Cancer Care Ontario

CLINICAL SPECIALIST RADIATION THERAPIST (CSRT) PROJECT

Summative Report May 2016

May 31st, 2016

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

Table of Contents

Executive Summary

In 2004, the Ministry of Health and Long Term Care (MOHLTC) funded a small, two-year development project to assess the feasibility of implementing a new model of care that would be facilitated by the development of a new health care provider role – the advanced practice radiation therapist (APRT). Numerous challenges threatening the ability of the radiation treatment sector to keep pace with cancer care needs of Ontario's patients had been identified and the MOHLTC was seeking new, innovative strategies to mitigate these threats. The success of that two-year project served as a springboard for a subsequent 10-year series of projects (2007-2016) that began with the announcement of funding for the development and pilot testing of the Clinical Specialist Radiation Therapist (CSRT). CSRT was the title given to professionals practicing in an advanced capacity in radiation therapy in Ontario. The announcement was part of the HealthForceOntario health force strategy in 2006.

The project phases that followed would strive to demonstrate that the integration of this new CSRT could increase Ontarians' access to radiation treatment by building capacity in the system, improve the quality of care being received by patients, and improve the health of Ontarians.

At this time, 23 CSRTs are currently in practice in Ontario. Figures e1 provides an overview of CSRT implementation over time and Figure e2 shows the evolution of the overall project across its several phases. Using a robust set of tools and processes developed and validated during the project, data has been collected that demonstrate a number of ways CSRTs can have a positive impact on patients, providers and the overall radiation treatment program in Ontario and beyond.

1. **Increase access to care** – CSRTs can increase ability of the system to see more patients in a timely fashion. The degree of their impact is dictated by job description, local need and practice, patient population being served, among other factors. Through direct patient care activities and the assumption of indirect patient care work that results in significant time savings for ROs, the system can accommodate more patients in a more timely fashion with the same high quality care. In many instances, CSRT are also key to increasing access to care for previously underserviced populations and to increasing appropriate utilization of radiation therapy in their local community.
2. **Improve quality of patient care** – There is compelling evidence that CSRTs can improve the high quality care provided in our radiation treatment programs. In addition to improving quality, CSRTS have been involved in multiple initiatives to enhance current service or provide services that did not previously exist. Both direct and indirect evidence has demonstrated clearly that patients are pleased with these enhancements and benefit from greater continuity in their care.
3. **System improvement -** Many activities undertaken by the CSRTs carry the promise of improved care for Ontario's cancer patients. Through a variety of initiatives using patient- and family-centred ideologies, CSRTs developed and implemented many ideas that impact positively on patients receiving radiation therapy and those in follow up to treatment received. Activities, developed by CSRTs, that lead to improved patient compliance, improved consistency in treatment process, augmented quality control measures, etc. all contribute to the provision of higher quality care.

When CSRT positions are designed appropriately, these goals can be realized in a cost-effective way. Funding policy and processes need to be taken into account in the design of the position to ensure financial stability.

In addition to these major impacts on the healthcare system, a number of other positive outcomes were identified during the Projects:

- Data show that CSRTs facilitated enhanced interprofessional practice amongst team members which led to streamlining of patient care and numerous process improvements. This resulted in high provider satisfaction with work in their respective teams.
- The contributions of the CSRTs to the science and practice of radiation medicine and in the development of the knowledge base in radiation therapy cannot be understated. Seen as transformational leaders in their field, they are being recognized as equal partners in the knowledge translation and innovation sectors and garner awards for their contributions in Ontario and beyond.
- The expansion of the radiation therapy career ladder will undoubtedly positively impact retention rates in this community as the advent of the CSRT role is evaluated to address areas of documented dissatisfaction among RTTs – low wages, few opportunities to advance or specialize in their field. It also hoped that the implementation of the role in Ontario will lead to increased recruitment of professional leaders to Ontario as they seek advanced career opportunities.
- The processes, tools and resources curated and developed during the Projects serve as one of the most comprehensive collection of resources for the creation, development, implementation and evaluation of new health care provider roles available. It is expected that this suite of tools will be adopted by the national professional association as it leads the national deployment of advanced radiation therapy practice with the guidance of the CSRT Project.

There are currently two important paradigms that will influence our ongoing ability to provide timely high quality radiation therapy in Ontario:

1. the escalating pace of technological innovation; and
2. the advent of personalized medicine as the standard of care to aspire to.

In the face of these emerging pressures, the radiation treatment domain cannot continue to do "more of the same" and will rather need to implement a suite of strategies, including changing models of care that will enable the sector to do more and do better within the same budgetary realities.

To implement this model of care system-wide, it is extremely important that Cancer Care Ontario and the MOHLTC continue to actively support this initiative at a policy level and through funding mechanisms to implement this effective new model of care system-wide. Health care, as we know it, is on the precipice of significant change. Flexible, fluid health care teams and professionals will be required to navigate and harness these changes to the maximum benefit of our patients. This CSRT-mediated model of care has proven to be an effective strategy for improving the quality of patient care in the radiation treatment domain. If implemented effectively, the CSRT role can facilitate the availability of universal and unimpeded access to the highest quality of radiation therapy care in Ontario and is poised to influence how patients are cared for beyond our provincial borders.

Figure e1: CSRT Position Implementation Tracking

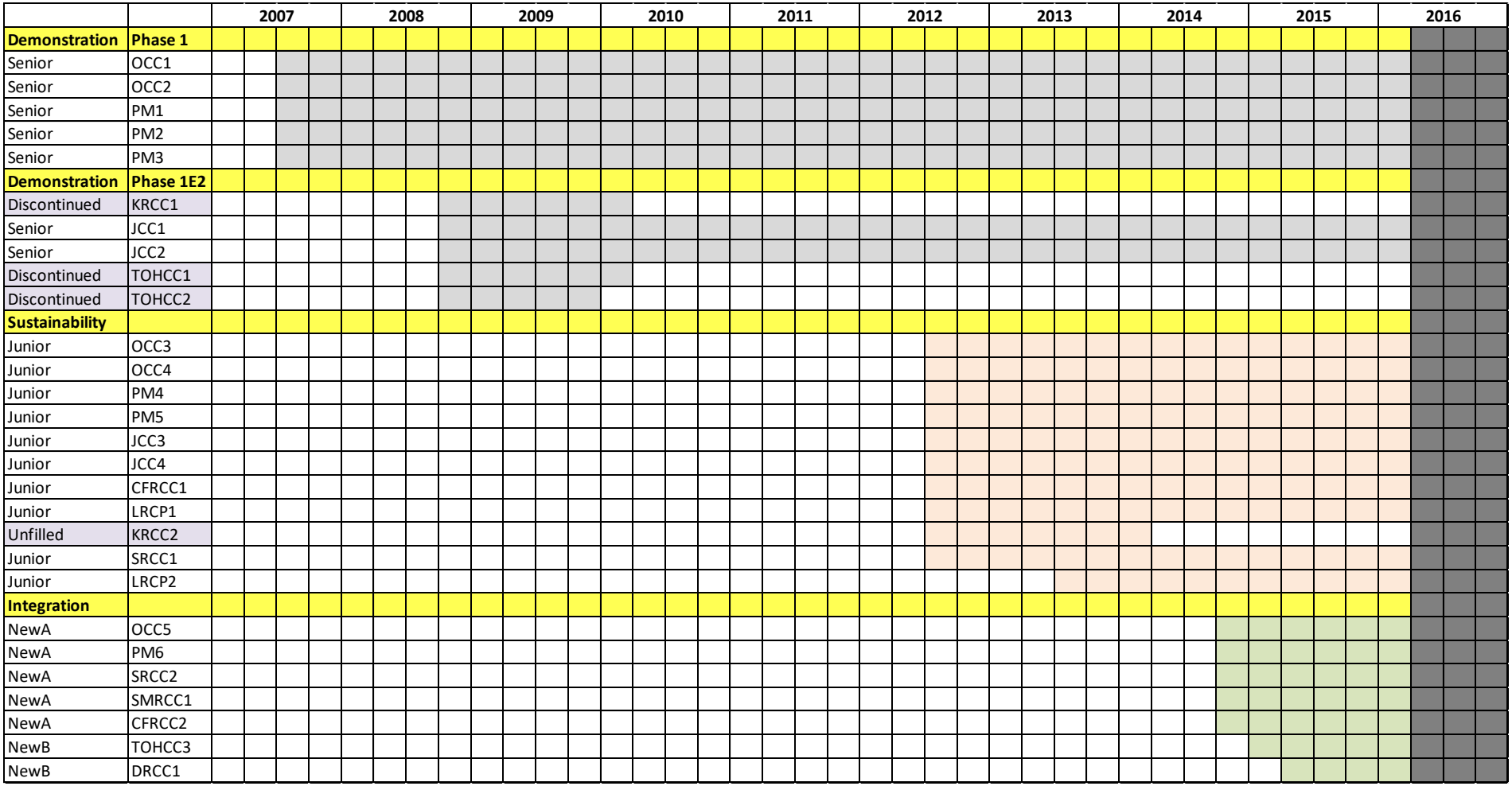
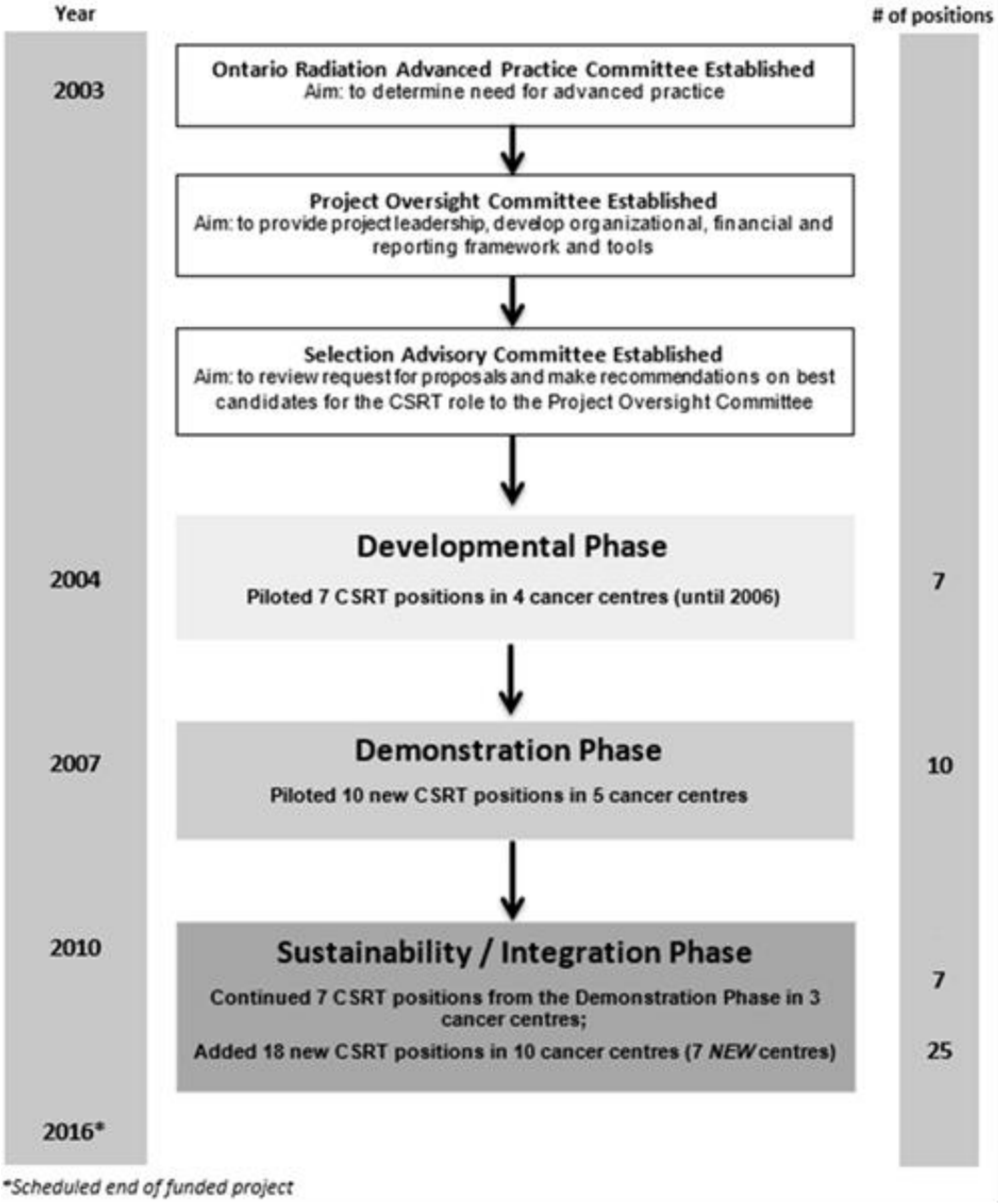


