NSIR-RT BULLETIN

Welcome to the electronic bulletin for the National System for Incident Reporting - Radiation Treatment (NSIR-RT). This Bulletin supports continuous learning from incident data through the presentation of data trends and case studies. It will also provide system users with information on program developments and enhancements.

NSIR-RT Advisory Committee

In 2018 CPQR and CIHI established a committee to oversee the operation and evolution of NSIR-RT to assure it meets the current and future needs of the radiation treatment community. The NSIR-RT Advisory Committee also reviews radiation treatment incident data submitted to NSIR-RT, informs the radiation treatment community of important patterns and trends, and makes recommendations to minimize or mitigate risk.

NSIR-RT CASE STUDY

Appropriate Policies and Procedures Can Help Mitigate Incident Occurrence

A review of incidents submitted to NSIR-RT found that Policies and Procedures (P&Ps) ranked highly among both factors that contributed to the event and actions planned for risk mitigation.

NSIR-RT Minimum Data Set Definitions

Contributing Factors – A circumstance, action or influence that is thought to have played a part in the origin or development of an incident or to have increased the risk of an incident.

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

P&Ps are necessary building blocks of an organization and help encourage standardization, reduce the likelihood of errors and improve overall program quality, consistency and productivity (1, 2). The CPQR document *Quality Assurance Guidelines for Canadian Radiation Treatment Programs* describes important elements of radiation treatment quality assurance that should be common to all programs (5). Included in the document's set of key quality indicators (KQI) are indicators pertaining to the creation and maintenance of, and adherence to P&Ps on a variety of issues including those related to quality assurance and incidence reporting and may be useful for programs looking to undertake a comprehensive program review. Where P&Ps rank as the highest contributing factor within NSIR-RT data, it is important to consider the basis for lack of adherence which may be the result of a complex interplay of personal or system factors including those listed in the inset table (2).

NSIR-RT Data: By the Numbers

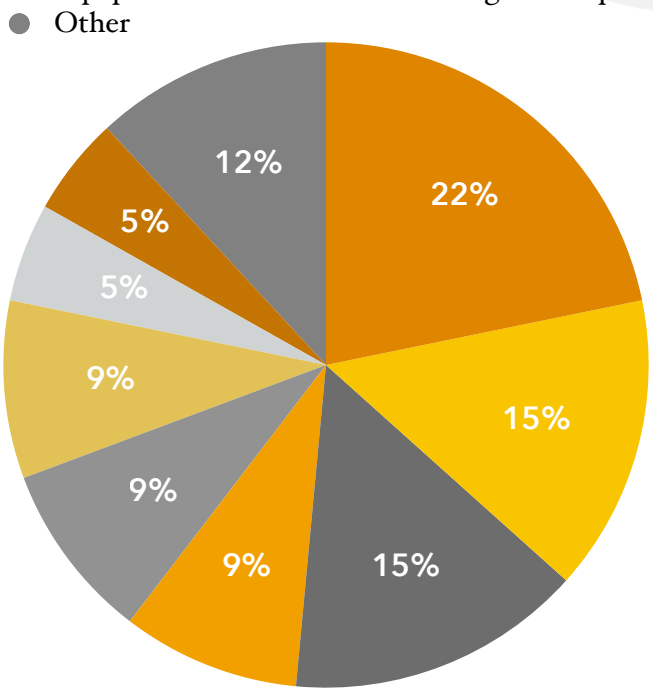
Incident Submitted: 3,318

Actual Incidents: 2,032

Severity: None (1,619), Mild (375), Moderate (34), Severe (4)

Reasons Procedures May Not Be Followed (table 1)

- Real or perceived pressure for production optimization/throughput
- Lack of staffing
- Unavailable/non-operational/outdated equipment specified
- A change in the environment or systems, necessitating work-arounds
- Impractical, unclear, or unrealistic procedures
- Language that is misunderstood/too technical/not written for the user
- Repetition results in violations that become automatic
- Lack of buy-in that policies and procedures will improve practice
- Poor perception of risk
- Complacency due to an accident free environment, lack of supervision or accountability
- Lack of accessibility of policies and procedures at the point of need
- Too many policies
- Lack of training on new/changed policies and procedures



Recommendations

Development and Maintenance

•Co-develop P&Ps with those who know the procedure and those expected to use it

•Complete procedure testing by both end users and those unfamiliar with the relevant area

•Consider opportunities to standardize practice, reducing the need for multiple P&Ps

•Remove outdated P&Ps

•Conduct a thorough review of P&Ps, and associated equipment and workflows to ensure new factors or work-arounds are either eliminated or appropriately re-designed

