Journal of Medical Radiation Sciences

Open Access

ORIGINAL ARTICLE

The Clinical Specialist Radiation Therapist (CSRT): A case study exploring the effectiveness of a new advanced practice role in Canada

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Keywords
Advanced practice, clinical specialist radiation therapist, CSRT, radiation therapy

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Received: 6 March 2017; Accepted: 29 March 2018

J Med Radiat Sci **65** (2018) 86–96

doi: 10.1002/jmrs.281

Abstract

Introduction: The Clinical Specialist Radiation Therapist (CSRT), is a new advanced practice (AP) role for radiation therapists (RTTs). Following training, education and evaluation, the CSRT performs specific duties in autonomous ways, making advanced clinical decisions in their area of specialization. This case study examines the CSRT's impact on quantity (i.e., increasing capacity), improving quality and stimulating research and innovation. **Methods:** Between 2007 and 2016, 23 CSRTs worked in 10 cancer centres in various AP position. A standardised metrics package, focusing on wait-times, patient volumes, patient throughput, time-savings, quality initiatives, satisfaction, research and innovation was developed and used to collect qualitative and quantitative data. Data were self-reported by the CSRTs but electronic databases, pre/post-studies, surveys and interviews were also used. **Results:** Quantity projects ($n = 76$) related to patient volumes, wait-times, patient throughput and time-savings increased capacity and allowed more patients to enter the system. The presence of a CSRT allowed, on average, 13 additional patients (either new or re-treated) to be seen, at their respective cancer centre, per month. An average of 1.4 yearly quality improvement initiatives were led by each CSRT, which contributed to improvements in quality of care and satisfaction. CSRTs demonstrated a high level of involvement in research, innovation and knowledge translation activities, either as leaders or part of interprofessional teams. **Conclusion:** CSRTs positively impact quantity (capacity of the system), quality, research and innovation. Future efforts include permanent and sustainable team integration, practice standards, formal and comprehensive educational preparation, and approaches to consistent, valid assessment of AP in radiation therapy.

Introduction

Recently the province of Ontario has faced challenges that include increased demand for cancer services, pressure to meet government targets, implementation of complex treatments, shortages of specialised staff and an aging workforce.[1] In this context, there was demand for innovative models of care, responsive interprofessional teams and advanced practice (AP) initiatives,[2] leading to the development of new healthcare provider roles, including the Clinical Specialist Radiation Therapist (CSRT). The role was rooted in the work of the Advanced Practice Radiation Therapist (APRT) project, which occurred between 2004 and 2006.[3]

In practice, the term AP is used inconsistently. Therefore, a new definition (Fig. 1) highlighting the specialised and advanced knowledge, skills and judgement required was created early in the CSRT project.[4] As described in this definition the CSRT is a registered medical radiation technologist in the specialty of

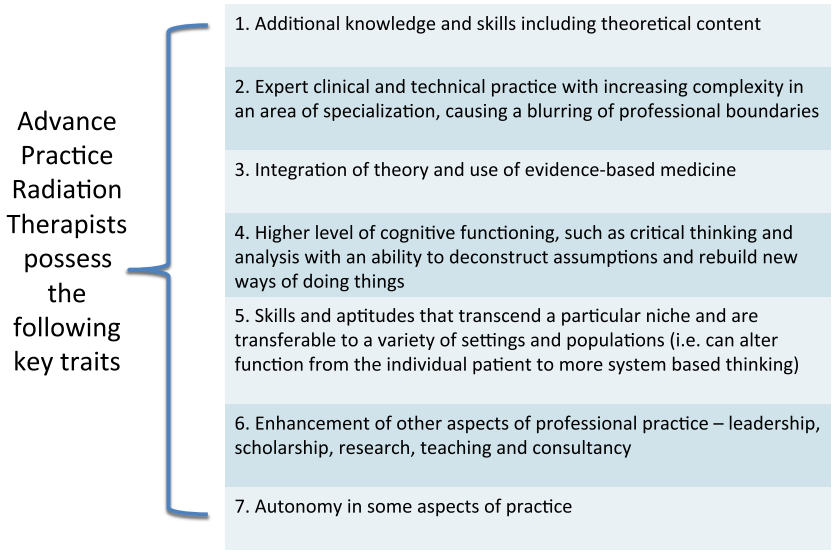

Figure 1. Definition of advanced practice in radiation therapy.

