



National System for Incident Reporting — Radiation Treatment Pilot Assessment Report

Summary



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Foreword

The National System for Incident Reporting (NSIR), launched by the Canadian Institute for Health Information (CIHI) in 2010, is a voluntary, web-based reporting system that collects medication incident data from acute and long-term care facilities. It supports sharing and learning from medication incidents to reduce the risk of future incidents. NSIR data and analyses can be used at the local, regional, provincial and national levels to inform quality improvement activities and foster improvements in health care delivery.

In 2013, CIHI began collaborating with the [Canadian Partnership for Quality Radiotherapy](#) (CPQR) on a new module to collect radiation treatment incidents: the National System for Incident Reporting — Radiation Treatment (NSIR-RT). The initial work focused on developing the minimum data set (MDS) and draft module for data collection. NSIR-RT was pilot-tested by 28 cancer treatment centres in 6 jurisdictions from September 2015 to December 2016. A comprehensive evaluation of NSIR-RT including the pilot project was conducted in March 2017. The evaluation led to key improvements to the MDS and system, many of which were implemented prior to the launch of NSIR-RT in July 2017. This document provides a summary of the evaluation. The full report is available by writing to nsir@cihi.ca.

Acknowledgements

CIHI wishes to acknowledge and thank CPQR and the CPQR Incident Management Working Group for their expertise and guidance in

- Developing the NSIR-RT system and tools;
- Providing education and client support for participating pilot sites; and
- Preparing the evaluation report, including the recommendations for enhancements.

CIHI would also like to acknowledge and thank the individuals and organizations that volunteered their time and effort to contribute to the evaluation of NSIR-RT. Sincere appreciation goes to the front-line, managerial and administrative staff in the organizations that participated in the NSIR-RT pilot test. Individuals within each organization spent time preparing for their participation and providing both formal and informal feedback. A list of participating facilities is provided in the full report.

Report summary

Through collaboration with CPQR, CIHI expanded NSIR to include a module to support the reporting of radiation treatment incidents. NSIR-RT was built to provide registered pilot sites with access to their own data and to de-identified data from other participating sites. The integrated Analytical Tool allowed organizations to conduct analyses to inform the development and implementation of preventive strategies.

The performance of NSIR-RT was evaluated in a 15-month pilot from September 2015 to December 2016. The evaluation focused on

- Patient safety, including data sharing and learning;
- Education and client support;
- Technical system evaluation;
- Evaluation of the NSIR-RT MDS; and
- Fitness of use of RT incident pilot data.

Methods used included a survey of pilot sites, analysis of pilot data, assessment of data quality and ongoing consultations with CPQR.

28 radiation treatment centres from 6 jurisdictions participated in the pilot project (Nova Scotia, New Brunswick, Quebec, Ontario, Alberta and British Columbia).

Results

Almost all users supported the NSIR-RT pilot and provided helpful input. Over the 15-month pilot, 1,322 incident records were submitted. The depth and breadth of the data was assessed for its relevance and usefulness for sharing and learning, which is a primary objective of NSIR-RT. The results show that the data is valid, reliable and fit for its intended purpose. Users provided valuable insights and concrete evidence for future development and enhancements of NSIR-RT, many of which were implemented prior to its launch in July 2017. Key areas are summarized below.

Patient safety sharing and learning

93% of survey respondents agreed that users could learn from the recommendations/findings reported by other facilities. A similar percentage felt that there was value in nationally sharing the incident details, as well as the recommendations/findings reported by facilities. At the local level, about two-thirds of survey respondents (65%) felt that NSIR-RT incident data would inform their own patient safety activities.

Education and client support

All survey respondents (100%) found the NSIR-RT education materials useful. Those materials included web conferences, a user set-up checklist, an education checklist, a privacy information sheet and ward/unit set-up instructions. Users typically reached out to NSIR client support by email and found the responses to be helpful and timely.

Pilot project sites were a mix of initial users (those exposed to NSIR for the first time in the pilot) and super users (those who were more actively involved in system development and had advanced knowledge of NSIR). Feedback from the initial users led to a recommendation to develop a more comprehensive education program for the NSIR-RT launch that included specific case studies. The general lower quality of data reported by initial users strengthened this recommendation. In response to this feedback, an [online education program](#) for new and existing NSIR-RT users was developed and coordinated by CPQR with CIHI's participation.

