Summer 2022

NSIR-RT BULLETIN

Welcome to the electronic bulletin of the National System for Incident Reporting - Radiation Treatment (NSIR-RT). This bulletin supports continuous learning through sharing incident data trends and case studies, and provides system users with information on program developments and enhancements.

Send Us Ideas for Upcoming Bulletins

The NSIR-RT Bulletin has been published since 2016 by the Canadian Partnership for Quality Radiotherapy (CPQR) NSIR-RT Advisory Committee, with support from the Canadian Institute for Health Information (CIHI) and since 2021, the Canadian Association of Provincial Cancer Agencies (CAPCA). Earlier editions can be found on the CPQR website .

If you have an idea for a future case study or topic, we'd love to hear from you. Please contact Staci Kentish, CAPCA Program Coordinator, at skentish@capca.ca.

RO-ILS Themed Report: Surface Guided Radiation Therapy

Recently, RO-ILS released a report on Surface Guided Radiation Therapy (SGRT) that examines the technology and how it can impact the safety of radiation delivery.

The report offers mitigation strategies that may help SGRT users avoid a safety incident. These strategies are relevant to the introduction of all new technologies. They include:

- **Establish protocols for use of new technology prior to its implementation.** Ensure protocols are communicated clearly and review regularly for necessary updates.
- **Ramp up use of new technology slowly** to ensure staff have an opportunity to become experienced before applying it to more complex treatments.
- **Train a smaller, specialized group of staff before expanding more broadly**. These individuals can attend external training, gain experience and assist in onboarding the rest of the team.
- **New technology is not a substitute for safety fundamentals.** It's important to maintain fundamental safety processes, such as timeouts and peer review, even when new technologies emerge that help identify and mitigate human errors.
- **Adding more tools and processes to an already complex system may not always be the best method of making practice safer.** While there are many benefits to new technologies like SGRT, do not ignore the risks. Think critically about whether adding complexity to your practice justifies any gained functionality.

ABOUT CAPCA

The Canadian Association of Provincial Cancer Agencies (CAPCA) works to improve cancer control across Canada. CAPCA envisions Canadian cancer control systems that are collaborative, patient-centered, and high performing by international standards.

CIHI CAPCA CPQR Canadian Partnership for Quality Radiotherapy PCQR Partenariat canadien pour la qualité en radiothérapie

Inaugural NSIR-RT Annual Report

By Kathryn Moran BSc MRT(T)

NSIR-RT data collection has been ongoing since 2017 and user agreements are now established in almost all provinces. In the interest of pan-Canadian shared learning, and to provide feedback to our dedicated incident-reporting community, the NSIR-RT Advisory Committee would like to showcase high-level volume trends for key elements.

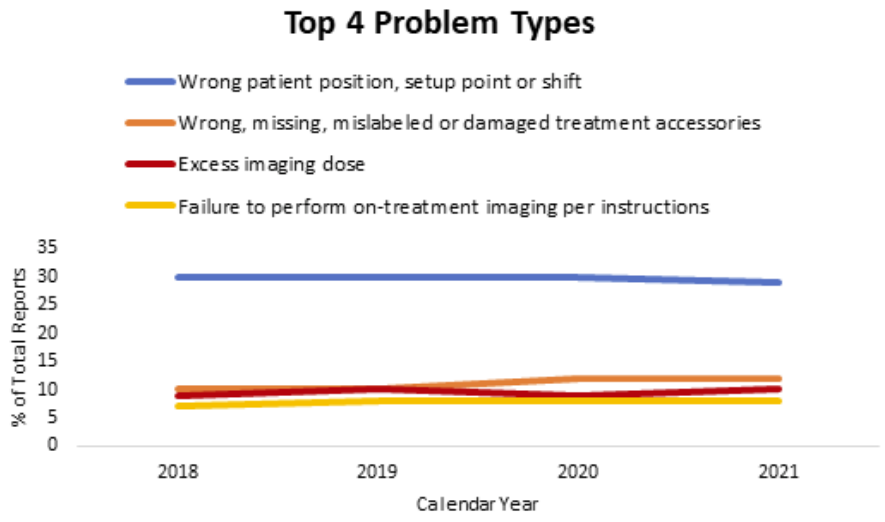
We have selected the following key elements (definitions from the NSIR-RT minimum data set), reporting top four counts by calendar year:

