



# Medical Radiation Technologist Database (MRTDB)

P r i v a c y   I m p a c t   A s s e s s m e n t



Canadian Institute  
for Health Information

Institut canadien  
d'information sur la santé

The contents of this publication may be reproduced in whole or in part, provided the intended use is for non-commercial purposes and full acknowledgement is given to the Canadian Institute for Health Information.

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)

© 2007 Canadian Institute for Health Information

Cette publication est aussi disponible en français sous le titre *Base de données sur les technologues en radiation médicale (BDTRM) — Évaluation des incidences sur la vie privée*.

# **Medical Radiation Technologist Database (MRTDB) Privacy Impact Assessment**

## **Table of Contents**

Medical Radiation Technologist Database (MRTDB)—Privacy Impact Assessment.....	iii
1. Introduction and Overview .....	1
1.1 The Canadian Institute for Health Information .....	1
1.2 Overview of the Medical Radiation Technologist Database .....	1
2. Description .....	2
2.1 Need for the MRTDB .....	2
2.2 General Goals and Purposes .....	2
2.3 Intended Scope of the MRTDB.....	3
3. Data Collection for the MRTDB.....	4
3.1 Statutory Authorities for the Collection, Use and Disclosure of Information for the MRTDB .....	4
3.2 Limits on Data Collection for the MRTDB .....	5
3.3 Data Accuracy for the MRTDB.....	6
3.4 Sources of Data for the MRTDB.....	6
3.6 Data Retention/Destruction for the MRTDB .....	8
3.7 Consent Issues in the MRTDB .....	9
4. Uses and Disclosures of Information.....	10
4.1 Uses of Information.....	10
4.2 Disclosures of Information.....	10
4.3 Access Rights for Individuals to Their Personal Information .....	11
5. Privacy Concerns and Security Measures for the MRTDB .....	12
5.1 Record Linkages for the MRTDB .....	12
5.2 Disclosure Avoidance Practices for the MRTDB.....	12
5.3 Security Safeguards .....	13
6. Conclusions: A Privacy Report Card for the MRTDB .....	15
Sources of Information for This PIA .....	17
Appendix A—Potential Data Provider Organizations.....	18
Appendix B—Public Sector Privacy Legislation.....	19
Appendix C—Medical Radiation Technologist Database Data Elements, Values and Rationale.....	21
Appendix D—Information Flow in the MRTDB.....	39



# **Medical Radiation Technologist Database (MRTDB) Privacy Impact Assessment**

**Prepared by:**

- Suzanne McAllister, Program Lead, Health Human Resources, CIHI
- Rahme Youssef, Analyst, Health Human Resources, CIHI
- Tobi Laine Henderson, Senior Analyst, Health Human Resources, CIHI
- Brent Barber, Program Consultant, Privacy Secretariat, CIHI
- Deborah Cohen, Manager, Health Human Resources, CIHI
- Francine Anne Roy, Director, Health Human Resources, CIHI
- Mimi Lepage, Chief Privacy Officer and General Counsel, CIHI
- David H. Flaherty, Ph.D., Chief Privacy Advisor, CIHI, David H. Flaherty Inc.,  
Privacy and Information Policy Consultants, Victoria, British Columbia



# 1. Introduction and Overview

## 1.1 The Canadian Institute for Health Information

The Canadian Institute for Health Information (CIHI) collects and analyzes information on health and health care in Canada and makes it publicly available. Canada's federal, provincial and territorial governments created CIHI as a not-for-profit, independent organization dedicated to forging a common approach to Canadian health information. CIHI's goal: to provide timely, accurate and comparable information. CIHI's data and reports inform health policies, support the effective delivery of health services and raise awareness among Canadians of the factors that contribute to good health.

Respecting personal privacy, safeguarding the confidentiality of individual records and ensuring system security are critical to successfully meeting its mandate. CIHI has in place a Privacy Secretariat headed by a Chief Privacy Officer who has delegated authority from the President and Chief Executive Officer (CEO) to manage the privacy program. A cornerstone of this program is a set of established principles, policies and procedures for the protection of health information (which continue to undergo revision and enhancement in a rapidly changing field).<sup>i</sup> As part of this initiative, CIHI is committed to conducting a privacy impact assessment (PIA) on each of its data holdings. A PIA assesses the possible privacy-related risks associated with some of CIHI's core activities.

## 1.2 Overview of the Medical Radiation Technologist Database

To address the existing data gaps and improve the information base on medical radiation technologists, CIHI is undertaking the development of a new national, supply-based database and reporting system for medical radiation technologists. The Medical Radiation Technologist Database (MRTDB) aims to provide standardized comparative data and reports on demographic, geographic, education and employment information for medical radiation technologists in Canada.

At the time this document was written, CIHI was in the process of determining the specific data providers for the MRTDB. For the purposes of this document data provider means an organization that will disclose data to CIHI. For the initial year of collection (2008), it is anticipated that data for each province/territory will be supplied by one of the following data providers: a provincial regulatory body for medical radiation technologists, a provincial professional association for medical radiation technologists or the Canadian Association of Medical Radiation Technologists (CAMRT). The list of potential data providers under review are identified in Appendix A.

---

i. Canadian Institute for Health Information, *Privacy and Confidentiality of Health Information at CIHI: Principles and Policies for the Protection of Health Information and Policies for Institution-Identifiable Information* (third edition), (Ottawa: CIHI, 2002), [online], from <[www.cihi.ca](http://www.cihi.ca)>.

## **2. Description**

### **2.1 Need for the MRTDB**

Policy reports and research papers have consistently identified that there is very little standardized national data on health professionals in Canada, except for physicians and the regulated nursing professions. Based on consultation with federal, provincial and territorial ministries of health and other stakeholders, human resources data about medical radiation technologists was identified as a priority focus for such data development.

The MRTDB is being created in response to a need for standardized administrative health human resources data that permits comparisons across the country. Currently, federal, provincial and territorial managers and other key stakeholders do not have access to national, standardized, timely and accurate information on the supply and distribution of medical radiation technologists in Canada.

The MRTDB supply-based data will allow for clear and objective analyses that will support informed decision-making and policy formulation by key stakeholders.

### **2.2 General Goals and Purposes**

The purposes of the MRTDB are to:

- facilitate the collection, processing, analyzing and reporting of accurate and timely information on the supply and distribution of medical radiation technologists in Canada;
- provide comparable provincial/territorial demographic, geographic, education and employment data on medical radiation technologists in Canada;
- support policy-making and related approved longitudinal, retrospective and concurrent analyses and research projects on medical radiation technologists; and
- enable more informed decision-making and policy formulation by governments, health professionals, researchers and advocacy groups that respond to issues related to health services and health care delivery.



## **2.3 Intended Scope of the MRTDB**

The MRTDB will annually collect demographic, geographic, education and employment information on medical radiation technologists registered with each data provider. Data collection by CIHI will occur prior to the date (point-in-time data collection) identified in the Schedule of Collection in the Medical Radiation Technologist Data Letter of Agreement. The MRTDB will include data from all medical radiation technologists who are registered in a province/territory, prior to the point-in-time data collection date. The data collected and maintained within the MRTDB will be record-level data, that is, each record in the MRTDB will refer to the information provided on one medical radiation technologist. The MRTDB will not collect information that directly identifies any medical radiation technologist, such as name, home and work address (number, street name and city) and contact information (for example, telephone number).

Data on medical radiation technologists meeting CIHI's criteria of active and inactive will be captured in the MRTDB. CIHI's definition of active includes medical radiation technologists registered with a data provider and eligible to practice (based on the type of registration or licence held). CIHI's definition of inactive includes medical radiation technologists who are registered with a data provider but ineligible to practice (based on the type of registration or licence held).

At this time, there are no plans to expand the database, although CIHI will hold annual meetings to review the data elements to ensure that the database accurately reflects the changing environment of Canada's health care system and the needs of managing medical radiation technologist human resources. The data elements and values may be reviewed and amended by mutual agreement between CIHI and the data providers. Any such amendments shall be in accordance with applicable privacy legislation and will be reflected in updating this Privacy Impact Assessment on the CIHI website.