Figure e2: The phases of the CSRT Project



*Scheduled end of funded project

Abbreviation List

AP- Advanced practice

APN- Advanced Practice Nursing

APRT- Advanced Practice for Radiation Therapists

CAMRT- Canadian Association of Medical Radiation Technologists

CCO- Cancer Care Ontario

CMRTO- College of Medial Radiation Technologists of Ontario

CoP- Community of Practice

CSRT- Clinical Specialist Radiation Therapist

HCP- Health Care Provider

HHR- Health Human Resource

IST- Integration Support Team

MOHLTC- Ministry of Health and Long-Term Care

NHS- National Health Service

OCP- Ontario Cancer Plan

OMA- Ontario Medical Association

PAC- Portfolio Assessment Committee

PDSA- Plan, So, Study, Act

PEPPA- Participatory, Evidence-based, Patient-focused Process, for guiding the development, implementation, and evaluation of Advanced practice nursing

PLAR- Prior learning assessment and recognition

PMT- Project Management Team

POC- Project Oversight Committee

REB- Research ethics board

RFP- Request for proposal

RO- Radiation Oncologist

RT- Radiation therapy

RTT- Radiation therapist

SAC- Selection Advisory Committee

WHO- World Health Organization

Acknowledgements

This project would not have been possible without the immense dedication and support of a large team of champions, facilitators, practitioners, leaders, skeptics and mentors. They include:

Early champions
Pam Catton
Marcia Smoke
Amanda Bolderston
Donna Lewis
Anthony Whitton
Lynne Nagata
Mary Gospodarowicz

The Core Team
The CSRTs – past, present and future
Laura Zychla
Elizabeth Lockhart
Michelle Ang
Carina Simniceanu
Kate Bak
Elizabeth Murray
Eric Gutierrez
Padraig Warde

The Clinical Partners
CSRT Supervisors at host cancer centres
Departmental Managers at host cancer centres
The Project Oversight Committee

Organizations
Cancer Care Ontario
College of Medical Radiation Technologists of Ontario
Canadian Association of Medical Radiation Technologists

Funder
Ministry of Health and Long Term Care

Nicole Harnett, MRT(T), BSc, MEd,
Project Lead
Advanced Practice Radiation Therapist Demonstration Project (2004 – 2006)
Clinical Specialist Radiation Therapy Project Series (2007 – 2016)

Section 1: WHY

A variety of pressures existed that required new ways of thinking about how to deliver the most timely high quality care to cancer patients in Ontario. This section provides readers with information that describes the state of the radiation therapy sector leading up to the inception of the Clinical Specialist Radiation Therapy Projects.

Key Messages

1. A variety of pressures in the cancer care system were impacting the timeliness and quality of patient care in Ontario.
2. The Ministry of Health and Long-Term Care made a system-wide call for health care providers and organizations to consider new ways of working to address the various challenges present in the system, including the augmentation of interdisciplinary and interprofessional care models.
3. The success of the initial two-year Advanced Practice for Radiation Therapists (APRT) Developmental Project led to a longitudinal 12-year study of the impact of this new health care provider (HCP) model on the delivery of care to patients in the radiation treatment program in Ontario.

Section 1: WHY

1.0 Background

1.0.1 Radiation Therapy as a treatment modality

Radiation therapy (RT) is a proven, effective and important tool for treating cancer, and is used for both curative and palliative purposes. The National Cancer Institute defines radiation therapy as “the treatment of cancer and other diseases with ionizing radiation. Ionizing radiation deposits energy that injures or destroys cells in the area being treated (the "target tissue") by damaging their genetic material, making it impossible for these cells to continue to grow."[1] Radiation in high doses kills cells or keeps them from growing and dividing. Due to the fact that cancer cells grow and divide more rapidly than most of the normal cells around them, radiation therapy can successfully treat many kinds of cancer.

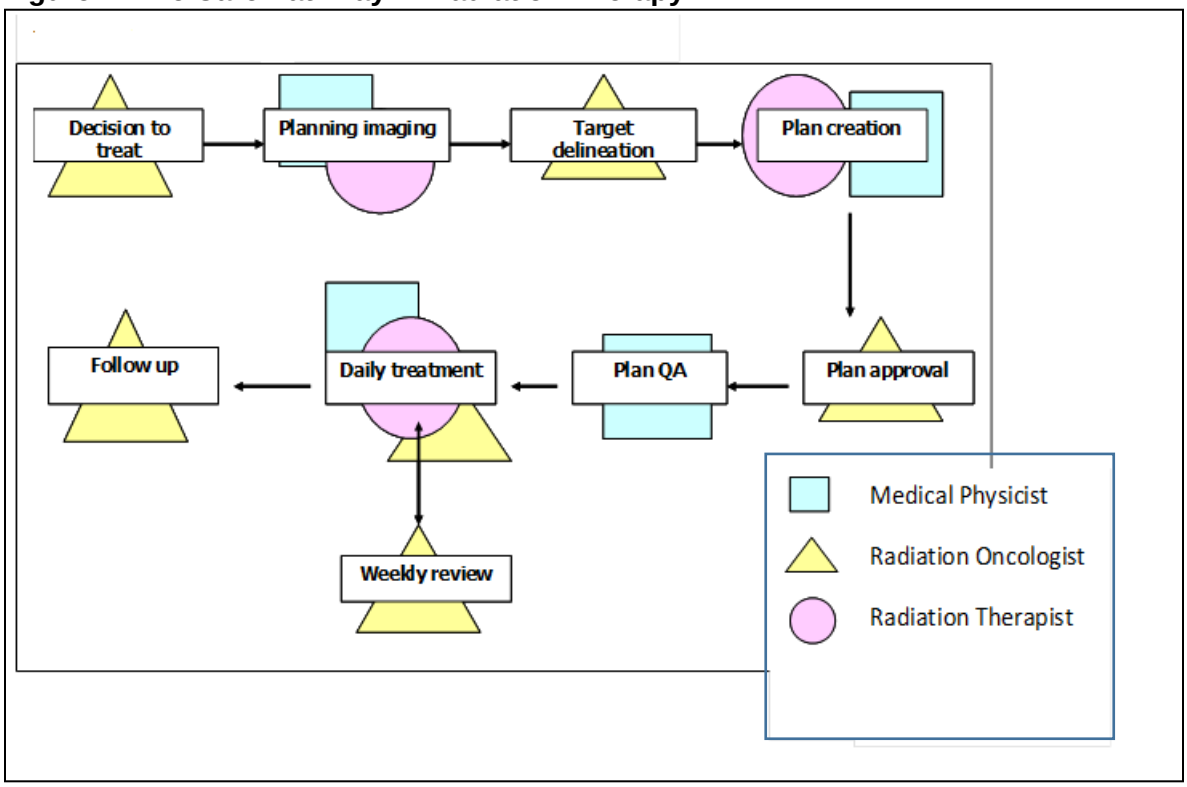
The radiation treatment “team” is comprised primarily of three specialized professional groups:

- Medical Physicists
- Radiation Oncologists
- Radiation Therapists

Undoubtedly, there are number of other professionals groups who are important members of the overall care team along the patient care pathway including nurses, social workers, rehabilitation professionals, etc. The generalized care pathway for a patient entering and traversing the radiation treatment domain is shown in Figure 1. It highlights the important radiation treatment specific activities that must take place once it is decided that a patient will have radiation treatment as part of the overall cancer management strategy. There are many other parallel pathways taking place to care for the patient’s many needs. Figure 1 also illustrates the multiprofessional nature of a patient-centred radiation treatment planning and delivery process.

[1] Radiation Oncology, University of Toronto. Radiation Therapy. Retrieved from http://www.radonc.utoronto.ca/radiation-therapy

Figure 1: The Care Pathway in Radiation Therapy



1.0.2 Pressures in the cancer care system

Over the last several decades, Ontario's cancer system has seen increased demand for services, pressure to meet government targets, increasingly complex treatments, episodic shortages of highly specialized staff and an aging workforce.[2] The number of individuals diagnosed with cancer continues to grow at a rate of approximately 3% per year.[3] In this context, the demand for innovative models of care, flexible professionals and responsive interprofessional teams is greater than ever; a fact evidenced by the HealthForceOntario Strategy[4] put forth by Ontario's Ministry of Health and Long-Term Care (MOHLTC) and Cancer Care Ontario's (CCO) advanced practice (AP) initiatives.[5] [6]

In the decade prior to the start of this project, strategies to address these cyclical fluctuations in supply and demand proved only moderate and temporary. For example, maximizing enrolment in training programs for the relevant professional groups and extended work hours strained departments and staff, leading to increased injury, sick time and burnout.[7] [8] International recruitment drives filled vacant posts, but only temporarily, and when professionals returned to their home countries, vacancies resurfaced. Numerous reports confirmed that Ontario would

[2] Cancer Care Ontario. *Ontario Cancer Plan 2008-2011*. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=13808.
[3] Canadian Cancer Society's Steering Committee on Cancer Statistics. (2012). *Cancer Care Statistics 2012*. Toronto ON: Canadian Cancer Society.
[4] HealthForceOntario. (2006, July). *Proceedings report for the Summit on Advancing Interprofessional Education and Practice*. Retried from https://www.healthforceontario.ca/UserFiles/file/PolicymakersResearchers/summit-proceedings-report-2006-en.pdf
[5] Cancer Care Ontario. (2006, July). *New ways of working: A provincial Strategy for Advanced Practice Roles in Canada: Summary Strategy Document*. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=13478.
[6] Cancer Quality Council of Ontario. (2010, June). *Modern Care for Modern Patients: Innovating and supporting care for 21st century patients*. Signature event synthesis. Retrieved from http://www.cqco.ca/common/pages/UserFile.aspx?fileId=98420
[7] See, for example, Ibid; and Goodyear, J. (March 26, 2004). *Innovative Solutions: New and Expanded Roles in the Healthcare System*. Presented at Advanced Practice Workshop. Toronto, Ontario.
[8] The Radiation Therapy Think Tank, sponsored by the Ministry of Health and Long-Term Care, revealed that job satisfaction among radiation therapists was on the decline and a major cause of significant attrition rates from the profession. September, 2000.

continue to face health human resource (HHR) challenges in cancer-related professions and supporting disciplines, including radiation therapy given the following:

- A continuing expansion of cancer services in response to increased demand;
- Government and CCO commitments to reduce radiation therapy wait times;
- Workforce aging and retirement of staff in cancer-related professions and supporting disciplines;
- Difficulty in attracting and retaining staff;
- Lack of approved funding for new positions;
- Lack of candidates to fill vacancies;
- Inadequate supply of trainees in cancer-related disciplines;
- Low job satisfaction rates for radiation therapists;
- Technical advances requiring highly specialized staff; and
- The drive for continuous improvement in service planning and delivery.

The HHR challenges that had been afflicting the radiation treatment programs in the late 1990s resulted in reduced treatment capacity. One of the components of this trend was the identified low job satisfaction for radiation therapists across the province, which was resulting in low retention and higher than normal attritions rates. A number of factors were felt to be fueling the issue. However, in order to clearly identify the underpinning causes, the MOHLTC sponsored a "radiation therapy think tank" in 2000 to bring leaders and practitioners in the community together in order to examine the situation and formulate strategies for change. The final report[7] identified a number of recurring pressures on radiation therapists and put forth a number of recommendations aimed at improving quality of work life and job satisfaction for these professionals in Ontario. One of the three key long term recommendations outlined in the report was "meaningful expansion of the role played by radiation therapists". This recommendation was emphasized as critical to achieving higher rates of retention in the Ontario radiation therapy community.