radiation therapy (RT) who brings advanced clinical, technical and professional competencies to the existing healthcare team. The CSRT role differs from the certified radiation therapist (RTT) in that, after appropriate training, education and evaluation, the CSRT performs specific duties in an autonomous way, making more advanced clinical decisions in their area of specialization.[3]

Experience with AP in RT is most advanced in the United Kingdom (UK),[5,6] Australia and New Zealand,[7] where AP roles have been implemented, tested and formalised. In the UK, the National Health Service successfully developed, implemented and evaluated a four-tier model for AP roles.[5] However, one study[8] examining the scope of radiographic practice in the UK confirmed that the implementation was designed primarily for radiography services. As Cox[9] similarly notes, in the UK "RT AP was more varied and was tailored to suit the needs of individual departments of radiation oncology". While a number of initiatives displaying the RTT's potential for AP have been developed in Australia and New Zealand, these tend to be "a 'bottom-up' approach, being led by RTs and supported only in certain supportive departments."[9] Therefore, the CSRT project is one of the first examples of a jurisdiction-wide, systematic and evidence-based strategy for the development, implementation and sustainment of an AP role for radiation therapists.

In Canada, implementation of the CSRT role was a 10-year initiative, consisting of several project phases, described in detail in a previous paper,[10] along with an implementation framework, challenges encountered and lessons learned for those embarking on similar initiatives. This paper will present a case study describing the impact of the CSRT role on increasing capacity, improving quality and stimulating research, innovation and knowledge translation.

Methods

Study design and sample

This investigation used a case study design, which is a preferred research strategy when investigating 'real-life' interventions since they offer explanations that link program implementation with program effects. They are also ideal in situations where multiple sources of data and data gathering techniques are being used.[11,12] The embedded units of analysis in this case study are the CSRTs who are grouped into three categories: the Senior CSRTs (eight+ years of experience), Junior CSRTs (3–4 years of experience) and New CSRTs (less than 2 years of experience). Our previously published paper[10] details the specific methodology used to select the CSRT's.

Data collection and analysis

Despite the different trajectories of the CSRT positions, a preliminary set of tools, to measure the impact of the role, was developed and tested for viability and applicability. This was done by first reviewing published literature for comparable methodologies, surveys and implementation designs. Unfortunately when the project began in 2004, the literature on the use of systematic, evidence-based frameworks for jurisdiction-wide implementation of new

health provider roles was scarce and only a handful of relevant, validated tools were identified.[13–15] Therefore, a new collection of standardised metrics was curated and developed then piloted by the Senior CSRTs.[10]

Categories of data collection in the standardised metrics package included: wait times, patient volumes, patient throughput, time-savings, quality initiatives, stakeholder satisfaction, research and innovation and knowledge translation. These categories were further classified into the three domains of quantity, quality or innovation, which were adapted from Cancer Care Ontario's (CCO) Models of Care Program.[16] Refer to Table 1 for definitions of the standardised metrics and details on the corresponding data collection tools used. All CSRTs were required to collect data using the above-mentioned metrics and submit standardised annual reports detailing their progress. They also documented their average workweek by tracking the number of hours spent on clinical, research/innovation, administrative/quality assurance and teaching activities.

Due to the uniqueness of each position, data were reported and analysed individually or under broad categories of findings. Where possible, data were aggregated to identify project-wide trends and examples of CSRTs' projects were provided. The CSRT project manager collated the data from the CSRT reports on an annual basis. Survey[13–15,17,18] and interview data were collected and analysed by third parties (e.g., research assistants). Secondary sources, including relevant literature, were also used (e.g., in developing the definition of advanced practice). Anecdotal case studies from clinics or individual patient experiences were used to give real life meaning to the role and its benefits, or to identify best practices or gaps. In cases where patient data were collected (e.g., for patient satisfaction surveys) CSRTs obtained ethics approvals or were assigned "quality assurance project" status from various hospitals and university research ethics boards.