Formatting

•Standardized templates facilitate development, revision and use

•Standardized version control and naming conventions enhance electronic search functions

•Use the active voice and simple words avoiding formal language, acronyms and abbreviations

•Put instructions in a logical order. Warnings should precede an action, and should be highlighted

•Consider the conditions where the policy and procedure will be read/accessed (i.e. lighting, decision making timelines, stressful circumstances)

Training

•Complete staff training prior to implementation

•Provide training in a variety of formats to account for different audiences, availability experience and learning styles

Accessibility

•Ensure staff have quick and easy access to the most recent versions of P&Ps

•Electronic platforms facilitate control of policy version, search-ability, and dissemination

While it is important to identify and rectify missing or outdated policies, focus should first be given to elimination of the risk, followed by effective control and lastly acceptance (3), with policies and procedures as a final layer of defensive control.

Case Study References

1. Barbe B, Verdonck K, Mukendi D, Lejon V, Lilo Kalo JR, Alirol E, et al. The Art of Writing and Implementing Standard Operating Procedures (SOPs) for Laboratories in Low-Resource Settings: Review of Guidelines and Best Practices. PLoS Negl Trop Dis. 2016 Nov 3;10(11):e0005053.
2. Why Employees Do Not Follow Procedures ; 2007.
3. Canadian Incident Analysis Framework; 2012.
4. Liberati EG, Peerally MF, Dixon-Woods M. Learning from high risk industries may not be straightforward: a qualitative study of the hierarchy of risk controls approach in healthcare. Int J Qual Health Care. 2018 Feb 1;30(1):39-43.
5. Quality Assurance Guidelines for Canadian Radiation Treatment Programs ; 2015.

Problem Type – Before and After Changes to the Data Standard

One of the objectives of the NSIR-RT piloting, conducted through 2017 was to determine if the proposed minimum data set (MDS) met the needs of users. Feedback through a formal questionnaire and ad hoc comments provided information on gaps and labeling issues with all of the data elements. Four key data elements required more extensive changes: Problem Type, Process Step where Incident Occurred, Process Step where Incident was Detected and Contributing Factors. Problem Type underwent the most significant revisions to address the high use of 'Other' as a value and to incorporate the feedback received.

Problem Type is a key mandatory data element, and is one of the most analyzed and telling pieces of information. Problem Type is the issue that is most responsible for the incident and categorizes the event 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. Table 2 below shows all of the values for Problem Type up to July 2017. Changes resulting in the current value set included discontinuation of values, merging related values into a single value, clarifying the value label and adding new values to address identified gaps. The resulting value set and the frequency of user selection is shown in Table 3 below.

A noticeable difference in the results after the changes was a decrease in the use of the value 'Other' from 41% to 23%. This could indicate that the revised value set allowed users to better select a descriptive and appropriate Problem Type for their incident. In the nearly two years following the changes, users selected newly added values for Problem Type 23% of the time. This suggests that adding new values addressed some portion of the reduction in the use of 'Other'. (see tables 2 and 3).

Table 2: Problem Type prior to MDS changes (October 2015 to July 2017)

Problem	Total	Percentage
Other	603	41%
Wrong shift from setup point	189	13%
Wrong treatment accessories	131	9%
Radiation treatment scheduling error	117	8%
Wrong patient position	96	7%
Hardware/software problem	82	6%
Wrong target or OAR contours or wrong planning margins	64	4%
Wrong anatomical site	31	2%
Combined modality treatment scheduling error	27	2%
Wrong side (laterality)	26	2%
Others with less than 1% responses	79	<1%
Total	**1458**	**100%**

Table 3: Problem Type after MDS changes (July 2017 to March 2019)

Problem	Total	Percentage
Other	434	23%
Wrong patient position, setup point, or shift	356	19%
Wrong, missing, mislabeled, or damaged treatment accessories	188	10%
Excess imaging dose	187	10%
Radiation therapy scheduling error	175	9%
Failure to perform on-treatment imaging as per instructions[3]	108	6%
Wrong prescription dose-fractionation or calculation error[1]	62	3%
Wrong target or OAR contours[2]	49	3%
Treatment plan acceptable but not physically deliverable[3]	39	2%
Untimely access to medical care or radiotherapy[3]	37	2%
Wrong patient[4]	33	2%
Inadequate coordination of combined modality care[2]	32	2%
Fall or other patient injury or medical condition[2]	30	2%
Others with less than 1% responses	113	<1%
Total	**1856**	**100%**