1.0.3 Calls for new ways of working

In response to these issues, as well as similar pressures in other jurisdictions, the MOHLTC began calling for health care professions (HCP) and organizations to entertain non-traditional solutions to these pressures.[9] Support and evidence were building for more interdisciplinary and interprofessional practice in health care. Positive effects on patient care, in response to a more fluid and flexible health care team, were being seen and documented.[10] [11] [12] In fact, studies have demonstrated that interdisciplinary practice can improve health care process and patient outcomes.[13] [14] [15] [16] Additionally, it has been shown that administrators and policy makers believed this approach could lead to improved patient care at lower costs[6]; that interprofessional teamwork can lead to improved job satisfaction for the health care workers[7]; and that it may serve as a method to better address the social accountability of the professions.[8] As such, the importance of interprofessional teamwork has become increasingly recognized and supported at both the educational and institutional level.[9]

---

[9] Goodyear, J. (March 26, 2004). Innovative Solutions: New and Expanded Roles in the Healthcare System. Presented at Advanced Practice Workshop. Toronto, Ontario.
[10] Stanton, M. P., Swanson, M., Sherrod, R. A., Packa, D. R. (2005). Case management evolution: from basic to advanced practice role. *Professional Case Management, 10*(6):274-284.
[11] Fox, V. J., Schira, M., Wadlund, D. (2000). The pioneer spirit in perioperative advanced practice – two practice examples. *AORN Journal*, *72*(2):241-253.
[12] Price, R. C., Edwards, H. M. (2008). Harnessing competence and confidence: Dimensions in education and development for advanced practice and consultant practice. *Radiography*, 14, e65-ee70.
[13] Ruston, S. A. (2008). Extended scope practitioners and clinical specialists: a place in rural health? *Australian Journal of Rural Health, 16:*120–123
[14] Eddy, A. (2008). Advanced practice for therapy radiographers-a discussion paper. *Radiography*, *14*(1), 24–31.
[15] American Dental Association. Advanced Dental Hygiene Practitioner. (2009). http://www.sfdda.org/web/pdf/ga/ADA%20adhp%20Resource%20package.pdf.
[16] Touger-Decker, R. (2005). Advanced practice doctorate in clinical nutrition: a new graduate degree option for registered dietitians. *American Journal for Clinical Nutrition, 20*(1):48–53.

This new focus on interdisciplinary practice was in alignment with strategies being developed by CCO. CCO believed that new models of care and HHR innovation were two essential approaches for the realization of system-wide service improvements in cancer care. The 2005-2008 Ontario Cancer Plan[17] articulated a provincial strategy for innovation in HHR through the examination and possible development of AP roles in cancer care using a systematic, coordinated and interdisciplinary approach, among other strategies. The plan was to create new "non-traditional" roles for HCPs with modernized models of care in order to expand system capacity, including in radiation therapy. Experience developing and implementing AP roles in the nursing profession demonstrated that these roles could improve the quality and efficiency of patient services, address HHR shortages, and increase patient and provider satisfaction.[18] [19] [20] [21] [22] [23] [24] AP roles represented an exciting opportunity for Ontario's cancer system and played a transformative role in HHR within cancer care.

Another challenge identified in the radiation treatment domain was the escalating pace of technological advancement.[25] The ability of local departments to introduce and implement new technologies – those being shown to be an improvement on current practice – was proving an insurmountable challenge. With no easing of the pace perceived, new approaches to knowledge translation were required.

1.1 Overview of the Clinical Specialist Radiation Therapist Project Series

Due to the identified challenges, provincial strategic priorities and the interprofessional nature of the radiation medicine practice, Ontario began exploring the introduction of an AP role for RTTs in 2003. The Advanced Practice for Radiation Therapy (APRT) Project, launched in August 2004, was aimed at assessing the feasibility of introducing a new kind of RT professional into the existing interprofessional team and facilitating a redistribution of activities amongst team members, so that they could use their relevant scopes of practice more efficiently and effectively. Initially funded as a two-year "developmental project", the promising data coming out of the original phase of the project motivated the MOHLTC to provide further funding for a pilot project through the HealthForceOntario initiative in 2006.[26] One of the key components of the HealthForceOntario strategy involves establishing innovative new health care professional roles in areas of high need, and supporting interprofessional teams. Interprofessional care was one of the cornerstones of the HealthForceOntario strategy.

The initial success of the APRT Developmental Project led to the receipt of funding for a demonstration project for the newly named "Clinical Specialist Radiation Therapist (CSRT)" as part of the Ministry of Health and Long Term Care's HealthForceOntario initiative in 2006.

[17] Cancer Care Ontario. (2005). Ontario cancer plan 2005-2008. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=34910
[18] Macdonald, J., Herbert, R., Thibeault, C. (2006). Advanced practice nursing: unification through a common identity. *Professional Nursing, 22*:172–179.
[19] Canam C. (2005). Illuminating the clinical nurse specialist role of advanced practice nursing: a qualitative study. *Nursing Leadership Volume*, *18*(4):70-89.
[20] Jamieson, L., Mosel Williams, L. (2002). Confusion prevails in defining 'advanced' nursing practice. *Collegian, 9*(4):29-33.
[21] Pauly, B., Schreiber, R., MacDonald, M., Davidson, H., Crickmore, J., Moss, L., et al. (2004). Dancing to our own tune: understandings of advanced nursing practice in British Columbia. *Nursing Leadership*, *17*(2):47-59.
[22] Alvarado, K., Keatings, M., Park Dorsay, J. (2003). Cultivating APNs for the future: a hospital-based advanced practice nursing internship program. *Nursing Leadership*, *16*(1), 91-98.
[23] Fawcett, J., Newman, D. M. L., McAllister, M. (2004). Advanced practice nursing and conceptual models of nursing. *Nursing Science Quarterly, 17*(2), 135-138
[24] Ketefian, S., Redman, R. W., Hanucharurnkul, S., Masterson, A., Neves, E. P. (2001). The development of advanced practice roles: implications in the international nursing community. *International Nursing Review*, 48, 152–163.
[25] Dawson, L., Jaffray, D. (2007). Advances in image-guided radiation therapy. *Journal of Clinical Oncology*, *25*(8), 938-946.
[26] HealthForceOntario. (2007). HealthForce Ontario year-end report: opening doors. Retrieved from http://tools.hhr-rhs.ca/index.php?option=com_mtree&task=att_download&link_id=5207&cf_id=68&lang=en

The implementation and evaluation of this role became a 12-year initiative, consisting of several Clinical Specialist Radiation Therapist (CSRT) project phases (see Figure e1). It began with a feasibility study (Development Project), continued with a series of pilot phases (Demonstration Project) and is concluding with the Sustainability/Integration Project. The main objective of the overall initiative was to develop and maximize the contribution of an AP role in RT to maximize the care of cancer patients receiving radiation therapy and, if successful, to support the appropriate and sustained integration of the role into Ontario's cancer system. Integration was to be achieved through a provincial, systematic and coordinated approach to planning, development, implementation and evaluation across the CSRT project phases as described in detail in other publications[27] and reports.[28] [29] [30] [31] [32] [33]

[27] Harnett, N., Bak, K., Zychla, L., Lockhart, L. (2014). A Roadmap for Change: Charting the Course of the Development of a New, Advanced Role for Radiation Therapists. *Journal of Allied Health*, *43*(2), 110-116.
[28] Cancer Care Ontario. (2008). Clinical Specialist Radiation Therapist Demonstration (CSRT) Project: Phase I Evaluation Report.
[29] Cancer Care Ontario. (2010). Clinical Specialist Radiation Therapist (CSRT) Demonstration Project: Summative Evaluation. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=119462
[30] Cancer Care Ontario. (2012). Clinical Specialist Radiation Therapist (CSRT) Sustainability Project: 2011/12 Final Report. Retrieved from http://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=121148
[31] Cancer Care Ontario. (2013). Clinical Specialist Readiation Therapist (CSRT) Project: 2012/13 Final Report. Retrieved from http://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=287716
[32] Cancer Care Ontario. (2014). Clinical Specialist Radiation Therapist (CSRT) Sustainability Project: Final Report 2013/14. Retrieved from http://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=313180
[33] Cancer Care Ontario. (2015). Clinical Specialist Radiation Therapist (CSRT) Sustainability/Intergration Project 2014/15

Section 2: WHO

One of the key deliverables of the early stages of the CSRT Projects was to characterize what this new health care provider role in the radiation treatment domain would look like and what they would do as part of the existing patient care team. This section outlines the steps taken to describe advanced radiation therapy practice and to validate the defined scope of practice.

Key Messages

1. Ample literature existed to guide discussions and thinking about the concept of advanced practice in health care, much of it from within the nursing domain.
2. Cancer Care Ontario had already documented its support for new models of care including the development of advanced practice roles where appropriate to improve patient care in Ontario.
3. The levels of radiation therapy practice can be described using established models regarding the development of expertise in practice.
4. A draft competency profile, the first of its kind for advanced radiation therapy practice, was created using field notes from the project investigators in the developmental phase of the Project. It was subsequently tested and validated in the ensuing phases.
5. Ongoing assessment of the competency profile provided evidence that supported its generalizability and transferability to a variety of practice settings and in response to varying local demands.
6. Significant support for this new health care provider role was garnered from the radiation therapy and radiation oncology communities including the College of Medial Radiation Technologists of Ontario (CMRTO), the Radiation Oncology Subcommittee of the Ontario Medical Association (OMA), the Canadian Association of Medical Radiation Technologists (CAMRT), among others.

Section 2: WHO

2.0 The concept of advanced practice

The notion of AP is not new. In Canada and in other jurisdictions, a number of AP roles have been implemented with many positive results, and support for AP roles is now widespread. There is strong evidence from other jurisdictions that implementation of AP roles can help address HHR issues, reduce wait times, improve quality of care and increase efficiency, amongst other things.[34]

There is now a wide body of international literature supporting AP roles in health care. Most of the early experience with AP involved AP nursing. However, in the last two decades, there has been growing interest in developing AP roles for RTTs in a number of countries, including Canada.[35] [36] Experience with AP in RT is most advanced in the United Kingdom (UK), where the National Health Service (NHS) successfully developed, implemented and evaluated a new "four tier model" for radiography services that involved AP roles.[37]

2.0.1 Benefits of advanced practice roles

CCO report on new ways of working, including the possibility of new AP roles, identified a number of benefits for patients, service delivery and health professionals associated with AP roles that emerge from the literature (Table 1 below).[38]

Table 1: Identified Benefits of Advanced Practice Roles in Health Care

For patients. . .
• Improved patient care • Improved health outcomes • Flexible services designed around patients' needs • Faster access to more focused services or specialized care • Continuity of service provider
For services. . .
• Improved patient outcomes • Enhanced patient and family satisfaction with services • Advent of innovative services (I.e. Brachytherapy, adaptive radiotherapy) • Enhanced equitable access (I.e. OTN) • Positive impact on recruitment and retention • Enhanced continuity and coordination of care • Better utilization of staff skills and expertise and, as a consequence, more targeted use of the skills of other professions • Cost-effective method of delivering high-quality services • Improved teamwork and multidisciplinary collaboration • More appropriate skill mix within clinical teams • Facilitates increased emphasis on prevention, education and health promotion
For health professionals. . .

[34] Cancer Care Ontario. (2006, July). *New Ways of Working: A Provincial Strategy for Advanced Roles in Cancer Care*. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=13690
[35] Bolderston, A. (2005). Advanced Practice Issues for Radiation Therapists in the Province of Ontario: A Case Study. *Canadian Journal of Medical Radiation Technologies, 36*(2), 5.
[36] Australian Institue of Radiography (AIR). Advanced Practice. Retrieved from http://www.air.asn.au/advanced.php
[37] Department of Health (UK). (2003). *Radiography Skills Mix: A Report on the Four-Tier Service Delivery Model.* Retrieved from http://www.dh.gov.uk/assetRoot/04/06/12/60/04061260.pdf
[38] This list, which is taken from Cancer Care Ontario's "New Ways of Working" report. The list was adapted from a number of sources, particularly: Scottish Executive Health Department. (2005, June). *Framework for Role Development in Allied Health Professions*. Retrieved from http://www.scotland.gov.uk/Resource/Doc/55971/0015377.pdf

- Opportunity to improve patient care
- Opportunity to increase patient satisfaction
- Opportunities to increase knowledge, skills and competencies
- Increased job satisfaction
- Greater responsibility for services
- Leadership opportunities
- Expanded career pathway with increased job options

2.0.2 Defining advanced practice in radiation therapy

An evaluation of peer-reviewed published literature revealed that the term "advanced practice" remained an imprecise one; in fact it was used differently within and across professions. While most of the published work on AP originates in the nursing literature, several other professions have examined role expansion to address identified system needs or pressures.[39] [40] Consensus can be garnered on the natural occurrence and progression of professional groups to develop subspecialties over time. Furthermore, as knowledge continues to grow, new therapies and technologies continue to be developed with this increasing complexity, which further evolves practice.[41] Sidani elaborates on this idea by acknowledging that new types of professionals are required across time to meet changes in practice needs.[42]

AP roles in RT offered the Ontario cancer system a unique opportunity. As noted in the CCO report – New Ways of Working: A Provincial Strategy for Advanced Practice Roles in Cancer Care– strategic implementation of AP roles can help address key issues in HHR.[43] At the same time, new AP roles – such as the APRT – can play a meaningful role in transforming Ontario's cancer system by improving patient care and service delivery in the face of rapid technological evolution.

In the case of AP role implementation, it was often mistakenly assumed that AP roles were simply the transfer of duties from one member of a team to another, when in fact it is the application of advanced knowledge required to perform the activities that makes the role "advanced."[44] This resulted in the early misidentification of advanced practitioners.