## 3. Data Collection for the MRTDB

### 3.1 Statutory Authorities for the Collection, Use and Disclosure of Information for the MRTDB

The federal, provincial and territorial governments specifically created CIHI to be a central repository for administrative health data, to streamline the health information system in Canada and to provide timely information for the purposes of analysis, management and planning of the health care system, as well as to increase the public's awareness of the factors affecting health.

CIHI will collect data for the MRTDB under terms mutually agreed-upon amongst CIHI and each data provider, and as set out in the Medical Radiation Technologist Data Letter of Agreement. Individual data providers have the option to include companion agreements with CIHI outlining further requirements in compliance with governing legislation. The data will be collected, used and disclosed in accordance with these terms and CIHI's *Privacy and Confidentiality of Health Information at CIHI: Principles and Policies for the Protection of Health Information*<sup>ii</sup> ("CIHI's privacy and confidentiality policies"). In Ontario, CIHI is a prescribed entity under the *Ontario Personal Health Information Protection Act*. CIHI's status as a prescribed entity carries with it the strict responsibility to have in place practices and procedures to protect the privacy of individuals whose personal health information it receives and to maintain the confidentiality of that information. The Act requires the Information and Privacy Commissioner/Ontario to review CIHI's data protection policies, procedures and practices every three years.

Each data provider will disclose record-level medical radiation technologist data to CIHI in compliance with the Medical Radiation Technologist Data Letter of Agreement, taking into account availability of data, applicable laws, regulations and policies.

All provinces and territories have public sector privacy legislation in place, and Alberta, Saskatchewan, Manitoba and Ontario also have specific health information privacy legislation. The privacy acts generally include provisions that authorize bodies covered by the acts to disclose person-identifiable data required for the purposes of research and statistical analyses. Specific health information acts also include provisions that permit the use and disclosure of personal information for the purposes of analysis and management of the health system. Appendix B provides a listing of the applicable federal, provincial and territorial privacy legislation.

Provincial regulatory bodies for medical radiation technologists, in provinces where this regulatory role has been enacted, have authority to collect, use, and disclose personal information for registries. The regulatory role typically derives from jurisdiction-specific health profession acts and may include provisions that define the use and disclosure of personal information collected on health professionals.

---

ii. The document was developed in consultation with the ministries of health and approved by the CIHI Board of Directors in 2002. CIHI's privacy policies are based on the 10 privacy principles of the Canadian Standards Association *Model Code for the Protection of Personal Information* and also found in Schedule 1 of the federal *Personal Information Protection and Electronic Documents Act*.

Provincial and national (that is the CAMRT) professional associations for medical radiation technologists are not regulatory bodies, but rather, voluntary membership organizations. These organizations collect information for the purposes of assessing eligibility for membership, and in some cases for other reasons such as profession-specific research. These organizations do not have legislated authority for the collection, use and disclosure of personal information submitted by their membership, and instead follow internal privacy policies. CIHI requires data providers to confirm that any disclosure of information to CIHI will be in compliance with all applicable legislation.

## 3.2 Limits on Data Collection for the MRTDB

CIHI will be limiting its data collection to data elements identified as essential to satisfy the purposes of the data holding.

The focus of MRTDB data collection—demographic, geographic, education and employment information—is a subset of priority information needs for health human resources management, identified and validated through a national consultation process completed in 2005.<sup>iii</sup> Based on this foundation, the data elements included in the MRTDB Minimum Data Set were further refined through extensive consultation with representatives from provincial medical radiation technologist regulatory bodies, provincial medical radiation technologist professional associations and the CAMRT.

The data elements and values to be collected in 2008 and for the duration of the Medical Radiation Technologist Data Letter of Agreement are set out in Appendix C. A rationale for the collection of each data element is included.

A review and update of the data elements collected will be completed yearly with the data providers to ensure that the purposes of the MRTDB continue to be met with the data elements collected.

Name, home or work address (number, street name and city) and contact information (for example, telephone number) will not be collected in the MRTDB, because they are not required for the purposes of the database.

---

iii. Canadian Institute for Health Information, *Guidance Document for the Development of Data Sets to Support Health Human Resources Management in Canada* (Ottawa: CIHI, 2005), [online], from <[www.cihi.ca](http://www.cihi.ca)>.

### 3.3 Data Accuracy for the MRTDB

To ensure data quality, data received by CIHI for inclusion in the MRTDB will undergo two stages of processing before inclusion in the national database to ensure data quality.

In the first stage, the staff of the MRTDB will conduct edit, validation and logic checks on the data transmitted from the data providers to ensure that the files are in the proper format and to identify missing and/or invalid data and inconsistencies in data transmissions. Feedback reports will be forwarded to the specific data provider to support the continuous improvement of data quality, or enhancements to the data quality cycle. The data providers are expected to correct the source data and to re-submit the entire file again. In certain instances when resubmission is not possible, and a data provider has confirmed agreement to make changes, CIHI may correct the data manually.

The second-stage review by CIHI identifies duplicate records. To accurately count the number of medical radiation technologists working in Canada, procedures are used to avoid double counting of medical radiation technologists registered in two or more jurisdictions.

Both stages of processing are critical practices for data quality and data protection because they will ensure accurate information in the database. Upon completion of each stage of processing, CIHI requires each data provider to provide signed authorization verifying the quality of data submitted to CIHI.

Maintaining and enhancing the quality of incoming data is essential to CIHI's mandate to produce high-quality health information. CIHI's corporate data quality program ensures the continued regular improvement of the quality of CIHI's databases and registries to meet changing and expanding user requirements and expectations. A cornerstone of CIHI's data quality program is the Data Quality Framework, which is a CIHI-developed tool designed to provide a common, objective approach to assessing and documenting the data quality of its various data holdings along five general dimensions of quality: accuracy, comparability, timeliness, usability and relevance. CIHI's Data Quality Framework will be applied to the MRTDB.

Further information on CIHI's data quality program and CIHI's Data Quality Framework can be found on CIHI's website, at [www.cihi.ca](http://www.cihi.ca).

### 3.4 Sources of Data for the MRTDB

Across Canada, medical radiation technologists submit information in order to be licensed by regulatory bodies and/or to obtain membership with provincial or national professional organizations. Where the requirement to license is enacted in provincial/territorial legislation, medical radiation technologists must register and be licensed with their respective regulatory body. In regulated and unregulated provinces, medical radiation technologists may also register with their provincial professional association and/or the CAMRT on a voluntary basis, or as a result of an employer-mandated condition of employment. At the current time, there are no professional organizations or regulatory bodies available as data providers for medical radiation technologists in any of the Territories.

As noted in Section 1.2, CIHI is in the process of identifying the specific organizations that will supply data to the MRTDB. For the initial year of collection (2008), it is anticipated that data for each province/territory will be supplied by one of the following data providers:

a provincial regulatory body for medical radiation technologists, a provincial professional association for medical radiation technologists or the Canadian Association of Medical Radiation Technologists (CAMRT).

### 3.5 Personal Information Collected for the MRTDB

Data providers that enter into agreement with CIHI (Medical Radiation Technologist Data Letter of Agreement) will make every reasonable effort to submit to CIHI all or some of the pre-established data elements set out in Appendix C, in compliance with the applicable laws, regulations and policies of each jurisdiction.

The MRTDB will not collect information that directly identifies any medical radiation technologist, such as name, home or work address (number, street name and city) and contact information (for example, telephone number).

The MRTDB will collect data elements that could, in combination with other information, lead to the identification of an individual in exceptional circumstances but these are unlikely to arise. These elements include provincial unique identification/registration number, gender, year of birth, and postal code of employment. However, because data such as name and address are not collected CIHI does not have access to information that would permit, for example, the association of a provincial unique identification/registration number with the name or contact information for a particular medical radiation technologist.

Following is a description of selected data elements from the MRTDB that have historically been considered to be more sensitive, and the rationale for their collection:

#### **Provincial/Territorial Unique Identification/Registration Number**

- This number, assigned by each data provider, uniquely identifies a medical radiation technologist within the information system maintained by each data provider.
- This number is needed to uniquely identify a professional within the information system maintained by each data provider, and to follow changes specific to that professional over time.
- The collection of this data element enables longitudinal, retrospective and concurrent analyses and studies of supply and distribution trends.
- Data providers may choose to submit pseudonymized identification numbers<sup>iv</sup> instead of the provincial/territorial registration numbers to CIHI.

