



Implementation Strategy for Radiation Therapy Safety Straps

A Recommendation Report developed by The Ontario Radiation Therapy Community of Practice (RThCoP) of the Radiation Treatment Program in conjunction with the Radiation Therapy Professional Advisory Committee (RTPAC) of Cancer Care Ontario (CCO)

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Background

Safety straps are removable straps designed to protect patients from falls from elevated treatment beds, and have been highlighted provincially as a recommended safety device in the provision of daily radiation treatment. A critical patient injury occurred in a regional cancer centre (RCC) in 2012, involving a patient falling from a linear accelerator (LINAC) treatment bed. This incident highlighted the critical need for ensuring patient safety beyond traditional measures.

Importantly, safety straps recommended for use in this document are not to be confused with restraints, defined as a method to place a person under control by the use of force, mechanical means or chemicals where the person is unable to release it him/herself (Health Quality Ontario, 2013). Safety straps should be placed in positions that are easily removable by the patient if needed. Straps are used to enhance the safety of the treatment environment (during both simulation and treatment procedures) for both patients and providers. Preventing undesired movement while on treatment beds minimizes the risk of movement on treatment beds, acting as an additional safety measure.

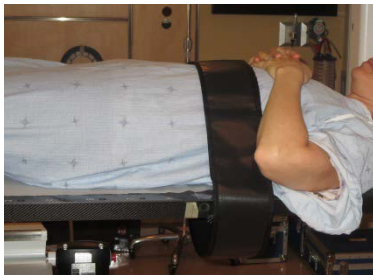


Figure 1: Example of a removable Velcro safety strap used on a patient

These straps act as a reminder for patients of the elevations that can be maintained on LINAC treatment beds, which can reach over 4 feet (1.5 metres) from ground level during treatment procedures. This is particularly important, as patients are positioned before treatment beds are fully elevated, and therefore may not be fully aware of the heights to which they are raised.



Figure 2: Demonstration of treatment bed height on a standard radiation treatment machine

Post treatment, patients are often tempted to sit upright quickly or jump down from treatment beds, which may increase the possibility of slips and falls. Patients may also fall asleep during treatment, causing them to shift dangerously on the treatment bed. Safety strap usage may therefore prevent falls from dangerous unintentional shifting. In addition, straps, along with other immobilization devices, emphasize the importance of not moving while on the bed, ensuring that patients remain in the correct position for treatment.

The Radiation Therapy Professional Advisory Committee (RTPAC), comprised of the heads of radiation therapy departments from all Ontario RCCs, is a CCO committee responsible for advising the Radiation Treatment Program (RTP) on matters pertaining to professional practice, discipline specific planning, evaluation, implementation and delivery of radiation therapy in Ontario. In response to the 2012 critical incident, the RTPAC prepared a position statement on the use of safety straps for radiotherapy procedures, including simulation and treatment, which is included in this report ([Appendix A](#)). The document provides the necessary rationale to support the recommendations put forth in this report and demonstrates why RCCs should adopt these recommendations to prevent patient injury due to falls from a treatment bed through the safe and effective use of a safety strap.

The goal of this recommendation report is to raise awareness of this safety measure, to facilitate knowledge transfer and exchange regarding the current implementation of safety straps in centres as well as providing individuals in decision-making roles for RCCs in Ontario with support for an implementation strategy for safety straps. This recommendation report is presented by the Radiation Therapy Community of Practice (RThCoP), a provincial group facilitated by CCO consisting of Medical Radiation Technologist (Therapy) [MRT(T)]



representatives from RCCs who come together to identify quality issues relevant to frontline radiation therapy staff and drive corresponding quality improvement projects with the goal of improving the quality of care and safety for patients receiving radiotherapy.

Approach

Data presented in this document was self-reported by RThCoP members and other therapists actively working in RCCs across the province. Initial information was collected at a face-to-face RThCoP meeting where members discussed the critical patient injury that previously occurred and the implementation of safety straps as a response at two RCCs. Consensus that the implementation of safety straps on a wider scale was an important initiative was achieved at the RThCoP meeting and a working group was formed to develop this recommendation document. RThCoP members were encouraged to discuss the implementation of safety straps at their respective host centres using presentations developed by group members and information developed by initial centres that adopted safety straps. Figure 3 presents a timeline of key events involved in the implementation of safety straps in Ontario's RCCs.