- Problem type
  - *Problem Type categorizes the incident from the perspective of how it directly affected the patient or, in the case of a near miss, how it would have affected the patient had it not been detected by chance or by 1 or more safety barriers*
- Safety barriers that identified an incident
- Safety barriers that failed to identify an incident
  - *A safety barrier is a physical or non-physical means planned to prevent, control, or mitigate undesired events or accidents*
- Actions taken or planned to reduce risk, and other recommendations
  - *Prevention activities planned or implemented within the radiation treatment centre and recommendations to minimize future harm*

It is important to note that incident reporting data should not be used as a benchmark or measure of overall safety, as it depends on reporting practices, institutional buy-in, trust and other factors. Due to healthcare staff reliance on manual data entry, it is understood that not all incidents reported locally by an institution will be reported to NSIR-RT. Please refer to NSIR-RT Bulletins Spring and Summer 2020 for more information on the importance, challenges and opportunities of incident reporting.

Data presented below were generated for all radiation treatment incidents detected within each calendar year, regardless of acute medical harm or dosimetric impact, and include near miss, actual events and programmatic hazards where applicable. Other reported data elements such as “other” were excluded from the top four counts, as they don’t contain meaningful information. Data presented are high-level and shown as percentages of total incident reports per year.

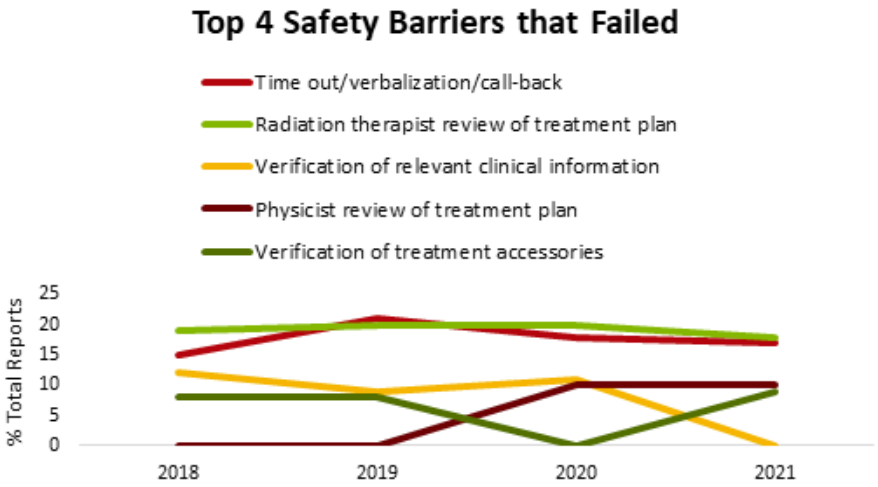
Figure 1. NSIR-RT Top Four Problem Types (% of total reports by year)



NSIR-RT Annual Report Continued

The top four *problem types* show stability in reporting over time. Problem type "*other*" was restricted from the report due to a lack of meaningful information, though counts ranged between 13% - 25% of total reports per calendar year, the highest percentage being in 2018. Data shows that the most commonly reported problem type affecting radiation treatments in Canada appears to be related to "*wrong patient position, setup point or shift*" (highlighted in blue above). The exact NSIR-RT MDS definition of this data element is "*incorrect delineation, reference or use of verification points, or other incorrect patient positioning*".

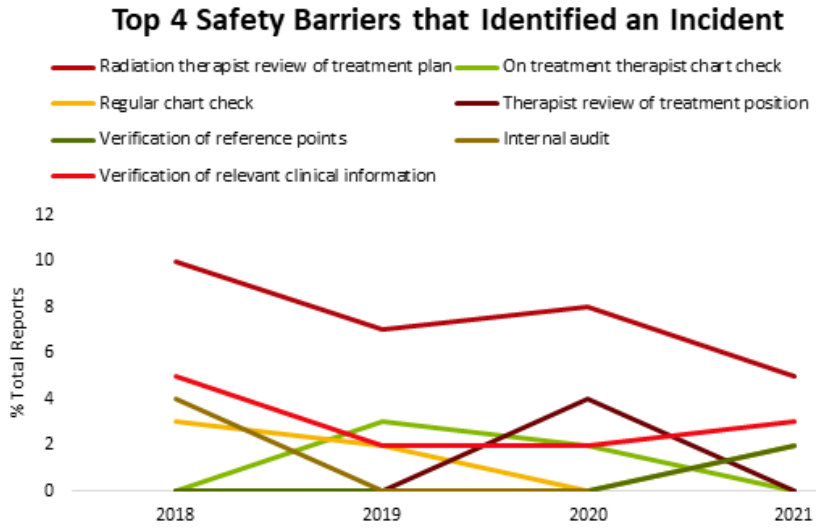
Figure 2. NSIR-RT Top Four Safety Barriers that Failed to Identify an Incident (% of total reports by year)



