
for Health

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Summary

This guide provides context and information, including an assessment of data quality as defined by CIHI's Information Quality Framework, to facilitate the understanding and use of hospital-based and residential continuing care/long-term care data submitted to the Canadian Institute for Health Information (CIHI).

This data is collected via CIHI's Continuing Care Reporting System (CCRS) and the Integrated interRAI Reporting System (IRRS) module for the interRAI Long-Term Care Facilities (LTCF) © instrument, which is a newer version of the long-term care data standard used by CCRS. This IRRS-LTCF module was developed to eventually replace CCRS, and several jurisdictions across Canada are in the process of transitioning from CCRS to IRRS.

CCRS and IRRS-LTCF capture 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. Both databases include administrative information about residents and their stays, as well as information derived from clinical assessments.

The clinical standard for CCRS is the Resident

- In 2021–2022, Canada (excluding Quebec) had 1,630 long-term care homes where health care was either entirely or partially funded by the provincial or territorial government.

Introduction

Data and information quality at CIHI

Quality is at the heart of everything CIHI does. It is embedded in our mandate and vision: Better data. Better decisions. Healthier Canadians.

Information Quality Framework

CIHI's Information Quality Framework provides an overarching structure for all of our quality management practices related to capturing and processing data and transforming it into information products.

For further information on the Information Quality Framework, including CIHI's information life cycle, quality dimensions and quality principles, please visit the data and information quality section of our website.

Provincial/territorial data quality reports

CIHI produces annual data quality reports to assess the contribution of each province and territory to a number of CIHI's databases (including CCRS and IRRS) and to inform on data advancement in key areas. These reports are shared with deputy ministers of health and key jurisdictional representatives across the country.

Introduction to continuing care

Overview of continuing care

Continuing care includes long-term care (e.g., nursing or personal care homes) and hospital-based continuing care for people who require on-site delivery of supervised care, with nursing care provided 24 hours a day, 7 days a week.

Long-term care

Long-term care is governed by provincial and territorial legislation. The admission criteria for long-term care and the services provided vary across the country. Jurisdictions tailor their admission criteria and service provision for long-term care toward the local needs of their populations based on a number of factors, including the availability of other services in the

jurisdictions, where home care and other community support services are available, many people who would have otherwise been admitted to a long-term care home are now served at home or in other settings.

There is also variation in how long-term care homes are governed and who owns them. Of the total 2,076 Canadian long-term care homes, 54% are privately owned and 46% are publicly owned.[1]

Long-term care homes can submit data to CCRS or IRRS-LTCF if they provide 24-hour

Case-mix systems sort residents into similar clinical groups that reflect 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 to plan and monitor care, understand populations, improve quality and allocate resources.

CIHI has conducted preliminary analyses to determine the comparability of the RAI-MDS 2.0 and the interRAI LTCF outcome scales and quality indicators. Based on these preliminary analyses, CIHI recommends that stakeholders can trend the majority of the outcome scale and quality indicator data over time as they transition from the RAI-MDS 2.0 to the interRAI LTCF, as well as compare among organizations or jurisdictions using either instrument. As CIHI receives more interRAI LTCF data, analyses and recommendations will be reassessed and adjusted as needed.

Further details are in the *CCRS RAI-MDS 2.0 Output Specifications Manual*, *Care Facilities Output Specifications*, and , available in CIHI's eStore.

Information comparing the data elements used in the output algorithms in CCRS and IRRS-LTCF is available in the , available as part of the IRRS reference materials in CIHI's eStore.

Record types

CCRS

There are 9 different types of records that can be submitted to CCRS: 7 for the submission of resident-specific information[iii] and 2 non-resident record types required for the appropriate processing of resident-specific records.[iv] The data elements collected vary by assessment type; the assessment types are described in more detail in the next section. Resident-specific records can be submitted to CCRS as new, correction or deletion records.

Further details are in the , available in CIHI's eStore.

iii. The 7 record types for the submission of resident-specific data are Admission/Re-entry (AD), Update (UP), RAI-MDS 2.0 Full Assessment (FA), RAI-MDS 2.0 Quarterly Assessment (QA), Medication (MD), Discharge (DC) and Special Project (SP).

iv. The 2 non-resident record types required for the appropriate processing of resident-specific records are Control Record (CR) and Contact Information (CI).