Findings

This paper presents data collected from 2007 to March 2016. Currently, there are 23 CSRT positions at various stages of integration in 10 of 14 Ontario cancer centres. One additional position is currently unfilled. A total of 28 positions were implemented during the project, with three being discontinued for various financial and/or administrative reasons (Fig. 2).

CSRT role description

The CSRTs' self-reported data showed that each new position is unique with numerous distinct responsibilities. The positions covered a spectrum of services, within and across several treatment phases, from referral and decision to treat, through treatment planning and treatment delivery, to follow-up and palliative care. They also encompassed various disease sites and/or specialty techniques. The data documenting CSRTs' average workweek (Table 2) further highlights the variability across the CSRT positions. For example, the clinical and innovation/knowledge creation categories have the largest range of activity since they are the primary focus for each position. The data are also skewed by highly unique positions, for example, one CSRT had a high focus on research and development while another CSRT had none at the time of data collection. The workload breakdown also varied over time per CSRT depending on individual department goals and priorities. This type of variation in role description was also noted in other jurisdictions implementing AP roles. Lukosius Bryant et al.[19] note that in AP nursing there is a wide range in the number of work hours spent on domains such as clinical practice, education, leadership activities and research, suggesting a high degree of role variability.

Quantity – Does the new model improve capacity?

Due to position diversity, individual project duration and reporting structure, the total number of projects undertaken over the years in each quantity category could not be easily tallied. However, Table 3 and the text below provide a snapshot of the most recent self-reported data from 2015/2016, which increased capacity and allowed more patients to enter or move through the system. A total of 76 quantity projects related to patient volumes, wait times, patient throughput and time savings were undertaken (Table 3).

CSRTs affected capacity at two points of care; via (1) activities at the point of entry into the RT system (e.g., projects related to patient volumes and wait times), and (2) activities further along the patient care pathway (e.g., projects related to throughput and time savings). Between 2015 and 2016 the quantity projects were almost equally split between activities that occur at the point of entry and those that affect capacity further down the patient care pathway.

Activities at the point of entry into the RT system

CSRTs practising directly with new patient referrals and consults ("point of entry") could easily identify and assess their impact on the program's capacity. Table 4 shows the number of additional patients (either new or re-treated) who entered the system as a result of having a

Table 1. Domains and categories of data collection in the standardised metrics package used to measure the CSRTs' impact.

Domain	Metric definition	Methodology used to collect data
Quantity Does the new model increase capacity? (i.e., allow more patients to enter/move through the system than when a CSRT is not present)	**Wait times** Impact on specific patient wait experience at various points along the care path (e.g., initial consultation)	• Wait times data collected by CSRT from time stamp in electronic patient record
	Patient volumes Overall patient capacity in a specific clinic (# of patients per clinic)	• Data collected by CSRT from reports generated in electronic scheduling system • A pre/post study by CSRT (Pre = 3 months prior to CSRT's start; Post = 2 months after CSRT start) • Control/experimental method (CSRT's compared their group to a similar group outside of the CSRT's influence)
	Patient throughput Time it takes for patient to move from point X to point Y on the care path (e.g., from referral to consultation)	• Data collected by CSRT from electronic patient record with time stamp to track time points • A pre/post study done by CSRT (Pre = 3 months prior to CSRT's start; Post = 2 months after CSRT start) • Control/experimental method (CSRTs compared their group to a similar group outside of the CSRTs influence)
	Time savings Time saved by RO on activities delegated to/shared with the CSRT	• Baseline values documented by CSRT during initial project phases, a calculation of the time saved by RO for the CSRT to complete specific activities (# cases/period of time x time for RO to complete task)
Quality Does the new model improve process and increase satisfaction?	**Quality initiatives** Projects that address bottlenecks in the radiation therapy workflow	• Data self-reported by CSRT in annual reports
	Patient satisfaction Patient's content with the health care they receive from a CSRT	• Pre/post modified patient satisfaction survey - originally 46 questions scored on a 5-point Likert scale - revised to accommodate the cancer/palliative population (6 questions for non-CSRT cohort; 10 for CSRT cohort) - CSRTs obtained REB approvals
	RTT satisfaction RTT's content with the CSRT role	• Internally developed survey - originally seven questions on a 5-point Likert scale - revised to include three additional questions on a 5-point Likert scale (total of 10 questions)
	Stakeholder satisfaction Direct Supervisor's, Frontline staff (those working with CSRT e.g., RO, nurse), Secondline staff (those who indirectly/infrequent work with the CSRT, e.g. clerks, managers, RTTs) content regarding the value of the CSRT role	• Semi-structured telephone interviews with direct supervisors conducted by a single interviewer and analysed thematically (by hand or with NVivo software) • Originally 3 validated surveys for frontline and secondline staff using a pre-CSRT/control group and a post-CSRT/experimental group

