



# Addendum to the November 2012 Privacy Impact Assessment of the NACRS Clinic Lite Web-Entry Tool

February 2017



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For permission or information, please contact CIHI:

Canadian Institute for Health Information  
495 Richmond Road, Suite 600  
Ottawa, Ontario K2A 4H6

Phone: 613-241-7860

Fax: 613-241-8120

[www.cihi.ca](http://www.cihi.ca)

[copyright@cihi.ca](mailto:copyright@cihi.ca)

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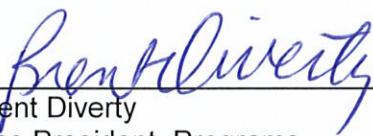
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Clinical Administrative Databases:  
National Ambulatory Care Reporting System Clinic Lite Web-Entry Tool

**PRIVACY IMPACT ASSESSMENT  
2017 Addendum**

(February 2017)

Approved by:

  
\_\_\_\_\_  
Brent Diverty  
Vice President, Programs

  
\_\_\_\_\_  
Anne-Mari Phillips  
Chief Privacy Officer & General Counsel

Ottawa – February 2017



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# 1 Introduction

The Canadian Institute for Health Information (CIHI) collects and analyzes information on health and health care in Canada. Its mandate is to deliver comparable and actionable information to accelerate improvements in health care, health system performance and population health across the continuum of care. CIHI obtains data from hospitals and other health care facilities, long-term care homes, regional health authorities, medical practitioners and governments. This data includes information about health services provided to individuals, the health professionals who provide those services and the cost of health services.

The purpose of this privacy impact assessment (PIA) addendum is to update the [current PIA for CIHI's Clinical Administrative Databases](#)<sup>i</sup> (CAD). Specifically, this PIA examines the privacy, confidentiality and security risks associated with the National Ambulatory Care Reporting System (NACRS) web-entry tool, which will be used by data providers to submit data at a level referred to as NACRS Clinic Lite.<sup>ii</sup> This addendum includes a review of the 10 privacy principles set out in the Canadian Standards Association's Model Code for the Protection of Personal Information as they apply to the web-entry tool. The primary driver for this PIA is compliance with CIHI's [Privacy Impact Assessment Policy](#).

## 2 Background

The volume of emergency and ambulatory care activity is significant and has become one of the largest-volume patient activities in Canadian health care. As care shifts from inpatient to ambulatory care and from hospital clinics to community clinics, there is a need to collect key relevant clinical, quality and resource utilization information at the patient level. Leveraging successes with emergency department data, CIHI introduced the web-entry tool as a new method of collecting and reporting basic but essential clinic data in a timely and flexible manner.

CIHI recognized the need to provide an alternative means of data submission to smaller data providers (facilities, mostly ambulatory care clinics) that do not have adequate resources and/or infrastructure to submit NACRS data via CIHI's electronic Data Submission Services (eDSS) using the traditional eFile format. As result, in 2015, CIHI developed and implemented a web-entry tool that would allow data providers to submit NACRS Clinic Lite records that contain fewer mandatory data fields than those currently being submitted to NACRS. The NACRS Clinic Lite option, Level 0, is used by data providers to submit basic but essential

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i. The CAD comprise 2 separate databases: the Discharge Abstract Database–Hospital Morbidity Database and the National Ambulatory Care Reporting System. The web-entry tool and NACRS Clinic Lite data will be managed under the latter. The [CAD PIA](#) is available on CIHI's website.

ii. NACRS offers 4 options (levels 0 to 3) for submitting emergency department records. Level 0 is reserved for NACRS Clinic Lite.

clinic data. NACRS Clinic Lite uses Special Project fields to collect supplemental information that is not routinely collected in NACRS. The use of Special Project fields to collect Clinic Lite data opens the door for any data provider or group of providers, who may not have submitted data to CIHI in the past, to provide CIHI with data that complies with its standards.

The major differences between the data submitted to NACRS and the data submitted as NACRS Clinic Lite are as follows:

- There are fewer mandatory data elements; and
- Clinic Lite data providers can select the optional data they want to collect and submit to meet the information needs of a particular clinic type (e.g., rehabilitation, cataract, gastrointestinal).