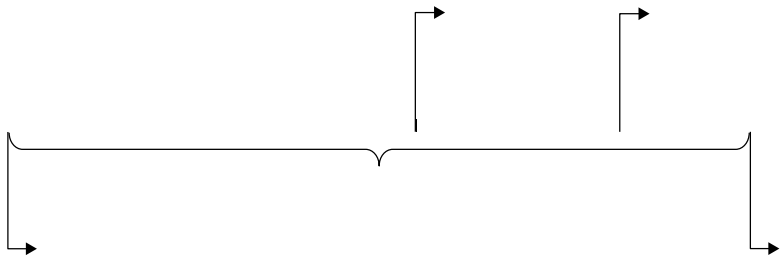
IRRS-LTCF

A shorter quarterly RAI-MDS 2.0 assessment (record type QA) should be completed every quarter (at 3, 6 and 9 months) between full 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.

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 their scheduled assessment while out of the continuing care facility, a new episode of care must be started under a new URI.

Figure 1 Typical CCRS episode



Submission organizations

Submission organizations submit data to CIHI. In some jurisdictions, source organizations

Coverage and participation

Data coverage speaks to the extent to which each jurisdiction participates in, and is therefore reflected in, the database. Some jurisdictions will participate fully, some partially and some not at all.

The CCRS/IRRS-LTCF population of interest, the group of units for which information is wanted, is defined as all residents of all publicly funded continuing care facilities (primarily long-term care homes, but also hospital-based facilities for CCRS) in Canada that have 24-hour nursing available.

The CCRS/IRRS-LTCF population of reference, the group of units for which information should be available, is defined as all publicly funded continuing care facilities in Canada with 24-hour nursing from which data submissions to CCRS or IRRS-LTCF can be expected.

The population of reference has changed over time, and participation varies by jurisdiction and year. Furthermore, as IRRS-LTCF was developed to eventually replace CCRS, several jurisdictions across Canada are in the process of transitioning from CCRS to IRRS-LTCF. Therefore, any time series changes must be interpreted carefully, as they may reflect changes in the underlying population rather than actual changes in the characteristics and resource utilization of the residents being served.

As the CCRS/IRRS-LTCF population of reference does not currently contain all provinces and territories (or all providers within submitting provinces and territories) that make up the population of interest, caution should be used when interpreting results, as the data may not be representative of all continuing care facilities in Canada.

For further information on participation by province/territory and the number of long-term care homes and continuing care hospitals submitting data to CCRS/IRRS-LTCF by province/territory and year, see tables 3, 4 and 5 in the section CCRS/IRRS-LTCF data.

Quality measures for CCRS/IRRS-LTCF throughout the information life cycle

This section provides information on the processes and standards CIHI uses to support data quality and information quality throughout the CCRS/IRRS-LTCF information life cycle: capture, submit, process, analyze and disseminate.

Capture

Data capture

The process begins with data (assessment, demographic and administrative) collected electronically by front-line clinicians and stored in a vendor software system. The RAI-MDS 2.0 or interRAI LTCF 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 or IRRS-LTCF is, therefore, a by-product of the ongoing processes of care.

The CCRS and IRRS-LTCF data sets consist of both clinical assessment data elements and those required by CIHI for administrative purposes; this amounts to more than 400 items for the RAI-MDS 2.0 and more than 300 for the interRAI LTCF. In both cases, the vast majority of data elements are mandatory to submit, including all the elements that are used to derive the key outputs (outcome scales, CAPs, quality indicators and the case-mix systems).

In long-term care, most assessments are completed by nurses; sometimes they are completed by occupational therapists, physiotherapists and/or social workers. Some organizations have super users whose sole responsibility is to conduct interRAI assessments, while other sites have an interdisciplinary team that completes assessments.

Quality measures

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

- Providing data element definitions and data collection standards such as user manuals and job aids;
- 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 that allow corrections and verifications to occur at the time of data entry;
- Providing education courses that address coding of RAI-MDS 2.0/interRAI LTCF assessment data; 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

Resources and job aids are available on CIHI's website to support assessors who use the RAI-MDS 2.0 and interRAI LTCF. They are organized into 3 categories:

- User manuals and forms
- Resources
- Education

Submit

CCRS/IRRS-LTCF data submission

Various vendor software systems are used to capture data at long-term care facilities. This data may then be securely submitted to CIHI in real time (for IRRS-LTCF) or compiled into submission files that are submitted later (for CCRS). In most cases, this data comes to CIHI directly from the facility; in some cases, however, facilities send the data to their regional health authority or ministry, which compiles it and sends it to CIHI on their behalf.