#### **Gender**

This data element is required to determine trends for employment, recruitment and career patterns for health human resource planning (for example, proportion of the workforce that is female).

---

<sup>iv</sup> Pseudonymized means that a provincial registration number has been removed and a manufactured number assigned in a consistent manner that allows for the determination that several records (for example, records appearing in different data years) relate to the same individual.

### **Year of Birth**

This data element is required to determine trends and to establish patterns for health human resource planning (for example, distribution of workforce by five-year age group). Only the year of birth will be collected. Day and month of birth will not be collected to further protect the confidentiality of the registrant and to reduce the possibility of re-identification. Collecting year of birth provides maximum flexibility in responding to information needs associated with the age related characteristics of the workforce (for example, the need to determine the average age of the workforce or age-related retirement projections).

### **Postal Code of Employment**

- CIHI will collect the six-character postal code of employment in order to assign and aggregate medical radiation technologists to geographical areas that are relevant for health planning and research. CIHI will use postal code information only to assign a medical radiation technologist to a particular geographic area for subsequent aggregation (grouping). The six-character postal code of employment is required to support analyses such as the sub-provincial/territorial analysis of geographical mobility and/or distribution of the medical radiation technologist workforce, or examinations of the regional variations of other common variables, such as educational attainment, type of practice and employment status.
- The full six-character postal code is required to accurately assign individual medical radiation technologists to geographic areas. Without the level of detail and precision provided by the six-character postal code, it is not possible to accurately define some geographical boundaries (such as community or a non-political region like southwestern Ontario), thus limiting analysis and the utility of the data. By collecting all six characters of the postal code, CIHI is able to aggregate individual medical radiation technologists into larger groupings (such as health region) for analysis and reporting. The full postal code provides maximum flexibility in responding to information needs; particularly as the boundaries of health care delivery areas (for example, health regions) and many of Statistics Canada's reporting units (for example, census subdivisions) change over time. Six-character postal codes permit trending analysis for changed boundaries.
- It is not possible to accurately assign medical radiation technologists into rural and urban areas without the six-digit postal code. At present, there is no formal standard for the geographical concepts of urban and rural, and the collection of full six-character postal codes permits analysis by different definitions of these geographical constructs. Without six-character postal code data, comprehensive information on demographic and practice patterns of medical radiation technologists might be available for urban professionals, but not for their rural counterparts.

## **3.6 Data Retention/Destruction for the MRTDB**

Consistent with CIHI's mandate and purposes for data collection, CIHI will maintain the MRTDB data for as long as necessary to facilitate longitudinal, retrospective and concurrent statistical reporting and analysis of trends in this profession. This may result in indefinite retention of the data by CIHI. Data no longer required for the purposes of the MRTDB will be securely archived or destroyed under conditions defined by CIHI's best practices.

### **3.7 Consent Issues in the MRTDB**

CIHI is a secondary data collector for medical radiation technologist data. CIHI fully supports the privacy principles regarding notification and consent from the registrants at the point of primary collection. Each data provider that discloses medical radiation technologist data to CIHI will have established that it has the proper legal authority to disclose such data, including consent if required by legislation, and, if specifically required by legislation, will retain this consent information for the term of the Medical Radiation Technologist Data Letter of Agreement with CIHI.

As a further step, CIHI supports data provider efforts to make medical radiation technologists aware that data are being disclosed to CIHI under controlled and managed conditions for stated purposes, and furthermore that CIHI has strict privacy policies that govern release of any information about registrants.

## 4. Uses and Disclosures of Information

### 4.1 Uses of Information

The MRTDB will be used for statistical reporting and research purposes, including, but not limited to, pan-Canadian reports, analytical tools, an annual report, ad hoc data/information requests, and analytical studies pertaining to the supply and distribution of the workforce of medical radiation technologists in Canada. Some typical studies that might be conducted include labour market studies and examination of the education and employment characteristics of the medical radiation technologist workforce within a broad overview of the health human resources planning.

The annual statistical report on medical radiation technologists will be released yearly, starting in 2009.

The primary users of the MRTDB are expected to be the provincial regulatory bodies, provincial professional associations, the CAMRT, researchers, other stakeholders and advocacy groups associated with the profession of medical radiation technology, all levels of government (including federal and provincial/territorial departments of health and education and their committees), private and public organizations, and the media.

### 4.2 Disclosures of Information

All disclosures of information from the MRTDB will be in compliance with CIHI's privacy and confidentiality policies<sup>v</sup> and the agreements with the data providers. CIHI's general approach is to suppress, truncate and aggregate information to a level that both allows the researchers to perform analyses and enables CIHI to protect the privacy of individuals. The MRTDB will not disclose identifiable record-level medical radiation technologist data except:

- when the law requires disclosure;
- when a data provider has consented; or
- when a data provider has requested its own data.

See CIHI's privacy and confidentiality policies 5.12 and 5.13 for further details.

The MRTDB will not collect information that directly identifies any medical radiation technologist, such as name, home or work address (number, street name and city) and contact information (for example, telephone number). Therefore de-identification of record-level data from the MRTDB will involve further modification of sensitive data elements to protect against residual disclosure. For example, record-level data from the MRTDB would be further de-identified by removal or encryption of the provincial/territorial unique identification/registration number; truncation of postal code or conversion of postal code to a less specific area of geography; and then reviewing the remaining data elements prior to disclosure, so that the identity of any individual cannot be determined by a reasonably foreseeable method.

---

v. Canadian Institute for Health Information, Privacy and Confidentiality of Health Information at CIHI: Principles and Policies for the Protection of Health Information and Policies for Institution-Identifiable Information (third edition), (Ottawa: CIHI, 2002), from <[www.cihi.ca](http://www.cihi.ca)>.



CIHI will provide the public with aggregate analyses based on MRTDB data. This information will always be in the form of non-identifiable data (aggregate or de-identified record-level data). All data releases and reports will be subject to CIHI's standard practices for avoiding residual disclosure.

Disclosures in response to media requests always involve aggregate, non-identifiable data and are managed through CIHI's Communications branch in collaboration with the program area and Privacy Secretariat.

#### **4.2.1 External (Third-Party) Data Requests**

CIHI anticipates receiving ad hoc third-party requests, primarily from researchers, for data and special analyses.

CIHI data disclosures will be made at the highest degree of anonymity possible to meet the needs of the request, irrespective of whether the data request involves aggregate non-identifiable data or record-level data. Whenever possible, data are aggregated, and where aggregate data are not sufficiently detailed for the purpose, identifiers are removed or encoded, and sensitive data elements are made less identifiable (for example, provincial data may be reported instead of information for each regional health authority within the province).

External requests for data for research purposes must be made using one of CIHI's client information request forms, available on the CIHI website.<sup>vi</sup> Part of the form requires information on the proposed analysis, the individuals involved, and the data being requested. The form also incorporates a *Non-Disclosure/Confidentiality* Agreement which must be signed by third-party requestors. The Agreement details the limits for the use of the data and binds the data requestor to properly protect the information, to respect the sensitivity and confidentiality of the data, and not to attempt to re-identify individuals in the data set.

#### **4.2.2 Disclosure to Data Providers**

Data providers are given access to their own data, as well as value-added elements that CIHI has derived or compiled using their data. For example, data providers will have access to aggregations of their data into standard geographic areas, based on the postal code of employment supplied to CIHI. Data providers will also receive a summary of CIHI's and others' uses of their data.

### **4.3 Access Rights for Individuals to Their Personal Information**

The data providers will submit record-level data to CIHI. The data will include provincial/territorial unique identification/registration numbers. Because CIHI will not collect an individual's name, home or work address or other contact information it will not have access to the key that associates or links the provincial/territorial unique identification/registration number with a specific person. CIHI will have limited information with which to authenticate an individual. Following CIHI's established privacy policies and procedures, a medical radiation technologist requesting access to his or her information will be referred to the source data provider.

---

vi. The *client information request form for aggregate and record-level data* are from <[www.cihi.ca](http://www.cihi.ca)>.

