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Unless otherwise indicated, this product uses data provided by Canada's provinces and territories.

Table of contents

Summary

This guide provides context and information to guide the understanding and use of data from the Continuing Care Reporting System (CCRS) at the Canadian Institute for Health Information (CIHI), including the assessment of data quality as deýned by CIHIĭs Information Quality

- CCRS contains data from full RAI-MDS 2.0 assessments (completed within 14 days of admission and repeated annually within the same episode of care or after a signiýcant change in clinical status) and shorter quarterly RAI-MDS 2.0 assessments. When using RAI-MDS 2.0 assessment data, users should be aware that not all data elements will be available for the quarterly assessments.
- CCRS does not contain assessment information about all residents, primarily because some stay in the continuing care facility for less than 14 days. For lengths of stay less than 14 days, completing an assessment is voluntary; thus only demographic and administrative data is available for these residents.
- The structure of CCRS longitudinal data is complex. There are more than 500 data elements, consisting of RAI-MDS 2.0 data elements plus data elements developed by CIHI. The supporting documentation will help with understanding and interpretation (e.g., RAI-MDS 2.0 Userûs Manual, CCRS RAI-MDS 2.0 Output Speciýcations Manual, CCRS Data Submission User Manual).

Please email ccrs@cihi.ca with any feedback or questions.

Introduction

Introduction to CCRS

Overview of CCRS

CCRS, launched in 2003–2004, is a database that captures longitudinal demographic, clinical and functional information on residents who receive continuing care services in hospital-based facilities and long-term care homes in Canada that have 24-hour nursing available. Participating organizations also provide administrative information collected when the resident enters and leaves the hospital/long-term care home, plus information on hospital/long-term care home characteristics to support comparative reporting.

Clinical standard

The clinical standard for CCRS is the RAI-MDS 2.0. It is a validated clinical assessment developed by interRAI, an international research network.[iii] The RAI-MDS 2.0 has been modiýed for use in Canada by CIHI, with permission from interRAI. The RAI-MDS 2.0 has been used in Ontario complex continuing care facilities since 1996; data collected via the RAI-MDS has been incorporated into CCRS.

The RAI-MDS 2.0 is a comprehensive assessment that is used to identify the preferences, needs and strengths of residents of long-term 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.

The information, which is 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.

The CCRS standard expects that a full RAI-MDS 2.0 assessment will be carried out on residents in continuing care within 14 days of admission and will be repeated annually within the same episode of care. A full assessment should also be completed when a resident experiences a signiýcant change in clinical status. For lengths of stay less than 14 days, completing an assessment is voluntary. A shorter quarterly RAI-MDS 2.0 assessment should be completed every quarter (at 3, 6 and 9 months) between full assessments.

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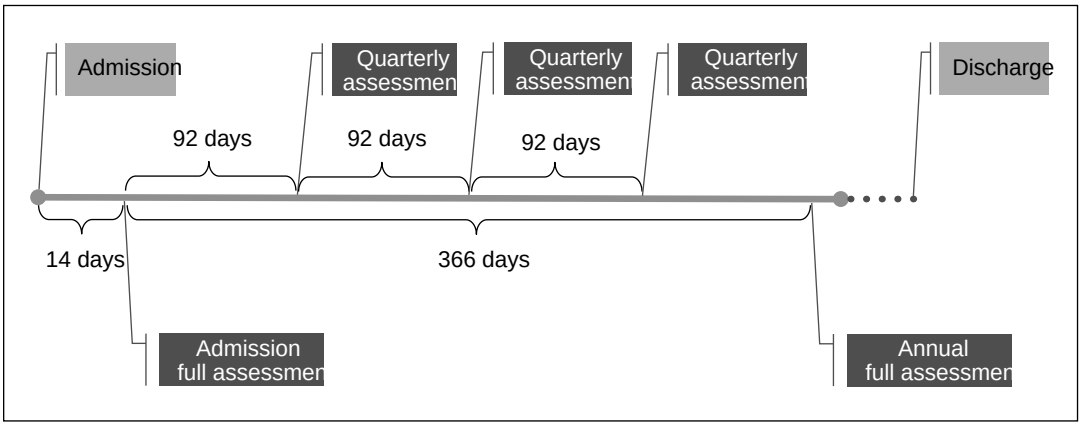
iii. A peer-reviewed paper published in 2013 found that data quality with respect to reliability, validity, completeness and freedom from logical coding errors was consistently high for Ontario RAI-MDS 2.0 data.[2]

Figure Typical CCRS episode



The next-generation clinical assessment instrument for long-term care is the interRAI Long-Term Care Facilities (interRAI LTCF ©). CIHI has built a new integrated reporting system to support this and other interRAI assessment instruments. This new system and the interRAI LTCF are outside the scope of this guide.