Once the data has been submitted, CIHI processes the data and sends back acceptance and/or error messages, either directly to the facility's software in real time (for IRRS-LTCF) or via submission reports (for CCRS). Corrected data should be resubmitted to CIHI. Records that have been accepted by the final submission deadline each quarter are included in analytical reports that can support clinical and quality management decisions.

Quality measures

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

- Producing user manuals and specifications documents that provide information on how the data is to be submitted to CIHI, including data element specifications, valid code values, record layouts, data validation rules and error message descriptions. Documentation is reviewed annually, and changes are made available to clients prior to the beginning of each fiscal year;
- Requiring data providers to use licensed software vendors that incorporate CIHI's submission specifications into their proprietary software systems;
- Requiring all software vendors to pass CIHI's testing requirements to ensure compliance with the most recent CIHI specifications;
- Checking each data element upon submission to ensure completeness and valid values. Data not meeting these specifications is either rejected (hard edit) or accepted with a warning message (soft edit), and data providers are given information about the reasons for the rejection. Correcting and resubmitting rejected records is the responsibility of the organizations collecting and submitting the data;
- Producing quarterly data quality audit reports that identify potentially missing records and illogical or suspicious values in successfully submitted data; and
- Providing direct client support by email (specializedcare@cihi.ca) to assist with submitting data, interpreting submission reports and correcting rejected records.

Resources for data submitters

CIHI has developed the following manuals to support data submission. They are available by logging in to CIHI's website and visiting eStore.

CCRS

-

IRRS-LTCF

-
-

In addition to the manuals above, CIHI's Education Program includes a suite of courses relating to long-term care, including data submission. The course catalogue and the courses are available by logging in to CIHI's Learning Centre.

Frequency of submission

Data submission to CCRS/IRRS-LTCF is quarterly, but organizations can submit data any number of times within each quarter. Quarterly data submission deadlines are published annually, prior to the beginning of the data submission year.

To have data included in the comparative reports that CIHI updates each quarter, CCRS data providers have up to 45 days after the end of the quarter to submit their data, and an additional 15 days to submit corrections and/or missing data.

As IRRS is designed to be a timelier reporting system, submitters have 1 month following the end of each quarter to submit data, including corrections, and have it included in that set of quarterly reports.

For either database, late data can be submitted at any time but might not be included in the respective quarterly or annual reporting.

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A publicly available Quick Stats report is produced using Quarter 4 (Q4) data each year; as such, submissions occurring after the Q4 submission deadline are not included in that year's report. Data submitted after the Q4 submission deadline may still appear in public Your Health System (YHS) reports, if submitted before the next fscal year's Q1 submission deadline.

Data quality flags

The CCRS and IRRS-LTCF analytical data fles have a series of data quality fags used to identify records that have issues with given demographic variables, such as if a resident's age is outside the expected range (younger than 16 or older than 115).

Analyze

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

Table 1 CCRS/IRRS-LTCF counting variations

Counting variables	Variations	Comments
Identifier type	**CCRS** • Unique Registration Identifer (URI) • Encrypted HCN • Resident ID	Note that each ID will produce a different result when counting unique clients due to different relationships between the variables within jurisdictions.
	IRRS-LTCF • Client ID • Encrypted HCN	
Resident type	Total residents	The count of residents may be event based; if a resident

Disseminate

Dissemination of CCRS/IRRS-LTCF data

The table below summarizes the ways CIHI disseminates CCRS/IRRS-LTCF data.