The NACRS Clinic Lite Web-Entry Tool is a secure web-based tool that allows users to enter, save, edit/update/delete, access and retrieve saved or submitted records. The tool includes

- Customizable data capture functionality;
- Basic data edits and validations (e.g., entry of mandatory data, data types, permissible values, data lengths), which are displayed for users and enforced prior to data transmission;
- The ability for users to create and trigger submission files for processing; and
- An embedded in-application user guide and help modules.

2 projects were identified to submit data via the web-entry tool: the Canadian Association of Paediatric Health Centres (CAPHC) Paediatric Rehabilitation Project, also known as the Paediatric Rehabilitation Reporting System (PRRS), and the Ontario Outpatient Rehabilitation Project. Additional projects are expected to begin as interest in submitting data at the NACRS Clinic Lite level grows.

The new data collection resulting from the projects and any additional NACRS Clinic Lite data is subject to Section 1 of CIHI's Privacy Policy and related procedures. CIHI's Executive Committee must approve data collection prior to initiation.

### 3 Data submission, storage, processing and access

As reported in the CAD PIA, NACRS captures clinical, administrative and demographic information from facility-based and community-based emergency and ambulatory care (emergency departments, day surgery and outpatient clinics, such as those for diagnostic imaging, cardiac catheterization, renal dialysis and oncology) for patients staying in a hospital or other health care facility for less than 24 hours. Hospitals are required to collect the following information to reflect the normal course of patient care and administration for individual patients resulting from an ambulatory care visit: patient demographic, diagnostic, intervention and administrative information.

The web-entry tool allows for the collection of a customizable subset of data with fewer mandatory data elements that is consistent with the type of data submitted to NACRS. Similar to the CAD, data elements collected in Clinic Lite could be used alone or in combination with other information to identify an individual. These elements include the original Health Care Number, full Postal Code, Date of Birth and Gender (see the appendix for a detailed list of mandatory and optional data elements).

Similar to the CAD, patient names are not collected in the Clinic Lite data. Since 2009, data sets used for analysis purposes do not contain direct identifiers such as unencrypted (original) health care numbers. Health care numbers in an unencrypted (original) form are available to CIHI staff on an exceptional, need-to-know basis only, subject to internal approval processes, as set out in CIHI's Privacy Policy and related procedures.

As well, data providers can use Special Project fields to submit supplemental health information for their own purposes. The Special Project fields enable the capture of data in the form of alpha and/or numeric values that are meaningful only to the data provider (e.g., the data collected in Special Project fields from organizations participating in the PRRS project will be meaningful only to them). Prior to the use of Special Project fields, data providers are required to submit to CIHI for review and approval the codes and values that they intend to submit. The abstracting manuals available to users inform data providers to not use Special Project fields to record personal identifiable or confidential information (e.g., health care [card] numbers, chart numbers, provider numbers).

Semi-annually, the CAD audits Special Project fields to determine whether health care numbers have been submitted in non-health care number fields.

Below is a list of common data elements that may be collected via the web-entry tool that are particularly sensitive.

## Facility and assigned identifiers

- Reporting Facility's Ambulatory Care Number
- Register Number
- Chart Number

## Emergency services assigned identifier

- Ambulance Call Number

## Patient identifiers and attributes, geographic identifiers

- Health Care Number
- Date of Birth
- Gender
- Postal Code
- Living Arrangement
- Residence Type
- Highest Level of Education