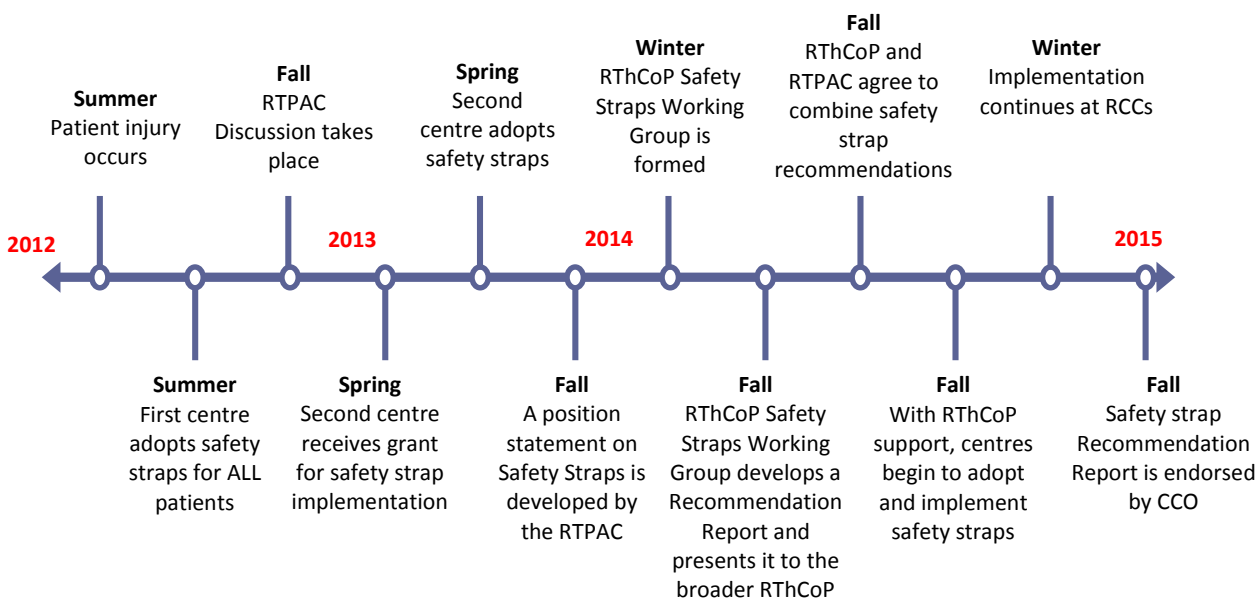


Figure 3: Timeline of the implementation of safety straps

Implementation Recommendations

The following information describes recommendations developed by the RThCoP for the use and implementation of safety straps for all patients undergoing radiation treatment. These recommendations suggest various strategies for the training; strap positioning, patient and provider education and documentation of strap usage. Strategies outlined are based on best recommendations; however centre and department specific modifications are expected.



Staff Training

Persons and staff responsible for using safety straps should be provided with the necessary supporting documents to provide sufficient explanation to patients on the difference between restraints and the recommended safety strap. This information should also be provided to those individuals responsible for obtaining patient consent for strap use.

Patient consent for strap use should be obtained, and specific explanation should be provided regarding the difference between safety straps and patient restraints. According to The Ontario Ministry of Health and Long-Term Care's (MOHLTC) "[Minimizing of Restraining Provisions](#)" presentation and [Bill 85](#), a physical device is not considered to be a patient restraint if the individual is able to self-release the device. Consequently, safety straps should be positioned on patients so that self-removal is possible. Suggestions for strap placement include placing patients' arms over top of the straps with the strap attachment point resting above the patient. Such strap positioning maintains compliance with the MOHLTC guidelines to minimize restraints as patient's arm movements would not be confined. RCC with other institutional policies such as falls risk assessments should not be impacted by the use of safety straps and should continue to be conducted separately. It is recommended that published information be available to those involved in implementing safety straps. Reference materials include (but are not limited to):

1. [Appendix A](#): Cancer Care Ontario (CCO) 2013. A Position Statement on behalf of the: Radiation Therapy Professional Advisory Committee (RTPAC)
2. Legislative Assembly of Ontario (2001). Bill 85: an act to minimize the use of restraints on patients in hospital and on patients of facilities. http://www.e-laws.gov.on.ca/html/source/statutes/english/2001/elaws_src_s01016_e.htm. Accessed June 13, 2014.