Table 2 CCRS/IRRS-LTCF reporting outputs

Name	Description	Access	Frequency
Quick Stats	Standard tables of aggregate data at the province/territory level for a given year, therefore reflecting only 1 point in time. Contain administrative, clinical, resource utilization and quality indicator information. Include data for only the jurisdictions that submitted data for the given fiscal year. As of the publication of *Profile of Residents in Residential and Hospital-* , tables include both CCRS and IRRS-LTCF data.	Available publicly	Annually
eReports	Secure, web-based access to comparable RAI-MDS 2.0/interRAI LTCF and related data in a user-friendly, interactive environment. Functionality includes • Comparative reporting (compare across organizations, regions, provinces/territories or the entire database); • Trending over time (4 years or 8 quarters); • Customizable reports that can be saved; and • Graphs and tables that can be downloaded in Excel or as a PDF.	Authorized users only. Available to users that meet specific criteria, such as organizations that submit data to CCRS/IRRS-LTCF, as well as their health authorities and ministries of health. Accessed via CIHI's Client Services application.	Quarterly
Your Health System (YHS): In Brief and In Depth	Interactive public reporting tool that includes 9 Long-Term Care quality indicators and 7 contextual measures. Includes functionality that allows comparisons between organizations, regions and provinces/territories. YHS: In Depth includes a matrix that provides a snapshot of how indicators are performing compared with the average and across time. Features exportable graphs and data. Designed to present comparative indicator results that may facilitate sharing of best practices and help generate new ideas for improvement strategies.	Available publicly: In Brief In Depth	Annually

Name	Description	Access	Frequency
Data requests	Researchers, decision-makers and health managers can request specifc CCRS and/or IRRS-LTCF data from CIHI at an aggregate or record level to suit their information needs. Data will be released in accordance with CIHI's Privacy Policy.	Via Data Inquiry Form	On request
Special topic	Tailored analytical outputs that use data from across CIHI's data holdings to focus on a particular health area. Some examples include (2017) and (2018).	CIHI's website	Varies

Before any analytical outputs are released by CIHI, they undergo internal verifcation and approval processes. These include both checking the accuracy of the outputs and verifying adherence to CIHI's Privacy Policy.

CCRS/IRRS-LTCF data

The following section presents data relating to CCRS and IRRS-LTCF participation, resident counts and data quality indicators. Results are based on the Q4 data cut of the respective fscal years, usually extracted at the beginning of May for IRRS-LTCF and June for CCRS.

Participation

Current and historic coverage

The following table shows the number of long-term care homes and continuing care hospitals with available data in CCRS/IRRS-LTCF by province/territory and year, over the total number of homes suitable for participation.

The numerators in Table 3 represent the number of long-term care homes and continuing care hospitals that submitted data in that year, as opposed to the number for which CCRS data is currently available. Table 4, on the other hand, shows the years for which a substantive amount of data is available in CCRS and IRRS-LTCF, by province; this can include data that was submitted retroactively.

The denominators in Table 3 represent the number of long-term care homes and continuing care hospitals that were considered suitable for participation in CCRS or IRRS-LTCF in the fscal year at that time.

Table 4 Historic CCRS and IRRS-LTCF coverage and data availability,* by province/territory

Province/ territory	CCRS	IRRS-LTCF	Comments
Hospital-based continuing care			
Ont.	1996–1997 to current	—	Ontario complex continuing care (CCC) facilities began completing RAI-MDS 2.0 assessments in 1996–1997 and began submitting to CCRS when it was created in 2003–2004. Small Ontario CCC facilities sometimes do not submit to CCRS in a given year, as they do not have any residents in their designated CCC beds.
Man.	2008–2009 to current	—	Manitoba has partial commitment to participate, with full participation from WRHA only.

Notes

* Years of data coverage are based on the years for which a substantive number of assessment records (50 or more) are available, based on the Assessment Reference Date of the record. It does not necessarily reflect full coverage in a province or territory.

— Not applicable.

Sources

Continuing Care Reporting System, June 2022, and Integrated interRAI Reporting System, May 2022, Canadian Institute for Health Information.

Resident counts

Residents by year

The table below presents the number of residents reflected in CCRS/IRRS-LTCF data, by province/territory and year. The values represent the number of residents based on the data submitted in 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/IRRS-LTCF residents, by province/territory and year

Province/ territory	Database	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022
Facility-based care							
N.L.	CCRS	3,546	3,818	3,733	3,773	3,786	3,769
N.S.	CCRS	114	176	—	114	111	69
N.B.	CCRS	293	—	—	—	—	—
	IRRS-LTCF	—	293	300	3,509	6,335	6,264
Ont.	CCRS	114,206	114,326	110,161	109,410	91,265	92,427
Man.	CCRS	7,798	7,805	7,632	7,854	7,233	7,199

Province/ territory	Database	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022
Facility-based care (continued)							
Sask.	CCRS	12,315	12,221	11,069	8,457*	—	—
	IRRS-LTCF	—	—	—	—	11,546	11,750
Alta.	CCRS	21,879	21,825	22,095	22,799	20,857	21,299
B.C.	CCRS	37,256	36,802	36,829	36,950	35,757	36,664
Y.T.	CCRS	345	388	316	419	386	433
Hospital-based care							
Ont.	CCRS	27,416	27,689	26,523	26,760	25,134	28,920
Man.	CCRS	261	246	231	214	206	204

Notes

* 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 fscal year. Saskatchewan's data in 2019–2020 refects 70% of the residents reported on for a typical fscal year.

