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CLINICAL SPECIALIST RADIATION THERAPIST (CSRT) SUSTAINABILITY PROJECT

*FINAL REPORT – **2012/13***

FINAL REPORT
May 24th, 2013

Driving quality, accountability and innovation in all cancer-related services

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EXECUTIVE SUMMARY

Beginning in May 2006, in the face of increasing cancer burden and human resource pressures, the Ministry of Health and Long-Term Care (MOHLTC) funded a series of projects to investigate a new health care provider role – the "clinical specialist radiation therapist" (CSRT). The results of these projects showed a number of positive impacts in local radiation treatment programs and resulted in the approval of the CSRT Sustainability Project, in March 2011.

The Sustainability Project, set to span a five-year period, focuses on six key elements related to long-term sustainability of the CSRT role in Ontario:

1. Extending agreements with each employment site, for the original (up to) seven full time equivalent (FTE) CSRTs, that guide the ongoing relationship and oversee the continued data collection as CSRTs transition to full scope;
2. Creating and overseeing the "Integration Support Team" which will assist with the integration of original and new CSRTs into cancer care teams;
3. Supporting the hiring of (up to) thirteen FTE additional CSRTs and providing ongoing assistance with position implementation and assessment;
4. Formalizing the CSRT role through ongoing data collection and work with relevant organizations;
5. Developing comprehensive "models of care" for radiation medicine which capture the contributions of the CSRT and consider other roles that may be introduced to maximize system efficiencies; and
6. Conducting knowledge creation and dissemination activities including employer surveys to contribute to labour market knowledge.

This report provides an update on CSRT Sustainability Project activities completed as of March 31, 2013.

Since the last report, the Integration Support Team (IST) has overseen a rapid escalation in activities related to the selection and implementation of 10 (9.5 FTE) new positions in Ontario which were filled in July 2012. Also, an additional two positions were selected in a second RFP round over the winter of 2012. These additional two successful sites are currently selecting the radiation therapists who will fill the respective CSRT positions beginning in Summer 2013. This will bring the total number of CSRT positions in the province to 19.

Efforts continue to better understand and articulate the positive benefits the CSRTs have on their local programs. Data consistently show positive impact on both quantity of patients seen and quality of care, including a positive impact on both patient and provider experiences. A collective and concise description of the CSRT impact is an ongoing focus as is the establishment of standards and consistent approaches to CSRT implementation and integration. To this end, work with the College of Medical Radiation Technologists of Ontario (CMRTO) is ongoing so that the new role can be characterized and documented in alignment with the regulatory requirements.

Sustainability efforts are also being advanced through the establishment of "permanent" CSRT positions in the provincial cancer centres. The Odette Cancer Centre and Juravinski Cancer Centre have now each made their two senior CSRT positions permanent. Progress continues to be made for the three senior positions at the remaining original site – Princess Margaret Cancer Centre (Toronto). In addition, in this past year, one of the senior CSRTs, who was retiring, was replaced with a new incumbent. This demonstrates that there is a pool of radiation therapists

who are qualified to assume CSRT positions and responsibilities and that the transition can occur smoothly.

One of the most important initiatives related to the sustainability of the CSRT role is knowledge dissemination and promotion of the positive benefits of the role. CSRT engagement in these activities continues to grow almost exponentially and we expect this trend to continue as the 10 junior CSRTs begin to express their new found confidence and experience. Scholarly activities related to knowledge dissemination, including publication of projects both online and in peer reviewed journals as well as presentations and workshops at relevant professional gatherings, have continued to grow at a rapid pace, as does the number of awards and accolades the CSRTs continue to garner. The communication of these successes in combination with the project's current momentum combine to favorably impact on the long term sustainability of the CSRT role in the Ontario cancer care system.

Despite the many successes of the CSRT project there are also several outstanding areas that require continued attention, including:

- Reach consensus on what "full scale" implementation looks like
- Pilot testing within existing resource constraints
- Investigate for and advocate with other sources of funding beyond pilot
- Prepare to advocate for necessary changes – policy, regulations, other components

These are essential steps in finalizing the permanence of the CSRT role in the interprofessional radiation treatment team and will continue to be addressed as the CSRT project moves forward.

A/ BACKGROUND

Ontario's heath care system faces many challenges, including increasing costs, an aging population, shortage of health professionals, the introduction of expensive new treatments and technologies, and a growing complexity of care. In the coming years, 44% of men and 39% of women are expected to develop cancer. Cancer Care Ontario (CCO) estimates each day 180 Ontarians are diagnosed with cancer, and that by 2015 400,000 people will be living with or have survived cancer in Ontario.[1] In this context, the demand for innovative clinical practitioners and flexible and responsive interprofessional teams has never been stronger.

In response to these system demands – and recognizing the value of interprofessional practice[2] – the Ministry began exploring non-traditional and creative solutions to recurring issues in radiation therapy.[3] These efforts ultimately led to the development of the CSRT role and the CSRT Demonstration Project (See Figure 1). The CSRT role provided an opportunity to think creatively about traditional and new ways of working, within the context of an interdisciplinary team environment. The work of the CSRT Demonstration Project confirms CCO's commitment to drive quality, accountability and innovation throughout Ontario's cancer system. A detailed background and timeline for the series of projects can be found in Appendix A.

Figure 1: CSRT Projects – Project Phases

- Advanced Practice Radiation Therapy (APRT) Development Project (2004-2006)
- CSRT Demonstration Project – Phase I (March 1, 2007 to March 31, 2008)
- CSRT Demonstration Project – Phase I Extension (April 1, 2008 to March 31, 2009)
- CSRT Demonstration Project – Phase II Expansion (August 1, 2008 to March 31, 2010)
- CSRT Demonstration Project – Phase IE[2] (April 1, 2009 to March 31, 2010)
- **CSRT Sustainability Project – April 1, 2010 to March 31, 2014**

The new initiative included a Demonstration Project that introduced and evaluated the CSRT role in a number of different health care institutions across the province. Up to 10 full-time equivalent (FTE) CSRTs were supported in this project which ended March 31, 2010. The results of the final phase of the CSRT Demonstration Project were reported in May 2010 showing the overall positive impact that the pilot CSRT positions were having in their respective programs and services. In concert with the submission of the final results, CCO also recommended a final "Sustainability Phase" of this health service development work. In March of 2011, the CSRT Sustainability Project received funding for a three-year plan to permanently integrate the CSRT role into Ontario's cancer care system including an additional 10 CSRT pilot positions. In October of 2012, a further 4 pilot positions were approved in principle.

