Data Quality Documentation for Users
Canadian Patient Experiences Reporting System

Multi-Year Information

Canadian Institute for Health Information

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Glossary of abbreviations

Alta.	Alberta
B.C.	British Columbia
CCI	*Canadian Classification of Health Interventions*
CIHI	Canadian Institute for Health Information
CPERS	Canadian Patient Experiences Reporting System
CPES-IC	Canadian Patient Experiences Survey — Inpatient Care
CPES-IC MDS	Canadian Patient Experiences Survey — Inpatient Care: Minimum Data Set
DAD	Discharge Abstract Database
DSRS	disproportionate stratified random sampling
ICD-10-CA	*International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canada*
PODS	Patient Oriented Discharge Summary
PREM	patient-reported experience measure
Man.	Manitoba
N.B.	New Brunswick
N.S.	Nova Scotia
Ont.	Ontario

Purpose of this document

This document provides high-level data quality information about the Canadian Patient Experiences Reporting System (CPERS) data holding. This information will help users determine whether the data is fit for the intended use. Specifically, this document contains information on the CPERS data system, population and coverage, collection processes, data quality, comparability and revision history.

Introduction

Patient-reported experience measures

The evaluation of health care services has historically focused on outcomes from a clinical perspective. There is growing recognition of the importance of amplifying the patient voice as health care organizations promote the use of patient-centred models of care with the aim of improving service delivery that is meaningful to patients. Understanding a patient's experience when they received health care is integral to providing patient-centred care and quality delivery of health care services.

A patient-reported experience measure (PREM) assesses a patient's perception of their personal experience of the health care service they have received. PREMs are typically collected using validated survey tools designed to capture information on key drivers of patient experience. Measuring patient experience consistently provides a systematic and objective way to assess aspects of patient care that are working well, and those that can be improved. PREMs can also complement clinical and administrative data to inform policies, programs and value-based health care delivery. Additionally, PREMs can support quality improvements, comparisons and benchmarking for patient experiences in health care settings.

Overview of the Canadian Patient Experiences Reporting System

Launched in 2015, CPERS is a national database that collects data about patient experiences in inpatient acute care hospital stays across 3 service lines (i.e., medical, surgical, maternity). CPERS receives data about patient experiences from hospitals and jurisdictions that administer the [Canadian Patient Experiences Survey — Inpatient Care (CPES-IC)](#), which was developed by the Canadian Institute for Health Information (CIHI).

Data in CPERS is actionable as it facilitates the comparison of PREMs at the hospital or corporation level, at the peer group level, and at the regional, provincial and national levels. This highlights both strengths and areas of improvement for participating facilities. Hospitals are able to target points of care that impact patient experience by implementing quality improvement programs and policies. An example of a quality improvement program is the Patient Oriented Discharge Summary (PODS) Program at Ross Memorial Hospital in Kawartha Lakes, Ontario. There, data related to discharge planning spurred the implementation of the PODS tool to create a more patient-centred process. Read more about the [PODS Program](#).

Concepts and definitions

Canadian Patient Experiences Survey — Inpatient Care measures

The CPES-IC is a standardized 48-question questionnaire that includes 22 questions from the United States–based Hospital Consumer Assessment of Healthcare Providers and Systems survey, 19 questions that address key areas relevant to the Canadian context and 7 questions that help collect demographic information. The CPES-IC underwent cognitive and pilot testing to ensure the questions are appropriate and understandable by patients. The standards and guidelines for administering the CPES-IC are outlined in the *Canadian Patient Experiences Survey — Inpatient Care Procedure Manual, January 2019*.

The CPES-IC covers different points of a patient's hospital visit, including admission processes, communication, involvement, coordination, discharge and overall experience. The survey was designed to inform the calculation of 23 PREMs that comprise 13 single-question measures and 10 multi-question (composite) measures. The composite measures are derived by combining survey questions with similar concepts. The single measures are stand-alone survey questions measuring a distinct concept. These measures spotlight a mix of themes that reflect patient, facility and system-level voices.