— Data not available.

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

is the number of Unique Registration Identifers (URIs) for residents who were admitted, assessed or discharged through 2017–2018. Beginning in 2018–2019, uses Resident ID.

Sources

Continuing Care Reporting System, June 2022, and Integrated interRAI Reporting System, May 2022, Canadian Institute for Health Information.

Data quality indicators

This section of the guide presents results for 3 data quality indicators. The results are based on the data submitted in the respective fscal 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 _____ _____.

Missing Longitudinal Records

The Missing Longitudinal Records indicator measures the percentage of CCRS/IRRS-LTCF residents who had activity (an AD record or an assessment record) in Q1, 2 or 3 of the reporting fscal year, for whom data (an assessment or discharge) was expected by CIHI but had not been submitted for at least one fscal quarter as of the end of Q4 of the reporting fscal year.

This indicator provides a measure of records that are potentially missing from CCRS/IRRS-LTCF. 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 6 CCRS residents with missing longitudinal records, by province/territory and year (%)

Province/ territory	Database	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022
Facility-based care							
N.L.	CCRS	0.1	0.2	1.0	1.6	1.6	

Residents Without a Full Assessment

The Residents Without a Full Assessment indicator measures the percentage of residents (based on URI) who had data submitted in the reporting fscal year who were expected to have at least one full assessment submitted but for whom no full assessments were received. Residents who 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.

This indicator is relevant only for clients receiving RAI-MDS 2.0 assessments that are submitted to CCRS — residents are assessed quarterly with a reduced number of items but are also expected to receive a full assessment each year. Assessments that use the terRAI LTCF instrument and are submitted to IRRS all contain the same items (i.e., all are ll assessments except the discharge tracking assessments).

able 7 CCRS residents without a full assessment, by province/territory and year (%)

Province/ territory	Database	2019–2020	2020–2021	2021–2022
Hospital-based care				
Ont.	CCRS	0.2	0.4	0.4
Man.	CCRS	0.5	1.5	2.1

Notes

* This indicator is relevant only for clients receiving RAI-MDS 2.0 assessments that are submitted to CCRS — residents are assessed quarterly with a reduced number of items and are expected to receive a full assessment each year. Assessments that use the interRAI LTCF instrument and are submitted to IRRS all contain the same items — all are full assessments — except the discharge tracking assessments.

† 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 fscal year.

— Data not available.

Due to a methodological change, numbers reported here might not align with those in previous versions of this report, and historical results from before 2019–2020 cannot be reproduced.

Sources

Continuing Care Reporting System, June 2022, and Integrated interRAI Reporting System, May 2022, Canadian Institute for Health Information.

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/IRRS-LTCF. It calculates the percentage of records for a given year that are submitted after the quarterly submission deadline but before the Q1 deadline of the next fscal year.[vi] 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.

vi. Note that the methodology for this indicator di fers from that used in the in that it calculates late submissions for the fscal year rather than by quarter.

Table 8 CCRS record-level late submissions, by province/territory and year (%)

Province/ territory	Database	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022

Reference

1. Canadian Institute for Health Information. Long-term care homes in Canada: How many and who owns them?. Accessed July 26, 2023.

help@cihi.ca

CIHI Ottawa
495 Richmond Road
Suite 600
Ottawa, Ont.
K2A 4H6
613-241-7860

CIHI Toronto
4110 Yonge Street
Suite 300
Toronto, Ont.
M2P 2B7
416-481-2002

CIHI Victoria
880 Douglas Street
Suite 600
Victoria, B.C.
V8W 2B7
250-220-4100

CIHI Montréal
1010 Sherbrooke Street West
Suite 602
Montréal, Que.
H3A 2R7
514-842-2226

cihi.ca

37213-0823