(*Continued*)

Table 1. Continued.

Domain	Metric definition	Methodology used to collect data
		- revised to a 5-question survey for frontline stakeholders scored on a 5-point Likert scale
Research, innovation & KT Does the new model encourage innovation and academic contributions?	**Research** Principal investigator, co- principal investigator or collaborator	• Data self-reported by CSRT in annual reports
	Innovation New techniques and procedure	• Data self-reported by CSRT in annual reports
	Academic productivity and awards Peer reviewed papers and presentations, books/ chapters, etc.	• Data self-reported by CSRT in annual reports

CSRT, clinical specialist radiation therapist; KT, knowledge translation; REB, research ethics Board; RO, radiation oncologist; RTT, radiation therapist.

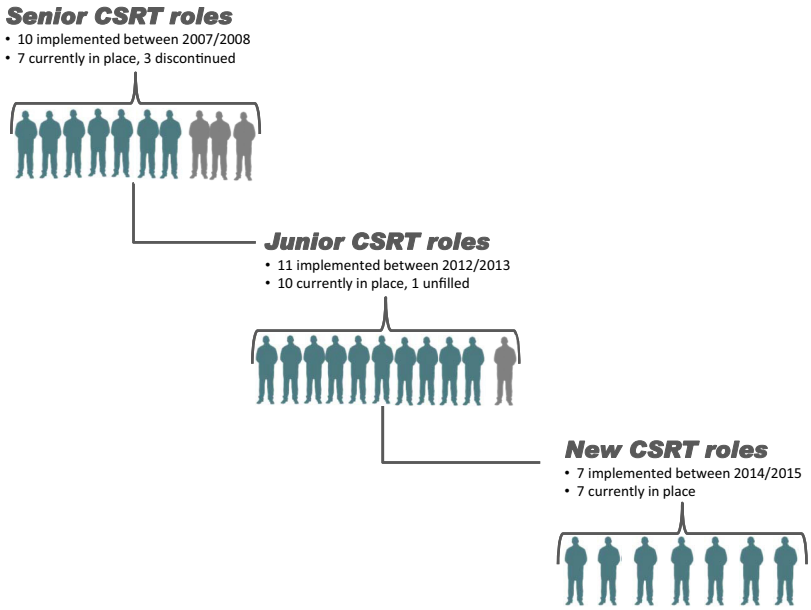

Figure 2. Overview of the total CSRT positions implemented in Ontario between 2007 and 2015.

CSRT working at the point of entry. The presence of a CSRT, at this stage, allowed, on average, 13 additional patients (either new or re-treated) to be seen, at their respective cancer centre, per month.

The large range in additional patients seen per month (2–36) was presumed to relate to differences in job description, local practices, patient populations and CSRT skill set. Local priorities also dictated how CSRTs were employed. In some cases, wait time pressures were the driving force for integrating a CSRT into a team, which would result in greater impact on the number of new patients seen. Data collected from interviews with CSRTs' direct supervisors (discussed in the next section) indicated that the redistribution of activities was highly valuable to the interprofessional team and program.