The RThCoP also endorses the recommendations put forth in the RTPAC position statement (Appendix A) on the following issues: safety straps should not be placed in the primary radiation beam, safety straps should not be attached to the gantry and should not pose any risk of asphyxiation. The following recommendations for strap placement put forward by the RThCoP include situating the strap opposite to the area being treated with radiotherapy in order to minimize any possible unwanted radiation through the straps:

- For treatment above the diaphragm: place strap around the abdomen/pelvis
- For treatment below the diaphragm: place strap around the torso

The use of the safety strap for patients treated with face masks are subject to the discretion of the implementing department, as patients will already be secured to the treatment bed by the mask. Risk of further patient movement should be discussed by the care team before offering safety straps to these patients.



Patient Education

The RThCoP recommends that all cohorts of patients (those currently on active treatment and those starting treatment) would benefit from the use of safety straps and should be offered information about the benefits and risks associated with the safety straps. It is recommended that the following benefits be presented in patient education: provision of an additional safety device to complement the existing intercom and closed-circuit camera system, prevention of patients prematurely trying to get off the bed after treatment, and provision of increased stability for patients by giving them an item to hold on to. The following risks associated with declining the optional safety strap should be discussed with patients: accepting treatment hazards such as a narrow treatment bed, elevated bed height (4 feet or more above the floor) and the potential risk of serious injury should a patient fall from the treatment bed.

For patients already on active treatment who will be introduced to safety strap usage for the first time, it is recommended that a written supporting document be provided to patients explaining this change in procedure. A template of a patient information letter is provided in [Appendix B](#). At minimum, this letter should be offered in English and translated to additional languages as needed depending on RCC-specific patient populations.

For patients beginning treatment after departmental implementation of safety straps, the following education methods should be modified to include information about safety strap use and placement:

- Any group “patient education” classes
- MRT(T) led Computed Tomography (CT) simulation procedure education
- MRT(T) led LINAC new patient treatment procedure education
- Education provided on day 1 of radiation treatment (e.g. RThCoP day 1 education checklist):
 - o addition of “safety strap discussed” field
 - o additional information about bed height awareness to expand on the rationale

It is recommended that patients who decline the safety strap should have additional documentation added to their patient chart setup notes (or another visible area that is verified daily prior to treatment) to facilitate consistent treatment delivery in accordance with patients’ preferences by all members of the radiation treatment team.

Documentation

Documentation of patient consent for the use of safety straps should be captured in the patients’ radiation therapy chart. This consent should be verbally obtained and documented by MRT(T)s. Patients who choose to decline the strap after reviewing the benefits and risks with their MRT(T) team should also have documentation added to the radiotherapy set-up area of their chart.

Monitoring

No changes from routine practice are recommended with regards to the monitoring of patients using the safety strap. It is current practice that all facilities have a functioning intercom and



closed circuit camera system for radiation therapy patients undergoing procedures, including simulation and treatment. The RThCoP recommends the continued use of this equipment for all patients, with or without a safety strap.

Should patient-specific adverse effects related to a safety strap be noted, the strap should be inspected to determine a root cause. If patients reports discomfort that cannot be avoided, he/she has the right to decline use of the safety strap and education should be reviewed on the risks of treatment without a safety strap.

Current State of use Among Ontario Regional Cancer Centres

A survey was sent to MRT(T) representatives on the RThCoP in June 2014. Data was collected on the following: local implementation of safety strap usage (in their respective RCC), purchasing information and any observed barriers in implementation. A response rate of 73.3% was obtained (n=11 out of 15). To determine if further implementation had been achieved, additional implementation status updates were collected in an additional poll administered in June 2015. This second update received a 100% response rate (n=15).

Local Implementation Status

As of June 2015, the use of safety straps had been fully implemented in 12 RCCs and partially implemented in one RCC. The remaining RCC has purchased straps and completed draft policies but has not implemented their use.

Purchasing Information

Purchasing information and vendors used to develop straps for centres can be accessed by contacting Michelle Ang at: RTP@cancercare.on.ca

Barriers

The main barriers identified by MRT(T)s in the survey included challenges finding suitable straps that were cost effective and met RCC specific infection control guidelines. These guidelines can include, but are not limited to, an assessment of product safety and consideration of potential infection risks of the product to both patients and staff. Staff education is an important component of safety strap implementation to ensure adherence/buy-in.

Summary

In summary, the RThCoP recommends the implementation of safety straps in Ontario RCCs. These straps are safety tools, not restraints, and to date have been successfully implemented in most RCCs. It is recommended that remaining RCCs continue to move forward with policy creation, strap ordering and implementation in order to ensure the safest possible treatment environment for all patients undergoing radiotherapy simulation and treatment in the province.