## 5. Privacy Concerns and Security Measures for the MRTDB

### 5.1 Record Linkages for the MRTDB

At CIHI, record linkage may be conducted to process data, develop indicators and conduct analyses. CIHI only undertakes data linkage (the bringing together of two or more records of personal health information to form a composite record) with other data holdings when the conditions identified in CIHI's privacy and confidentiality policy 5.7<sup>vii</sup> are met. Under the policy, CIHI's Privacy, Confidentiality and Security Team (PC&S Team) approves requests for data linkages. With respect to the MRTDB, CIHI will also seek the approval of the specific MRTDB data providers. Linked data will be used for analytical purposes only and will not be used to make decisions that affect an individual health professional.

### 5.2 Disclosure Avoidance Practices for the MRTDB

To safeguard the privacy and confidentiality of data received by CIHI, all disclosures of information from the MRTDB will be in compliance with CIHI's privacy and confidentiality policies.<sup>vii</sup> These policies govern the release of any MRTDB data, including, but not limited to, reports and publications, ad hoc queries and external data requests, and special analytical studies. CIHI will adopt encryption, aggregation and/or cell suppression methodologies reflective of CIHI best practices designed to eliminate residual disclosure through so-called "small cells" (for example, counts from 1 to 4 inclusive), in compliance with CIHI's privacy and confidentiality policies.<sup>vii</sup>

Release of data in reports and publications will be subject to CIHI's standard practices for avoiding residual disclosure. Reports will be reviewed for such risks and, where necessary, action will be taken to avoid residual disclosure (for example, data will be aggregated to a higher level).

The MRTDB will receive ad hoc requests for data and special analyses. All requests will be subject to CIHI's data request policies and procedures, including a multi-stage review process. Researchers will be required to complete formal requests for data using CIHI's standardized aggregate or record-level external information request forms, and to sign non-disclosure/confidentiality agreements, wherein they agree not to attempt to re-identify the data, not to link data with other data sources, and to avoid residual disclosure of individuals or institutions. Requests that are complex will be forwarded for review and advice to the Privacy Secretariat and the CIHI PC&S Team. Particularly sensitive requests may be taken to CIHI's Chief Privacy Advisor (external) for review and may require the approval of the President and CEO.

A complete description of CIHI's policies and procedures related to privacy and confidentiality is available in *Privacy and Confidentiality of Health Information at CIHI: Principles and Policies for the Protection of Personal Health Information and Policies for Institution-Identifiable Information* ([www.cihi.ca](http://www.cihi.ca)).

---

vii. Canadian Institute for Health Information, *Privacy and Confidentiality of Health Information at CIHI: Principles and Policies for the Protection of Health Information and Policies for Institution-Identifiable Information* (third edition), (Ottawa: CIHI, 2002), [online], from <[www.cihi.ca](http://www.cihi.ca)>.

## 5.3 Security Safeguards

### General Database Architecture

The MRTDB will reside at CIHI's office in Toronto, Ontario, Canada. Incoming data will be processed and validated on a central database server. Once system edit checks are completed and both CIHI and the data providers have confirmed the quality, data will be stored on a reporting and analysis database server. The MRTDB will operate on a Unix (IBM AIX) platform, and Oracle will be used as the relational database management system (RDBMS). The AIX operating system and the Oracle RDBMS have sophisticated security features that are utilized to restrict database access for processing and analysis purposes to authorized CIHI staff. The software used to support the MRTDB will also have access controls to restrict access of MRTDB to authorized staff.

Backups of the MRTDB will be created according to CIHI's standard of daily incremental backups (capturing changes made for the day) and full weekly backups. Once a month, tape backups will be sent offsite for storage with a bonded, secure data storage company in Ontario.

### Data Submission and Processing Safeguards

Data will be received directly from submitting data providers. Please see Appendix D for visual representations of the flow of data.

The data providers will be responsible for data collection, which occurs during the annual registration process. Most data providers receive the data via paper registration forms and then enter the information electronically. Following this process, they complete any manipulation of the data (in order to meet national standards) before sending the data files to CIHI. Data will normally be provided to CIHI in electronic form.

The most secure method, and the method preferred by CIHI, is the direct method of submission, which involves submitting encrypted files using CIHI's electronic Data Submission Services (eDSS). The eDSS permits online transmission of electronic files to CIHI via the Internet and facilitates the establishment of a secure encrypted session between CIHI and its data providers for the purpose of data transfer. This level of encryption is considered industry standard and is used, for example, for most Internet banking and e-commerce applications.<sup>viii</sup> The file transmission via eDSS is received on a file transfer protocol (FTP) server, residing in the external zone<sup>ix</sup> of the CIHI network, and moved immediately into the internal zone.<sup>x</sup> Although eDSS is CIHI's preferred method to receive data, for data providers without sufficient infrastructure, CIHI also allows submission of data on CD or DVD and/or sent by registered mail or bonded courier service. It is not anticipated that data will be received in paper format.

---

viii. Secure Sockets Layer (SSL) technology is today's Internet standard for secure communications and e-commerce transactions. The SSL protocol uses digital certificates to create a secure, confidential communications "pipe" between two entities. Data transmitted over an SSL connection cannot be tampered with or forged without the two parties becoming immediately aware of the tampering.

ix. Area protected by firewalls that is accessible via the Internet.

x. Area protected by additional firewalls that is not accessible via the Internet.

Individual data providers are responsible to ensure that data are submitted to CIHI safely and securely, by whatever means are selected. CIHI will continue to encourage data providers to supply data files in direct electronic format via eDSS.

Once received from data providers, MRTDB data will be validated, processed and analyzed within CIHI's secure protected servers.

### **External Users**

External access to the MRTDB will not be permitted.

### **Access Procedures for CIHI Employees**

CIHI offices have controlled physical access by requiring pass cards and pass codes to enter working areas. CIHI's privacy and security procedures, which include standards for user names and requirements for passwords to be changed on a regular basis, provide network and computer security.

CIHI staff members sign a confidentiality agreement as a condition of employment, and acknowledge that breaches are grounds for dismissal and possible legal action. CIHI staff members attend mandatory privacy, confidentiality and security training. CIHI does not allow confidential records to be removed from its offices.

The MRTDB held at CIHI will have sophisticated security features that are utilized to restrict access to the production database for processing and analysis purposes to a small number of authorized CIHI staff. The software developed to run the MRTDB contains appropriate access restrictions to limit access and use of the database to authorized staff. Data cannot be used for analytical or reporting purposes until they are collected and processed, and made available by authorized production and program area staff.

In order for a CIHI employee to access the MRTDB data set, the employee's manager must complete and sign a data access authorization form, which specifies:

- why access is required for the employee's job responsibilities;
- the duration for which access is required; and
- type of access required (restricted or unrestricted).

The Manager, Health Human Resources, must approve the data access authorization form before access is granted.

## 6. Conclusions: A Privacy Report Card for the MRTDB

The MRTDB will contain registration information about medical radiation technologists. While this data does not per se identify individuals, nonetheless, CIHI will treat the contents of the MRTDB as personal information.

The data will be coded, and access to them will be limited. The data will be received from data providers for the purposes of analysis and to support medical radiation technologist human resource planning. In the past, CIHI has informed its stakeholders of the security and disclosure practices regarding its databases, and it will continue to do so.