Activities further along the patient care pathway

Seventeen CSRTs were engaged in patient care activities such as patient assessment, teaching and follow-up care that took place further along in the RT pathway, which had a less clearly measurable impact. These activities were those that would normally be completed by a RO and often done on an ad-hoc basis with no formal workload capture mechanism. For example, in some cases a readily available CSRT can address a treatment-related patient

Table 2. Percentage of fulltime workweek dedicated to CSRTs activities (N = 23 CSRTs).

Type of activity	Description	Time (% of workload)
Clinical	Patient-related activities, such as planning, scheduled and ad-hoc consultations, calls, on-treatment reviews, follow-ups, online support groups, dictation, documentation, etc.	Average: 65 Median: 70 Mode: 80 Range: 10–90 Standard deviation: 22
Research/innovation	Protocol development, data collection, analysis, clinical trials, grant/document/manuscript preparation, etc.	Average: 23 Median: 17.5 Mode: 10 Range: 0–70 Standard deviation: 1
Administrative/quality assurance	Documentation, meetings, committees, quality assurance activities	Average: 14 Median: 10 Mode: 10 Range: 0–28 Standard Deviation: 6
Teaching	Education, evaluation, etc.	Average: 9 Median: 7 Mode: 5 Range: 0–20 Standard Deviation: 5

Table 3. Summary of results and examples of metrics used to capture the quantity domain (Self-reported data from 2015 to 2016).

Metric	Number[1] and examples of projects
Patient volume/wait times	• 19 projects (for 20 CSRTs who had work responsibilities in this area) *Example of projects:* -Reduced inappropriate referrals to rapid response palliative clinic from 13.7% to 3.0% -Increased number of NPs seen in clinic from 90 pts/RO to 110 pts/RO -Reduced "Referral to Consult" time from 44 to 23 days for non-melanoma skin cancer pts
Patient throughput	• 18 projects (for 20 CSRTs who had work responsibilities in this area) *Example of projects:* -Reduced "CTSIM to Treatment" time from 176.2 to 13.3 days (191/68) for curative H&N pts -Reduced time from "Referral to Consult" from 96 to 50 days for non-melanoma skin cancer pts -Increased "same day sim and treat" for palliative pts from 74 to 84% (160/133)
Time savings (by RO for activities delegated to/shared with the CSRT)	• 39 projects (for 20 CSRTs who had responsibilities in this area) *Examples of average time savings per pt* • Complete history (palliative patients) – 20 min • Target delineation for palliative pts – 20 min • Clinical mark up (non-melanoma skin cancer) – 20 min • H&N contouring – 41 min • H&N image registration and fusion – 14 min

NP, new patient; pt(s), patient(s); RO, radiation oncologist; CTSIM, CT simulation; H&N, head and neck; sim, simulation.
[1]Due to role diversity, individual project duration and reporting structure, the total number of projects for each category cannot be tallied therefore we provide a snapshot of their most recent self-reported data from 2015/2016.

issue instead of requiring an RO to leave what he/she was doing to come to the simulator, treatment unit or planning area. This approach allows for more effective use of department resources, as the staff (and often, the patient) at the unit are no longer in a holding pattern waiting for the physician.

Table 4. CSRTs' impact on patient capacity (n = 12 CSRTs, self-reported data from 2007 to 2016).

	Additional patients seen by CSRT's per month, per centre		
CSRT Groups	Average (new patients/ month)	Range (new patients/ month)	# of CSRTs whose role focuses on new consultation/ total # CSRTs in this category
Senior CSRTs	14.2	2–21	5/7
Junior CSRTs	17	3–36	5/9
New CSRTs	5.5	3–8	2/7

CSRTs also performed technical and time consuming activities such as image fusion, contouring, field/bolus placement and target delineation. For example, preparing treatment plans for patients with head and neck (H&N) cancer often requires the contouring of a large number of anatomical structures and regions of interest. It is estimated that this activity takes, on average, 41 min per patient to complete and that more than 600 patients are treated per year. Having the CSRT expertly complete the large majority of the contouring results in time-savings for the team, which can be redirected to increasing the capacity of the system. Table 5 shows that when CSRTs assume/share specific activities normally performed by ROs, 21 h per month (range: 2–66) can be saved, on average, by the RO. While the redistribution of these activities may result in time-savings for ROs and other team members, how that surplus time was used was difficult to characterize.