An analysis of the top four safety barriers that failed to identify an incident showed stability across calendar years with respect to incidents labelled "*time out/verbalization/call-back*" (highlighted in red above) and "*radiation therapist review of the treatment plan*" (highlighted in light green). Interestingly, these are often among the final safety barriers prior to image verification and treatment, and therefore would appear to relate back to the problem types seen in figure 1, which showed a predominance towards positioning, accessory and image-based incidents.

Once again, those labelled as "*other*" remained stable ranging from 8%-11% of reports per calendar year. Interestingly, "*none*" frequented the counts ranging from 14% -18% per calendar year, indicating that the reporter felt no known safety barriers existed that would have prevented the incident.

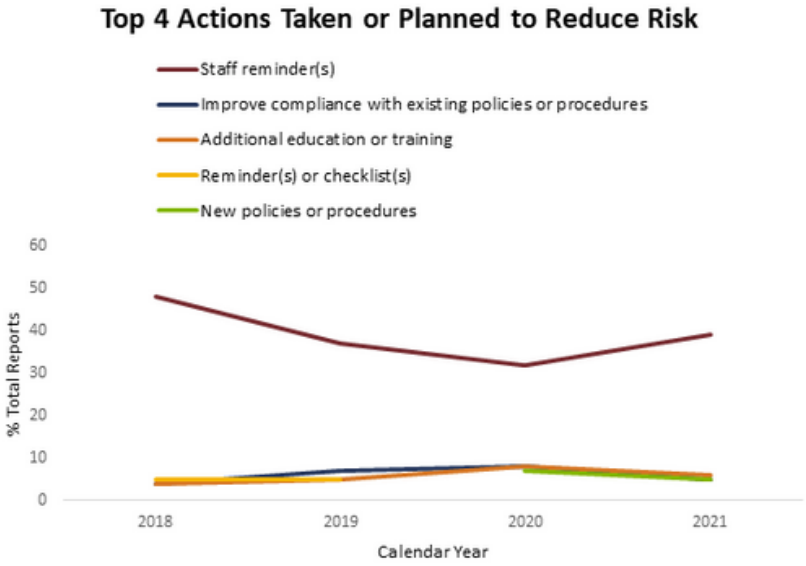
Figure 3. NSIR-RT Top Four Safety Barriers that Identified an Incident (% of total reports by year)



NSIR-RT Annual Report Continued

While "*radiation therapist review of the treatment plan*" (highlighted in medium red above) was seen as the most frequent safety barrier that failed, it was also seen as the most common safety barrier that identified incidents, though at a smaller overall percentage. Again, these data relate well with the top problem types shown in figure 1.

Figure 4. NSIR-RT Top 4 Actions Taken or Planned to Reduce Risk (% of total reports by year)



There were three *actions taken or planned to reduce risk* that show stability across calendar years. These included "*staff reminders", "improve compliance with existing policies or procedures*", and "*additional education or training*" (highlighted above in red, blue and orange respectively). Interestingly, these mitigation strategies, although frequently used, are often considered lower in the hierarchy of effectiveness when compared with standardization, streamlining and forced functions.

Take another moment to review the 2019 NSIR-RT Spring Bulletin that focused on associated risks and best practices of using policies and procedures in risk mitigation. Once again, incidents with the label "*other*" were excluded in the top four counts, however, ranged between 2% -3% per calendar year. Interestingly, "*unknown*" was indicated 30% -39% of the time per calendar year. This may indicate that incidents were logged prior to risk mitigation discussions, or that the staff logging the incidents are not informed of follow-up actions.