The CSRT Sustainability Project has several key elements:

1. Extending agreements with each employment site for the original (up to) seven FTE CSRTs; the agreements will outline requirements and responsibilities of each site as a

[1] CCO, Ontario Cancer Plans. https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=84204 (accessed on May 22, 2013)
[3] Institute of Medicine, Crossing the Quality Chiasm: A New Health System for the 21st Century. Washington, D.C.: National Academies Press, 2001.
[4] Goodyear, J. Innovative Solutions: New and Expanded Roles in the Healthcare System. Presentation at CCO Advanced Practice Workshop. Toronto, Ontario, March 26, 2004 (March 26, 2004).

partner in the project and oversee the ongoing data collection as CSRTs transition to full scope;
2. Creating and overseeing the "Integration Support Team" which will assist with the integration of original and new CSRTs into cancer care teams;
3. Supporting the hiring of (up to) thirteen FTE additional CSRTs through various activities related to education, communication, preparation, supporting selection processes and ongoing assistance with position implementation and assessment;
4. Formalizing the CSRT role by continuing to collect evidence documenting impact of original and new positions and working with relevant organizations to formalize the CSRT role;
5. Developing comprehensive "models of care" for radiation medicine which capture the contributions of the CSRT and consider other roles that may be introduced to maximize system efficiencies; and
6. Conducting knowledge creation and dissemination activities including employer surveys to contribute to labour market knowledge for use in health human resource forecasting and planning.

In general, CCO believes that the CSRT is a valued and high-performing member of the interprofessional team, contributing to the provision of high quality, cost effective radiation therapy and care to the people of Ontario while serving as leaders in the advancement of the overall science and practice of radiation therapy. These sustainability measures will go a great distance to facilitate the long-term integration of the CSRT role in Ontario and beyond.

B/ KEY ELEMENTS

1.0 CSRTs

1.1 General Overview

There are currently 17 CSRTs in place across the province placed in 7 of the 14 cancer centres in Ontario (See Figure 2). One additional position is currently being filled (for start in June 2013) and one proposal is undergoing minor revision in anticipation of approval and subsequent implementation in July 2013. These will bring the total CSRT positions in Ontario to 19.

Figure: 2

SENIOR CSRTs

1. Palliative Radiation Therapy CSRT – Princess Margaret Cancer Centre (PMCC)
2. Target Visualization and Delineation CSRT, Head and Neck Site Group – PMCC
3. Palliative Radiation Therapy CSRT – Odette Cancer Centre (OCC)
4. Patient Assessment and Symptom Management CSRT, Breast Site Group – PMCC
5. Skin Cancer CSRT – OCC
6. Metastatic Bone Cancer CSRT - Juravinski Cancer Centre (JCC)
7. Head and Neck Cancer CSRT – JCC

JUNIOR CSRTs

1. Brachytherapy CSRT - Odette Cancer Centre (OCC)
2. Brachytherapy CSRT – Princess Margaret Cancer Centre (PMCC)
3. Thoracic HDR Brachytherapy CSRT – Juravinski Cancer Centre (JCC)
4. Breast CSRT, JCC
5. Planning Image Definition and Contouring Head and Neck (H&N) CSRT, London Regional Cancer Program (LRCP)
6. Stereotactic Body Radiation Therapy CSRT, OCC
7. Image Guided Adaptive Radiation Therapy (IGART) CSRT, PMCC
8. Palliative CSRT, Stronach Regional Cancer Centre (SRCC)
9. Palliative CSRT, Cancer Centre of Southeastern Ontario (CCSEO)
10. Palliative CSRT, Carlo Fidani Peel Regional Cancer Centre (PRCC)

A more detailed description of each position is provided in Appendix B.

CSRT Competency Profile and Job Descriptions

One of the most well documented challenges in developing permanent and integrated new health care professional roles is the clear communication of concrete job descriptions and role expectations. In anticipation of this, a competency profile has been developed. This competency profile forms the basis for all CSRT positions despite area of specialization. The provincially (and now nationally) validated competency profile, that was presented in previous reports, can be found in Appendix C.

It has been long recognized that each CSRT position varies from the next with respect to the emphasis that is placed on clinical, research and teaching activities (for example). It has been further recognized that the breakdown of work responsibilities will change from time to time for a

single CSRT in response to shifting programmatic pressures. To more clearly understand the variation amongst positions, the breakdown of each CSRT's work week (Table 1) is documented below under the following headings:

1. **Clinical** – any patient related activities - planning, consults, set up consults, telephone calls, on treatment reviews, follow-ups, online support groups, dictation, documentation, etc.
2. **Innovation** – data collection/analysis, clinical trials, document writing, presentation, etc
3. **Administrative/Quality Assurance (QA)** - documentation, meetings, committees, QA activities, etc.
4. **Referrals** – triaging, handling and sorting new patient referrals to appropriate clinics, specific physicians, services, etc.
5. **Teaching** – education and evaluation on any level.