In addition, the term "expert" is commonly used interchangeably to describe an advanced practitioner. However, an individual in an AP role should be more than an expert in their field. Not only do AP practitioners have specialized and advanced knowledge, skills and judgment related to the care of a unique patient populations and/or delivery of specialized or specific services,[33] but their roles also include multiple domains related to clinical practice, education, research, professional development and leadership.[45] Bolderston suggested that an AP role in RT "would involve increased autonomy, task significance and identity and the therapist would be using a wider range of skills than those utilised in a routine treatment position". [46] These are the characteristics that separate the advanced practitioner from the specialist or the expert.

[39] American Dental Association. Advanced Dental Hygiene Practitioner. (2009). http://www.sfdda.org/web/pdf/qa/ADA%20adhp%20Resource%20package.pdf
[40] Robarts, S., Kennedy, D., MacLeod, A. M, Findlay, H., Gollish, J. (2008). A framework for the development and implementation of an advanced practice role for physiotherapists that improves access and quality of care for patients. *Healthcare Quarterly, 11*(2), 67–75.
[41] Bucher, R. (1988). On the natural history of health care occupations. *Work and Occupations*,15, 131–147.
[42] Sidani, S., Irvine, D. (1999). A conceptual framework for evaluating the nurse practitioner role in acute care settings. *Journal of Advanced Nursing, 11*(2), 67-75.
[43] Cancer Care Ontario. (2006). New ways of working: A provincial strategy for advanced practice roles in cancer care. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=13478
[44] Fitch, M., Mings, D. (2003). Cancer nursing in Ontario: defining nursing roles. *Canadian Oncology Nursing Journal, 13*(1), 21-35.
[45] Lukosius, D., DiCenso, A. (2004). A framework for the introduction and evaluation of advanced practice nursing roles. *Journal of Advanced Nursing*, *48*(5), 530-540.
[46] Bolderston, A. (2005). Advanced Practice Issues for Radiation Therapists in the Province of Ontario: A Case Study. *Canadian Journal of Medical Radiation Technologies,* 36(2), 5.

Taking into account the recommendations from the CCO AP report[47] and the results of the systematic literature review, the following common traits were identified as key components of APRT:

1. Additional knowledge and skills including theoretical content
2. Expert clinical and technical practice with increasing complexity in an area of specialization, causing a blurring of professional boundaries
3. Integration of theory and use of evidence-based medicine
4. Higher level of cognitive functioning, such as critical thinking and analysis with an ability to deconstruct assumptions and rebuild new ways of doing things
5. Skills and aptitudes that transcend a particular niche and are transferable to a variety of settings and populations (i.e. can alter function from the individual patient to more system based thinking)
6. Enhancement of other aspects of professional practice – leadership, scholarship, research, teaching and consultancy
7. Autonomy in some aspects of practice

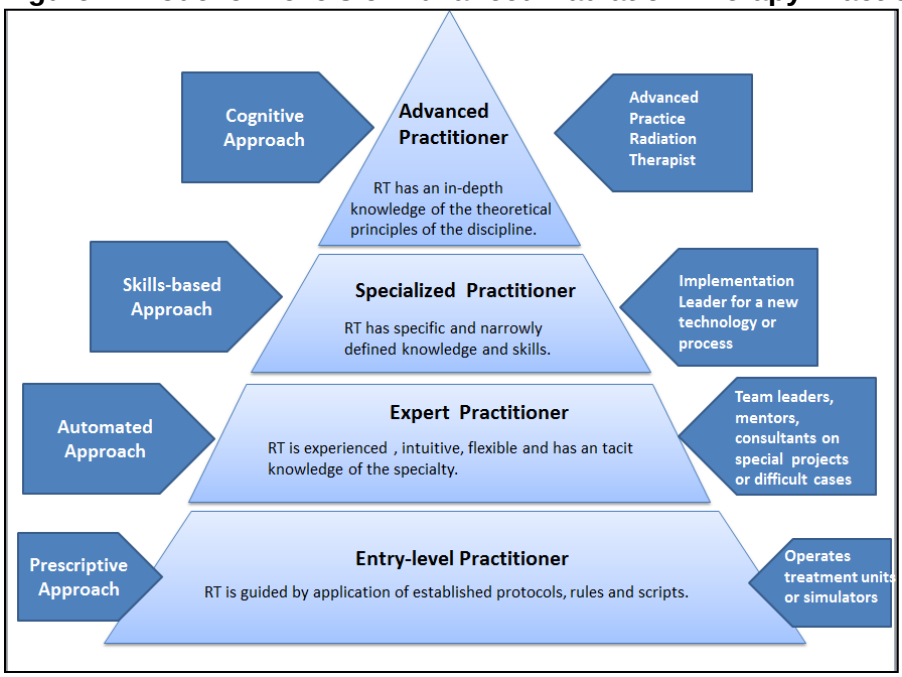
Using this definition of AP, a working framework (Figure 2), describing the various levels of practice in RT was created and later became the guidance for the development and integration of the new RTT role within the CSRT Project. The framework incorporates a general theoretical model that describes the movement of health care practitioners through the various stages of practice from entry-level to expert.[48] Additionally, it also offers practical descriptions of the activities and skills associated with each of the levels of practice.

A working framework, radiation therapy practice, was created and later became the basis for the development and implementation of new advanced practice radiation therapy positions across Ontario.

[47] Cancer Care Ontario. (2006, July). *New Ways of Working: A Provincial Strategy for Advanced Roles in Cancer Care*. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=13690

[48] Dreyfus, L. and Dreyfus S.E. (1986). *Mind Over Machine: The power of human intuition and expertise in the era of the computer.* Oxford: Basil Blackwell.

Figure 2: Model of Levels of Advanced Radiation Therapy Practice



The following provides a descriptive discussion of each progressive stage in the model that a radiation therapist can achieve:

a) The Entry-level Practitioner

RT practice encompasses a continuum of activities and skill levels that allow the radiation therapist to move from an entry-level practitioner to a professional expert. The time required to move from one end of the spectrum to another (from entry-level to expert) is based on a number of factors, including the individual's skills, strengths and motivations. The entry-level practitioner has acquired basic competence required for the practice of the profession. The entry-level practitioner's approach to practice is primarily prescriptive, and practice is guided by the application of rules and scripts. Generally speaking, entry-level practitioners are unable to differentially weigh indicators presented in routine practice: they see all aspects and variables as equal and must consider each one before proceeding or solving the problem at hand in order to satisfy their need to follow a defined procedure.

b) The Expert Practitioner

As practitioners move from competent to expert, experience allows them to intuitively select from the full range of factors and variables and distinguish those which are significant from those which are not. The expert practitioner has developed the additional attributes of flexibility, discrimination and discretion. In general, the expert practitioner still practices within the existing scope of practice; there is not necessarily a new domain of knowledge or competence employed, just a deep tacit knowledge of the practitioner's particular specialty. Expert practitioners may be asked to provide consultation on the state of current practice and/or how to improve it. They will not be inclined, however, to deconstruct practice, challenge the basic assumptions upon which practice is based, or rebuild or transform practice.

c) Specialized Practitioner

Terms such as “expanded”, “enhanced” or “extended” roles are often used interchangeably in the discourse on AP. While these terms infer a sense of augmentation of activities of a practitioner, they are not synonymous with AP. Role extension does not represent a wholesale move to another level of functioning and practice. Role extension frequently occurs in response to local pressures in a particular area. In such a case, an expert practitioner may be asked to move outside of his or her usual scope of practice in a very practical and “skills-based” way. These added responsibilities usually involve the acquisition and application of specific and narrowly defined knowledge and associated skills and eventually become part of the education and scope of practice for the entry-level radiation therapist, as new activities become “entrenched within a new subculture of professional demarcations”.[49]

d) The Advanced Practice Radiation Therapist, APRT

In contrast to the entry-level, expert or extended practitioners, advanced practitioners are equipped with a constellation of higher order cognitive skills (e.g., critical thinking, problem solving, decision making skills, etc.), in addition to advanced clinical skills (patient physical examination, obtaining consent, etc.) and leadership attributes. These valuable skills are built atop an in-depth, advanced knowledge of the theoretical principles of the practitioner’s discipline. The abilities and approaches of the advanced practitioner are transferable to a variety of settings in the practitioner’s area of specialty.

The advanced practitioner also brings to bear on issues, problems or analyses, a broader understanding of the health care discipline and its place in the multidisciplinary health care environment. This allows the advanced practitioner to consider issues and problems through a much larger lens, and to integrate solutions more widely. In addition, advanced practitioners do not only use advanced skills of analysis and enquiry to improve practice. Instead, they challenge the very basis of practice, deconstructing current models and approaches of care and bringing deep understanding of the profession, creativity and flexibility to true innovation in practice. Advanced practitioners are positioned to be transformative leaders and innovators.

2.1 Describing the scope of advanced practice in radiation therapy

As noted earlier in this report, advances in RT, coupled with increasing demand for radiation treatment and the ongoing desire to maintain a patient-centric model of care, place a significant burden on radiation treatment services in Ontario. The APRT Project flowed from the recognition that new strategies were required to ensure timely access to high quality radiation treatment for all Ontarians. The project’s main objective was to develop, measure and maximize the contribution of AP positions in RT and to support their sustained integration into Ontario’s cancer system.

During the Developmental Phase of the APRT project pilot, seven radiation therapy (RTT) investigators were placed at various regional cancer centres to help build a rough draft of a competency profile for their proposed positions against local service needs. They also identified and quantified (where possible) the potential benefits of these new positions to the patient and the system, and assessed the readiness of members of the health care team around their ability and willingness to accept these new professional positions as part of the inter-discipline health care team. The list of potential competencies was provided to the Project Team who compiled and reviewed each item for validity, overlap, and thematic coding. A detailed review of these

[49] Nightingale, J. and Hogg, P. (2003). Clinical Practice at an Advanced Level: An introduction. *Radiography, 9*: 77 – 83.

competencies, to ensure that they were considered AP in nature, was conducted against a literature review on the topic and through general stakeholder consultation.[50]

It was evident that the CSRT role and associated competencies would require great flexibility in the definition as each position needed to address specific local needs, resulting in variation in their duties. With consideration of this concept, the remaining items were grouped together in three main competency categories through a consensus building exercise with the Project Team:

1. **CORE CLINICAL COMPETENCIES** - Works as a member of the interdisciplinary care team to provide optimal patient care for RT patients:
    - At any point in the patient journey;
    - In a variety of settings (e.g. new patient, follow up, treatment review, at outreach clinic, etc.); and
    - In person or at a distance (remote consultation, email, telephone, telehealth etc.).

2. **CORE TECHNICAL COMPETENCIES** - Uses advanced oncologic, radiobiological and dosimetric knowledge to optimize the use of available technology for the provision of tailored radiation therapy treatment to patients.

3. **CORE PROFESSIONAL COMPETENCIES -** Uses research and evidence-based practice principles to serve as a quality champion, role model, mentor and innovator in RT and especially in their area of specialization.

The full competency profile can be found in Appendix A. A summary of past, current and future competency use within the distinct CSRT roles can be found in Appendix B.

During subsequent phases of the project - CSRT Demonstration, Phase I (extension) and Phase II (expansion) – the applicability and transferability of the profile was continually evaluated. [51] [52] [53] [54] [55] It was determined that the draft competency profile can be applied against the positions regardless of the variation they require to address the diverse geographic and demographic patient needs across Ontario.

The competency profile built in the CSRT Project was eventually adopted and validated by the Canadian Association of Medical Radiation Technologists, and is now used as the basis for the new certification process for advanced practice in Canada.

Parallel collaborative work also began with both the Canadian Association of Medical Radiation Technologists (CAMRT) - the national professional certification body, and the The College of Medical Radiation Technologists of Ontario (CMRTO) - the provincial regulatory body for radiation therapists. The first steps were to validate the drafted competency profile through a provincial working group that was convened. The group consisted of members from CAMRT and CMRTO, validation experts and members of the Project Oversight Committee (POC) of the CSRT Project. A

[50] Harnett, N., Bak, K., Lockhart, E., Ang, M., Zychla, L., Gutierrez, E., Warde, P. (2016). Advanced Practice Roles in Radiation Therapy: A Feasibility Study *(manuscript in progress).*
[51] Cancer Care Ontario. (2008). Clinical Specialist Radiation Therapist Demonstration (CSRT) Project: Phase I Evaluation Report.
[52]Cancer Care Ontario. (2010). Clinical Specialist Radiation Therapist (CSRT) Demonstration Project: Summative Evaluation. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=119462
[53] Cancer Care Ontario. (2013). Clinical Specialist Readiation Therapist (CSRT) Project: 2012/13 Final Report. Retrieved from http://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=287716
[54] Cancer Care Ontario. (2014). Clinical Specialist Radiation Therapist (CSRT) Sustainability Project: Final Report 2013/14. Retrieved from http://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=313180
[55] Cancer Care Ontario. (2015). Clinical Specialist Radiation Therapist (CSRT) Sustainability/Intergration Project 2014/15

thorough step-by-step review of each competency was conducted, with each line meticulously analyzed for validity, clarity and meaning. The second step involved reviewing each competency based on the category that it was in and ensuring that all competencies were under the correct section. A third step was taken to review the entire competency list for a gap analysis. Initial discussion was held in regards to the action items and assessment possibility for each competency. In a second meeting, facilitated by assessment methodology consultants, the working group members discussed in detail the ability of the competencies to be assessed by the different measures. An initial blue print on the effective methods of assessing performance was constructed and was reviewed against the CMRTO scope of practice at a later date.