There were no medico-legal issues associated with the delegation of AP roles. In Ontario, activities can be delegated to a healthcare provider, who is not authorised for that controlled act, using two mechanisms – delegation and medical directives. Both mechanisms were used to allow CSRTs to assume responsibility and accountability for tasks normally provided by the RO.[20]

Table 5. Timesavings for Radiation Oncologists (ROs) resulting from CSRTs assuming activities (n = 17 CSRTs, self-reported data from 2007 to 2016).

CSRT Groups	Radiation Oncologist hours saved per month (per CSRT)
Senior CSRTs	Average: 23 h/month Range: 13–66 h/month n = 7/7 CSRTs have some duties that result in indirect impact depending on job description
Junior CSRTs	Average: 15.4 h/month Range: 2–37 h/month n = 6/9 CSRTs have some duties that result in indirect impact depending on job description
New CSRTs	Average: 24 h/month Range :16–39 h/month n = 4/7 CSRTs have some duties that result in indirect impact depending on job description

Quality – Does the new model improve process and increase satisfaction?

All CSRTs recorded activities and initiatives that contributed to improvements in quality of care and patient, RTT, and stakeholder satisfaction. On average, between 2007 and 2016, there were 1.4 quality initiatives being led by each CSRT every year (this number does not include initiatives were the CSRT was only a participant on a working group). There was a consistent rise in the number of initiatives being undertaken, for example, in 2013/14 there were approximately 30 projects underway, in 2014/15 there were 34 and that number rose to 39 in 2015/16.

The quality initiatives often focused on the introduction and/or enhancement of quality assurance (QA) processes and the development of new evidence-based treatment and care standards. For example, variation in contouring is a frequently documented problem in RT.[21] Consequently, when a single CSRT completed the contouring across 600+ patients with H&N cancer, contouring consistency was significantly increased.[22] Furthermore, introducing QA "case rounds" resulted in an opportunity to discuss planning variations and achieve team consensus.[22,23] Similarly, another CSRT assumed responsibility for QA rounds for a breast disease-site group and was able to increase the number of patient cases reviewed from 20 to 100%.[23] Another CSRT developed new institutional guidelines for whole brain radiation, reducing the large variation in techniques that previously existed.[22] Due to QA changes implemented by CSRTs, there has been a substantial increase in standardization of treatment and consistency in practice, which is expected to lead to more accurate dose delivery and better outcomes for patients.[21] CSRTs' expertise is often recognised and employed beyond their local department. For example, one CSRT led the development of provincial recommendations for H&N nomenclature and clinical volume setting.[24]

Between 2008 and 2016 a total of 246 pre-CSRT and 383 post-CSRT patient satisfaction surveys were completed. The results showed that patients express high levels of satisfaction and report no disadvantages to care provided by a CSRT.[25] CSRT-led changes also improved healthcare provider satisfaction by streamlining workflow, creating time-savings for ROs and introducing practice standards, policies and procedures. For example, the CSRT streamlined the planning process for left-sided

breast cancer patients by developing a process that eliminated the need for a second simulation appointment, reducing workload on the simulator, saving patient time and reducing the risk of error from one appointment to the next. Survey and interview data gathered from CSRTs' supervisors showed that, providers were satisfied with CSRTs and believed they were a valuable addition to the RT team.