Outputs

The RAI-MDS 2.0 has embedded decision-support algorithms. These algorithms summarize information from the assessment and can be used to support both clinical and organizational decision-making. The algorithms include outcome scales, Clinical Assessment Protocols (CAPs), quality indicators and the case-mix systems.

Outcome scales combine assessment items from the RAI-MDS 2.0 to summarize a speciýc clinical domain for a person, such as cognitive performance, physical functioning, depression symptoms and pain.

Person-level CAPs provide evidence-informed guidance for further assessment and intervention in areas where there is risk of decline or potential to improve (e.g., activities of daily living).

Quality indicators are organizational summary measures that reþect presumed quality of care across key domains, including safety, health status, and appropriateness and e ectiveness.

Case-mix systems sort residents into similar clinical groups reþecting the relative costs of services and supports they are likely to use. This information becomes available to clinicians, managers and policy-makers and can be used at the point of care, at the organization level or at the system level for planning and monitoring care, understanding populations, improving quality and allocating resources.

Record types

There are 9 di erent types of records that can be submitted to CCRS: 7 for the submission of resident-speciýc information[iv] and 2 non-resident record types required for the appropriate processing of resident-speciýc records.[v] Resident-speciýc records can be submitted to CCRS as new, correction or deletion records.

Further details are in the *CCRS Data Submission User Manual*.

Episode of care

An episode of care is the period of time between an individual's admission to and discharge from a continuing care facility (hospital-based facility or long-term care home).

An Admission/Re-entry form (AD) that contains key demographic and administrative information is collected for all residents on admission. The AD opens the resident episode and establishes the Unique Registration Identiýer (URI) number associated with all assessments in that episode of care.

A discharge record is completed whenever a resident is discharged from a continuing care facility (including death). A discharge record may also be completed when the discharge is temporary (i.e., when the resident's return is anticipated). If a resident is discharged but returns to the same continuing care facility before the next scheduled assessment, the previous assessment cycle can continue under the same URI. If the resident misses his or her scheduled assessment while out of the continuing care facility, a new episode of care must be started under a new URI.

CCRS organization definitions

Organization and population scope

CCRS is designed to capture information on all residents of all publicly funded continuing care facilities (hospital-based facilities or long-term care homes) in Canada that have 24-hour nursing available. Some publicly funded long-term care homes have residents whose cost of stay is covered solely by private means; these long-term care homes may choose to submit data for these patients to CCRS. A private pay resident þag is collected to di erentiate these residents from those whose services are covered in whole or in part by public funds.

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iv. The 7 record types for the submission of resident-speciýc data are Admission/Re-entry (AD), Update (UP), RAI-MDS 2.0 Full Assessment (FA), RAI-MDS 2.0 Quarterly

Source organizations

Source organizations (i.e., long-term care homes, hospital-based continuing care facilities) are the agencies actually delivering services and those responsible for collecting information on the residents they serve.

Submission organizations

Submission organizations submit data to CIHI. In some jurisdictions, source organizations will submit their own data to CIHI and therefore will act as both source and submission organizations. In other jurisdictions, source organizations will send their data to another organization (e.g., their provincial ministry of health), which will then submit the data to CIHI.

Overview of CCRS data tables

CCRS data is grouped into 4 key data tables: Organization, Episode, Assessment and Medication. Additional tables contain information on resource utilization and quality indicators.

Organization data table

Organization data includes general information about agencies delivering continuing care, including the type of organization and basic name and address elements. CCRS data is submitted at the provider level and can be grouped up to the health region/zone and province/territory levels.

Episode data table

Episode data includes identiýers, demographic information and administrative data such as referral and discharge information. This data can be collected on all continuing care residents regardless of whether they receive a RAI-MDS 2.0 assessment.

Assessment data table

Assessment data is captured during the RAI-MDS 2.0 assessment (both full and quarterly). It includes information about a resident’s functioning, needs, strengths and preferences.