It is CCO's intention to disseminate this report to the Regional Cancer Programs and advisory committees within the province and to make the document available to Ontario healthcare



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providers on the CCO website (www.cancercare.on.ca). This report will be reviewed on a regular basis to determine whether the information is still accurate and relevant to current practice and revised accordingly.

For general inquiries regarding this report, please contact:
RTP@cancercare.on.ca.



Acknowledgements

This recommendation report was developed by a special working group of the Radiation Treatment

Program's Radiation Therapy Community of Practice. Members of the *Safety Straps Working Group* include: Jaclyn Jacques MRT(T), BSc., Kasey (Kathleen) Etrene MRT(T), RTT, CTIC, BSc., Renée Roy MRT(T), HBSoc., Kim H. Dalley MRT(T), DCR(T).

This report was developed with the assistance of the Radiation Therapy Community of Practice Lead: Margaret Hart MRT(T) BSc., and the Radiation Treatment Program: Eric Gutierrez, MRT(T), CMD, BSc; Michelle Ang MSc., BHSoc; Pdraig Warde, MB, MRCPI, FRCPC.

Disclaimer

- This recommendation report was developed by a working group of the Radiation Therapy Community of Practice of the Radiation Treatment Program of Cancer Care Ontario. The material presented in this recommendation report illustrates the consensus reached among members of the Radiation Therapy Community of Practice and may not reflect current practice at all Ontario cancer centres. All approaches to treatment are subject to clinical judgment and actual practice patterns may not follow the material outlined in this report.
- This recommendation report may not reflect all the available scientific research and is not intended as an exhaustive report. CCO and the Radiation Therapy Community of Practice members assume no responsibility for omissions or incomplete analysis resulting from this recommendation report. It is possible that other relevant scientific findings may have been reported since completion of this recommendation report. This recommendation report may be superseded by an updated publication on the same topic.
- This recommendation report is not a clinical guideline or practice standard, and was *not* developed in collaboration with CCO's Program in Evidence-Based Care (PEBC). Evidence-based guidelines for head and neck cancer are available through the [PEBC](#).
- This recommendation report is intended to be used for informational purposes only, by radiation treatment professionals. It is not intended to constitute or be a substitute for medical advice and should not be relied upon in any such regard. Any person seeking to apply this recommendation report is expected to use independent medical judgment in the context of individual clinical circumstances or seek out the supervision of a qualified clinician. CCO and the Radiation Therapy Community of Practice members make no representation or guarantee of any kind whatsoever regarding the content, use, or application of this recommendation report and disclaim any responsibility for its application or use in any way.

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Health Quality Ontario. Long-Term Care Restraint Indicator Informational Webinar. November 1, 2013. <http://www.hqontario.ca/Portals/0/Documents/pr/ltc-restraint-indicator-information-webinar-slide-deck-en.pdf>. Accessed June 13 2014.

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Canadian Association of Medical Radiation Technologists (CAMRT) 2014. Competency profile, January 2014, section B 1.5. <http://www.camrt.ca/certification/canadian/competencyprofiles/RA%202014%20Competency%20Profile%20EN.pdf>. Accessed June 13, 2014.



Appendix A: A Position Statement by the Radiation Therapy Professional Advisory Committee (RTPAC), Cancer Care Ontario

November 2013 (approved RTPAC 2014.01.21)

Position: All patients undergoing simulation or external beam radiation treatment will be secured to the bed with safety straps, at all times.

Purpose: To ensure patient safety

Rationale: Medical Radiation Therapists have a responsibility to provide a safe treatment environment for patients.

- When patients are in treatment position, they are unaware of how high the treatment and simulator bed has been raised from the floor
- Linear accelerator bed can be 4 feet, or more above the floor
- Linear accelerator and simulator beds are narrow
- Many patients are not immobilized
- Patients can fall from the bed
- Safety straps are not used as restraining devices. Safety straps are protective to ensure a safe environment and as a reminder not to move.
- Positioning suggestions:
 - For treatment above diaphragm, straps are placed around the abdomen/pelvis
 - For treatment below diaphragm, straps are placed around the torso
- Straps are not to be placed in the beam path
- Strap placement should not pose any risks of asphyxiation or be attached to the gantry

Recommendation: each treatment facility should institute a safety strap policy and procedure specific to their equipment.

