	
I1qq	Anemia	X		X	
I1rr	Cancer	X		X	
I1ss	Gastrointestinal Disease	X	X		
I1tt	Liver Disease	X	X		
I1uu	Renal Failure	X		X	
I2a	Antibiotic-Resistant Infection	X	X		
I2b	Cellulitis	X	X		
I2c	Clostridium Difficile	X	X		
I2d	Conjunctivitis	X	X		
I2e	HIV Infection	X	X		
I2f	Pneumonia	X	X		
I2g	Respiratory Infection	X	X		
I2h	Septicemia	X	X		
I2i	Sexually Transmitted Diseases	X	X		
I2j	Tuberculosis (Active)	X	X		
I2k	Urinary Tract Infection (UTI) in Last 30 Days	X	X		
I2l	Viral Hepatitis	X	X		
I2m	Wound Infection	X	X		
J1a	Weight Gain or Loss of 1.5 or More Kilograms in Last 7 Days (3 lbs)	X	X		
J1b	Inability to Lie Flat—Shortness of Breath	X	X		

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
J1c	Dehydrated	X	X		
J1d	Insufficient Fluid in Last 3 Days	X	X		
J1e	Delusions	X	X		
J1f	Dizziness/Vertigo	X	X		
J1g	Edema	X	X		
J1h	Fever	X	X		
J1i	Hallucinations	X	X		
J1j	Internal Bleeding	X	X		
J1k	Recurrent Lung Aspirations in Last 90 Days	X	X		
J1l	Shortness of Breath	X	X		
J1m	Syncope (Fainting)	X	X		
J1n	Unsteady Gait	X	X		
J1o	Vomiting	X	X		
J2a	Pain Symptoms—Frequency	X	X		
J2b	Pain Symptoms—Intensity	X	X		
J3a	Back Pain	X			
J3b	Bone Pain	X			
J3c	Chest Pain During Usual Activities	X			
J3d	Headache	X			
J3e	Hip Pain	X			
J3f	Incisional Pain	X			
J3g	Joint Pain (Other Than Hip)	X			
J3h	Soft Tissue Pain (Lesion)	X			
J3i	Stomach Pain	X			
J3j	Other Site Pain	X			
J4a	Fell in Past 30 Days	X	X		
J4b	Fell in Past 31 to 180 Days	X	X		
J4c	Hip Fracture in Last 180 Days	X	X		
J4d	Other Fracture in Last 180 Days	X	X		
J5a	Conditions or Diseases Make Resident's Cognition, ADL, Mood or Behaviour Patterns Unstable	X	X		
J5b	Resident Experiencing Acute Episode/Flare Up	X	X		
J5c	End-Stage Disease, 6 or Fewer Months to Live	X	X		
K1a	Chewing Problem	X	X		
K1b	Swallowing Problem	X	X		
K1c	Mouth Pain	X		X	
K2a	Height (Centimetres)	X	X		
K2b	Weight (Kilograms)	X	X		
K3a	Weight Loss	X	X		
K3b	Weight Gain	X	X		
K4a	Complains About Taste of Many Foods	X		X	