Table 1: Percentage of Total Workload by CSRT

	Clinical	Innovation	Admin/QA	Referrals	Teaching
SENIOR CSRTs					
Bone Mets CSRT, JCC	35	15	25	25	
Breast CSRT, PMCC	50	25	20		5
Skin CSRT, OCC	50	15	10	20	5
TV&D CSRT, PMCC	80	10	5		5
H&N CSRT, JCC	25	45	20		10
Palliative CSRT, OCC	50	25	12	8	5
Palliative CSRT, PMCC	80		15		5
JUNIOR CSRTs					
Brachytherapy CSRT, OCC	70	20	5		5
Brachytherapy CSRT, PMCC	50	30	10		10
Thoracic HDR Brachytherapy CSRT, JCC	80	20			
Breast CSRT, JCC	40	20	20	10	10
Planning Image Definition & Contouring H&N CSRT, LRCP	60	25			15
SBRT CSRT, OCC	65	25			10
IGART CSRT, PMCC		80			20
Palliative CSRT, SRCC	80	10	10		
Palliative CSRT, CCSEO	85		15		
Palliative CSRT, PRCC	65	20	5	10	

Providing a clear description of the CSRT position has been repeatedly identified as directly linked to maximizing successful integration of the position at the local level. As such, constant efforts are being put into characterizing the various positions and their clinical contexts. This work is ongoing.

1.1a Senior CSRTs

Two key elements of the funding agreement related to the senior CSRTs include:
1. Extending agreements with each employment site that outlines requirements and responsibilities of each site as a participant in the project; and
2. Overseeing ongoing data collection as CSRTs transition to full scope of practice.

Seven CSRTs, from the Demonstration Project, have been in place since 2007 or 2008 at the three main cancer centres in southern Ontario – Juravinski Cancer Centre (at Hamilton Health Sciences Centre), Odette Cancer Centre (at Sunnybrook Health Sciences Centre) and Princess Margaret Cancer Centre (part of the University Health Network). These seven CSRTs continue to work with their colleagues and programs to formalize their place among the interprofessional team. In keeping with the reality that the CSRT role is in constant evolution as it responds to the specific needs of its home program, some existing activities were discontinued or modified, and in some cases, additional activities were undertaken. The majority of new activities are related to innovation and knowledge translation as the CSRTs' expertise in driving and leading the adoption of new techniques and technologies is harnessed.

It is interesting to note that, due to a retirement, the Skin Cancer CSRT at OCC has been successfully replaced by a new CSRT. This is the first example of succession planning for a CSRT position. OCC employed the tools and processes developed throughout the CSRT projects to recruit and select the new CSRT.

1.1b Junior CSRTs

Ten new CSRT positions (9.5 FTEs) were implemented in the summer of 2012 in response to a formal request for proposals issued in November 2011. An additional request for proposals was issued in November 2012 and 2 new positions (2 FTEs) are currently being prepared for implementation. The two calls for proposals rendered a total of 16 proposals. Twelve (12) were eventually approved against established criteria for 11 funded positions. Given that one of the proposals was for a 0.5 FTE position, an additional proposal was funded at 50% upon agreeing to participate fully in project activities.

1.2 CSRT Data

As has been documented previously, efforts are underway to merge this longstanding CSRT Project with the newly established Models of Care program at CCO. As a result, the CSRT Sustainability Project modified how it is collecting and reporting on data in 2011/12 and continues this trend in the current report. The project now reports findings under the headings of Quantity (capacity building), Quality and Innovation/Knowledge Translation (See Figure 3). The categories reflect CCO's belief that these areas of impact are of greatest importance when considering a change in practice.

Figure: 3

i) Quantity

Does the new model save the system money or allow for increased patient capacity with the same money?

Does the new model allow patients to enter/move through the system more quickly?

Does the new model reduce the cost of human resources required to meet existing patient demands and/or optimize the use of human resources?

(while maintaining patient and provider experiences as well as patient outcomes)

ii) Quality

Does the new model improve patient experience, outcomes and/or provider experiences? (e.g. new services, process streamlining, standard setting, etc.)

iii) Innovation and Knowledge Translation

Does the new model bring the promise of improved patient treatment, care and/or outcomes? (e.g. new technique, adoption of new technology, etc.)

i) Quantity

Capacity building continues to be a top priority of the CSRT projects. The impact of the CSRTs related to quantity currently appears to fall into 2 categories – through direct patient care or through work behind the scenes. As previously mentioned, each of the pilot positions has a unique job description that outlines how much of their time is expected to contribute to the various elements of their position. The breakdown will be affected by department goals and objectives and the group/program that the CSRT is a part of. For those CSRTs engaged in direct patient care, it is easier to identify and assess their impact on the capacity of the program. But for those positions that focus on more technical activities, quantifying the impact of these indirect tasks has proven more difficult.

Tables 2 to 4 below illustrate the continued impact of the senior CSRTs on their particular areas. The capacity increases for the senior CSRTs remains relatively stable as the clinical requirements of the positions have plateaued as the departments work to solidify each position.

Table 2: Direct CSRT Impact on Quantity

QUANTITY – DIRECT		
Bone Mets CSRT, JCC	• Additional patients seen if CSRT is present in clinic	• ~12 patients/month
	• Unscheduled referrals accepted and managed by CSRT outside of regularly scheduled clinics	• ~8 patients/month
Palliative CSRT, PMCC	• Additional new patients accepted in rapid response clinic if CSRT present	• ~12 patients/month
	• CSRT-run weekly PROP review clinic	• ~20 patients/month

Skin Cancer CSRT, OCC*	• Increase number of new patients in each weekly clinic when CSRT is present	• TBD
	• Potential to add more patients through independent clinic in Veterans wing of hospital	• TBD
Breast CSRT, PMCC	• Additional new patients seen if CSRT present in clinic	• ~8 patients/month
Palliative CSRT, OCC	• Additional referrals accepted with CSRT part of the rapid response team	• ~12 patients/month
	• "CSRT-only" Bone Metastases Clinic	• ~10 patients/month

**new CSRT in position following retirement of original CSRT.*

As mentioned, there are some CSRT positions that focus on activities and functions that are behind the scenes, not at the front line interfacing directly with the patients. The impact of these positions is harder to firmly measure as the activities result in time savings for the radiation oncologists and other team members, but how that surplus time is used is difficult to quantify. There are also activities that all CSRTs undertake that have a less clearly identifiable impact on the program or service they work in. These activities usually involve the assumption of some function normally completed by a radiation oncologist which is usually scheduled outside of a dedicated clinic. These activities usually interrupt the oncologist in a clinic or completing some other activity. This process has a negative impact on the patient experience as well as on the effective use of department resources while the unit and staff are in a holding pattern waiting for the physician to arrive. Table 3 below summarizes some of these activities and the indirect time savings that result from the CSRT assuming these activities from the radiation oncologist.