This should include, but not limited to:

- Documentation: patient specific documentation to capture the consent for safety strap to be used or patients choice to decline use of safety strap
- Patient Teaching: Patient teaching by radiation therapy will include risks and benefits
- Staff Training: ensure all staff know how to properly place safety strap
- Monitoring: expectations on monitoring patients with a safety straps



Evidence to Support the Position Statement

1. Canadian Association of Medical Radiation Technologist Curriculum Guide and Competency Profile, Radiation Therapy, November 2006 (revised January 2011). Canadian Association of Medical Radiation Technologists (CAMRT).

The competency profile defines the standard for certification and registration of entry-level radiation therapists in Canada. Module B outlines the responsibilities of the MRT(T) to provide a safe environment for patients.

	B1 Provide a safe environment to minimize the risk of adverse events to the patients and to the staff
B 1.1	Provide a safe, clean and comfortable environment
B 1.2	Transport the patient safely, using equipment based on the patient's physical and cognitive status and resources available
B 1.3	Transfer the patient safely, using equipment and techniques based on the patient's physical and cognitive status
B 1.4	Employ proper body mechanics to prevent harm to self and patient
B 1.5	Implement immobilization techniques based on age, physical and cognitive status of the patient and type of procedure
B 1.6	Adjust the patient's position to prevent harm, promote comfort and optimize procedure outcomes

2. College of Medical Radiation Technologists of Ontario Standards of Practice, (CMRTO) 2004 (Revised 2011).

MRT(T)s operate equipment, apply ionizing radiation and electromagnetism for magnetic resonance imaging, and administer radiopharmaceuticals, all of which could be dangerous if used incorrectly. MRT(T)s endeavor, at all times and in every aspect of their practice, to reduce the risk of harm to their patients, to themselves, to their colleagues and to any other individuals who may be present in the practice environment.

MRT(T)s must:

- assess the patient's physical and emotional limitations and ensure that the patient will not be expected to perform any task or movement that would cause physical harm
- take all reasonable precautions to ensure that no equipment can injure a patient

3. College of Medical Radiation Technologist of Ontario, Code of Ethics (CMRTO).

The Code of Ethics is intended to help MRT(T)s choose the right, fair, good and just action. Each MRT(T) is personally responsible for behaving according to the ethical principles set down in the Code. The Code of Ethics is to be used in conjunction with the College's Standards of Practice. Together, these documents provide a model for ensuring safe, effective and ethical professional performance to ensure safe, effective and ethical outcomes for patients.



The Code of Ethics details the MRT(T)s responsibility to the public and to the patient.

MRT(T)s act to ensure the trust and respect of the public by:

- a. maintaining high standards of professional conduct, competence and appearance;
- b. providing only those services for which they are qualified by education, training or experience;
- c. not making false, misleading or deceptive statements, orally or in writing; and
- d. advancing and supporting health promotion and research.

MRT(T)s act in the best interests of their patients by:

- upholding the principle of informed consent including the right of the patient, or the patient's substitute decision maker, to refuse service;
- treating all patients equitably, regardless of race, ancestry, place of origin, colour, ethnic origin, citizenship, creed, sex, sexual orientation, age, marital status, same sex partnership status, family status, disability or type of illness;
- providing individualized, comprehensive and safe treatment during examinations or therapy sessions, taking into account the patient's particular physical and emotional needs, values and cultural background;

4. Critical Incident in Ontario

In 2012, an adverse event occurred at a radiation treatment center in Ontario. A patient fell off the treatment bed and was seriously injured. This incident prompted a root cause analysis investigation, leading to routine use of safety straps for all patients at this facility.

This event is significant to highlight the chance of this happening at another centre. Although the frequency of occurrence is low, the severity can be high.



Appendix B: Patient Communication Letter

Dear Patient,

We are writing to inform you of a recent change in our practices at <<*Insert Cancer Centre Name*>> in the Radiation Therapy Department. This change will affect any patients having a CT/MRI planning scan as well as any patient receiving radiation treatment on the Linear Accelerator machines.

In an effort to improve patient safety, our treatment tables will now be equipped with a safety strap. This belt will be secured across your waist or chest during your treatment or scan. Wearing this safety belt will help to ensure that you do not fall or rotate off the table. Given the height of the treatment tables, this will help us to prevent unnecessary injuries.

You are of course free to decline using our safety belts; however, we strongly encourage the use of the belt for your safety. If you choose not to use the belt, you must understand and accept the risks involved.

If you have any questions or concerns about our new safety measures, please contact <<*Insert Radiation Therapy Manager name and contact information*>>

Thank you for your cooperation and understanding.

Sincerely,

<< *Insert Radiation Therapy Manager name*>>