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
K4b	Regular Complaints of Hunger	X			
K4c	Leaves 25%+ Food Uneaten at Most Meals	X	X		
K5a	Parenteral/IV	X	X		
K5b	Feeding Tube	X	X		
K5c	Mechanically Altered Diet	X		X	
K5d	Syringe (Oral Feeding)	X		X	
K5e	Therapeutic Diet	X		X	
K5f	Dietary Supplement Between Meals	X	X		
K5g	Plate Guard, Stabilised Utensil, etc.	X	X		
K5h	On a Planned Weight Change Program	X	X		
K6a	Parenteral or Enteral Intake—Proportion of Total Calories	X	X		
K6b	Parenteral or Enteral Intake—Average Fluid Intake Per Day	X	X		
L1a	Debris in Mouth Before Going to Bed	X		X	
L1b	Has Dentures or Removable Bridge	X			
L1c	Some/All Natural Teeth Lost	X		X	
L1d	Broken, Loose or Carious Teeth	X		X	
L1e	Inflamed/Bleeding Gums, Oral Abscesses, etc.	X		X	
L1f	Daily Cleaning Teeth/Dentures or Mouth Care	X		X	
DL11	Oral Status and Problems: None of the Above	X			
M1a	Number of Stage 1 Ulcers	X	X		
M1b	Number of Stage 2 Ulcers	X	X		
M1c	Number of Stage 3 Ulcers	X	X		
M1d	Number of Stage 4 Ulcers	X	X		
M2a	Stage of Pressure Ulcer	X	X		
M2b	Stage of Stasis Ulcer	X	X		
M3	History of Resolved Ulcers	X		X	
M4a	Abrasions, Bruises	X	X		
M4b	Burns (Second or Third Degree)	X	X		
M4c	Open Lesions Other Than Ulcers, Rashes, Cuts	X	X		
M4d	Rashes (Intertrigo, Eczema, etc.)	X	X		
M4e	Skin Desensitized to Pain or Pressure	X	X		
M4f	Skin Tears or Cuts (Other Than Surgery)	X	X		
M4g	Surgical Wounds	X	X		
M5a	Pressure-Relieving Device(s) for Chair	X	X		
M5b	Pressure-Relieving Device(s) for Bed	X	X		
M5c	Turning/Repositioning Program	X	X		
M5d	Nutrition/Hydration Intervention	X	X		
M5e	Ulcer Care	X	X		

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
M5f	Surgical Wound Care	X	X		
M5g	Application of Dressings—Not Feet	X	X		
M5h	Application of Ointments/Medications—Not Feet	X	X		
M5i	Other Preventive/Protective Skin Care—Not Feet	X	X		
DM51	Skin Treatments: None of the Above	X			
M6a	Resident Has One or More Foot Problems	X	X		
M6b	Infection of the Foot (Cellulitis, etc.)	X	X		
M6c	Open Lesions on Foot	X	X		
M6d	Nails/Calluses Trimmed in Last 90 Days	X	X		
M6e	Received Preventive/Protective Foot Care	X	X		
M6f	Application of Dressings to Foot	X	X		
N1a	Time Awake—Morning	X	X		
N1b	Time Awake—Afternoon	X	X		
N1c	Time Awake—Evening	X	X		
DN11	Time Awake: None of the Above	X			
N2	Average Time Involved in Activities	X	X		
N3a	Preferred Activities—Own Room	X			
N3b	Preferred Activities—Day/Activity Room	X			
N3c	Preferred Activities—Inside Facility/Off Unit	X			
N3d	Preferred Activities—Outside Facility	X			
N4a	Preferred Activities—Cards/Other Games	X			
N4b	Preferred Activities—Crafts/Arts	X			
N4c	Preferred Activities—Exercise/Sports	X			
N4d	Preferred Activities—Music	X			
N4e	Preferred Activities—Reading/Writing	X			
N4f	Preferred Activities—Spiritual or Religious Activities	X			
N4g	Preferred Activities—Trips/Shopping	X			
N4h	Preferred Activities—Walking/Wheeling Outdoors	X			
N4i	Preferred Activities—Watching TV	X			
N4j	Preferred Activities—Gardening or Plants	X			
N4k	Preferred Activities—Talking or Conversing	X			
N4l	Preferred Activities—Helping Others	X			
N5a	Prefers Change in Types of Activities	X			X
N5b	Prefers Change in Involvement in Activities	X			X
O1	Number of Medications	X	X		
O2	New Medications	X			