The data collection, use and disclosure activities for the MRTDB will be guided by CIHI's corporate privacy principles, policies and procedures, which are based on the 10 privacy principles set out in the Canadian Standards Association *Model Code for the Protection of Personal Information* (also found in Schedule 1 of the federal *Personal Information Protection and Electronic Documents Act*). Practices for maintaining the MRTDB in relation to the 10 privacy principles are summarized below:

- 1. Accountability:** CIHI has designated its President and CEO as accountable for ensuring compliance with CIHI's *Privacy and Confidentiality of Health Information at CIHI: Principles and Policies for the Protection of Health Information*. In addition to the terms set out in agreements and the Medical Radiation Technologist Data Letter of Agreement with the data providers, the MRTDB will be subject to these same principles and policies. CIHI has a Chief Privacy Officer (with dedicated staff), a Chief Privacy Advisor (external) and a corporate Privacy, Confidentiality and Security Team to manage privacy matters at CIHI. CIHI also has a Privacy and Data Protection Committee of its Board of Directors, which oversees an annual program of privacy auditing and other activities. The MRTDB PIA will also be posted on CIHI's publicly accessible website, at [www.cihi.ca](http://www.cihi.ca).
- 2. Identifying Purposes:** The PIA clearly identifies the intended purposes and scope of the MRTDB. The purposes of the MRTDB will also be clearly identified in CIHI's *Products and Services Catalogue* and on the CIHI website. CIHI will continue to work with data providers to support activities to bring the purposes of the data collection to the attention of the data subjects.
- 3. Consent:** CIHI has discussed the principle of knowledgeable and informed consent with the data providers. CIHI will be a secondary collector of data and will not have direct contact with the data subjects. CIHI will rely on the data collectors to meet their data collection, use and disclosure rules and responsibilities, including those related to consent and notification, as outlined in applicable laws, regulations and policies. As one of the terms of the Medical Radiation Technologist Data Letter of Agreement, data providers are required to represent and warrant that they are in compliance with all applicable legislation. CIHI's focus is on transparency of its purposes for data collection, on its data protection practices, and on ensuring only authorized uses for all data holdings. The MRTDB will collect and disclose personal information in accordance with the Medical Radiation Technologist Data Letter of Agreement.

- 4. Limiting Collection:** Data elements collected will be limited to the minimum number possible to meet the purposes of the collection. In 2008, collection will include up to 159 data elements. CIHI and the data providers determined these data elements to be necessary. The number of data elements collected may fluctuate over time, since the data elements will be reviewed annually with the data providers.
- 5. Limiting Use, Disclosure and Retention:** CIHI will use and disclose MRTDB information as permitted by the Medical Radiation Technologist Data Letter of Agreement between CIHI and the data providers. CIHI will retain data as long as it is necessary to meet the purposes of the database and to conduct longitudinal, retrospective and concurrent analyses and studies of supply and distribution trends. CIHI will review these retention practices on a regular basis. Data no longer required for the purposes of the MRTDB will be securely archived or destroyed under conditions defined by CIHI best practices.
- 6. Accuracy:** The MRTDB will be subject to the CIHI data quality program. In addition, CIHI will undertake data checks and edits when data are received and will work with data providers to correct data errors or omissions.
- 7. Safeguards:** Appropriate physical, technological, administrative and other safeguards—including staff confidentiality agreements, staff training and secure transfer of data—will seek to ensure a secure environment for information held in the MRTDB.
- 8. Openness:** CIHI provides information on its corporate privacy policies, data practices and programs and on uses of information on its corporate website. The same information is available in paper and electronic format upon request.
- 9. Individual Access:** Because the MRTDB will not contain enough information to accurately identify individuals, a medical radiation technologist requesting access to his or her information will be referred to the source data provider.
- 10. Challenging Compliance with CIHI's Privacy Policy:** The public may challenge CIHI's compliance with its privacy and confidentiality policies. CIHI's Privacy Secretariat and the Chief Privacy Officer handle all privacy complaints. If an individual does not believe that a challenge has been satisfactorily resolved, he or she may appeal to CIHI's Chief Privacy Advisor (external), who will report his findings to CIHI's President and CEO.

More information about the MRTDB is available upon request. Please direct your inquiries to:

Program Lead, Medical Radiation Technologist Database  
Health Human Resources  
Canadian Institute for Health Information  
495 Richmond Road, Suite 600  
Ottawa, Ontario  
K2A 4H6

Phone: 613-241-7860  
Fax: 613-241-8120  
Email: [mrtddb@cihi.ca](mailto:mrtddb@cihi.ca)  
Website: [www.cihi.ca](http://www.cihi.ca)

## Sources of Information for This PIA

- Canadian Institute for Health Information. *Canadian Regulated Nursing Professions Databases: Registered Nurses Database (RNDB), Licensed Practical Nurses Database (LPNDB), Registered Psychiatric Nurses Database (RPNDB), Privacy Impact Assessment*. Ottawa: CIHI, 2002.
- Canadian Institute for Health Information. *National Prescription Drug Utilization Information System (NPDUIS) Privacy Impact Assessment*. Ottawa: CIHI, 2004.
- Canadian Institute for Health Information. *Medical Radiation Technologist Database Data Dictionary, Version 1.0*. Ottawa: CIHI, 2007.
- Canadian Institute for Health Information. *Medical Radiation Technologist Database Data Submission Specifications Manual, Version 1.0*. Ottawa: CIHI, 2007.
- Canadian Institute for Health Information. *Privacy and Confidentiality of Health Information at CIHI: Principles and Policies for the Protection of Health Information and Policies for Institution-Identifiable Information*. (Third edition.) Ottawa: CIHI, 2002.
- Canadian Institute for Health Information. *Privacy Impact Assessment, Clinical Administrative Databases: Discharge Abstract Database (DAD), Hospital Morbidity Database (HMDB), National Ambulatory Care Reporting System (NACRS)*. Ottawa: CIHI, 2005.
- Canadian Institute for Health Information. *Guidance Document for the Development of Data Sets to Support Health Human Resources Management in Canada*. Ottawa: CIHI, 2005. [Online], from <[www.cihi.ca](http://www.cihi.ca)>.

## Appendix A—Potential Data Provider Organizations

Potential Data Provider Organization	Regulatory Body or Professional Association Only (Information as of November 2007)	Corresponding Provincial/Territorial Data That May Be Submitted to CIHI
Newfoundland Association of Medical Radiation Technologists	Professional Association	Newfoundland and Labrador
Prince Edward Island Association of Medical Radiation Technologists	Professional Association	Prince Edward Island
Nova Scotia Association of Medical Radiation Technologists	Professional Association	Nova Scotia
New Brunswick Association of Medical Radiation Technologists	Professional Association	New Brunswick
Ordre des technologues en radiologie du Québec	Regulatory Body	Québec
College of Medical Radiation Technologists of Ontario	Regulatory Body	Ontario
Manitoba Association of Medical Radiation Technologists	Professional Association	Manitoba
Saskatchewan Association of Medical Radiation Technologists	Professional Association	Saskatchewan
Alberta College of Medical Diagnostic & Therapeutic Technologists	Regulatory Body	Alberta
British Columbia Association of Medical Radiation Technologists	Professional Association	British Columbia
Canadian Association of Medical Radiation Technologists (CAMRT)	Professional Association	Northwest Territories, Yukon, Nunavut

### Notes:

Some data providers that are regulatory bodies may also have a role as a professional organization. At the current time, there are no professional organizations or regulatory bodies available as data providers for medical radiation technologists in any of the Territories.



## Appendix B—Public Sector Privacy Legislation

### Provincial and Territorial Privacy Acts

Province/ Territory	Act/Legislation	Reference/Link
B.C.	Freedom of Information and Protection of Privacy Act, R.S.B.C. 1996, c. 165	<a href="#">Freedom of Information and Protection of Privacy Act</a>
Alta.	Freedom of Information and Protection of Privacy Act, S.A. 1994, c. F-18.5	<a href="#">Freedom of Information and Protection of Privacy Act</a>
Sask.	Freedom of Information and Protection of Privacy Act, S.S. 1990-91, c. F-22.01	<a href="#">Freedom of Information and Protection of Privacy Act</a>
Man.	The Freedom of Information and Protection of Privacy Act, R.S.M. c.F-175	<a href="#">Freedom of Information and Protection of Privacy Act</a>
Ont.	Freedom of Information and Protection of Privacy, R.S.O.1990, c.F.31	<a href="#">Freedom of Information and Protection of Privacy Act</a>
Que.	Act respecting Access to documents held by public bodies and the Protection of personal information, R.S.Q. c.A-2.1	<a href="#">Act Respecting Access to Documents Held by Public Bodies and the Protection of Personal Information</a>
N.B.	Protection of Personal Information Act, S.N.B. 1998, c.P-19.1 ( <i>Assented to 26 February 1998—not yet proclaimed in force.</i> )	<a href="#">Protection of Personal Information Act</a>
N.S.	Freedom of Information and Protection of Privacy Act, S.N.S. 1993, c.5	<a href="#">Freedom of Information and Protection of Privacy Act</a>
P.E.I.	Bill 81, Freedom of Information and Protection of Privacy Act, 1 <sup>st</sup> Sess., 60 <sup>th</sup> General Assembly, P.E.I. 1997	<a href="#">Freedom of Information and Protection of Privacy Act</a>
N.L.	Access to Information and Protection of Privacy Act	<a href="#">Access to Information and Protection of Privacy Act</a>
Nun.	Access to Information and Protection of Privacy Act	<a href="#">Access to Information and Protection of Privacy Act</a>
N.W.T.	Access to Information and Protection of Privacy Act	<a href="#">Access to Information and Protection of Privacy Act</a>
Y.T.	Access to Information and Protection of Privacy Act	<a href="#">Access to Information and Protection of Privacy Act</a>
Federal	Privacy Act, R.S.C. 1985, c. P-21  Privacy Act Regulations, S.O.R./83-508	<a href="#">Privacy Act</a>