The validation of the competencies was completed at a national level by the CAMRT, who distributed the competency profile produced by the CSRT Project to its members and relevant stakeholders. Positive results were garnered from the quantitative and qualitative information yielded from the review and only minor revisions to the competency profile were made. This information was used by the CAMRT in the development of methods and mechanism for national certification of APRTs (see this discussion on page 42). A finalized competency profile was published and a blue print for assessment of the competencies developed and implemented as part of a pilot project running from September 2015 to June 2016.

During the CSRT Sustainability Project Work, the PMT also continued to work 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. A task group, including the CMRTO Registrar and current president, and the CSRT Project Lead, reviewed the supporting documentation for the CSRTs in order to ensure that the information contained was current under the new scope of practice statement, authorized acts and Standards of Practice.[56] Furthermore, work was completed by a task group around drafting practice standards for AP for medical radiation technologists, in order to ensure congruency with the CMRTO Standards of Practice and prepare for a time when AP would require regulation in the future.

Based on the work of the CSRT Project, practice standards for advanced practice for medical radiation technologists in Ontario were drafted in alignment with the existing CMRTO practice standards in preparation for a time when advanced practitioners will require regulation in Ontario.

2.1.1 The Profile in Action

As was discussed above, successful CSRT positions take on a variety of configurations that are guided by the competency profile but shaped by the locally identified needs and goals. The variability across positions can be seen in Table 2, which is a summary of the documented activities of the CSRTs under the following categories:

1. **Clinical** – any patient related activities – triaging referrals, planning, consults, set up checks, telephone calls, on treatment reviews, follow-ups, quality assurance, online support groups, dictation, documentation, etc.
2. **Innovation/Knowledge Creation** – data collection/analysis, clinical trials, procedure or guideline development, presentation, best practice activities, etc.

[56] College of Medical Radiation Technologists of Ontario (CMRTO). Standards of practice. Retrieved from https://www.cmrto.org/what-we-do/professional-practice/standards-of-practice/

3. **Administrative** – report writing, meetings, committee work, etc.
4. **Teaching** – education and evaluation on any level.

Please refer to Appendix C for a comprehensive breakdown of work week activities.

Table 2: Summarized "Average Work Week" Data

	Clinical	Innovation/ Knowledge Creation	Administration	Teaching/ Education
Average	**65**	**23**	**14**	**9**
Median	**70**	**17.5**	**10**	**7**
Mode	**80**	**10**	**10**	**5**
Range	**10 - 90**	**0 - 70**	**0 - 28**	**0 - 20**
SD	**22**	**19**	**6**	**5**

As can be seen, the largest range of activity is in the Clinical and Innovation/Knowledge Creation. In general, every position has a primary focus in one of these activites, or distributes focus between them. The ranges reflect the great variability and are often impacted by one or two highly unique positions – for example, the IGART (Chest, Upper Abdomen) CSRT has an extremely high focus on Innovation, whereas the H&N CSRT in London has none. The Administrative and Teaching/Education activities tend to be less emphasized, as can be seen by the lower upper end of the range and the smaller standard deviations. It is important to note that a CSRT's time distribution can vary greatly over time as well as across positions. As the strategic goals of a department change over time, or a new need arises, the CSRT has a constellation of competencies that can be redeployed based on where need exists across the radiation treatment program. Therefore, it is important that departments continually review the CSRT's job description against goals and activities to ensure that everyone on the team, and the patients, understand what to expect from the CSRT. Lack of role clarity has been frequently documented as a source of dissatisfaction for advanced practice nurses (APN) and a source of confusion for their local team.[57]

[57] Bryant-Lukosius D, Green E, et al (2007). A survey of oncology advanced practice nurses in Ontario. *Nursing Research*. 20 (2): 50 – 68.

Section 3: HOW

Once it was identified that introducing the concept of advanced practice to the radiation treatment enterprise could result in improved patient care for cancer patients in Ontario, an action plan needed to be developed. Significant changes would be required to launch a pilot project evaluating the impact of a new health care provider role for radiation therapists. In order to successfully introduce the concept of the CSRT and to implement the change necessary for pilot activities, the Project Management Team (PMT) had to think systematically about how to approach these changes.

Evaluation of the change management literature led the PMT to select Kotter's "Process for Leading Change"[58] as a guiding framework to develop and implement its plan of action. This section uses the model to describe the work of the project teams over the Demonstration and Sustainability/Integration phases of the Project.

Key Messages

1. The collective set of processes and supporting resources developed during the project serve as one of the most comprehensive packages of tools for envisioning, developing, implementing and evaluating new health care roles in the public domain. Over time, it is expected that these tools will be adapted for use by the national professional association and beyond.
2. Communication is a critical and often underutilized tool for influencing change. Many formats, methods, channels and mechanisms must be employed for maximum impact.
3. Champions are key to success and employing the early adopters as champions was a key to early success for the CSRT Demonstration Project.
4. Work continues on various fronts to secure the long-term sustainability of the role in Ontario.

[58] Kotter International. (2014). The 8-step process for leading change. Retrieved from http://www.kotterinternational.com/the-8-step-process-for-leading-change/

Section 3: HOW

3.0 Managing Change

For the purposes of the CSRT Projects, John Kotter's Process for Leading Change was adopted.[59] The 8-step model for change management provides a framework to develop change strategy and is used here to report the work undertaken by the CSRT Project team and stakeholders to develop, implement and evaluate impact of the role during the pilot project.

The Model consists of 3 main categories of actions:

Create a climate for change
- Create a sense of urgency
- Build a guiding team
- Get the right vision

Engage and enable
- Communicate
- Empower action
- Create short term wins

Implement and Sustain
- Don't let up
- Make it stick

3.0.1 CREATE A CLIMATE FOR CHANGE

Create a sense of urgency

Change is most easily facilitated when the goals of the change can be linked to a recognized need or desire. Goals for change can be drawn from the current state of affairs in the relevant jurisdiction and can be formulated to articulate a clear direction forward. The drivers and actions that combined to create a sense of urgency for the CSRT Projects were discussed above in the WHY Section (Section 1.0, page 10).

Build a guiding team

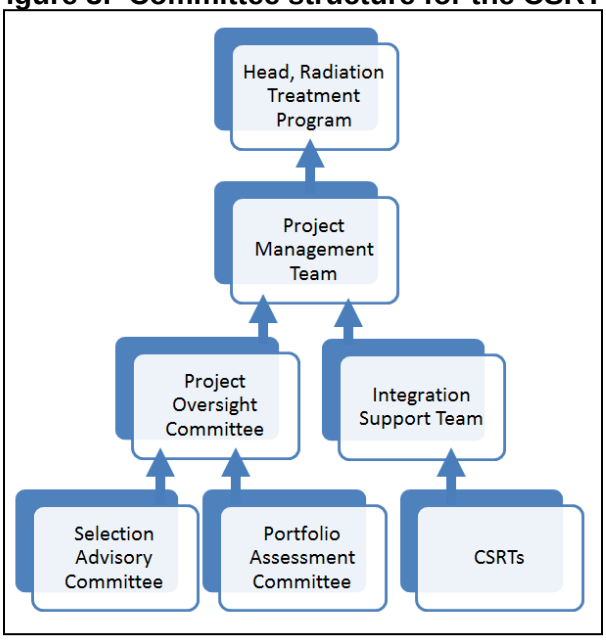
In order to launch a change initiative successfully, the appropriate manpower and stakeholders must be brought to the table. This include necessary champions, opponents (or skeptics), advisory team members and a team charged with leading the change activities. The CSRT Project set about identifying and convening the necessary committees and teams to take the project from an idea to action.

a) Committees

In order to create an accountable and transparent structure around the project, a committee structure was developed to guide the recruitment of appropriate expertise and insight in alignment with the goals of the project (see Figure 3).

[59] Kotter, J. P. (2007). Leading change: why transformation efforts fail. *Harvard Business Review,* 92-107.

Figure 3: Committee structure for the CSRT Projects



i. Project Management Team

The core team consisted of a Project Manager, Project Coordinator and a Radiation Treatment Program Manager dedicated to supporting the CSRT project during the critical initial years of provincial implementation, maintenance and evaluation.

ii. The Integration Support Team (IST)

This committee includes the members of the PMT and any current consultants/contractors. The team met twice a week - one meeting dedicated to program items and the second meeting centered on project data collection, analysis and future directions. Internal CCO stakeholders and external stakeholders from the MOHLTC and CAMRT amongst other key organizations, were engaged on an ongoing basis in order to provide input and expertise around various project components.

The IST relied heavily on the unique expertise and experience brought forth by each member. The Project Manager spearheaded this project, bringing forth extensive clinical, research, teaching and project management experience centered on interprofessional practice within radiation medicine. The Radiation Treatment Program Manager and Project Coordinators brought forth expertise around policy and fiscal planning, as well as facilitation and coordination skills, particularly within the CSRT Community of Practice (CoP). These team members also wore the “CCO hat”, and acted as an intermediary between key project decisions and directions in relation to policy considerations. In addition, additional researchers brought forth expertise around ethics, data acquisition and analysis and provided overall analytical support.

The IST used 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 programs; and
- Overseeing the monitoring and measuring of activities and outcomes.

iii. Project Oversight Committee

The Project Oversight Committee (POC) was situated at an arms' length from the IST and was often called upon at key project milestones in order to provide expertise and guidance. POC membership was interdisciplinary and drawn from three key categories: jurisdiction, education and program oversight. Membership was further sub-divided into members who possessed an advisory role versus those who hold an operational/working group role. Advisory members were often called upon to aide with strategic or "thinking" activities such as: brainstorming, reflection and identification of risks. Meanwhile, operational members assisted with "doing" activities such as planning, implementation and evaluation.

iv. Other Committees

Several subcommittees of the IST were struck as needed for the implementation of the various processes inherent in the project operation and evolution, most frequently in response to each new round of pilot position selection and implementation (See Appendix D).

The *Selection Advisory Committee* (SAC) was a group of "arm's length" stakeholders who act as an objective body of related health care professionals (for example, radiation oncology, nursing, etc.) responsible for ranking the proposals submitted in response to the Request for Proposals (RFPs). With each round, experts are selected from amongst the cancer care community to perform the proposal assessment against the criteria established for the proposals and submit recommendations to the POC.

Once positions had been selected and departments mobilize to implement them, the selection of the incumbent began. As part of that selection process, interested applicants were required to submit a portfolio of evidence attesting to their clinical skills and judgement. The IST was responsible for convening the *Portfolio Assessment Committee* (PAC) who would review the portfolios submitted by interested candidates around the province. The PAC consisted of expert radiation therapists who had completed the mandatory portfolio assessment training developed and provided through the IST. The CSRT Portfolio Guidebook can be found in Appendix E.

b) Champions

The role of champions is a vital component of a change management strategy, particularly within the context of the healthcare system. Research shows that using a local champion in an effort to implement change can have stronger results as members of a team are most influenced by one of their colleagues.[60] Additionally, local champions have been shown to promote the concept of change and also help ensure its sustainability.[61] They can also act as local experts in adopting change while often serving as a strong link between an external

[60] See, for example, Raymond Caldwell Champions, adapters, consultants and synergists: the new change agents in HRM Issue Human Resource Management Journal, Human Resource Management Journal, Volume 11, Issue 3, pages 39–52, July 2001
[61] World Health Organization. (2011). Beginning with the end in mind: planning pilot projects and other programmatic research for successful scaling up. Retrieved from http://apps.who.int/iris/bitstream/10665/44708/1/9789241502320_eng.pdf

implementation team and local clinicians being encouraged to embrace change. When considering potential candidates who could act as a change agent, it is important to select an individual who can be seen as an early adopter and/or someone who would want to champion the change.[62]

This concept of using a champion when implementing change has been around for a long time and it is important to note that this individual will often emerge spontaneously and will be selected for this role in a rather informal way. In other words, this agent of change will likely already express the enthusiasm and motivational drive needed to advocate for change.[63] Research suggests that change agents typically do not take on the role passively and the expectations that come along with it, but instead are actively involved in interpreting their role when being presented with this opportunity.[64] Keeping these factors in mind, it is crucial that the change implementation team looks for individuals who volunteer themselves, as opposed to assigning the role when searching for a suitable change agent.[65]

At the outset of the CSRT Project, the team was aware of practitioners who had already expressed their interest in the development and implementation of this AP role at specific cancer centres. This was a significant step in selecting champions who would help with the integration by gaining further buy-in at these facilities. Experience showed that including champions was pivotal to successful implementation of early positions and to disseminating information about the benefits of the positions for the patients. In instances where champions were less engaged in the early stages of the pilot project, positions would lose momentum and eventually be discontinued.