Finally, survey data from RTTs also showed that they felt the addition of the CSRT role to the RTT career ladder was a positive move and may address some of the sources of career dissatisfaction among RTTs, such as lack of career opportunities, low wages and opportunity to specialise (Table 6). Bolderston confirms that prior to the move towards an AP role there had been limited efforts to expand RTT's career advancement opportunities, enrich their work environment and/or increase their autonomy.[26]

Research, innovation and knowledge translation – Does the new model encourage innovation and academic contributions?

Depending on specific job descriptions, CSRTs engaged in projects such as original research, developing innovative techniques and procedures, and translation and dissemination of existing knowledge into practice. Examples ranged from the creation and management of an outcomes database for patients receiving intensive chemo-radiation allowing enhanced evaluation of the efficacy of specific treatment techniques, and the assessment of the use of cardiac ultrasound in establishing the suitability of left-sided breast cancer patients for special cardiac-sparing treatment techniques. The impressive body of work for these CSRTs is shown in Table 7 and Figure 3 highlighting the overall academic/scholarly contributions of these professional leaders and showcasing their productivity. CSRTs are recognised for their contribution to the science of RT through the receipt of numerous awards, being sought after as opinion leaders for invited presentations, provincial, national and international committee membership, and contribution on expert panels and communities of practice.

Future efforts

Ongoing sustainability efforts include establishing a national credential and practice standard for AP in RT, the creation of a formal Community of Practice for CSRTs in Ontario, ensuring that voices are heard in relevant policy discussions at the loco-regional and national level, and characterising the true financial implications of the new model of care. Educational institutions in Ontario have been engaged to deliver a formal curriculum that will facilitate acquisition of the necessary competencies. Institutions are also being encouraged to offer the curriculum online, to increase accessibility and flexibility for part-time students. Furthermore, a collaborative initiative between the project members and the national professional association has resulted in the development and implementation of a standardised assessment process for advanced RT practice.[27]

As the project evolves, it is important to streamline the expectations of the role and to facilitate collaboration and knowledge sharing amongst and between the professionals involved. Advocacy, knowledge dissemination and policy influence become imperative to the sustainability of the

Table 6. Radiation therapist satisfaction survey with the CSRT role (survey data from 2010).

Survey Question	Response/Rating	Statistics	
Whether you would like to become a Clinical Specialist Radiation Therapist or not, do you think this position will help positively address the three main issues impacting Radiation Therapist job satisfaction:			
(a) Lack of career opportunities	4 – Strongly address the issue	Mode	3
	3 – Somewhat address the issue	Mean	3.0
	2 – Only address the issue a little bit	SD	0.7
	1 – Not address the issue at all	*N*	200
(b) Low wages	4 – Strongly address the issue	Mode	3
	3 – Somewhat address the issue	Mean	2.5
	2 – Only address the issue a little bit	SD	0.9
	1 – Not address the issue at all	*N*	193
(c) Opportunities to specialise	4 – Strongly address the issue	Mode	4
	3 – Somewhat address the issue	Mean	3.3
	2 – Only address the issue a little bit	SD	0.8
	1 – Not address the issue at all	*N*	198

N, number of participants; SD, standard deviation.

Table 7. Knowledge creation and dissemination activities for all CSRTs (n = 23).

	Number of activities/initiatives							
Activity/initiative	2008	2009	2010	2011	2012	2013	2014	2015
Presentations								
Peer reviewed podium	4	10	6	4	18	20	27	19
Peer reviewed poster	7	7	15	20	14	26	32	24
Invited/external podium	6	6	9	8	10	15	11	18
Intra-departmental	3	10	8	2	7	9	11	6
Interdepartmental	3	5	2	2	9	8	12	5
Workshops		2		1	6	14	8	8
Peer-reviewed publications								
Manuscripts (published)	14	25	16	31	28	26	32	27
Manuscripts (in-progress)								2
Abstracts	16	6	12	4	14	10	17	38
Guidelines						2	4	
Book								
Chapter			13	2		11	4	4
Editor			1	2		1	1	
Awards/honours	4	3	5	9	10	14	11	7
Total activities/initiatives	57	74	90	85	116	156	170	158