### Specific Health Information Acts

Province/ Territory	Act/Legislation	Reference
Alta.	Health Information Act	<a href="#">Health Information Act</a>
Sask.	Health Information Protection Act	<a href="#">Health Information Protection Act</a>
Man.	Personal Health Information Act	<a href="#">Personal Health Information Act</a>
Ont.	Personal Health Information Protection Act	<a href="#">Personal Health Information Protection Act</a>

## Appendix C—Medical Radiation Technologist Database Data Elements, Values and Rationale

Data Element—Definition	Value(s)	Rationale
<b>Identifiers and Demographic Information</b>		
<b>Provincial/Territorial Unique Identification/Registration Number</b>	(Provincial/Territorial Registration Number or Suitable Alternative)	This number is needed to uniquely identify a professional within a particular jurisdiction and to follow changes specific to that individual over time (within the jurisdiction submitting data).
<b>Gender</b>	Female Male Not Collected Unknown	Necessary for the calculation of gender related workforce indicators (for example, proportion of the workforce that are female).
<b>Year of Birth</b>	(Valid year in format YYYY) Not Collected Unknown	Necessary for the calculation of age related workforce indicators (for example, the average age of the workforce).
<b>Geography and Related</b>		
<b>Province/Territory of Residence</b>	(Canadian Province/Territory Codes) Not Collected Not Applicable Unknown	Necessary for analysis of the geographical distribution of the work force. Information on a registrant's province/territory of residence is used (in comparison with other elements) to reduce the level of double counting of registrants registered in more than one Canadian jurisdiction.
<b>Country of Residence</b>	(Country Codes) Not Collected Unknown	
<b>Province/Territory of Registration</b>	(Canadian Province/Territory Codes)	Necessary for the analysis of the geographic distribution of the work force. Information on a registrant's province/territory of registration is used (in comparison with other elements) to reduce the level of double counting of registrants registered in more than one Canadian jurisdiction.

Data Element – Definition	Value(s)	Rationale
<b>Education</b>		
<b>Level of Basic Education in Medical Radiation Technology</b>	Diploma Baccalaureate Master's Doctorate Not Collected Unknown	This data element is used to monitor changes in the basic educational attainment of the workforce. A range of levels is included to accommodate situations where basic education may differ from the Canadian standard (usually diploma or baccalaureate), or cases where post-graduate degrees qualify as entry-level without having to complete a diploma program.
<b>Year of Graduation for Basic Education in Medical Radiation Technology</b>	(Valid year in format YYYY) Not Collected Unknown	Collecting this information permits an examination of the sequencing and timing of different educational attainments (initial education in the profession of interest, highest education in the profession of interest and highest education outside of the profession of interest) of the workforce. Year of graduation for basic education in the profession is also used to generate an indicator for the maximum length of time in the workforce (i.e. years since graduation from basic education in the profession).
<b>Institution of Graduation for Basic Education in Medical Radiation Technology</b>	(Canadian Institution for MRT Education Codes) Other Canadian Institution Non-Canadian Location of Graduation Not Collected Unknown	Collecting the Canadian institution, or country of graduation, permits the identification of where basic education in medical radiation technology was completed. It allows monitoring of the Canadian-educated/internationally-educated composition of the workforce, and analysis of provincial/territorial capacity to retain provincial/territorial graduates.
<b>Province/Territory of Graduation for Basic Education in Medical Radiation Technology</b>	(Canadian Province/Territory Codes) Non-Canadian Location of Graduation Not Collected Unknown	
<b>Country of Graduation for Basic Education in Medical Radiation Technology</b>	(Country Codes) Not Collected Unknown	

<b>Data Element – Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Level of Post-Basic Education in Medical Radiation Technology 1,2,3</b>	Diploma Post-Secondary Certificate Baccalaureate Master's Doctorate Not Collected Not Applicable Unknown	This data element is used to monitor changes in educational attainment of the workforce.
<b>Year of Graduation for Post-Basic Education in Medical Radiation Technology 1,2,3</b>	(Valid year in format YYYY) Not Collected Not Applicable Unknown	Collecting the year of completion of other education in medical radiation technology permits monitoring trends in the sequencing and timing of medical radiation technology educational attainments.
<b>Institution of Graduation for Post-Basic Education in Medical Radiation Technology 1,2,3</b>	(Canadian Institution for MRT Education Codes) Other Canadian Institution Non-Canadian Location of Graduation Not Collected Not Applicable Unknown	Collecting the Canadian institution, or country of graduation, permits the identification of the location where post-basic education in medical radiation technology was completed and allows monitoring of the Canadian-educated/internationally-educated composition of the workforce and analysis of provincial/territorial capacity to retain provincial/territorial graduates (for provinces/territories with education programs).
<b>Province/Territory of Graduation for Post-Basic Education in Medical Radiation Technology 1,2,3</b>	(Canadian Province/Territory Codes) Non-Canadian Location of Graduation Not Collected Not Applicable Unknown	
<b>Country of Graduation for Post-Basic Education in Medical Radiation Technology 1,2,3</b>	(Country Codes) Not Collected Not Applicable Unknown	

<b>Data Element – Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Initial MRT Certification</b>	Medical Radiation Technologist (MRT) Certification Not Certified Not Collected Not Applicable Unknown	These data elements are used to monitor changes in the medical radiation technologist certification attainment of the workforce. In conjunction with other data elements such as “Area of Practice” and “Major Function”, it allows for an examination which specialty areas MRTs are working in relative to their certifications completed.
<b>Initial MRT Certification Discipline</b>	Magnetic Resonance Imaging Nuclear Medicine Radiation Therapy Radiological Technology Other Not Collected Not Applicable Unknown	
<b>Year of Initial MRT Certification</b>	(Valid year in format YYYY) Not Collected Not Applicable Unknown	Collecting the year of certification in medical radiation technology permits monitoring trends in the sequencing and timing of medical radiation technology certification attainments.
<b>Issuer of Initial MRT Certification</b>	Canadian Association of Medical Radiation Technologists (CAMRT) Ordre des technologues en radiologie du Québec (OTRQ) Other Canadian Certification Issuer Non-Canadian Certification Issuer Not Collected Not Applicable Unknown	This data element is required to identify which organization granted the first medical radiation technology certification.

<b>Data Element—Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Post-Initial Certification 1,2,3</b>	Medical Radiation Technologist (MRT) Certification Advanced Certification (AC) Fellow of the CAMRT (FCAMRT) Not Collected Not Applicable Unknown	These data elements are required to identify the area(s) and level of certification in which the professional can practice.
<b>Post-Initial Certification Discipline 1, 2,3</b>	Magnetic Resonance Imaging Nuclear Medicine Radiation Therapy Radiological Technology Other Not Collected Not Applicable Unknown	
<b>Year of Post-Initial Certification 1,2,3</b>	(Valid year in format YYYY) Not Collected Not Applicable Unknown	
<b>Issuer of Post-Initial MRT Certification 1,2,3</b>	Canadian Association of Medical Radiation Technologists (CAMRT) Ordre des technologues en radiologie du Québec (OTRQ) Other Canadian Certification Issuer Non-Canadian Certification Issuer Not Collected Not Applicable Unknown	

<b>Data Element—Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Specialty Certificate 1,2,3</b>	Bone Mineral Densitometry Dosimetry Breast Imaging Positron Emission Tomography (PET) Ultrasound (Quebec) Computed Tomography— Nuclear Medicine Computed Tomography— Radiation Therapy Computed Tomography— Radiological Technology Other Not Collected Not Applicable Unknown	
<b>Year of Completion of Specialty Certificate 1,2,3</b>	(Valid year in format YYYY) Not Collected Not Applicable Unknown	
<b>Issuer of Specialty Certificate 1,2,3</b>	Canadian Association of Medical Radiation Technologists (CAMRT) Ordre des technologues en radiologie du Québec (OTRQ) Other Canadian Certification Issuer Non-Canadian Certificate Issuer Not Collected Not Applicable Unknown	
<b>Medical Sonography Certification Indicator</b>	Yes No Not Collected Not Applicable Unknown	This data element is required to identify which organization granted the specialty credential in Diagnostic Medical Sonography (including ultrasound).