Priority areas for system enhancement

Overall, the system functionality met the pilot sites' needs for reporting incidents and generating summary reports. However, users indicated that the time and effort needed to enter data in both their own risk management system and NSIR-RT was a significant barrier to reporting incidents. In addition, those who used the Analytical Tool suggested that it could be more user-friendly and intuitive.

Future system enhancements will include the release of batch upload functionality to allow facilities to transfer data from their existing systems to NSIR-RT to ease the reporting burden. French translation of the NSIR-RT system (e.g., data management, reporting and analysis tools) will also be included on the list of future enhancements.

As well, further discussions will be held with CPQR to encourage use of NSIR-RT and to identify potential improvements to better meet CPQR's analytical needs.

Validity of NSIR-RT MDS

Overall, pilot site participants reported that the majority of data elements in the NSIR-RT met the essential criteria to accurately capture incident information. The majority of respondents rated 22 of the 26 data elements relevant, clear, comprehensive and useful for radiation treatment incident reporting.

The user survey identified 4 data elements that needed revision; this was confirmed by the CPQR expert working group. The problematic data elements were Incident Type (i.e., the value *reportable circumstance*), Process Step, Problem Type and Contributing Factors. Pilot data analysis also confirmed that these 4 data elements had data quality issues. These issues were reviewed in depth with CPQR and CIHI, and proposed changes were developed. These changes have been finalized and validated using actual pilot data to ensure that they capture the required details for sharing with participating sites.

Quality of NSIR-RT pilot data

Overall, the NSIR-RT pilot data was evaluated as being fit for use for radiation treatment incident reporting. Data collection and coding accuracy was assessed throughout the pilot by the CPQR working group. These content experts regularly reviewed the record-level data from the pilot sites to identify and examine data quality issues and to develop educational materials to address coding challenges that were evident from the incident details. Super users also served as expert coders. Their incident submissions were compared with those of other pilot sites to serve as a data quality benchmark for coding accuracy.

As noted, certain data elements were challenging for users, leading to inaccurate coding. For example, Problem Type presented significant coding issues, as evidenced by the disproportionate use of the value *other* in place of an informative Problem Type value.

The data quality review of the pilot data, together with input from CPQR content experts, led to the decision that the pilot data was fit for use and would be included in the NSIR-RT database. Data received during the pilot that was impacted by the changes to the NSIR-RT MDS was revised in consultation with CPQR and submitting facilities to assess whether recoding was possible.

Partnership with CPQR key to success of NSIR-RT pilot

Overall, pilot participants favourably reviewed the NSIR-RT system. This success was in large part due to the partnership with CPQR in developing the NSIR-RT MDS and system, as well as in planning and implementing the pilot. CPQR's clinical expertise, focus on quality in radiation treatment and position as a trusted organization in the radiation treatment community ensured that NSIR-RT captured the current knowledge, concepts and desired characteristics of radiation treatment incident reporting.

CPQR's active collaboration throughout the evaluation of the pilot ensured that the data collected met information needs, encompassed reporting requirements for quality improvement and considered the relevant clinical and programmatic details to inform preventive strategies. CPQR's review of the pilot data with CIHI was essential to identifying needed revisions to the MDS and the future launch of NSIR-RT. CPQR also provided essential information on the use and functionality of existing risk management systems at radiation treatment centres in Canada.

Updates and next steps

The NSIR-RT system was launched in July 2017, including priority MDS changes recommended in the pilot project. CPQR developed the 7-week education program CPQR Incident Learning Course with CIHI's participation. The first course ran from November 2017 to January 2018, and a second session was held in spring 2018.

In February 2018, the inaugural NSIR-RT Advisory Committee meeting was held in Calgary, Alberta. CIHI continues to work with CPQR to recruit radiation treatment centres that were not part of the pilot. CIHI is also working on implementing the batch upload functionality and will release specifications for use with existing risk management systems.

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