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
O3	Number of Days Injections Received	X	X		
O4a	Days Received Antipsychotic	X	X		
O4b	Days Received Antianxiety	X	X		
O4c	Days Received Antidepressant	X	X		
O4d	Days Received Hypnotic	X	X		
O4e	Days Received Diuretic	X	X		
O4f	Days Received Analgesics	X	X		
P1aa	Chemotherapy	X	X		
P1ab	Dialysis	X	X		
P1ac	IV Medication	X	X		
P1ad	Intake/Output	X	X		
P1ae	Monitoring Acute Medical Condition	X	X		
P1af	Ostomy Care	X	X		
P1ag	Oxygen Therapy	X	X		
P1ah	Radiation	X	X		
P1ai	Suctioning	X	X		
P1aj	Tracheostomy Care	X	X		
P1ak	Transfusions	X	X		
P1al	Ventilator or Respirator	X	X		
P1am	Alcohol/Drug Treatment Program	X	X		
P1an	Alzheimer's/Dementia Special Care Unit	X	X		
P1ao	Hospice Care	X	X		
P1ap	Pediatric Care	X	X		
P1aq	Respite Care	X	X		
P1ar	Training in Community Skills	X	X		
P1baA	Speech Therapy—Days	X	X		
P1baB	Speech Therapy—Minutes	X	X		
P1bbA	Occupational Therapy—Days	X	X		
P1bbB	Occupational Therapy—Minutes	X	X		
P1bcA	Physical Therapy—Days	X	X		
P1bcB	Physical Therapy—Minutes	X	X		
DP14	Received Respiratory Therapy	X			
P1bdA	Respiratory Therapy—Days	X	X		
P1bdB	Respiratory Therapy—Minutes	X	X		
P1beA	Psychological Therapy—Days	X	X		
P1beB	Psychological Therapy—Minutes	X	X		
P1bfA	Recreation Therapy—Days	X	X		
P1bfB	Recreation Therapy—Minutes	X	X		
P2a	Special Behavioural Symptom Evaluation Program	X		X	
P2b	Evaluation by Licensed Mental Health Specialist	X			
P2c	Group Therapy	X			

Item	Description	Assessment Type		Imputed on Quarterly (if Full Assessment Is Available)	
		Full Assessment	Quarterly Assessment	Always	Only if Comatose Status Unchanged
P2d	Resident-Specific Changes in Environment	X		X	
P2e	Reorientation	X			
P3a	Nursing Rehab Days—Range of Motion (Passive)	X	X		
P3b	Nursing Rehab Days—Range of Motion (Active)	X	X		
P3c	Nursing Rehab Days—Splint or Brace Assistance	X	X		
P3d	Nursing Rehab Days—Bed Mobility	X	X		
P3e	Nursing Rehab Days—Transfer	X	X		
P3f	Nursing Rehab Days—Walking	X	X		
P3g	Nursing Rehab Days—Dressing or Grooming	X	X		
P3h	Nursing Rehab Days—Eating or Swallowing	X	X		
P3i	Nursing Rehab Days—Amputation/Prosthesis Care	X	X		
P3j	Nursing Rehab Days—Communication	X	X		
P3k	Nursing Rehab Days—Other	X	X		
P4a	Full Bed Rails on All Sides of Bed	X	X		
P4b	Other Types of Side Rails Used	X	X		
P4c	Trunk Restraint	X	X		
P4d	Limb Restraint	X	X		
P4e	Chair Prevents Rising	X	X		
P5	Number of Hospital Stays	X			
P6	Number of Emergency Room Visit(s)	X			
P7	Days of Physician Visits	X	X		
P8	Days Physician Orders Changed	X	X		
P9	Abnormal Lab Values	X			
Q1a	Resident Wishes to Return to Community	X			
Q1b	Support Person Positive Toward Discharge	X			
Q1c	Stay Projected to Be of Short Duration	X			
Q2	Overall Change in Care Needs	X	X		
R1a	Resident Participated in Assessment	X			
R1b	Family Participated in Assessment	X			
R1c	Significant Other Participated in Assessment	X			

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