Results for the 23 PREMs are reported as Top Box and Bottom Box results. Top Box results calculate the percentage of survey respondents who chose the most positive response(s) to a given survey question. The higher the Top Box result, the higher the number of patients who responded favourably. A higher Bottom Box result indicates that a higher number of patients responded unfavourably.

CIHI publicly reports 5 of the 23 CPES-IC measures in its Your Health System online tool: Communication With Doctors, Communication With Nurses, Involvement in Decision-Making and Treatment Options, Information and Understanding When Leaving the Hospital and Overall Hospital Experience. Hospitals that submit data to CPERS can access all 23 CPES-IC measures using the private Canadian Patient Experiences Survey: Comparative Results secure web tool.

As measures provide a high-level overview of patient experience concepts and cover more than one dimension of care, they are useful for benchmarking, trending and making standardized comparisons between jurisdictions. This high-level comprehensive view helps facilities and jurisdictions identify themes and areas of patient care that can benefit from quality improvement initiatives and further analytical investigations. In comparison, individual questions are most useful when looking at specific patient concerns in an individual hospital.

For example, the Communication With Nurses measure consists of 3 questions focused on whether patients were listened to, whether nurses were respectful and courteous, and whether patients felt their care was clearly explained. When viewed together, the Communication With Nurses measure provides a comprehensive, high-level overview of how facilities and jurisdictions are performing at achieving good communication between nurses and patients. Facilities wanting to improve or further understand their Communication With Nurses results may focus on 1 of the 3 individual questions that make up the measure.

See the table in the *Canadian Patient Experiences Survey — Inpatient Care: Patient-Reported Experience Measures* document for further details on these 23 measures.

CPERS records

CPERS data is collected at the patient level. Patient records are uniquely identified for linkage purposes using an encrypted health care number, source organization identifier, organization patient identifier and discharge date. Refer to Table 1 for a detailed description of each data element.

Table 1   Description of data elements

Data element	Description
Encrypted Health Care Number	A jurisdictionally unique number used to identify a patient who has received or is receiving health care–related services or goods
Source Organization Identifier	A unique CIHI-assigned identifier (numerical) for the organization rendering the health care services. The source organization identifier is used in the CIHI Organizational Index to identify facilities that submit data to CPERS.
Organization Patient Identifier	A unique organization-assigned number (e.g., chart number) that identifies a patient who has received or is receiving health care–related services or goods
Discharge Date	The full date when the patient was formally discharged

Comprehensiveness

Population and frame

The target population of the CPES-IC is adults (i.e., age 18 and older) who received inpatient acute care in a hospital and were alive at the time of discharge. The type of service received by eligible patients is determined using *International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canada* (ICD-10-CA) and *Canadian Classification of Health Interventions* (CCI) codes. Refer to CIHI's [Indicators web pages](#) for applicable ICD-10-CA and CCI codes.

- **Maternity patients:** Women who gave birth to 1 or more live babies either through a vaginal or Caesarean-section delivery
- **Surgical patients:** Patients who underwent 1 or more procedures and/or interventions or who were identified as having used operating room time during their hospital stay
- **Medical patients:** Patients who received services primarily related to acute inpatient care and who meet the eligibility criteria but who did not receive maternity or surgical services

Patients who are not eligible for the CPES-IC include

- Those receiving care primarily for a psychiatric condition or mental health disorder;
- Those discharged from a rehabilitation unit or discharged to nursing homes or long-term care facilities;
- Those who have a primary diagnosis of alternate level of care at the time of admission or a primary diagnosis of alcohol and/or drug abuse or dependence;
- Day surgery patients;
- Patients requesting not to be contacted;
- Patients residing in prison; and
- Patients excluded on sensitive or compassionate grounds.

Patients who had been selected for surveying in the past 12 months within the same hospital are also not eligible for the CPES-IC, regardless of whether the patient completed a questionnaire. If patient records are received in CPERS that do not adhere to these criteria, they are identified and removed using a validation flag when undergoing [quality control](#).