The importance of champions to this work was further demonstrated when CSRT direct supervisors were interviewed as a part of the annual project reporting in 2012/13 and 2013/14. Semi-structured interviews were conducted with direct supervisors of senior and junior CSRTs (7 in 2012/13 and 10 in 2013/14). Questions related to the supervisors' involvement with the CSRTs, perceived facilitators and challenges to position integration, and their vision of the future of the role were posed. A number of factors which influence the integration process of CSRTs were noted at the programmatic and organizational level and can be linked to the importance of having the support and buy-in of key stakeholders and individuals 'at the ready' to promote and advocate for the new roles. The role of champions also appears to be beneficial over time and not just at the outset to instigate the initial implementation of the position in question. When discussing the acquisition of necessary support from program administrators, supervisors noted that as champions of the CSRT role, they were sometimes responsible for "convincing other people that [CSRT implementation] was a worthwhile endeavor" and creating "a supportive and nurturing" environment in which the CSRT position can thrive. These actions were aligned with the literature which describes champions as responsible for promoting change and ensuring the sustainability of the change/new behaviour. In some centres, the administrative leaders acted as champions themselves. One direct supervisor noted that a major facilitating factor to the integration process at his centre was an "understanding administrative head who saw the value [of the role]".

Once initial buy-in was garnered at the institutional/programmatic level, champions were also crucial to facilitating CSRTs' learning and bolstering integration with their immediate clinical

[62] Kirchner, J. E., Parker, L. E., Bonner, L. M., Fickel, J. J., Yano, E. M. & Ritchie, M. J. (2010). Role of managers, frontline staff and local champions, in implementing quality improvement: stakeholders' perspectives. *Journal of Evaluation in Clinical Practice, 18,* 63-69.
[63] Hendy, J., Barlow, J. (2012). The role of the organizational champion in achieving health system change. *Social Science & Medicine, 74*, 348-355.
[64] Tucker, D. A. Hendy, J., Barlow, J. G. (2015). The importance of role sending in the sensemaking of change agent roles. *Journal of Health, Organization & Management, 29*(7), 1047-1064.
[65] Goodyear, J. (March 26, 2004). Innovative Solutions: New and Expanded Roles in the Healthcare System. Presented at Advanced Practice Workshop. Toronto, Ontario.

team. Champions, whether they were the CSRTs' direct supervisors or not, often provided CSRTs with initial direction and supervision, as well as ongoing education and mentorship. These individuals also worked within their departments to further the understanding of the CSRT role amongst their colleagues and created an open learning environment for CSRTs, in which they felt comfortable raising questions or concerns and learning from all members of the inter-professional team and not just their assigned direct supervisor. It can be seen that champions were able to positively impact CSRTs' learning and intergration within the program both directly and indirectly.

The vision for the future that CSRT champions (in the form direct supervisors) projected also appears to be key to the successful integration of CSRTs. Several individuals interviewed as a part of this work proposed that the scope of the CSRT role is "unlimited" and encouraged expansion to other disease areas and institutions. Many individuals have specific ideas for future positions and avenues to consider for the evolution of the scope of the role. This demonstrates alignment with the literature, as these individuals are active in both the role that they signed up for (direct supervisor to the CSRT in their program), as well as to the broader project goals and role sustainability.

Getting the right vision

Once the nature of the issue(s) to be addressed is clearly understood and the relevant players have been enlisted and convened, it is important to develop appropriate short, mid-, and long term goals for the project. Further to the development of the goals, the strategy for implementation needs to be envisioned, which will set the course for the creation of necessary processes and identification of the required resources.

CSRT Project Goals

Guided by the overall goals of the CSRT Projects – to increase patient access, improve patient care and outcomes – specific activities and deliverables needed to be developed to realize these goals. The objectives of the Project were to support the development, implementation and evaluation of a sustainability plan for the integration of CSRTs into cancer care teams which will include but not limited to:

a) The implementation and evaluation of CSRT positions
b) The integration of positions as full functioning members of the existing teams
c) The creation and dissemination of knowledge about CSRTs
d) The continuation of work with professional associations and stakeholder groups to ensure consistent integration of the CSRT role; and
e) Influence within the system to facilitate longterm sustainability of the role.

The realization of the project's long term goals could only be visualized clearly if the context within which the initiative sits is well understood – including the drivers of the system and strategic directions of the key players.

Project Alignment

The development of the CSRT role and implementation of the CSRT Demonstration Project was closely aligned with core health care system objectives, a number of government initiatives, calls for broader health care system reform, the needs of the Regional Cancer Centres, and the interests of the RT profession. Among other things, the CSRT agenda was aligned with:

- Key recommendations set out in the Ontario Cancer Plan (OCP) IV 2015-2019[66] (and the previous OCPs; OCP III 2011-2015[67], OCP II 2008-2011[68], OCP I 2005-2008[69])
- HealthForceOntario's initiatives[70]
- CCO's innovation agenda and "Advancing Person Centre Care" corporate strategy[71]
- The 'right care, right time, right place' philosophy of the MOHLTC and CCO, which includes optimizing the models of care involved in the delivery of cancer services in ways that are person-centred and sustainable.
- Ongoing focus on increasing interdisciplinary collaboration, eliminating professional territorialism, maximizing scope of practice and flexibility for regulated health professions within the interprofessional team environment
- National and international interest in AP roles for health professionals
- The desire of RTT professionals to increase opportunities within their field thereby enhancing recruitment and retention of professionals
- The interests of departments to find efficiencies, improve care, and optimize intellectual capital

"People should be able to get the right care at the right time in the right setting from the right provider." (Ontario Health Quality Council, 2009 Report)

The Project's alignment with HealthForceOntario and Cancer Care Ontario's Ontario Cancer Plan are particularly important. HealthForceOntario is the province's health human resources strategy. This initiative, launched in May 2006, seeks to make Ontario the employer of choice in health care. The initiative confirmed the MOHLTC's commitment to ensuring that the province has the right number and mix of health care providers when and where they are needed.

As mentioned previously, one of the key components of the HealthForceOntario strategy involves establishing innovative new health care professional roles in areas of high need, and supporting interprofessional teams. In 2006, new role initiatives included nurse-performed flexible sigmoidoscopy, registered nurse first assist, physician assistant, and anesthesia assistant, as well as the CSRT role. The Project, examining the implementation of the CSRT role, was funded in part through this provincial initiative.

Interprofessional care involves the provision of comprehensive health services to patients by multiple health care professionals who work collaboratively to deliver the best quality of care in every health care setting. It encompasses partnership, collaboration and a multi-disciplinary approach to enhancing care outcomes. (HealthForceOntario, 2006)

The CSRT Demonstration Project built on commitments originally set out in the first OCP (2005-2008), and reaffirmed in the OCP II 2008-2011 and OCP III 2011-2015. The OCP II 2008-2011 includes a specific commitment "to develop innovative ways to deliver care through new roles for health professionals and enhance collaboration between disciplines."

[66] Cancer Care Ontario. (2015). Ontario cancer plan IV: 2015-2019. Retrieved from https://cancercare.on.ca/common/pages/UserFile.aspx?fileId=333871
[67] Cancer Care Ontario. (2011). Ontario cancer plan 2011-2015. Retrieved from http://www.iccp-portal.org/sites/default/files/plans/OCP20112015_Brochure.pdf
[68] Cancer Care Ontario. (2008). Ontario Cancer Plan 2008-2011. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=13808
[69] Cancer Care Ontario. (2005). Ontario cancer plan 2005-2008. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=34910
[70] HealtForceOntario. (2013). New roles in healthcare. Retrieved from http://www.healthforceontario.ca/en/Home/Policymakers_and_Researchers/New_Roles_in_Health_Care
[71] Cancer Care Ontario. (2012). A healthy Ontario: our future health: strategic direction 2012-2018. Retrieved from https://ecco.cancercare.on.ca/Divisions/President/stratman/Publications/English%20CCO%20Corporate%20Strategy.pdf

The CSRT Sustainability/Integration Project maintained alignment with CCO's provincial cancer strategy. In particular, the Project aligned with the 'Sustainability' dimension of the OCP IV 2015-2019, which includes the objective of "optimizing the model of care delivery to achieve the greatest benefit for patients and the cancer system."

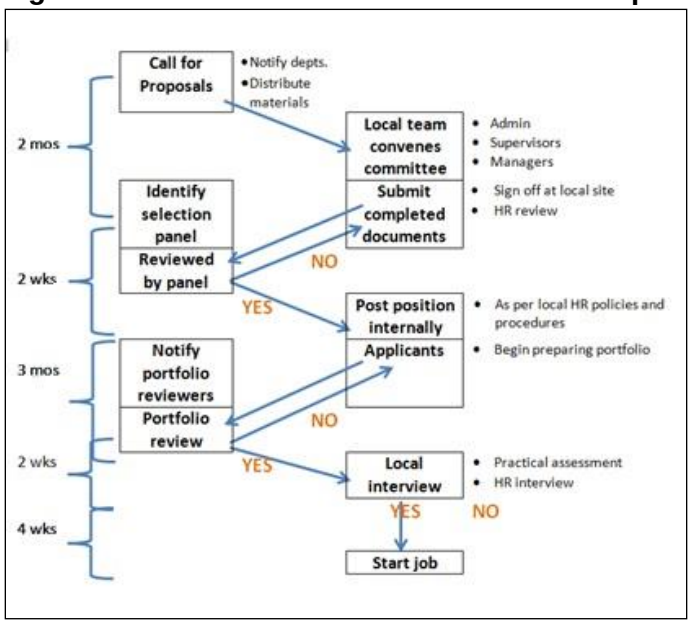
The interest in interprofessional care was also consistent with health reforms taking place in Canada and around the world. Reform efforts increasingly emphasized the value of collaboration among members of the health care team, and elimination or reduction of demarcations and hierarchical relations, in order to meet the increasingly complex needs of service users.[72]

The ability to realize goals set out during the strategic planning portion of the project hinged on robustness of the tools and processes developed to guide the forward movement of the project. Clear and adaptable processes needed to be augmented with tools to aid stakeholders in engaging and supporting the initiative. The IST was tasked with developing the requisite resources required to implement the activities and processes deemed necessary for the successful activation of the project vision.

Implementation Planning

Clearly visualizing the processes and steps that will be required to achieve the stated goals is an important proactive phase of envisioning the implementation of the project activities. The PMT mapped out the stages required for the selection of sites to host pilot positions and the steps required to fill and implement those positions at the local level. Figure 4 below outlines the high level workflow for the selection of host sites and of the local incumbents.

Figure 4: The Pilot Position Selection and Implementation Workflow



[72] Cooper, H., Carlisle, C., et. al. (2001). Developing an evidence base for interdisciplinary learning. *Journal of Advanced Nursing*, 35(2), 228-237.

The value of the workflow is its ability to reveal the adjacent processes and resources that will be required. Each step in the workflow needs to be guided for consistency and transparency and in many cases, participants need resources and tools to engage to their maximum capacity within the process. A full suite of resources were developed by the IST for use by applicants at each stage of the process as outlined in the table below. The full set of resources is available in Appendices A, D, E, F, G, I, J, K, L, M.

The robust processes and supporting resources developed during the project serve as enduring resources for the future implementation of APRTs in Ontario and beyond.

Table 3: List of project enduring resources

Asset	Purpose
CSRT Competency Profile	Describes the scope of practice for CSRT practice
Terms of Reference • Integration Support Team • Project Management Team • Project Oversight Committee • Community of Practice	Defines the parameters of operation and the responsibilities and accountabilities for each committee.
"Request for Proposals" package	Includes a set of guides and resources to help individual departments support and develop a valid and appropriate CSRT position
Portfolio Guide • For candidates • For assessors	Provides information, guidance, templates for the candidates to build their own professional portfolio; provides scoring criteria and process for candidates and assessors
Portfolio Assessment Training Session	Includes the resources to conduct a training workshop to introduce participants to the concept of prior learning assessment and recognition, the lay out and expectations of the portfolio, and materials to practice scoring and engaging in facilitated feedback about practice session.
Assessment/selection criteria • Selection Advisory Committee • Portfolio Assessment Committee	Provides the criteria for evaluation of the relevant submissions including the templates to record and report results
CSRT Reporting templates • Senior • Junior • New	Includes structured templates CSRTs to submit relevant materials and results depending on their stage of development (competency development and assessment tools, workflow diagrams, CV templates, data sheets, etc.)
Standardized Metrics Package	Provides the tools to evaluate a new HCP role and the mechanisms used to report the progress to an administrative or monitoring body

Implementation Tool Kit	Sets out the primary principles for the development of a new HCP and guides authors to the appropriate resources and tools to build a robust and compelling business case
Interview and focus group scripts • Managers • Direct Supervisors • CSRTs	Outlines the structured or semi-structured scripts to follow during an interview or for use in a focus group for the appropriate groups.