Table 3: Indirect CSRT Impact on Quantity

QUANTITY – INDIRECT		
Bone Mets CSRT, JCC	• Completion of virtual simulation independent of Radiation Oncologist (20 min/simulation x 40 simulations/month)	• ~ 20 hours/month
Target Visualization CSRT, PMCC	• Time saved by assuming responsibility of contouring – ~13*/week x 55 minutes/patient (previously reported)	• ~ 50 hours/month
H&N CSRT, JCC	• Bolus marking in place of Radiation Oncologist - ~ 3 patients/week at 15 minutes/patient • "on treatment" review in place of RO - ~12 patients per week x 6 minutes/patient	• ~4 hours/month • ~5 hours/month
Palliative CSRT, PMCC	• Discharge plans for patients completing treatment - ~24 patients/month x 15 minutes/patient	• ~6 hours/month
	• Contouring targets and delineating treatment fields in lieu of ROs	• ~12 hours/month
Breast CSRT,	• Unscheduled assessments possible due	• ~12 patients/month

PMCC	to CSRTs increased flexibility	
Palliative CSRT, OCC	• Placing of treatment volumes and treatment fields for rapid response patients	• ~20 hours/month

Efforts are continued to quantify how these indirect time savings impact the various program and department activities. Establishing direct correlations is proving very difficult, however qualitative feedback from the team indicates that the benefits are many.

While it is too early to provide data for these activities for the junior CSRTs, the current variety of projects that are being undertaken to provide evidence of impact are summarized in Table 4 below.

Table 4: Number of projects being completed by Junior CSRT to impact on Quantity

	Increased Throughput/ Access	Time Savings for team/members	Patients moving through system faster
JUNIOR CSRTs	8	8	8

The more detailed descriptions of the capacity building exercises can be found in Appendix D.

ii) Quality

The CSRTs continue to build their practice around Quality initiatives. In general, these activities relate to

- improving the patient experience – reduction in inappropriate referrals, addition of new patient services, activities focused on streamlining workflow, etc.
- improving patient outcomes – introduction/enhancement of quality assurance processes, development/introduction of treatment/care standards, etc.
- improving the provider experience – activities focused on streamlining workflow, introduction of practice standards or policies, etc.

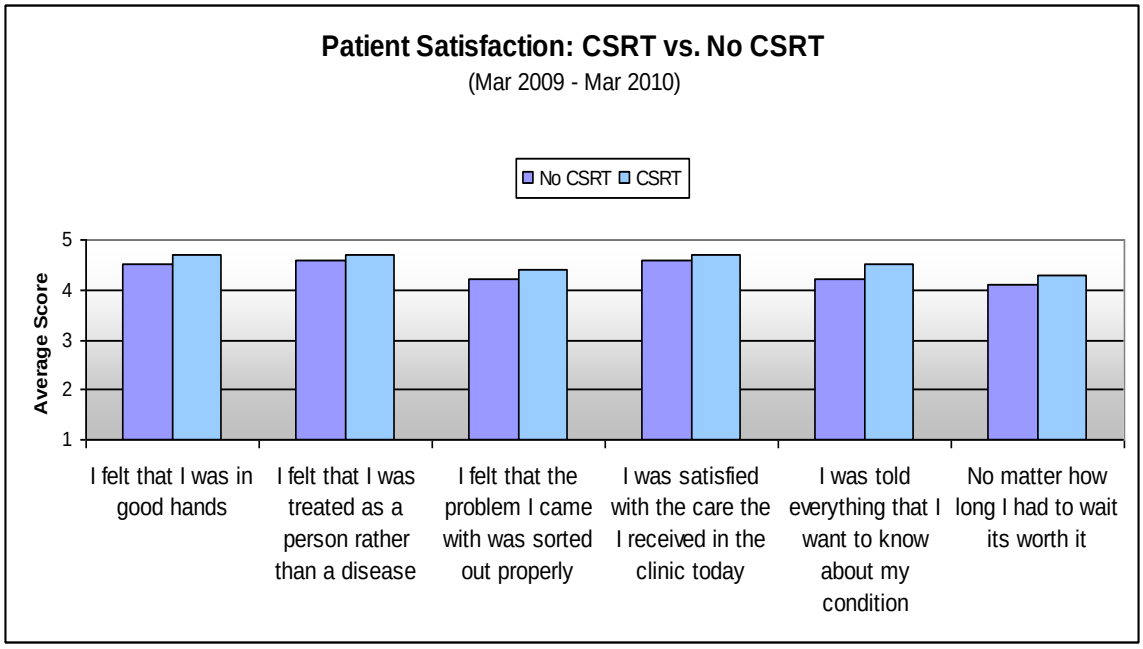
a) Patient satisfaction

Data were originally collected for the senior CSRTs in 2010 and are being presented here. The project employed the "Patient Satisfaction Questionnaire" originally designed and validated by the Rheumatism Research Unit at the University of Leeds[4] (the modified version was altered to make the questionnaire more generic for use in all clinics, rather than clinic specific).[5] The questionnaire takes approximately 10 minutes to complete and has a total of 46 questions that are responded to on a five point scale ("strongly agree" to "strongly disagree"). It has a Cronbach Alpha of 0.94 (reliability). In 2009, in response to the limitations of the palliative population being cared for by several of the CSRTs, an abbreviated version was developed to reduce the time commitment of the survey. The

[4] Hill, 1997
[5] Mortimer Market Centre: Service User Satisfaction Survey; Miles et al., 2003.

satisfaction survey was conducted in a "pre-CSRT/post-CSRT" design (pre-CSRT n = 55, post-CSRT n = 90). Some of the key results are re-presented below (see Figure 4)

Figure 4: Patient Satisfaction



The complete data set is provided in Appendix E.