<b>Data Element – Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Year of Completion of Medical Sonography Certification</b>	(Valid year in format YYYY) Not Collected Not Applicable Unknown	
<b>Issuer of Medical Sonography Certification</b>	American Registry for Diagnostic Medical Sonography (ARDMS) Canadian Association of Registered Diagnostic Ultrasound Professionals (CARDUP) Other Not Collected Not Applicable Unknown	
<b>Level of Education in Other Than Medical Radiation Technology 1,2,3</b>	Diploma Post-Secondary Certificate Baccalaureate Master's Doctorate Not Collected Not Applicable Unknown	This data element is used to identify and monitor the level of educational attainment <u>outside</u> the field of medical radiation technology and to augment a medical radiation technologist's education profile.

Data Element—Definition	Value(s)	Rationale
<b>Field of Study for Education in Other Than Medical Radiation Technology 1,2,3</b>	Health Administration/Management Public Administration Public Health Psychology Health Professions and Related Clinical Sciences Biological, Biomedical Sciences and Physical Sciences Mathematics and Statistics Computer and Information Sciences and Support Services Social Sciences, Arts and Humanities Education Law Business, Management, Marketing and Related Other Field of Study Not Collected Not Applicable Unknown	Collecting the field of study associated with education completed outside of medical radiation technology, allows for analysis of the type of post-secondary training that a professional has obtained, outside of their primary health discipline.
<b>Year of Graduation for Education in Other Than Medical Radiation Technology 1,2,3</b>	(Valid year in format YYYY) Not Collected Not Applicable Unknown	Collecting the year of completion of education in other than medical radiation technology permits monitoring trends in the sequencing and timing of different educational attainment outside the field of medical radiation technology.
<b>Province/Territory of Graduation for Education in Other Than Medical Radiation Technology 1,2,3</b>	(Canadian Province/Territory Codes) Non-Canadian Location of Graduation Not Collected Not Applicable Unknown	Collecting the province/territory and country of graduation permits the identification of where education outside medical radiation technology was completed and allows: monitoring of the Canadian-educated/internationally-educated composition of the workforce; and analysis of provincial/territorial capacity to retain provincial/territorial graduates.
<b>Country of Graduation for Education in Other Than Medical Radiation Technology 1,2,3</b>	(Country Codes) Not Collected Not Applicable Unknown	

Data Element—Definition	Value(s)	Rationale
<b>Employment—Historical</b>		
<b>Initial Province/Territory of Canadian Employment in Medical Radiation Technology</b>	(Canadian Province/Territory Codes) Not Collected Not Applicable Unknown	Identifies the initial Canadian jurisdiction of employment as a medical radiation technologist.
<b>Year of Initial Canadian Employment in Medical Radiation Technology</b>	(Valid year in format YYYY) Not Collected Not Applicable Unknown	Provides a baseline indication of initial entry into the Canadian medical radiation technology workforce. Year of initial employment can be used to generate a proxy indicator for length of time in the workforce (e.g. years since initial employment as a medical radiation technologist) and, in combination with other data elements on education, can be used to examine transitions into and out of the work lifecycle.

Data Element – Definition	Value(s)	Rationale
<b>Employment – Current General</b>		
<b>Employment Status</b>	Employed in Medical Radiation Technology Employed in Medical Radiation Technology, on leave Employed outside of Medical Radiation Technology Retired Unemployed Not Collected Unknown	Collection of this information permits the differentiation between those registrants (either an employee or self-employed) who are employed or unemployed. Capturing this data element provides opportunities to estimate the available registered workforce in different ways. When assessed in combination with other data elements, an estimation of the capacity on the available workforce can be determined.
<b>Activity Status if Not Employed in the Occupation</b>	Seeking Employment Only in Medical Radiation Technology Seeking Employment Only in Occupations Other Than Medical Radiation Technology Seeking Employment in Any Occupation Not Seeking Employment Not Collected Not Applicable Unknown	
<b>Total Usual Weekly Hours of Work</b>	(Valid number in format 99.9) Not Collected Unknown	Collection of worked hours can be a measure of capacity (available supply of personnel) and can be used to estimate the number of full-time equivalents in relation to comparable head count data. The collection of this element is especially important in situations of casual or self-employed work arrangements, where the parameters of worked hours are not prescribed by an employer/employment contract.

Data Element—Definition	Value(s)	Rationale
<b>Employment—Current Specific</b>		
<b>Employment Category (for Primary, Secondary, and Third Employment)</b>	Permanent Employee Temporary Employee Casual Employee Self-Employed Not Collected Not Applicable Unknown	The employment category permits the differentiation between those in an employee-employer work relationship from those self-employed. For registrants in an employee-employer work relationship, the distinction between permanent, temporary, and casual employment (in combination with other data elements such as employment status and hours worked) provides an indication of changes in the conditions of employment for a profession (for example, a change to more temporary rather than permanent work arrangements with employers). When assessed in combination with other data elements, an estimation of the capacity of the available workforce can be determined.
<b>Full-Time/Part-Time Status (for Primary, Secondary, and Third Employment)</b>	Full-Time Part-Time Not Collected Not Applicable Unknown	For those in an employee/employer relationship or self-employed, this element permits identification of some basic conditions of employment. When assessed in combination with other data elements, an estimation of the potential capacity of the available workforce can be determined (for example, professionals working part-time that could potentially move to full-time employment).

<b>Data Element – Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Province/Territory of Employment (for Primary, Secondary, and Third Employment)</b>	(Canadian Province/Territory Codes) Non-Canadian Location of Employment Not Collected Not Applicable Unknown	Necessary for analysis of the geographical distribution of the work force. Information on a registrant's location of employment is used (in comparison with other elements) to reduce the level of double counting of registrants registered in more than one Canadian jurisdiction. Collecting a location for up to two employments (primary and secondary) provides an indication of the proportion of the workforce registering and or living in Canada but conducting most of their employment activity outside of Canada.
<b>Country of Employment (for Primary, Secondary, and Third Employment)</b>	(Country Codes) Not Collected Not Applicable Unknown	
<b>Postal Code of Employment (for Primary, Secondary, and Third Employment)</b>	(Six-Digit Postal Code Assigned by Canada Post) Not Collected Not Applicable Unknown	Full postal code is collected in order to examine geographic distribution at all of the desired units of analysis (i.e. national, provincial/territorial and sub-provincial/territorial area) and to investigate geographic concepts relevant to health planning (e.g. urban and rural distribution of the health workforce).
<b>Place of Employment (for Primary, Secondary, and Third Employment)</b>	General Hospital Community Health Centre Cancer Centre Free-Standing Imaging Facility/Clinic Mobile Imaging Unit Post-Secondary Educational Institution Association/Government/Para-Governmental Industry, Manufacturing, and Commercial Other Not Collected Not Applicable Unknown	This element provides an indication of the setting in which the professional engages in employment activity and permits monitoring of changes in the setting of employment activity over time. Collection of this element allows an examination of, among other information, the number of professionals engaged in employment activity in the community versus a hospital or residential care setting.