Medication data table

The medication data includes information from the RAI-MDS 2.0 assessment Section U. Medication records contain speciýc information about each prescription drug, including the dose and frequency of administration. Medication records are linked to a speciýc assessment and are optional to submit.

CCRS coverage and participation

CIHI quality measures

CIHI takes measures to ensure quality control during the data capture phase of the CCRS information life cycle. These are intended to ensure standardized data collection and prevent data quality issues. They include

- Encouraging data suppliers to use electronic data capture to complete assessments and requiring them to use licensed vendors, preferably those that implement edits and audits at data capture. This allows for corrections and veriýcations to occur at the time of data entry;
- Providing data element deýnitions and data collection standards such as user manuals and job aids (see below);
- Providing education courses that address coding of RAI-MDS 2.0 assessment data (see below); and
- Responding to coding questions, including consultation with and approval by interRAI researchers for relevant questions, to ensure that standard, consistent responses are made available to data providers.

Resources for assessors

CIHI has developed the following RAI-MDS 2.0 user manuals and associated documents to support data capture (coding). They are available by logging in to CIHI's website and visiting eStore.

- Resident Assessment Instrument (RAI) RAI-MDS 2.0 User's Manual, Canadian Version
- RAI-MDS 2.0 Outcome Scales Reference Guide
- Continuing Care Reporting System (CCRS) Assessment and Administrative Forms
- interRAI Clinical Assessment Protocols (CAPs) — For Use With interRAI's Community and Long-Term Care Assessment Instruments
- ICD-10-CA Pick-List Codes Used for the Continuing Care Reporting System
- Home and Continuing Care (HCC) Medication List
- CIHI Language Codes

Job aids

CIHI has developed a number of job aids to support data capture (coding) that are available on CIHI's website. Examples include the following:

- Documenting Activities of Daily Living (G1)
-

Submit

CCRS submission

CIHI can receive CCRS data from provincial/territorial ministries, regional health authorities and continuing care providers (submitting organizations).

CIHI quality measures

CIHI takes measures to ensure quality control during the CCRS data submission phase of the information life cycle. These are aimed at preventing, monitoring and controlling data quality issues and include

- Producing the *CCRS Data Submission User Manual* and Edit Speciýcations, which provide information on how the data is to be submitted to CCRS and include data element speciýcations, valid code values, record layouts, data validation rules and error message descriptions. This documentation is reviewed annually, and changes are made available to clients prior to the beginning of each ýscal year;
- Requiring data providers to use licensed vendors that incorporate CIHI's submission speciýcations into their proprietary software systems;
-

Process

Processing CCRS data

CCRS data goes through robust, automated data quality processing in CIHI's IT environment. To prepare the data for analytical use, various data operations are performed, such as deriving data elements and þagging data quality issues. This transformed data is stored in a central data repository known as the Analytical Source of Truth.

De-identification

CIHI receives a complete health card number (HCN) on almost all CCRS records and applies a standard algorithm to encrypt this number, even if it has already been encrypted by the submitter. This standard encryption methodology is applied to all CIHI data holdings. As a result, CCRS data can be linked with other CIHI data (e.g., home care clinical assessments, hospital admissions).

Data cuts

60 days following the end of a quarter, a cut of the transformed CCRS data is produced to create analytical data ýles and outputs. While data is accepted into CCRS after the data submission deadline, it is not incorporated into that quarter's reporting. Late submissions are included in subsequent updates.

Annual reports are produced using Quarter 4 data; as such, late submissions of Quarter 4 data

Analyze

Resources for analysts

CIHI has developed a number of resources that can aid with the analysis and interpretation of CCRS outputs. These are available from CIHI's eStore and eReporting services (available by logging in to CIHI's website). Examples include the following:

- Continuing Care Reporting System (CCRS) RAI-MDS 2.0 Output Speciýcations Manual
- RAI-MDS 2.0 Outcome Scales Reference Guide
- Continuing Care Reporting System (CCRS) Data Submission User Manual
- CCRS Quality Indicators Risk Adjustment Methodology
- CCRS eReports User Manual
- CCRS eReports Quick Reference Guide
- CCRS eReporting Building Blocks

Education courses

CIHI's Learning and Development Program includes a suite of education courses relating to continuing care. Examples relating to analysis of CCRS data include the courses 833E — Calculating a Continuing Care Quality Indicator (web conference) and 895E — Navigating CCRS eReports (eLearning). The course catalogue and a learning pathway are available by logging in to CIHI's Learning Centre.