The junior CSRTs will also complete an assessment of patient satisfaction using the same protocol. "Pre-CSRT" data were collected from November 2012 to March 2013 with "post-CSRT" surveys being distributed beginning in April 2013. Results will be reported in the next report.

b) Direct Supervisors

A follow up study of the direct CSRT supervisors was conducted for the senior CSRTs. Seven supervisors (all radiation oncologists) agreed to a telephone interview in February and March 2013.

Direct supervisors of 'senior' CSRTs were invited to participate in a semi-structured interview with project staff. The purpose of the interviews was to gain insight into the current status of senior CSRT positions, the barriers and facilitators to integrating a CSRT positions, the ongoing impacts associated with the positions, and the supervisors' thoughts on the CSRT role in general. Interviews were conducted with seven direct supervisors, one for each senior CSRT position currently in place. Interviews (approximately 30–60 minutes) were recorded, transcribed verbatim and analyzed using a thematic analysis.

All supervisors (7/7) indicated that the CSRT continued to make positive contributions to the program/service and confirmed that the CSRT was practicing at an enhanced level. CSRTs were described as being able to decrease wait times, improve access to care, develop program innovations and process improvement, and improve both patient and team member satisfaction. Supervisors also highlighted the invaluable ability of the CSRTs to provide education and act as a knowledgeable resource for residents, medical and radiotherapy students and other members of the interprofessional team.

All supervisors (7/7) indicated that the CSRT position has evolved over time. Position evolution has often taken the form of increased duties, enhanced clinical autonomy, and the development of new programs and processes. As CSRTs gain experience they tend to take on more responsibility and become more independent in assessing and treating patients. In many cases position evolution has been in response to changes to, or development of new, local needs. The CSRTs have been able to apply their skill sets to pressing issues and alleviated pressures that have arisen over time. CSRTs were also recognized for the important contributions that they are making on academic, program development and knowledge translation fronts. Many CSRTs have presented their original work at professional conferences and published in relevant scholarly journals. Such activities are essential to harnessing and sharing knowledge and innovative approaches to practice within the radiation therapy profession.

> "…I trust her judgment completely and so if she says that the patient can be treated I know that the patient can be treated… and those are difficult cases…she knows so much about all of this that as I said I trust her judgment completely and I can't remember when I disagreed with any of her radiation plans or her clinical judgments." (Supervisor, JCC)

Supervisors identified multiple factors that may influence CSRT position integration at three distinct levels: individual, programmatic (relational between supervisor(s) and CSRT), and organizational (Table 5).

Table 5: Most significant factors contributing to permanent integration of a CSRT position.

Individual	Ability of CSRT to impact the program in which he/she works
	Personal attributes (e.g. self-motivation, comfort with uncertainty)
	Fit between individual interests/attributes and program needs
Programmatic	Available resources (e.g. supervisors' time, position framework)
	Nature of the relationship between supervisors and CSRTs
	Vision that supervisors have regarding the future of the role
Organizational	Local context (e.g. local needs, size of cancer centre)
	Administrative support
	Organizational culture

> "I don't know that there would be one site where you wouldn't benefit from a CSRT" (Supervisor, PMH)

All interviewees indicated that they think that CSRTs can play an important role in the radiation therapy system. Respondents suggested that the scope of the CSRT role is "unlimited" and encouraged expansion to other disease areas and institutions. The importance of the CSRT role as a part of the solution to address anticipated physician shortages and increasing incidence of cancer was noted. This signifies the degree to which the direct supervisors believe the role is useful and the value that would come from investing in it further to meet future health system demands.

The results of the thematic analysis and a detailed summary of interview responses can be found in Appendix F.

Interviews are currently being prepared for the supervisors and managers of the junior CSRTs. These data will be compared to those collected in 2010 when the senior CSRTs were at an earlier stage in their overall development. The final results of these interviews will be reported in subsequent reports.

The CSRTs continually look for opportunities to modify and improve the way things are done, as well as for gaps where new services can be added to enhance patient experience and/or outcomes. A detailed summary of the Quality initiatives being undertaken by the Junior CSRTs can be found in Appendix G.

iii) Process Innovation and Knowledge Translation

As they develop advanced knowledge, skills and judgment in their area of specialization, the CSRTs naturally begin to take the lead and direct initiatives related to new radiation therapy approaches and new ways of working. This can be either through the generation of new knowledge or by adopting techniques and approaches that are being discovered and reported by others. As such, CSRTs are engaged in a number of projects in their respective departments that bring with them a promise or proof of improved patient experience and/or outcomes as well as improved provider experience – all critical elements in the provision of the highest quality care to our patients. Once again, it is important to note that the amount of time that each CSRT contributes to different activities is directly tied to each unique job description (see Section 1.0). These activities are outlined in detail in Appendix B and summarized in Table 6 below.

Table 6: Summary of Process Innovation and Knowledge Translation Activities

Activity/Initiative	Number of activities/initiatives Senior + Junior CSRTs
Research Involvement (as leader or part of interdisciplinary team)	9 + 22
Program evaluation leading to revised/new approaches to deal with gaps/overlaps (new services, new processes)	7 + 21
Creation of new learning materials for patients/providers	7 + 4

2.0 Integration Support Team

Of paramount importance to the success of this project is the articulation of clear standards and processes as well as the alignment of any positions with the objectives and principles of the project and with the strategic directions of CCO. In order to nurture this new initiative during the critical initial years of transitioning to province-wide adoption, a small integration support team has been established to provide expert consultation to the treatment centres as they implement the new role. Comprised of a Project Manager, Project Coordinator and Radiation Treatment Program Manager, the Integration Support Team (IST) is utilizing tools and processes

developed during the CSRT Demonstration Project to facilitate a number of key outcomes, including:

- Disseminating key outcomes of the CSRT Demonstration Project across the province;
- Providing assistance to centres for internal needs assessment, the translation of needs into measurable objectives for a new position, the creation of the job descriptions, preparation of business cases (including specific metrics to track success);
- Ensuring accountability and consistency of implementation through selection of incumbents and design of on-site education and training program; and
- Overseeing the monitoring and measuring of activities and outcomes.