A complete implementation plan not only articulates the steps and processes for ramping up the project but also for monitoring and evaluating progress. This is a critical step in envisioning the full operation of the new initiative. How you measure progress and success/failure need to be anticipated and communicated. In some cases, agreements need to be struck with the participating organizations to ensure timely and effective monitoring of project progress. Many of the ways the CSRT Projects measures progress and success/failure are included in the SO WHAT Section (Section 4.0, page 43) and sample materials and tools included in Appendix N.

3.0.2 ENGAGE AND ENABLE

Communicate

During the integration of a new role within a clinical setting, it is critical that the information needs of the stakeholders are met. Failure to do so can result in confusion about the role and its expectations and potentially lead to eventual failure. There are numerous levels of communication, various mechanisms for communicating, as well as multiple messages that need to disseminated. As such, a robust and iterative plan for communication must be developed and continuously monitored.

There was much to be gleaned from the advanced practice nursing (APN) literature. Consistent messages emphasize the importance for administrators to understand the specifics of the position and the value it adds to existing model of care. A communication gap between the team integrating the role and the administrators can result in a vicious cycle that leads to improper understanding of the role by other stakeholders – to the point where it is sometimes difficult for them to differentiate it from similar roles.[73]

In the case of APNs, the role itself needs to be clarified to the patients, other healthcare providers and even other nurses.[74] Effective use of communication can address potential areas of confusion including: lack of well-defined terms, conceptualization of AP, a mechanism to differentiate between and among different levels of practice and distinguishing between medicine and the advanced practice role.[75] APNs who work in an environment where there is lack of full understanding of their responsibilities often face a negative impact on job satisfaction resulting in ambiguity about the scope of their role, as well as a need to protect their 'turf'.

In addition to this, another aspect of the role that needs to be communicated more effectively is the actual contribution of individuals filling these new roles. For example, the integration of the APN role can be evaluated based off of the individuals who currently hold this title. This would

[73] Carter, N., Dobbins, M., Ireland, S., Hoxby, H., Peachery, G., DiCenso, A. (2013). Knowledge gaps regarding APN roles: what hospital decision-makers tell us. *Nursing Leadership, 26*(4), 60-74
[74] Lowe, G.L., Plummer, V., Paul, A., O'Brien, P., Boyd, L. (2011). Time to clarify – the value of advanced practice nursing roles in healthcare. *Journal of Advanced Nursing, 68*(3), 677-685.
[75] Spross, J.A., Lawson, M.T. (2009). Conceptualizations of advanced practice nursing. In advanced practice nursing. An integrated approach. Saunders Elsevier, St Louis.
[75] Higgins, A. Begley, C., Lalor, J., Coyne, I., Murphy, K., Elliot, N. (2014). Factors influencing advanced practitioners' ability to enact leadership: a case study within Irish healthcare. *Journal of Nursing Management, 22*, 894-905.

include their ability to lead within a clinical setting, provide consults, and their impact on patient safety and satisfaction.[76]

As noted in the CCO report "*New ways of working*"[77]:

> "A meaningful definition of role involves more than a paper-based definition: it demands a clear description of roles and responsibilities, the population needs that the advanced practitioner is expected to meet, the knowledge, clinical and other skills that are required for the role, the boundaries of their practice, the relationship to other members of the interdisciplinary team, and the accountability; reporting structure, among other things."

The project goals included a streamlined and comprehensive communication plan featuring a variety of activities such as:

- Information video about CSRTs and the CSRT project
- Site visits across provincial cancer centres
- External facing CSRT project website
- Internal facing CSRT project collaborative website
- Poster and oral presentations at various local and international conferences delivered by the IST and CSRTs
- Publications in peer-reviewed journals
- Educational workshops
- CSRT profile features within the Radiation Treatment Program Semi-Annual Newsletter and CAMRT's quarterly newsletter
- Project presentations to external stakeholders (for example, CCO leadership, MOHLTC internal committees, etc.)
- CSRT Twitter account
- Distinct CSRT ResearchGate accounts citing the various research work surrounding the project
- CSRT newsletter (in development)

In addition to engagement with a range of stakeholders, communication amongst the project members was also critical to the success of the project. As the number of positions grew over time, informal conversations between members became more critical and require mechanisms and opportunities to do so. The CSRT CoP was convened in 2013 and currently meets on a monthly basis in order to provide updates and share experiences and ideas. The goals of the CoP are:

1.1 CSRT Role Definition – Promote and affirm identity and utilization in cancer care system
1.2 Encourage collaboration, knowledge generation/information sharing
1.3 Promote mentorship and peer-to-peer support network for new and existing CSRT roles

The CoP also gathered annually for a face to face meeting in order to engage in role formalization and advocacy, knowledge transfer and exchange (KTE) activities, and to consult on future strategic directions for role sustainability and for the project as a whole. The complete Terms of Reference for the CoP can be found in Appendix G.

[76] MacNeil, J. & MacKinnon, K. (2011). Making visible the contributions of the clinical nurse specialist. *Nursing Leadership*, 24(4), 88-98.
[77] Cancer Care Ontario. (2006, July). *New ways of working: A provincial Strategy for Advanced Practice Roles in Canada: Summary Strategy Document*. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=13478.

Empower action

It is during this stage of leading change that stakeholders and organizational leaders need to understand why and how to embrace a change. There are many ways to create motivation for change – whether it happens through firm directives, by creating a burning platform or the promise of improved working conditions.

In the CSRT Project, a combination of activities served to mobilize the radiation medicine community to engage with the project. As outlined above, the use of champions was key in the initial phases of the project. Various channels of communication were used to espouse the possible gains that could be realized and helped expand project interest beyond the core group responsible for the vision and the assembled working groups and committees.

Another important element to facilitating motivation is to work towards the removal of commonly perceived barriers. Issues like regulation, legislation, funding, etc often preclude community stakeholders from engaging in change initiatives. Many prefer to wait for a "done deal" before investing time, energy and resources. To that end, the IST worked in various ways to remove or decrease barriers to garnering support for the change initiatives being implemented. With the successful capture of grant monies from the MOHLTC, one of the most frequently articulated barriers to the development of new roles – funding – was removed.

In addition to the ability to fund pilot positions (to varying degrees), the IST worked on other common barriers. These included reducing territorialism between professional groups, improving the understanding of the objectives of the Project, disseminating literature about similar projects in other jurisdictions, gaining support from the regulatory body, engaging professional associations, as well as collaborating with other international groups working on similar projects. Members of the IST were invited to present at professional conferences to inform colleagues about the initiative and its goals, help them work through the steps required to envision AP in their region or jurisdiction, and many other activities that were deemed important to reduce or remove perceived barriers to progress.

Figure 5: The PDSA Model

Once initial momentum was established, it became necessary to maintain this momentum and build on the change and the results being generated. Ongoing evaluation, empowerment and communication were keys to success in this regard. Several methodologies were adopted to facilitate and perpetuate the testing of the CSRT role around the province. In an effort to standardize the approach to pilot position implementation and testing, the project utilized the "Model for Improvement" developed by the Institute for Healthcare Improvement. This model is widely used in quality improvement efforts, including those of the Ontario Health Quality Council. According to the Model for Improvement, in order to succeed, a quality improvement project or initiative should have a clear aim and track specific measures that demonstrate whether specific changes lead to an improvement. It is based upon the quality framework referred as the "Plan, Do, Study, Act (PDSA)".[78]

[78] Deming, E. W. (1986). *Out of the crisis*. Cambridge, MA: Massachusetts Institute of Technology Press.

The PDSA is a commonly used framework that emphasizes the quality improvement nature of any innovative planned activity. The process calls for repeated cycles of planning, doing, studying (or evaluating) and acting (or implementing changes based on the evaluation). The cycle repeats continuously to improve the intervention or design of a service on an ongoing basis. The APRT Development Project, the initial evaluation of what AP could look like within Ontario, highlighted the possible lack of consistency in evaluation given the different trajectories of potential positions (clinical, technical, professional). At this stage, it was determined that a preliminary set of tools would need to be constructed and tested for viability and applicability to measure the impact of the role. This task was conducted by the PMT who reviewed published literature for comparable methodologies, surveys and implementation designs. Consensus was obtained after team consultation and the first set of tools and methodology was developed.

A secondary framework that evaluates new service delivery models was also used in the construction of Project. The PEPPA framework is conceptualized for systematically planning and implementing a service delivery improvement process such as the role of AP clinicians.[79] Although the PEPPA framework was initially developed for implementing APN positions, the framework has been successfully used and evaluated for other roles such as AP roles for physiotherapists.[80] Findings from the implementation and evaluation of AP roles helped inform the planning and implementation of the CSRT position.

To guide these endeavors, the 'Standardized Metrics Package" and the "Implementation Tool Kit" were built (see Table 4). Across the various phases of the project, these tools have continued to maintain their value and have been implemented for each new CSRT, in addition to the continued usage by existing CSRTs where the data was required and applicable for longitudinal study. Thematic changes to the grouping of the datasets has occurred in conjunction with project reporting needs to the MOHLTC; however, the measures have been consistent and led to the ability to collect data in a standardized manner.

These tools can be found in Appendix F and Appendix J.

The combination of the Standardized Metrics Package and the Implementation Tool Kit, developed for the CSRT Projects, is believed to be the most comprehensive resource for implementing and evaluating new HCPs available publicly.

The standardized metrics package provides not only the tools to evaluate a new HCP role but also the mechanisms used to report the progress to an administrative or monitoring body. The comprehensive results provide a 360 degree view of impact, change and position evolution that can be quantified and compared. Each section of the package provides a description of the tasks, useful resources, a description of the tasks to be completed, associated timelines, and examples of the resulting work, templates to be completed or surveys to be utilized and associated REB applications. Each task is systematically rolled out in accordance to a timeline with associated due dates in a manner that is consistent with the learning needs, training and requirements for achieving advanced practice.

Each section of the standardized metrics package presents a methodology and/or tools that can be utilized independently, in conjunction with other sections or as a whole. The importance of

[79] Bryant-Lukosius, D., DiCenso, A., Browne, G., Pinelli, J. (2004). Advanced practice nursing roles: development, implementation and evaluation. *Journal of Advanced Nursing, 48*(5), 519-529.
[80] Robarts, S., Kennedy, D., MacLeod, A. M., Findlay, H., Gollish, J. (2008). A framework for the development and implementation of an advanced practice role for physiotherapists that improves access and quality of care for patients. *Healthcare Quarterly, 11*(2), 67-75.

this methodology should not be lost in that it represents a project deliverable that can be utilized by other organizations across the world to evaluate role construction, implementation and sustainability concepts for AP and non-AP (with some changes required) for new and embedded HCP roles.

Table 4 below describes the importance of specific package components and project deliverables.

Table 4: Summary of the standardized metrics for the CSRT Projects

Section	Description	Importance
Timeline	Role development and advancement expectations	Provides a map for position comparability in regards to achievement of milestones within first year of a position (standardized competency acquisition).
Process for reporting deviation from the approved implementation plan	3 level indicator system used to monitor position changes from original documented intent	Provides a formalized monitoring system, expectations and required actions to ensure position reporting consistency.
CSRT practice development	Process Flow Map - Documents the flow of change that a position can complete and the overlapping changes in duties between healthcare professionals	Strategic tool for understanding the current and future state of a position, in addition to acting as a communication tool for disseminating change to administration and other healthcare professionals (an identified potential barrier for position implementation).
	Competency Development Plan – Identification of learning objectives and action plan to achieve it	Built on an adult learning model of the “Learning Contract”, the plan provides a clear objective of the goals and associated action items to build the necessary advanced practice skills.
	Concordance Project Planning – Development of projects examine the CSRT’s ability to complete specified activities against a “gold standard”	Utilizing a residency based model, the concordance projects ensure that a transitioned level of skills training is provided, monitor and evaluated to show evidence based competency on a particular task. These projects can be patient driven or technically based tasks. Example projects are provided to assist in developing these concepts.
Impact on Quantity/ Capacity	Wait Times – Impact on the patient wait experience at designated points along the care path	The ability of a position to impact change can come in many forms, one of which is altering the length a patient has to wait. This impact can be patient and system focused, allowing for the positions to track and demonstrate their initiative to create positive change or a lack of harm. An electronic tool has been designed that can be used to collect and monitor this data.