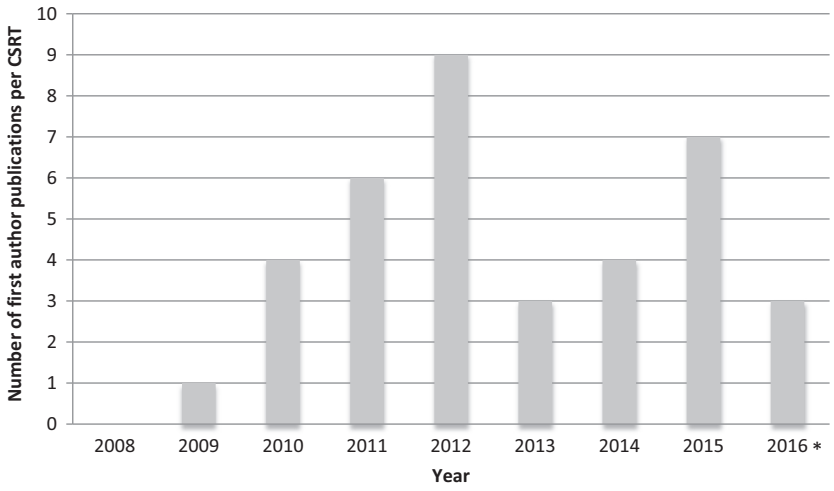

Figure 3. CRTS's First Authored Publications (n = 23). *The data is partial for 2016 since the cut off for CSRT reporting was April 2016 representing 33% of the year.

initiative at this juncture, since these types of "participatory approaches generate political commitment, build ownership and create champions, ensuring that the issues raised are considered from multiple perspectives, and decisions are reached collectively about how to proceed in the specific local context".[28] Administrators, team members, professional bodies and CSRTs must collaborate to maximise the impact of the role, identify where new positions will be beneficial, and contribute to the success and permanence of the role. For example, the data suggest that CSRTs who work in an area where patients enter the system, on average 13 additional patients can be seen per month. In Ontario's current funding model, the compensation formula for these additional patients would cover the salary of the CSRT as well as other downstream costs associated with higher patient volumes. However, additional research and discourse is needed.

Limitations

While the CSRT project used a robust mixed methods design to gather data, it is challenging to standardise

data collection when implementing new positions in different settings. Therefore the standardised metrics needed to be modified to capture the CSRT's contributions in specific positions, cultures and contexts. However, conversely, these noted variations highlighted the adaptability of CSRT positions to meet local needs. Another limitation of the current work is the unavoidable reliance on self-reported data, which can be affected by reporting bias and memory recall, however, it does offer an in-depth, first-hand understanding of the program being studied and its various complexities.[11]

We were unable to directly measure the CSRTs' impact on patient outcomes. Similarly, in a recent systematic review, Hardy et al.[29] were unable to definitively conclude that AP improved patient outcomes and health service quality. However they did suggest that patient morbidity may be reduced when an AP radiographer is present due to improvements in clinical diagnosis and treatment. While the quality projects carried out by CSRTs may lead to improved outcomes for patients additional research is needed in to confirm this hypothesis.

Conclusion

CSRTs are effective and high-performing members of the interprofessional healthcare teams. By optimising the use of intellectual capital and scopes of practice, the new model enhances quality of care delivered to our patients and facilitates advancements in the science and practice of RT, while increasing patient, capacity, throughput, and satisfaction. Work going forward will focus on permanent and sustainable integration of CSRTs into the RT team and facilitating province-wide uptake of the CSRT role. In the face of many factors influencing practice in contemporary radiation medicine, it is imperative that the team and system have flexible and adaptable strategies to meet the pressures and challenges that arise. It is believed that the CSRT role is one such strategy for success.

Acknowledgements

The CSRT project was made possible through funding from Ontario's Ministry of Health and Long-term Care. The study sponsors did not have any involvement in the study or its publication. We thank Carina Simniceanu for her assistance in preparing the final manuscript.

Conflict of Interest

The authors declare no conflict of interest.

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