Implementation activities are well underway. Table 7 offers a summary of the timelines for IST activities including an indication of what has been completed to date:

Table 7: Timeline Summary of IST activities

Activity – *9 FTE to be implemented in 2012/13*	Target/Completion Date
Conduct provincial site visits	September 2011 √
Issue Request for Proposal (RFP)	October 2011 √
Develop business cases for CSRT positions	December 2011 √
Assess proposals and evaluate professional portfolios	April - May 2012 √
Submit CSRT Final Report 2011/2012	May 15th, 2012 √
Implement 10 (9.5 FTE) new CSRT positions	July 2012 √
Education and training support	Begins: July 2012 √
Data collection regarding key outcomes of position implementation	July 2012 – June 2013
Submit CSRT Report 2012/2013	May 2013
Activity – *4.0 FTE to be implemented in 2013/14*	Target/Completion Date
Issue Request for Proposal (RFP)	December 2012 √
Develop business cases for CSRT positions	February 2013 √
Assess proposals and evaluate professional portfolios	May 2013
Implement 2 (2.0 FTE) new CSRT positions	June/July 2013
Education and training support	Begins: July 2013
Data collection regarding key outcomes of position implementation	July 2013 – June 2014
Submit CSRT Final Report 2013/2014	May 2014

The project team is also working with CCO to ensure that its regional cancer programs are held accountable for their role in ensuring the sustainability of the CSRT role in Ontario. Strategies currently being developed/implemented include:

- Requirements of the clear identification of a sustainability plan in the position proposal,

- Implementation of a problem solving process to follow when challenges are encountered at the local site, including the engagement of project representatives in the resolution, and
- Possible addition of a status report on locally implemented CSRTs at the quarterly meeting between CCO senior administration and Regional Vice-Presidents.

It has become clear that current measures have not gone far enough to make an impact on organization policy and process relating to the consideration of the CSRT role as a possible strategy to address identified gaps and bottlenecks in the current model of care. Steps are being explored to make further inroads on this front (See the "Discussion" section for more comments on this issue).

3.0 Implementation of (up to) 13 new CSRT positions

As reported above, a formal request for proposals (RFP) process was initiated in early 2012. 10 new funded CSRT positions (9.5 FTEs) were approved and implemented since July 2012. As part of the contractual agreement with CCO, the respective CSRTs began building their positions and undertaking the necessary preparations for the collection of data as aligned with the CSRT Demonstration Project. A project workplan of the activities and associated deadlines can be found in Appendix H.

Ten CSRT pilot positions (9.5 FTE) were implemented in the summer of 2012 as outlined below:

- Brachytherapy CSRT – Odette Cancer Centre (OCC), Toronto
- Brachytherapy CSRT – Princess Margaret Cancer Centre (PMCC), Toronto
- Breast Cancer CSRT – Juravinski Cancer Centre (JCC), Hamilton
- Palliative Care CSRT – Carlo Fidani Peel Regional Cancer Centre, Credit Valley
- Radiation Therapy Planning Image Definition and Contouring CSRT – London Regional Cancer Program (LRCP), London
- Stereotactic Body Radiation Therapy CSRT – OCC, Toronto
- Thoracic High Dose Rate Brachytherapy CSRT – JCC, Hamilton
- Palliative Care CSRT – Stronach Cancer Centre, Newmarket
- Palliative Care CSRT – Kingston Regional Cancer Centre (KRCC), Kingston
- Image-guided Adaptive Radiation Therapy CSRT – PMCC, Toronto

A second RFP went out in December 2012 for an additional 4 project sanctioned (currently unfunded) positions. Despite the absence of confirmed funding, it was decided to proceed with their recruitment in order to maximize the contribution of these positions to the project with acknowledgement of the sites who were interested in applying. Two proposals were submitted in response to the call. One proposal was accepted and expected to be in place by June 2013.

- Skin CSRT – LRCP, London

The second was returned to the department for minor revision and resubmission. The resubmission is expected May 24th.

- H&N Survivorship CSRT – PMCC, Toronto

With the implementation of these additional two positions, the total number of CSRTs in the province will be 19.

4.0 Formalization of the CSRT Role

The CSRT Sustainability Project continues its collaboration with both the Canadian Association of Medical Radiation Technologists (CAMRT) - the national professional certification body, and the College of Medical Radiation Technologists of Ontario (CMRTO) - the provincial regulatory body for radiation therapists.

Work is currently ongoing with the CMRTO. With the amendments to the Medical Radiation Technology Act (September 2011) came a new scope of practice statement, additional authorized acts for medical radiation technologists and the issue of new standards of practice. The CSRT Task Force reviewed the supporting documentation for the CSRTs in order to ensure that the information contained is current under the new scope of practice statement, authorized acts and Standards of Practice. Work was also completed with the Registrar of the CMRTO on draft practice standards for CSRTs to ensure congruency with the CMRTO Standards of Practice.

Significant progress has also been made in developing a formalized definition of practice for this new role including the creation of an effective method of assessing performance against the finalized scope of practice. Employing rigorous methods and strategies, a finalized competency profile has been created and a blueprint for assessing the competencies therein has also been developed. Work continues on finalizing the official assessment and recognition processes for this new health care provider role.

All of these activities will go a great distance to solidifying the concept of CSRTs in the Ontario cancer care system and help to monitor performance and impact on public safety.

5.0 Models of Care

It has long been recognized that new ways of working were going to be vital in the radiation treatment domain and as such, implementing innovative models of care was highlighted as a priority in each of the Ontario Cancer Plans (OCP), including the 2011-2015 OCP. The Models of Care (MOC) program, created in response to this priority, has a vision of a sustainable, integrated, patient-centred model of cancer care. The goals of the MOC Program are to:

1. Implement new models of cancer care delivery;
2. Ensure that payment and accountability mechanisms are aligned with best practice models of care; and
3. Enhance the ability to accurately predict health human resources demand while incorporating changes in models of care.