CCRS analytical outputs

CCRS analytical outputs are summarized in the Disseminate section of this guide.
Key outputs include Quick Stats, eReports and Your Health System (In Brief and In Depth).

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Depending on the vendor systems available to clients, 1 of 2 things can happen following an organizational change:

- Organizations discharge all their active residents from the old organization number and admit them under the new organization number. This breaks the longitudinal record of the active residents (as they all begin new episodes of care) and also a ects admission and discharge volumes and length-of-stay calculations.
- Organizations transfer all their active residents to the new organization number, maintaining the longitudinal integrity of individual resident records. However, all historical records for

Counting residents

Data users should be aware of the di erent ways of counting CCRS residents. Key variations are detailed in the table below.

Table 1 CCRS counting variations

Counting variables	Variations	Comments
Identifier type	• Unique Registration Identiýer (URI) • Encrypted HCN • Resident ID	Note that each ID will produce a di erent result when counting unique clients due to di erent relationships between the variables within jurisdictions. Resident ID is most commonly used for CIHI outputs (e.g., Quick Stats).
Resident type	• Total residents	The count of residents may be event based; if a resident had an admission, assessment or discharge in a given time period, he or she is counted. This includes but is not limited to residents who receive a RAI-MDS 2.0 assessment. Alternatively, resident count can refer to all active residents in a given time period, regardless of what year they were admitted to continuing care and whether they had an event in that period. If a resident has not been discharged, he or she is considered active.
	• Assessed residents	Residents assessed with the RAI-MDS 2.0 assessment instrument. It is expected that a full assessment will be carried out within 14 days of admission. However, some residents do not have an assessment (they may have stayed in the continuing care facility less than 14 days, or they may have had an assessment that was not completed or not successfully submitted to CCRS). A full assessment should be repeated annually or when a resident experiences a signiýcant change in clinical status. A shorter quarterly RAI-MDS 2.0 assessment should be completed every quarter (at 3, 6 and 9 months) between full assessments.
	• Admitted residents	Residents admitted to a continuing care facility with 24-hour nursing (may be a hospital-based facility or long-term care home).
	• Discharged residents	Residents discharged from a continuing care facility with 24-hour nursing (may be a hospital-based facility or long-term care home).

Counting variables	Variations	Comments
Event type	• All events (assessment, admission, discharge) • Latest event in given time period	

CCRS data

The following section presents data relating to CCRS participation, resident counts and data quality indicators.

Participation

2019–2020 participation

The table below presents CCRS participation by province/territory for 2019–2020.

Table 3 CCRS participation by province/territory, 2019–2020

Province/territory	Commitment to participate*	Number suitable for participation†	Participation
N.L. (L)	C	35 LTC homes	35
N.S. (L)	V	93 LTC homes	1
Ont. (H)	C	116 hospitals	100
Ont. (L)	C	624 LTC homes	623
Man. (H)	C	2 hospitals	2
Man. (L)	P	125 LTC homes	39
Sask. (L)	C	156 LTC homes	137
Alta. (L)	C	180 LTC homes	180
B.C. (L)	C	313 LTC homes	299
Y.T. (L)	C	5 LTC homes	5

Notes

* Commitment to participate indicates the level of commitment made by the province/territory to submit to CCRS. Prince Edward Island, Quebec, the Northwest Territories and Nunavut have no commitment to participate and so are not included in the table. New Brunswick is not included in the table as the interRAI LTCF was implemented across the province in 2017–2018. Saskatchewan began implementing the interRAI LTCF in 2019–2020 using a staggered approach. As such, most Saskatchewan facilities do not KDYH IXOO FRYHUDJH IRU WKH 5$, 0'6 IRU WKDW ¿VFDO \HDU 3OHDVH UHIHU WR W

Historic number of long-term care homes and continuing care hospitals submitting data to CCRS

The following table shows the number of long-term care homes and continuing care hospitals submitting data to CCRS by province/territory and year. The values represent the number of organizations that submitted data in that year, as opposed to the number for which CCRS

Resident counts

CCRS residents by year

The table below presents the number of residents by province/territory and year. The values represent the number of residents based on the data for that year, as opposed to data that is currently available. The latter can include data submitted retroactively. For information on assessed, admitted and discharged resident counts, see Quick Stats or eReports.