For more detailed CPES-IC inclusion and exclusion criteria including permissible admission routes, refer to the [CPES-IC Procedure Manual](#).

Coverage

Data submission to CPERS across all provinces and territories is voluntary for participating regional health authorities or facilities. CPERS collects data from more than 240 acute care hospitals from across 6 jurisdictions (Nova Scotia, New Brunswick, Ontario, Manitoba, Alberta and British Columbia). Tables 2 to 4 summarize the data submitted to CPERS by jurisdiction.

- Table 2 provides the number of submitted records for each jurisdiction by fiscal year.
- Table 3 provides survey cycle information for each participating jurisdiction.
- Table 4 provides information on the response rates.

The jurisdictions and facilities submitting data to CPERS vary each year because there is no required survey frequency. CPERS provides data submitters with the flexibility of providing data in a time frame that meets their patient experience surveying needs.

Table 2 Number of records and data years included in CPERS, by jurisdiction

Jurisdiction	2014–2015	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
N.S.*	—	—	—	2,923	—	—	—
N.B.	—	6,803	—	—	6,214	—	—
Ont.	—	—	37,973	40,257	41,194	41,563	44,880
Man.†	2,385	6,183	4,756	12,291	12,765	10,295	11,231
Alta.	—	—	—	24,417	24,678	24,520	22,304
B.C.‡	—	—	22,136	—	—	—	—

Notes
* In Nova Scotia, surveying and data submission are paused due to the COVID-19 pandemic.
† Manitoba data for 2014–2015 does not include facilities from the Winnipeg Regional Health Authority.
‡ The 2019–2020 data from 28 British Columbia facilities was submitted to CPERS to support CIHI's mode study project. This data has not been included in the table as it was submitted for this specific project. The 2016–2017 data from British Columbia is also not available for data requests.
— Data is not available.

Table 3   CPERS coverage for most current fiscal year, by jurisdiction

Jurisdiction	Most current fiscal year	Frequency of survey	Number of records	Facility participation rate*	Target population covered by participating facilities (%)
N.S.	2017–2018	Annual†	2,923	14/37	83.3
N.B.	2018–2019	Every 3 years	6,214	19/19	100
Ont.	2020–2021	Ongoing	44,880	94/163	79.6
Man.	2020–2021	Ongoing	11,231	51/56	99.9
Alta.	2020–2021	Ongoing	22,304	92/93	100
B.C.	2016–2017	Every 3 years‡	22,136	77/78	99.8

Notes
* This rate is calculated by dividing the number of submitting facilities by the total number of facilities eligible for CPES-IC surveying for the fiscal year in each jurisdiction. The number of submitting facilities varies each fiscal year.
† In Nova Scotia, surveying and data submission are paused due to the COVID-19 pandemic.
‡ The 2019–2020 data from 28 British Columbia facilities was submitted to CPERS to support CIHI's mode study project. This data has not been included in the table as it was submitted for this specific project. The 2016–2017 data from British Columbia is also not available for data requests.

Table 4   CPES-IC response rates, by fiscal year and jurisdiction (%)

Fiscal year	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
N.S.	n/a	n/a	33.5	n/a	n/a	n/a
N.B.	47.4	n/a	n/a	44.1	n/a	n/a
Ont.*	n/a	n/a	35.1	35.3	30.1	29.8
Man.*	n/a	n/a	34	36.8	31.1	32.9
Alta.	n/a	n/a	25.8	25	24.5	16.3
B.C.†	n/a	37.6	n/a	n/a	n/a	n/a

Notes
* Response rates prior to 2017–2018 are not available for Ontario and Manitoba.
† The 2019–2020 data from 28 British Columbia facilities was submitted to CPERS to support CIHI's mode study project. This data has not been included in the table as it was submitted for this specific project. The 2016–2017 data from British Columbia is also not available for data requests.
n/a: Not applicable.