While utilizing incident data as an absolute measure of safety is strongly discouraged, data trending over time can be used to establish normal variance, signal new or emerging issues, and aid in quality improvement over time. It may still take a few years of reporting to generate a true baseline of normal variance, given the pan-Canadian ramp up of NSIR-RT users since 2017, education targeted at classification harmonization in 2018, and the COVID-19 pandemic may have affected the ability for users to prioritize NSIR-RT data upload in 2020 and 2021.

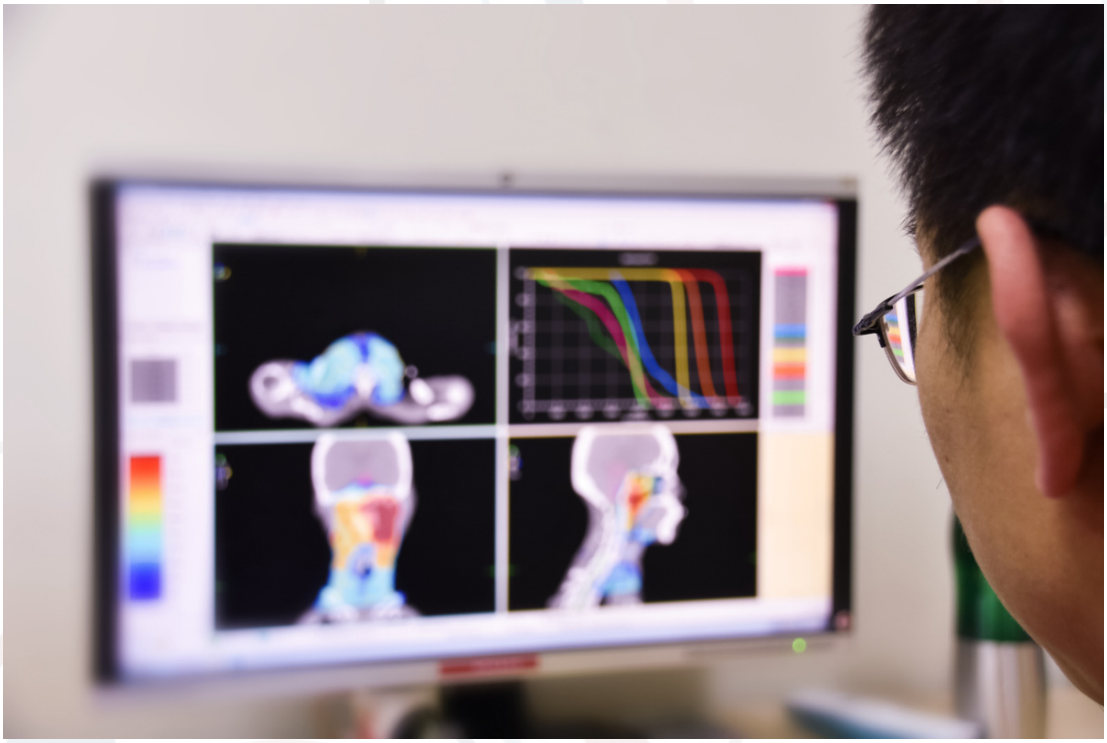
The NSIR-RT 4-year reported data on problem types and safety barriers appear to be concentrated at the later stages of the care trajectory. Leading up to radiation treatment delivery, there are many layers of routine quality assurance designed to pick up issues in advance of actual or potential patient impact and are therefore not routinely captured. It is the events that get propagated through the many layers, or originating at the end of the trajectory, prior to, or at the time of treatment delivery that appear to be most frequent. Determining risk mitigation strategies that focus on streamlined and standardized workflows should be prioritized over staff reminders or improving compliance with existing policies and procedures.

Continuing Education

CPQR's *Radiation Treatment Incident Investigation Independent Learning Course* continues to be available on the CPQR website **free of charge**.

The independent learning program will teach participants how to effectively investigate local incidents using the Canadian Patient Safety Institute (CPSI) guidelines, identify trends through local and pan-Canadian incident analysis and inform programmatic change with the aim of improving overall patient care and outcomes.

Watch the course introduction for more information here.



NSIR-RT BY THE NUMBERS

2015 - Aug 2022

Incidents Submitted	6, 626
Actual Incidents	4, 378

Overall Severity

None	3, 323
Mild	977
Moderate	70
Severe	8

CIHI CAPCA CPQR Canadian Partnership for Quality Radiotherapy PCQR Partenariat canadien pour la qualité en radiothérapie