## Clinical attributes of the patient

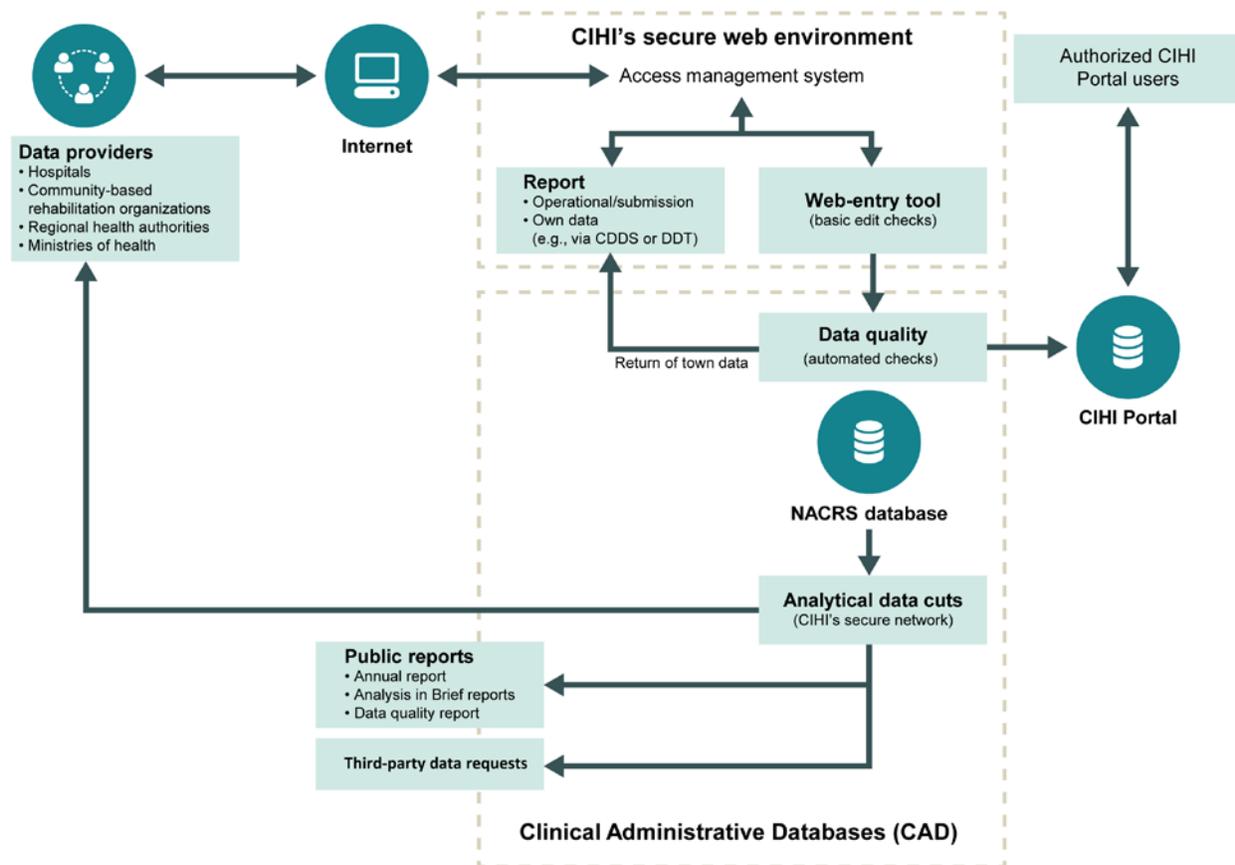
- Diagnoses (International Statistical Classification of Diseases and Related Health Problems, 10th Revision, Canada [ICD-10-CA])
- Interventions (Canadian Classification of Health Interventions [CCI])
- Blood Information
- Reproductive Care (therapeutic abortions)

[Details on the NACRS Clinic Lite data elements](#) are available on CIHI's website.

The web-entry tool allows users to enter, save and access data; retrieve records that have been partially completed, completed, and submitted and processed; edit/update data; and delete data. The tool performs basic edit checks in real time. Once the 16 mandatory data elements have been entered via the web-entry tool and the records have passed the basic validation checks, users can submit files to the NACRS Clinic Lite database. Following this, the data will

be integrated into the NACRS database for storage, where it will undergo comprehensive secondary data quality processing activities (e.g., edit checking and validation<sup>iii</sup>) and the removal of personal identifiers such as health card numbers before being released into the analytical environment, where it is made available to authorized staff (see Figure1).

**Figure 1** Overview of the data flow for Clinic Lite data collected via the web-entry tool



**Notes**

CDDS: Common Document Dissemination Service.  
 DDT: Data Dissemination Tool.

iii. Data is validated against standards that are set out in documents prepared and maintained by the CAD team, such as coding standards, data content specifications and data dictionaries. Examples of validation processing activities include checking for duplicate records, missing data, etc.

## 4 Access to the web-entry tool

Access to CIHI's secure applications is subject to CIHI's role-based access management process, which is managed by CIHI's Central Client Services (CCS). CCS manages access to CIHI's secure applications using established access management system (AMS) processes for granting and revoking access. Once authenticated, users can log in to CIHI's secure website to submit data through eDSS or the web-entry tool.