Process and methods

Data collection

Participating hospitals, health regions, health quality councils and ministries of health contact patients following discharge from a hospital to collect information about their inpatient care experience. They subsequently compile and extract CPES-IC data into submission files that adhere to the CPES-IC Data Submission Specifications (e.g., file characteristics, detailed data requirements, specifications, file-naming conventions). They then submit these files to CPERS using the secure electronic Data Submission Services application.

CPES-IC Data Submission Specifications are made available to organizations and vendors in a vendor specifications package. This technical documentation provides detailed requirements and guidelines for CPES-IC data submission to CIHI.

The following figure provides an overview of the data flow process to CPERS.

Figure Overview of data flows to CPERS
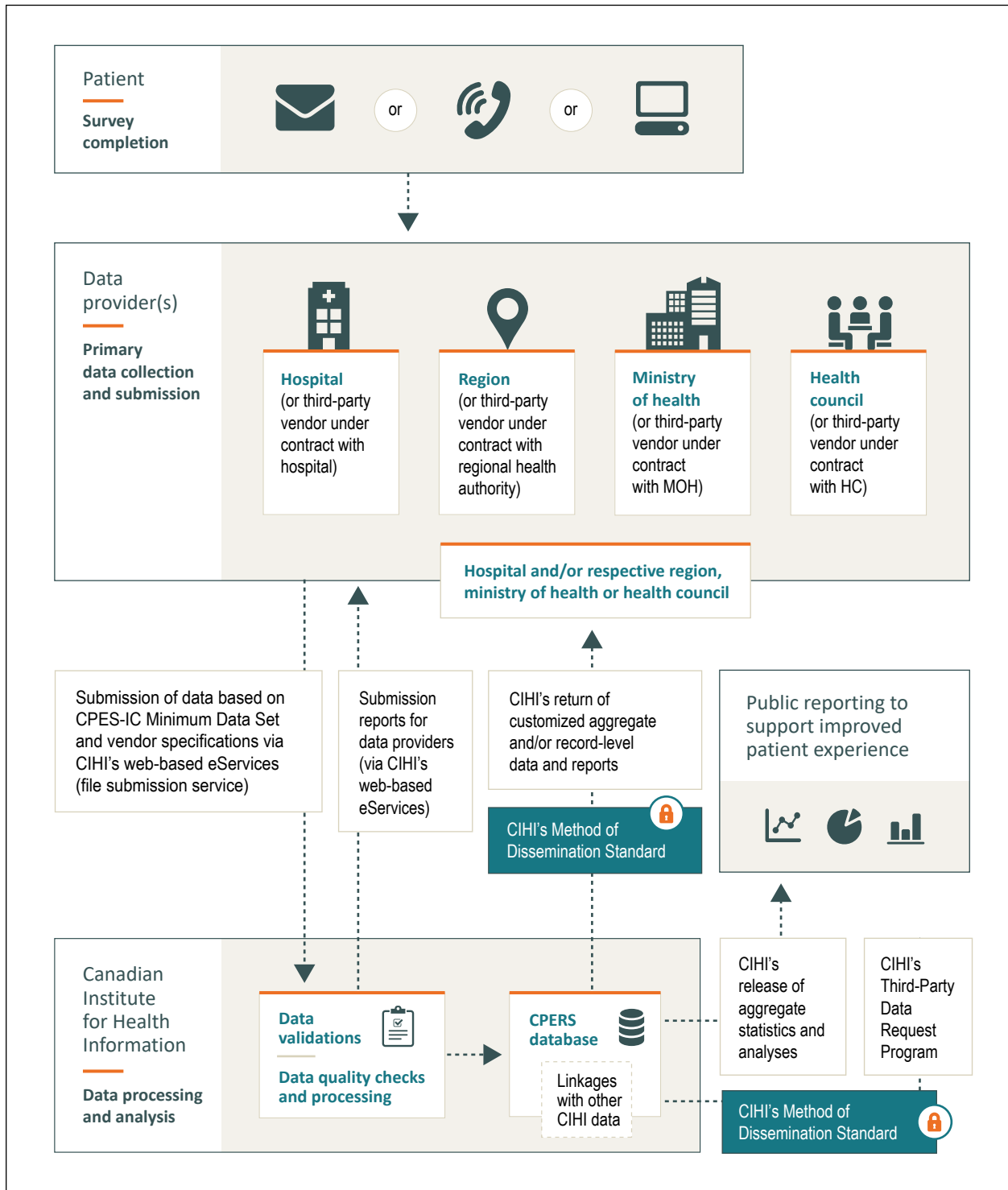
Notes
CPERS: Canadian Patient Experiences Reporting System.
MOH: Ministry of health.
HC: Health council.
CPES-IC: Canadian Patient Experiences Survey — Inpatient Care.