<b>Data Element—Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Position</b> <b>(for Primary, Secondary, and Third Employment)</b>	Manager Supervisor Charge Technologist/Team Leader Staff Technologist Radiation Safety Officer Consultant Information System Specialist Quality Management Specialist Educator Researcher Sales Other Not Collected Not Applicable Unknown	This element provides an indication of the role that the professional plays within an employment setting and allows for a more precise differentiation from those professionals primarily involved in direct-service provision, compared to those professionals involved in other roles, for example, as educators.
<b>Clinical Education/ Preceptor Activity Indicator</b> <b>(for Primary, Secondary, and Third Employment)</b>	Yes No Not Collected Not Applicable Unknown	This element provides an indication of how much of the workforce is actively participating in providing clinical education to students as part of their employment.
<b>Major Function</b> <b>(for Primary, Secondary, and Third Employment)</b>	Diagnostic and Therapeutic Services Administration Information Systems Teaching, Medical Radiation Technology Related Research Other Major Function Not Collected Not Applicable Unknown	Collection of this element permits the identification of the major focus of activities of a professional.
<b>Area(s) of Practice</b> <b>(for Primary, Secondary, and Third Employment) - Magnetic Resonance Imaging (General)</b>	Yes No Not Collected Not Applicable Unknown	Collection of this element permits the identification of the area(s) in which the professional is practicing.

<b>Data Element – Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment)-Nuclear Medicine (General)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment)- Radiation Therapy (General)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment)- Radiological Technology (General)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) - Angiography/Interventional</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) -Bone Mineral Densitometry</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) - Brachytherapy</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) -Breast Imaging</b>	Yes No Not Collected Not Applicable Unknown	



<b>Data Element—Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) - Computed Tomography (CT)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) - Computed Tomography Simulator (CT–Sim)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) — Positron Emission Tomography (PET)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) -Positron Emission Tomography/ Computed Tomography (PET/CT)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) - Simulation</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) -Single Photon Emission Computed Tomography (SPECT)</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment)- Single Photon Emission Computed Tomography/Computed Tomography (SPECT/CT)</b>	Yes No Not Collected Not Applicable Unknown	

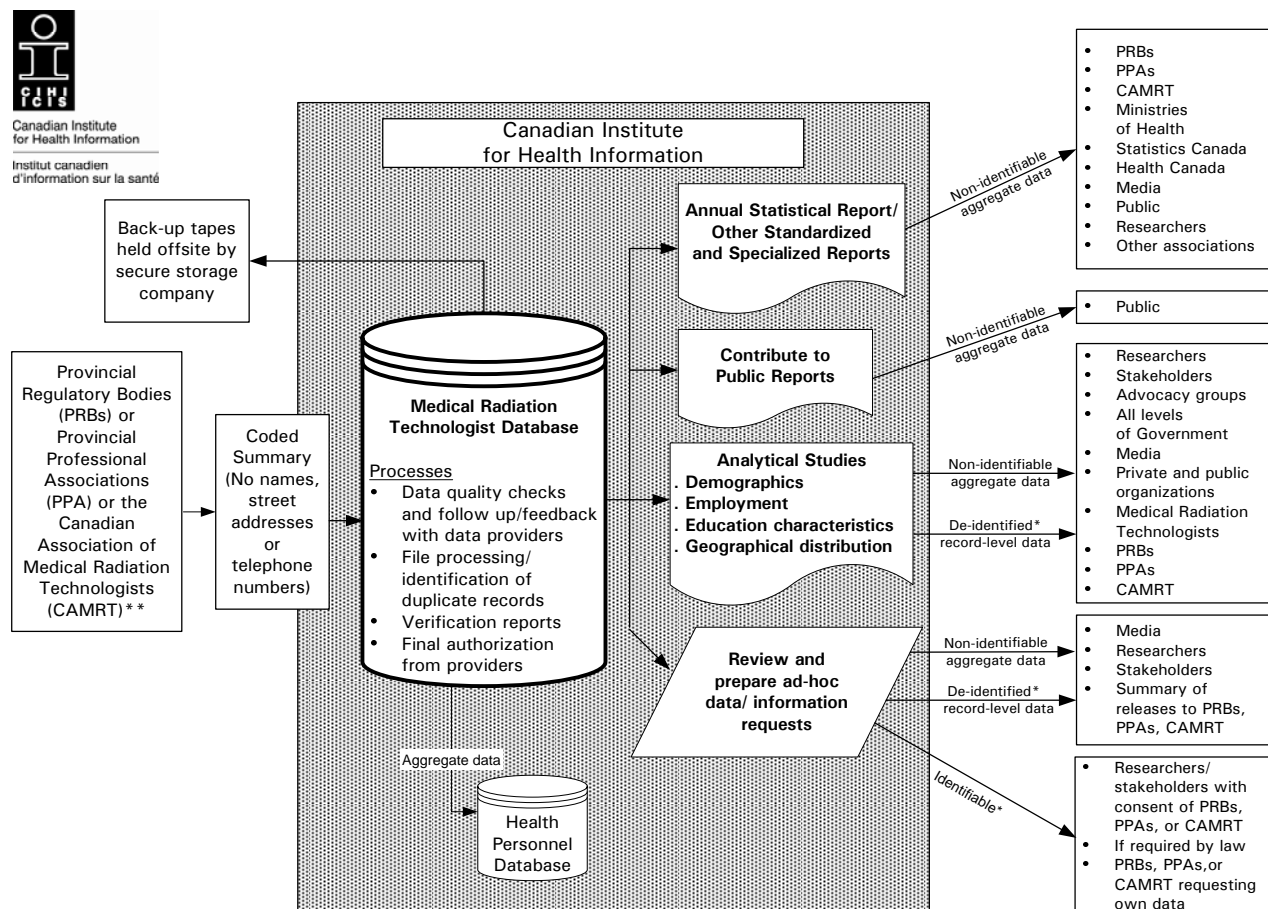
<b>Data Element – Definition</b>	<b>Value(s)</b>	<b>Rationale</b>
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) - Treatment Planning</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) - Ultrasound/Diagnostic Medical Sonography</b>	Yes No Not Collected Not Applicable Unknown	
<b>Area(s) of Practice (for Primary, Secondary, and Third Employment) -Other Area of Practice</b>	Yes No Not Collected Not Applicable Unknown	

Data Element – Definition	Value(s)	Rationale
<b>Main Area of Practice (for Primary, Secondary, and Third Employment)</b>	Magnetic Resonance Imaging (General) Nuclear Medicine (General) Radiation Therapy (General) Radiological Technology (General) Angiography/Interventional Bone Mineral Densitometry Brachytherapy Breast Imaging Computed Tomography (CT) Computed Tomography Simulator (CT-Sim) Positron Emission Tomography (PET) Positron Emission Tomography/ Computed Tomography (PET/CT) Simulation Single Photon Emission Computed Tomography (SPECT) Single Photon Emission Computed Tomography/Computed Tomography (SPECT/CT) Treatment Planning Ultrasound/Diagnostic Medical Sonography Other Area of Practice Cannot Identify One Main Area of Practice Not Collected Not Applicable Unknown	This data element identifies the main area of practice in which services are provided.

Data Element – Definition	Value(s)	Rationale
<b>Other</b>		
<b>Registration Type</b>	Active, Full Active, Other Inactive	Necessary to ensure that the appropriate reference population is submitted to CIHI. Collection permits separating the short-term licence component of the workforce where required for analysis, monitoring of workforce transitions from active to inactive, as well as more accurate reporting of attrition (for example, the collection of inactive data allows the differentiation of registrants maintaining registration but changing from active to inactive, from registrants that are registered and do not re-register).

**Reference:** Canadian Institute for Health Information, *Medical Laboratory Technologist Database Data Dictionary*, (Ottawa: CIHI, 2007).

## Appendix D—Information Flow in the MRTDB



\*The MRTDB will not collect information that directly identifies any medical radiation technologist, such as name, home and work address (number, street name and city) and contact information (for example, telephone number).

\*\*At the time this document was written, CIHI was in the process of determining the specific data providers for the MRTDB. For the purposes of this document data provider means an organization that will disclose data to CIHI. For the initial year of collection (2008), it is anticipated that data for each province/territory will be supplied by one of the following data providers: a provincial regulatory body for medical radiation technologists, a provincial professional association for medical radiation technologists or the Canadian Association of Medical Radiation Technologists (CAMRT). The list of potential data providers under review are identified in Appendix A.