Efforts over the past year have included work with several committees and working groups within the MOC structure. The CSRT Project Manager sits as a member of the MOC Advisory Group. At this level, decisions are made about the overarching models and frameworks used to drive and describe new models of care work (See Appendix I). It is hoped that these efforts will provide both a common lexicon to MOC projects as well as consistent ways of characterizing success. As part of the Evaluation Subcommittee, the Project Manager brings expertise regarding metrics and creative solutions to activities that are difficult to quantify or characterize. An evaluation framework, including how to engage stakeholders, is currently under

development. Finally, the CSRT Project Manager has joined the "Value" subgroup. This newly formed group is charged with finding ways to articulate the value added that each project/initiative is realizing in order to drive the permanent integration of the new model into the way of working at CCO. Ultimately this will drive change and accountability for human resource modeling costing algorithms for human resource planning and deployment.

This MOC work is critical to the sustainability of the CSRT role in Ontario. As part of this program, recommendations for how to include the CSRT role in planning and forecasting will become motivators for changes in processes and policies.

6.0 Knowledge Creation and Dissemination

Academic activity – through knowledge creation and dissemination - is an important aspect of maximizing the contribution of the CSRT role to enhance the quality and efficiency of the work being done in the radiation therapy programs.

CSRTs continue to make significant contributions to the knowledge base of not only radiation therapy practice, but to the overall practice of radiation medicine. The level of scholarly contribution continues to escalate – one of the most rapid areas of growth for the senior CSRTs, and of rapid uptake for the junior CSRTs. Not only are CSRTs actively engaging in research and knowledge creation activities at their local site, they are also undertaking more widespread knowledge dissemination activities – fundamental to translating new knowledge into practice in other jurisdictions.

This constant increase in their academic production, and the continued recognition of their work at the provincial, national and international level illustrates how the CSRTs continue to integrate into and contribute to the interprofessional radiation therapy team and the creation of new knowledge. Table 8 below lists some of the various knowledge creation and dissemination activities undertaken by the CSRTs illustrating the rapid integration of the junior CSRTs into their roles as leaders and investigators.

Table 8: Knowledge Creation and Dissemination activities

Activity/Initiative 2012/13		Number of activities/initiatives	
		Senior CSRT	Junior CSRT
Presentations	• Peer reviewed podium	12	6
	• Peer reviewed poster	17	3
	• Invited/external podium	9	1
	• Intra-departmental	22	8
	• Interdepartmental	16	3
	• Workshops	2	
Peer-reviewed publications*	• Manuscripts	73	
	• Abstracts	41	6

	• Guidelines	2	
Student Teaching/ Mentoring		15	19
Book	• Chapter	1	
	• Editor	1	
Awards/Honors		15	

**since beginning in the CSRT role.*

More details regarding the innovative and scholarly work being conducted by the CSRTs can be found in Appendix J.

In addition, the IST "writing group" continues its manuscript preparation for publication in peer-reviewed journals. The first manuscript has been submitted for acceptance to the Journal of Allied Health with several others in final drafts. A summary of the manuscripts submitted and in preparation is provided in Appendix K.

The Project Team also developed and delivered a one half day workshop in conjunction with the RTi3 conference held in Toronto in March 2013. The workshop was designed to bring the findings of the projects to the therapists and managers at the front lines. Instead of the presentation of research findings, case studies and descriptive sessions were used to expose the participant to "a day in the life" of the CSRT. Attendance at the session topped 50 participants; the program can be found in Appendix L.

Finally, the 2012 Labour Market Survey was completed in Summer 2012 and submitted to the Ministry on October 19, 2013. The Executive Summary of this report is included in Appendix M.

C/ DISCUSSION

While the core mandate of the CSRT Sustainability Project continues to be the accumulation of evidence to further support province-wide, CSRT implementation , it has become apparent that additional efforts are required on several fronts to realize our goal of permanent integration of CSRTs into the radiation treatment fabric. For guidance, the sustainability literature was consulted and used to reflect on our current and desired states within this project. In 2011, the World Health Organization (WHO) published "Beginning with the end in mind"[6] – a guide to planning successful health human resource innovations. In the guide, WHO outlines 12 recommendations for consideration at the time of planning and periodically throughout a project to enhance the potential for successful, long-term ramp-up of field-tested innovations.

Using this guide to reflect upon the CSRT project series has proven extremely valuable and has led to discussions about changes that may need to be made to facilitate the achievement of our ultimate goal. A review of the project against WHO's 12 recommendations reveals that nine of the recommendations have been addressed either moderately or very well:

- *Engage stakeholders* – conducted through the completion of validated surveys, semi-structured interviews and ad hoc discussions;
- *Ensure relevance* – constant feasibility and assessment of value throughout the project to ensure relevance with the jurisdictional needs;
- *Tailor innovation to sociocultural and institutional setting* – the role has been developed such that it can be potentiated in a number of directions while still being built atop the same standard competency profile
- *Keep it simple* – attempts to standardize and ensure consistency have been undertaken throughout the project to ensure ease and simplicity of implementation;
- *Test in different settings* – positions have been piloted in a number of environments to ascertain the generalizability of the role across the province;
- *Test under routine operating conditions* – in all cases, pilot positions were placed into existing interprofessional teams;
- *Assess/document implementation processes* – detailed documentation was taken and developed to understand the challenges and the strategies for success for new position implementation;
- *Plan for learning and dissemination* – once ready, a number of avenues for knowledge transfer were developed and continue to be used as more is learned about the value of the role; and
- *Use caution to collect evidence before scaling-up* – the project series was based on an "evidence-based" model imploring the project team to prove the benefits to the system before escalating project activity.