For information on data privacy and CIHI's privacy impact assessment, refer to *Canadian Patient Experiences Reporting System Privacy Impact Assessment, August 2020*.

Survey completion mode

The survey completion mode, surveying frequency and surveying duration vary across jurisdictions. Permissible survey modes include mailed questionnaire, telephone interview and online completion. It is important to note that survey completion mode is distinct from the survey initial contact mode. Survey completion mode is the medium by which respondents fill out the survey, whereas initial contact mode is the method by which surveying facilities reach out to potential respondents inquiring about their interest to participate in a survey. Table 5 provides the proportion of each survey completion mode implemented in each jurisdiction by fiscal year. Adjustments that are made for the survey completion mode are discussed in the Survey completion mode and service line adjustments section.

Table 5   Survey completion mode, by jurisdiction across submitting years

Jurisdiction	Fiscal year(s)	Mail (%)	Telephone (%)	Online (%)
N.S.	2017–2018	100	0	0
N.B.	2015–2016	100	0	0
	2018–2019	97.3	0	2.7
Ont.*	2017–2018	94.8	2.4	2.8
	2018–2019	93.5	4.3	2.2
	2019–2020	82.5	14.4	3.1
	2020–2021	64.8	30.4	4.8
Man.*	2017–2018	97.4	0	2.6
	2018–2019	96.7	0	3.3
	2019–2020	90.5	0	9.5
	2020–2021	90.2	0	9.8
Alta.	2017–2018 to 2020–2021	0	100	0
B.C.	2016–2017	0	83.6[†]	16.4[†]

Notes

*   Survey completion mode data prior to 2017–2018 is not available for Ontario and Manitoba.

†   In some cases in British Columbia, multiple modes of surveying were used to complete the survey.

Data elements

CPERS collects information on

- Patients' responses to CPES-IC questions and demographic information;
- Information on the survey methods and processes used to administer the survey; and
- Administrative information needed to support submissions, analysis and reporting.

The Canadian Patient Experiences Survey — Inpatient Care: Minimum Data Set (CPES-IC MDS) defines the minimum or essential information needed by multiple stakeholders to fulfil the objectives of the CPES-IC and meet the necessary requirements of CPERS. The data elements within the CPES-IC MDS are grouped into the following major categories: survey cycle data, organization profile and data submission information. For more detailed descriptions of each data element in the CPES-IC MDS, refer to *Canadian Patient Experiences Survey — Inpatient Care Data Dictionary Manual, January 2019*.

Sampling methods

Jurisdictions and hospitals have adopted varying sampling approaches based on their number of discharges, patient characteristics and quality improvement goals:

- A hospital can survey all its eligible patients; this is referred to as an attempted census.
- Patients can be sampled from within the hospital as a whole (i.e., without regard for unit or program structure).
- A hospital can also stratify its patient population by program and/or unit or in combination with a specific time period; note that unit-level breakdowns for CPERS data are not available.

Hospitals with fewer than 1,200 unique discharges must survey all eligible patients (i.e., conduct a census). Hospitals with at least 1,200 unique discharges may conduct a census or draw a random sample of eligible monthly discharges to ensure that the patients who participate in the survey are representative of all eligible patients (e.g., simple random sampling, proportionate stratified random sampling, disproportionate stratified random sampling [DSRS]).