Table 5 CCRS residents, by province/territory and year

Province/territory	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020
N.L. (L)	3,591	3,546	3,818	3,733	3,773
N.S. (L)	411	114	176	—	114
N.B. (L)	283	293	†	†	†
Ont. (H)	27,471	27,416	27,689	26,523	26,760
Ont. (L)	113,262	114,206	114,326	110,161	109,410
Man. (H)	265	261	246	231	214
Man. (L)	7,828	7,798	7,805	7,632	7,854
Sask. (L)	12,590	12,315	12,221	11,069	8,457‡

Data quality indicators

This section of the guide presents results for 4 data quality indicators. The results are based on the data for the respective ýscal year, as opposed to data that is currently available. The latter can include data submitted retroactively. For further information relating to the indicator methodology, please see the *Provincial/Territorial Data Quality Report: Indicators and Contextual Measures — Reference Guide*.

Invalid/Inconsistent Demographics

The Invalid/Inconsistent Demographics indicator measures the percentage of CCRS records with invalid or inconsistent information in key demographic data elements. For CCRS, this includes inconsistent resident sex and inconsistent resident date of birth. Only the latter is reported in this guide because very few CCRS records have inconsistent resident sex.

The optimal value is 0%.

Missing Longitudinal Record

The Missing Longitudinal Record indicator measures the percentage of CCRS records where submission of assessments stopped and no discharge was submitted. This indicator provides a measure of records that are potentially missing from CCRS. Organizations are expected to submit an assessment in each quarter the resident is in the long-term care home/hospital until the resident 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 (e.g., discharge record, assessment).

The optimal value is 0%. It is assumed for the purposes of this indicator that the expected assessment or discharge records are not in the database for 1 of 3 reasons: they were never completed, they were completed but not submitted to CIHI or they were rejected and never resubmitted.

This indicator relates to the capture and submit stages of the data life cycle and the quality dimension accuracy and reliability.

Table 7 CCRS residents with missing longitudinal records, by province/territory and year (%)

Province/territory	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020
N.L. (L)	0.1	0.1	0.2	1.0	1.6
N.S. (L)	4.6	3.5	28.0	—	71.1
N.B. (L)	0.0	0.0	†	†	†
Ont. (H)	0.4	0.1	0.1	0.4	0.5
Ont. (L)	0.1	0.1	0.1	0.6	2.9
Man. (H)	0.0	0.0	0.0	3.0	0.9
Man. (L)	0.2	0.5	0.5	4.2	2.6
Sask. (L)	1.2	1.0	0.6	2.8	‡
Alta. (L)	0.0	0.0	0.0	0.6	0.7
B.C. (L)	2.4	2.6	2.2	7.2	11.3
Y.T. (L)	1.0	2.3	1.0	2.2	1.7

Notes

† In 2017–2018, New Brunswick implemented the interRAI LTCF.

‡ Saskatchewan began implementing the interRAI LTCF in 2019–2020 using a staggered approach. As such, most Saskatchewan facilities do not have full coverage for the RAI-MDS 2.0 for that ýscal year. This indicator is not calculated during implementation of the interRAI LTCF.

— Data not available.

H: Hospital-based facility.

L: Long-term care home.

Source

2019–2020: Continuing Care Reporting System, July 2020, Canadian Institute for Health Information.

Residents Without a Full Assessment

The Residents Without a Full Assessment indicator measures the percentage of URIs that had data submitted in the reporting ýscal year that were expected to have at least one full assessment submitted but for whom no full assessments were received. Residents who either were discharged before the organization started submitting to CCRS, were discharged within 14 days of being admitted or were admitted within 14 days of March 31 of the reporting year are excluded from this indicator, as they were not expected to be assessed.

The optimal value is 0%. It is assumed for the purposes of this indicator that the expected full assessment records are not in the database for 1 of 3 reasons: they were never completed, they were completed but not submitted to CIHI or they were rejected and never resubmitted.

This indicator relates to the capture and submit stages of the data life cycle and the quality dimension accuracy and reliability.

Table 8 CCRS residents without a full assessment, by province/territory and year (%)

Province/territory	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020

Late Submissions: Record Level

The Late Submissions: Record Level indicator is a measure of the timeliness of the province's/territory's data submission to CCRS. It calculates the percentage of records for a given year that are submitted after the Quarter 4 deadline.[ix] The optimal value is 0%.

This indicator relates to the capture and submit stages of the data life cycle and the quality dimension timeliness and punctuality.

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