The AMS Listener is an optional notification feature developed to further reduce the risk of unauthorized access to CIHI's restricted services. Manual audits are triggered when access is being granted to a new user. This is achieved by having program area staff monitor the alerting mechanism within the AMS application. If staff suspect or identify that an incorrect type of access was granted, they immediately alert CCS to disable access and send an email to [incident@cihi.ca](mailto:incident@cihi.ca) in compliance with CIHI's [Privacy and Security Incident Management Protocol](#).

Currently, data in NACRS is updated by having users submit an update record. However, in the case of the Clinic Lite data submitted via the web-entry tool, users can access, view and edit the data (including health care numbers) in any record that has been submitted by them or someone else at their facility (see Table 1).

**Table 1** Privileges available to data providers\* during processing stages for records

Processing stage	Enter and save	Edit/update	Delete
<b>Pre-submission and basic data quality processing</b> Access to partially completed and completed records that have been saved but not submitted	Available	Available	Available
<b>Submission to NACRS Clinic Lite production database</b> Access to submitted records following comprehensive data quality processing Access to operation (submission) reports for the purpose of correcting errors	Available	Available	Available
<b>Integration into NACRS production database</b> Access to records released to the NACRS production database, where records are made available to CIHI staff for analysis and reporting	Not available	Not available	Not available

**Note**

\* Authorized users from the submitting facility.

Access to Clinic Lite data by CIHI program area staff is subject to internal approval processes, as set out in CIHI's Privacy Policy and related procedures. Only staff with a need to know are authorized to view records.

## 5 Safeguards

The design and architecture of the NACRS Clinic Lite Web-Entry Tool is based on the design of the web-based data entry tool used by CIHI's Canadian Organ Replacement Register. Its design and development conforms with CIHI's privacy and security best practices. The tool was developed in recognition that smaller data providers may not have adequate resources and/or infrastructure to submit larger and more comprehensive data to NACRS via eDSS.

A vulnerability assessment on the NACRS Clinic Lite Web-Entry Tool was performed by external third-party ethical hackers (consultants) in August 2015. The assessment comprised a manual review of key areas of the application code to identify potential vulnerabilities, followed by a penetration test of the application using specialized hacking tools to simulate an attack, paying particular attention to areas identified in the manual code review. The results of the audit were very favorable, with only 4 vulnerabilities and 4 associated recommendations identified. These were all addressed prior to the completion of the consultants' final report.

## 6 Conclusion

No privacy risks are identified.

# Appendix: NACRS Clinic Lite data elements

## Mandatory data elements

- Reporting Facility's Province/Territory
- Reporting Facility's Ambulatory Care Number
- Submission Fiscal Year
- Submission Period
- Abstract Identification Number
- Chart Number
- Submission Level Code
- Health Care Number
- Province/Territory Issuing Health Care Number
- Postal Code
- Gender
- Birth Date
- Mode of Visit/Contact
- Registration/Visit Date
- Visit Disposition
- Visit MIS Functional Centre Account Code

## Optional data elements

- Coder Number
- Ambulatory Registration Number
- Ambulatory Registration/Encounter Sequence Number
- Complete Record
- Responsibility for Payment
- Residence Code (Geographic Code)
- Birth Date Is Estimated
- Living Arrangement

- Residence Type
- Highest Level of Education
- Access to Primary Health Care Code
- Admit via Ambulance
- Ambulance Call Number
- Ambulance Arrival Date and Time
- Ambulance Transfer of Care Process Date and Time
- Ambulatory Visit Status
- Registration/Visit Time
- Referral Source Prior to Ambulatory Care Visit
- Institution From
- Referral Date
- Provider Type
- Provider Service
- Provider Number
- Program Area
- Main and Other Problem Prefix
- Main Problem (ICD-10-CA or Diagnostic Code)
- Other Problem(s) (ICD-10-CA or Diagnostic Codes)
- Main and Other Problem Cluster
- Consult Request Date and Time
- Consult Request Service
- Consult Arrival Date and Time
- Intervention Data (CCI Codes)
- Referred to After Completion of Ambulatory Care Visit
- Institution To
- Disposition Date/Time
- MIS Functional Centre Account Code
- Blood Information
- Customizable Special Project fields, as defined by data providers



**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

15306-0517