Data processing and quality control

All CPES-IC submission files must adhere to the validation rules provided in the CPES-IC Data Submission Specifications. These validations are important to ensure that CPERS contains high-quality data that is fit for use in analysis and reporting. Any information that does not comply with the validation rules can be rejected or accepted with warnings. Both types of errors are flagged in submission reports that are returned to data providers via operational reports. Records that are rejected are not saved in the database and must be resubmitted. Examples of rejected files include those that violate any file processing rules (i.e., if a file does not follow the appropriate extensible markup language, or XML, format specified in CPES-IC Data Submission Specifications). Records flagged with warnings are accepted into the database but should be reviewed for incorrect information. Warnings are typically triggered when suspicious information is present in survey cycle data or in survey cycle metadata.

After data is successfully submitted, internal data quality checks are performed to flag any key issues such as low quarterly volumes, low response rates, high percentages of missing and unknown variables, inappropriately answered skip pattern questions and other validation flags.

Other data quality considerations

Duplicate records

If duplicated survey records are included in the submitted data files, they will trigger a series of validation rules that will result in the rejection of the survey cycle data. The rejected file will have to be corrected and then resubmitted to be included in the CPERS database.

Missing data elements

In CPERS, responses for individual questions can be missing because they are truly unknown (i.e., respondent did not provide an answer to a question when it should have been provided) or because the question does not apply to the survey respondent (i.e., respondent was instructed to skip the question).

For 2020–2021, missing rates for CPERS data elements that are truly unknown are below 10% across the database as a whole, with most rates falling within the range of 1% to 4%. Similar patterns can be seen for missing rates for individual jurisdictions. The only exception is the question for service line (question 47), where the missing rate is about 68%. However, this data element is supplemented by linking CPERS to CIHI's Discharge Abstract Database (DAD) to capture maternity status.

Comparability

To enhance the comparability of results across jurisdictions and hospitals, patient experience measures in the Canadian Patient Experiences Survey: Comparative Results tool are adjusted for survey design, non-response, mode of survey completion and service line. They have also been age–gender standardized, where applicable, to the hospital population. These adjustments ensure comparable results across facilities and with natural comparators (i.e., peer hospital group, regional, provincial and national averages). Thus these results may differ from results reported by individual hospitals or jurisdictions. More information on how these adjustments are applied is provided in the following sections.

For individual data requests, the methodological requirements may vary. CIHI will work with the requestor to develop an appropriate methodology, as needed.

Standardization and non-response adjustments

Standardization and non-response adjustments are applied to ensure that the respondent population is as representative of the eligible population as possible and to compensate for the fact that persons with certain characteristics are more or less likely to respond to a survey. Among medium-sized community hospitals, large community hospitals and teaching hospitals, adjustment is applied for gender (male and female) and age (18 to 59, 60 to 79 and 80+). Due to low volumes, hospital-level results for small community hospitals have not been age–gender standardized. Only maternity status has been used to standardize these hospital populations.

Non-response adjustment is calculated as the hospital or stratum sample size divided by the number of respondents. Survey respondents within each facility are assigned to a post-stratum formed by their age and gender (e.g., male, age 18 to 59) and maternity status for DSRS hospitals or maternity status for non-DSRS hospitals. If applicable, non-response adjustments are multiplied with the sampling weights to calculate the non-response adjusted weighted population for each post-stratum.

Survey completion mode and service line adjustments

The CPES-IC is currently administered via 3 modes: mail, telephone and online completion. The mode of survey administration may impact results by influencing the composition of respondents and the way respondents answer questions. Furthermore, the impact of mode of survey completion on CPES-IC results differs by the type of service a patient has received (i.e., medical, surgical, maternity). CIHI has quantified the impact of mode and service line on CPES-IC question responses and generated a set of adjustment values on a log scale for each question.

To apply these adjustments to the CPES-IC results, unweighted and unadjusted Top Box and Bottom Box results are first calculated at the finest aggregate grouping available in the data — facility, survey cycle, survey stratum, age, gender, mode and service line — before being converted into the log-odds scale. The adjustment values are then subtracted from these and the adjusted results are merged back with the individual-level data after being converted into proportions. Weights and age and/or gender standardization are then applied to generate adjusted Top Box and Bottom Box results, which are used to calculate the final measures.