The review also highlights several outstanding project challenges and reinforces identified areas that require continued attention. The results of this process chart a course for the next steps in the CSRT sustainability plan:

- Reach consensus on what "full scale" implementation looks like
- Pilot testing within existing resource constraints
- Investigate for and advocate with other sources of funding beyond pilot
- Prepare to advocate for necessary changes – policy, regulations, other components

Reach consensus on full scale implementation

[6] World Health Organization, 2011

The Project Oversight Committee met recently to create a vision for what "success" and "completion" of the CSRT initiative would look like. The discussion revolved around a number of possible endpoints:

- Establishing the "ideal number" of permanent CSRTs within the province
- Establishing the number of CSRTs per cancer centre OR per disease site
- Formalizing standard sustainability and transition plans (when CSRTs vacate positions) where existing CSRTs are placed
- Integrating the CSRT role into the current/future human resource funding formula

While a final benchmark to define success was not decided upon, the discussion did validate the current work that is taking place, in conjunction with the Models of Care initiative, to establish the "value" of CSRTs' impact on a program. Such work involves more effectively communicating the benefits of integrating the CSRT role into the constellation of strategies that departments will need to employ in light of the well documented challenges facing the sector in the coming years.

Pilot testing within existing resource constraints

Attempts are currently underway to implement new positions into environments that are receiving no additional funding to host the position. It is the ultimate goal of the project that departments allocate their own funding to these positions in recognition of the value-added to the program. However, several issues are impeding our ability to do this:

- There are significant competing financial priorities in the radiation medicine jurisdiction as the struggle to balance quality, complexity and cost continues.
- At the current time, there is no "de facto" educational program that produces a CSRT ready to enter an approved position. Thus, departments continue to be required to direct significant energy and resources to the education and training of the incumbent to get them up to a level of competence before the positive impacts can be seen.

It is believed that additional efforts in the area of policy and funding modifications, in conjunction with the implementation of a CSRT certification process, will reduce this burden making it easier to introduce CSRTs to the existing model of care.

Investigate for and advocate with other sources of funding beyond pilot

Significant efforts have gone into the analysis and dissemination of results from the series of projects. Despite this, 50% of the centres in Ontario do not currently have a CSRT pilot or permanent position in place. Reflection on this fact reveals several issues that may be contributing to some centres' reluctance to participate in the roll out:

- Lack of understanding of the CSRT role at senior administrative levels including the documented benefits for local departments and patients
- Lack of departmental expertise to establish the case for the development and implementation of a relevant CSRT position
- Lack of funding to support the additional FTE within the existing departmental budget due to competing priorities for funding dollars
- Existence of significant variability of how the CSRT role is customized to meet local pressures and needs

It has been established that more focused tactics will need to be employed to assist centres to understand where the CSRT role can fit into their radiation treatment team as it evolves to meet the challenges it will be facing moving forward. This long term strategy will involve a combination of the following initiatives:

- Conducting a focused roll out of one specific type of CSRT position – one that addresses some of the commonly identified issues (ie. Palliative Radiation Therapy) - and assisting individual departments with harnessing the established position (within identified scope) to meet their unique needs;
- If necessary, deploying project representatives to remaining centres in order to conduct a review of local needs assessment data and documentation in attempts to understand the gaps and bottlenecks unique to their environment and offer recommendations regarding the nature of a CSRT position that could specifically assist them in ensuring optimal patient access and quality of care.

Prepare to advocate for necessary changes (policy, regulations, etc.)

In parallel with the number of initiatives that have been and will be undertaken to garner support and expand comprehension of the CSRT role, policy and process changes will need to be consider at both the system and regional level. Change in this regard is slow and deliberate, but seeds must be planted to make the right changes to their system-wide policies – specifically related to human resource deployment and funding. As pressure builds to adopt new ways of working to maximize the capacity and quality of the system under the stress of the growing incidence and prevalence of cancer and increasing complexity of radiation treatment as a treatment modality, CCO will be required to take bolder actions that embrace and espouse the strategies it believes to be valuable in this endeavor.

In order to initiate these discussions, a realistic evaluation of the ongoing challenges to implementation will need to be conducted. Once understood, concrete and consistent messaging, related to the benefits of the CSRT role, will need to be developed and disseminated throughout all levels of the organizations. Also, as funding for cancer centres is regional and linked with host hospitals, candid discussions will need to take place to ensure that unnecessary barriers are not impeding departmental adoption of this new model of care where appropriate. In addition, CCO, as the overarching policy organization for Ontario, will need to revise processes to ensure that the CSRT role is consistently considered as a potential tool for managing workload and access to care. It is felt that this is an essential step in finalizing the permanence of the CSRT in the interprofessional radiation treatment team.

D/ FINANCIAL REPORT

Project expenditures continued to come in under budget for Fiscal 2012/13. The full Financial Report for 2012/13 including revised forecasts for subsequent years of the project and accompanying recommendations can be found in the separate "***CSRT Sustainability Project Financial Report - 2012/13***"

E/ CONCLUSIONS

Cancer Care Ontario believes the CSRT Sustainability Project continues to meet, if not exceed, expectations in the development and formalization of this new CSRT role. As is widely known, the timing of funding announcements has occasionally impeded the ability to meet specified deliverables due to the long turn around required for some activities. Despite this, the number of CSRTs has grown from 7 to 17 (and expected to grow to 19 by Summer 2013) in the past fiscal under extremely tight timelines. Data continue to be collected and reviewed and feedback from new departments has been tremendously positive. In additional, the development of a mechanism to certify and formally recognize CSRTs has made significant headway. However, while data continue to extol the virtues of the CSRTs' contributions and great strides have been made with the province-wide implementation and uptake of the CSRT role, several barriers remain.

It is a critical time for the implementation of the CSRT role. We must find ways to capitalize on the levers currently in place to facilitate greater uptake of the CSRT role throughout the province where need exists. The CSRT role must be put on the table during discussions about alternate funding formulae and considered in the toolkit of strategies available for dealing with increased incidence, prevalence and treatment complexity as these factors collide - potentially threatening the system's ability to maintain existing levels of access to and quality of care.