Email prems@cihi.ca for more details on mode and service line adjustment methodology.

Peer groups

Hospitals are also assigned to peer groups to facilitate standardized comparisons by categorizing facilities that have similar structural and patient characteristics.

Hospitals can be designated as

- Teaching
- Community — Large
- Community — Medium
- Community — Small

For more details on CIHI's peer group methodology, refer to CIHI's *Indicator Library: Peer Group Methodology, November 2019*.

Linkage to other databases using health care number

Survey responses are linkable to the DAD using an encrypted health care number, discharge date and institution number, where possible.

Health care number availability for CPERS varied in early years as it was initially an optional data element. Beginning in January 2018, collecting information on both health care numbers and jurisdictions issuing health care numbers became mandatory. Table 6 presents the availability of health care numbers by jurisdiction and fiscal year.

In 2020–2021, 99% of CPERS records with available health care numbers could be linked to the DAD.

Table 6 Availability of health care numbers for linkage, by jurisdiction across fiscal years (%)

Fiscal year	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020	2020–2021
N.S.	n/a	n/a	100	n/a	n/a	n/a
N.B.	100	n/a	n/a	100	n/a	n/a
Ont.*	n/a	n/a	32.1	53.9	90.6	89
Man.*	n/a	n/a	100	100	100	100
Alta.	n/a	n/a	100	100	100	100
B.C.†	n/a	99.8	n/a	n/a	n/a	n/a

Notes

* Health care number availability prior to 2017–2018 is not available for Ontario and Manitoba.

† The 2019–2020 data from 28 British Columbia facilities was submitted to CPERS to support CIHI's mode study project. This data has not been included in the table as it was submitted for this specific project. The 2016–2017 data from British Columbia is also not available for data requests.

n/a: Not applicable.

Historical changes

Changes in data collection standards

The following significant changes were made to the data collection standards (i.e., the submission specifications, procedures manual and/or CPES-IC) after the initial release in 2014.

- January 2017:
  - Disaggregated the response option of First Nations, Inuk, Métis or mixed (others may say Indigenous or Aboriginal) into 4 groups: First Nations, Inuit, Métis and Indigenous or Aboriginal (not included elsewhere) for question 48.
  - Added "not applicable" as a valid value for questions 11, 13, 14, 16, 17, 19, 20 and 38. These valid values apply only to surveys administered via telephone.
- January 2018: Updated Health Care Number (PA_1) and Jurisdiction Issuing Health Care Number (PA_2) from optional to mandatory elements.
- January 2019: Updated question 48 on the CPES-IC (i.e., question wording and permissible responses were updated and re-ordered).

The date of adoption of these changes varies by jurisdiction.

Data revisions and updates

The CPERS database accepts data beyond the reporting period deadline. Therefore, there may be variations in published data over time due to historical submissions or data revisions.

Contact information

For more information, visit the CPERS web page or email prems@cihi.ca.

Appendix

Text alternative for figure

Figure: Overview of the data flows for CPERS

This figure shows the flow of CPERS data into the CPERS program, within CIHI and out of the program.

Following discharge from hospitals, inpatients who received medical, surgical or maternity care are surveyed via phone, or mailed hard-copy or electronic surveys by data providers (e.g., hospitals, health regions, ministries of health, health councils and/or third-party vendors) to collect information about their experience based on the CPES-IC. The collected CPERS data is submitted electronically through CIHI's secure file submission service to CIHI for processing, which includes activities such as data validation and data quality checks for errors and inconsistencies. Submission reports are returned to data providers for review, and data providers are required to correct files with identified errors and inconsistencies

Following data validation and data quality processing, CPERS data is processed into the CPERS database. The data file is then used by CIHI staff for analysis and can be linked with other CIHI data holdings such as the Discharge Abstract Data for the delivery of customized aggregate and/or record-level data and reports.

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