	Throughput and Time Savings – The ability of the role to impact access to care	Documentation of a position's ability to do this will demonstrate their impact on the system, which can come in the form of number of patients accessing a service and how often, in addition to the reallocation of workload from a healthcare professional to the new role. The package projects example projects that can be followed to support initiatives. An electronic tool has been designed that can be used to collect and monitor this data.
Impact on Quality: Patient experience Patient Outcomes Provider Experience	Competency Assessment - CSRT Competency Profile evaluation form	A modified version of the CSRT Competency Profile to allow for evaluation across time by supervisors/managers of the role. Designated time points have been provided as integral checkpoints to monitor training advancement and gap analysis. This tool provides the ground work for open and consistent discussion between the CSRT and management.
	Stakeholder Satisfaction – • Stakeholder Questionnaire • Radiation Therapist Questionnaire • Manager Questionnaire • Direct Supervisor Interview • Patient Survey	Stakeholder satisfaction comes in many groups, all of which are equally significant (patient and profession-, team- and administrative- specific). The toolkit provides standardized measures, sample REB applications, and flexible methodology that can be implemented in a flexible model.
	Process Improvements	Details a systematic approach to describing the process improvement initiatives and their impact on the patient and/or system.
	Safety Tracking - monitoring of position, not the environment or other healthcare professionals	Building upon the safety occurrence tracking systems used in the province, it is applied to the CSRTs during the project for position monitoring. The associated definitions and formalized process provide a procedural map for reporting any occurrence.
Innovation	Innovations, Developments and Knowledge Translation activities – CSRT driven initiatives that improve patient care, experience and/or outcomes	Tracking and recording information for qualitative assurance and knowledge translation activities have been categorizes and examples provided to help guide future positions on how they can impact change at a local and national level.

Create short term wins

The value of access to a concrete collection of implementation and evaluation tools cannot be overlooked. In addition to availability of these resources, the communication of "early wins" was critical to the ongoing momentum of a change initiative. Two significant gains were achieved early on in the project series – both pivotal to the ongoing success of the piloting the new health care provider role.

In 2006, the announcement by the MOHLTC, in alignment with their HealthForceOntario platform, about the CSRT role and its potential for improving existing services in RT was a critical early win. With the formal recognition of the role and assignment of funding for the longer term project, the project had a clear path forward.[81]

In addition to this, as mentioned previously, the ongoing work with the OMA led to the the formal and public endorsement of the CSRT in 2009 as a "viable and accepted new health care professional in the radiation treatment enterprise".[82] This was a bonefide early win for the project and served as a spring board to increased engagement with the CSRT Project at that time.

In order to capitalize on these early endorsements and achievements, the IST used various methods to communicate with its stakeholder community. Press releases, matte stories, videos and the public-facing website were used to disseminate information. Over time, social media was also engaged to share important milestones of the Project and of the individual CSRTs.

3.0.3 IMPLEMENT AND SUSTAIN

Consolidate/Sustain

The project team continues to measure its progress against the ultimate goals of the project. With the positive impacts measured and documented and with 24 approved positions across the province, work and funding efforts must continue towards full scale implementation and permanent integration into the health care team.

As highlighted above, several positive steps have been made during the projects towards the permanent integration of the CSRT into the existing interprofessional RT team. Work continues with the CAMRT for the creation of reliable and valid certification process. With support from the CAMRT Board of Directors, the pilot test of the certification process began in Fall 2015 and is slated to enter its evaluation phase in June 2016 (currently underway). It is hoped that the formalization of a professional designation under the national professional body will further support the existence of the role and ensure consistency of implementation of new positions within and outside the province. Please refer to the certification process map within Appendix H.

[81] Ministry of Health and Long-Term Care. (2006, May). McGuinty government launches new health human resources strategy. Retrieved from https://news.ontario.ca/archive/en/2006/05/03/McGuinty-Government-Launches-New-Health-Human-Resources-Strategy.html

[82] Cancer Care Ontario. (2011). Clinical specialist radiation therapist sustainability project: frequently asked questions. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=134083

Section 4: SO WHAT

The accumulated body of evidence collected over the course of the CSRT Projects is presented in this section. In order to appreciate the impact of the CSRTs in their respective positions and environments, a mixed methods approach was used to collect data to illustrate how the integration of CSRTs to the existing health care team could impact on patient care in the radiation therapy domain.

Key Messages

1. Result indicate that patients in Ontario benefit from a CSRT-based model of care through an increase in capacity in the respective programs, an increase in services available which add to the quality of their care, and an increase quality assurance and consistency that carry a promise of improved outcomes for patients dealing with cancer.
2. Providers identified a number of perceived benefits of having a CSRT on their team including improved streamlining of program processes, observation of patient care and engagement, as well as improvements in consistency of care, among others.
3. CSRTs are contributing to the development of new knowledge in both radiation medicine and radiation therapy in an unprecedented level, as well as accelerating the pace of knowledge translation when that activity is part of their overall job description.
4. CSRT are perceived to be highly functioning leaders and role models in their field, garnering national and international recognition for their work to date.
5. Overall the collective body of work of the CSRTs and the CSRT Project represents a mammoth contribution to radiation therapy, radiation medicine, health services research, competency assessment, and prior learning assessment and recognition (PLAR) beyond the boundaries of this project.

Section 4: SO WHAT

4.0 Categories of impact

At the project's inception, few articles were published on the use of systematic, evidence-based frameworks for the jurisdiction-wide creation of new HCP roles. It was necessary, therefore, to develop suitable outcome measures de novo. Drawing, where possible, from existing literature, validated tools were gathered and approved for use.[83] Where none existed, metrics were developed and piloted before utilization. A collection of "standardized metrics" was built and used by CSRTs at their local sites.

In spite of the significant variability amongst the CSRT positions discussed earlier in the report, three main domains were identified for measuring impact of the new role: i) Quantity (capacity building), ii) Quality, and iii) Research, Innovation and Knowledge Translation. The categories reflect CCO's belief that these domains are key when considering practice change. The following indicators were selected for each domain:

Quantity

Capacity building is a top priority of the CSRT project as outlined by the MOHLTC's objectives in response to identified provincial needs.

- e.g., Does the new model allow patients to enter/move through the system more quickly?
- Methods: Pre/post time studies, retrospective data analyses

Quality

Of vital importance is the documentation of the nature and frequency of activities that add quality to relevant programs or services.

- e.g., Does the new model improve outcomes, patient experience and provider experience?
- Methods: Satisfaction surveys (patient, team member, RTT), supervisor interviews

Research, Innovation and Knowledge Translation

With advanced knowledge, skills and judgment in their area of specialization, CSRTs are positioned to lead initiatives that create new ways of thinking about RT and adopt new techniques and approaches.

- e.g., Does the new model bring the promise of improved patient treatment, care and/or outcomes?
- Methods: Documentation analysis from annual reports, self-reporting by CSRTs

4.1 Measures

Evaluation is a form of applied research concerned with assessing the results, impacts and outcomes achieved by an intervention (e.g., a policy, project or program) in order to inform conclusions about that intervention. Overall, using the frameworks discussed and the compiled set of measurement tools, the Project used a mixed methods approach in all phases, employing both quantitative and qualitative tools and metrics, under REB approved protocols when appropriate. Where possible, data was aggregated and comparative examples were used. Primary data was collected and compiled by CSRTs and third parties for patient and

[83] Cancer Care Ontario. (2010). Clinical Specialist Radiation Therapist (CSRT) Demonstration Project Summative Evaluation. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=119462

stakeholder populations. Research assistants conducted stakeholder and key informant interviews. Secondary sources, including relevant literature, were also used (e.g., in developing the definition of advanced practice, and assessing appropriate education). 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. Throughout the project, a relatively consistent methodology and model was utilized to conduct this work, which built upon itself at each major milestone throughout project phases (described in detail in Appendix J). Within the evolution of the model, however, a level of flexibility in assessment was required to accommodate the diverse duties and characteristics of each CSRT role – a concept that was discovered to be a necessity in the early stages of the project (see HOW Section, Section 3.0, page 27).

4.2 Results

4.2.1 QUANTITY

Providing timely access to care is one of the critical requirements of a well functioning cancer care system. The focus on quantity emerges out of a need in the RT domain to find ways to manage increasing numbers of patients and cases in the face of ongoing changes within the practice of radiation medicine. Technological advances in the last ten to fifteen years have motivated the team to evaluate how they work in order to find efficiences with an eye to optimizing the care of patients. On the heels of these changes comes a new paradigm of personalized medicine – an ambitious approach to embed in a specialty that functions most safely with class solutions and streamlined approaches. The convergence of these influences creates an environment of rapid change and presents unprecedented opportunities that need to be harnessed and capitalized on. Furthermore, a constantly increasing incidence and prevalance of patients with cancer [84] only escalates the calls to seek efficiencies while maintaining or improving effectiveness.

As discussed above, the CSRT role is an overarching scope of practice that defines advanced radiation therapy practice – a practice that can be customized to meet local needs and address pressures in the radiation treatment process. Given the flexibility of the scope, CSRTs undertake rather unique positions that present challenges in consistently measuring impact across the positions as opposed to “per position.” However, positive steps have been made throughout the project to identify categories of impact that can show trends in capacity building effects of the CSRTs.

In general, CSRTs’ impact on “quantity” falls into two main categories:

1. **Direct** – this impact is seen at the point of entry of the patient – when they first come to the RT program to be seen for consideration for radiation therapy, usually at referral and/or consult. It is relatively easy to identify the additional patients that are accessing care (capacity building) and to correlate that information appropriately with the presence of the CSRT.
2. **Indirect** – this impact is less obvious. Through the development of advanced skills, CSRTs have been able to share/assume activities that were previously undertaken by a radiation oncologist (RO). In the evaluation of the position, CSRTs were able to estimate the time this transfer of responsibility could save the RO on a regular basis. These “time savings” can be used by the RO to complete other work, for example, focus on patients who require more complex care, complete other work (for example,

[84] Cancer Care Ontario. (2015). Ontario Cancer Plan IV 2015-2019. Retrieved from http://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=333871

research), or take on additional new patients. It is difficult to identify how these time savings are used by the RO to the advantage of the system.

Given the variation in the CSRT positions, not all work can result in either direct or indirect impacts. However, the table below summarizes the measured direct and indirect impacts of the CSRTs in these two categories. The itemized table of these impacts PER CSRT can be found in Appendix O and concordance activities within Appendix P.

In many cases, CSRT job descriptions are written such that, once competence is proven, they can facilitate an increase in the number of patients that can be seen in a given clinic. The proportion of time dedicated to these tasks and the relative impact will depend on the individual CSRT, the program they are working in, the population of patients they care for, among other factors. For example, comparing two CSRTs working in palliative RT programs in different centres reveals that one CSRT makes it possible for an additional 2 patients to be seen per month in her program, representing a 17% increase in capacity in that program, while the other CSRT, who sees 36 additional patients per month only impacts capacity in that program by 11%. The different denominators make it difficult to interpret in an aggregate fashion. However, a summary of the direct impacts being identified is presented in Table 5 below.

Table 5: Summary of Direct CSRT Impact on Quantity

CSRT Grouped by experience	Additional patients seen per month (Direct Impact) per CSRT
Senior CSRTs **(**8+ years experience)	**Ave. = 14.2 new pts/mo** Range 2 – 21 new pts/mo n = 5/7 CSRTs have majority focus on bringing new patients into the system
Junior CSRTs **(**3+ years experience)	**Ave. = 17 new pts/mo** Range 3 – 36 new pts/mo n = 5/9 CSRTs have majority focus on bringing new patients into the system
New CSRTs **(**2+ years experience)	**Ave. = 5.5 new pts/mo** Range 3 – 8 new pts/mo n = 2/7 CSRTs are having impact on new patients entering the system
COMBINED AVERAGE	**Average = 12 new pts/mo**

It is important to note that in some jurisdictions, new patients entering the system can result in incremental funding for the department. In Ontario, for example, the average monthly salary for a CSRT can be covered with funding associated with the addition of 3 to 4 new patients per month. Interpreting this against the data provided above shows that for CSRTs who work in an area where patients enter the system, the average number of additional patients that can be seen, on average, is 12 patients per month which easily covers the salary of the CSRT with remaining funding to cover other downstream costs associated with higher patient volumes.

When working with new patients is part of a CSRTs job description, they can increase the number of patients accessing care by, on average, 12 patients per month. New patients entering the system can result in incremental funding for the respective department.

Table 6 provides a summary of the indirect impacts CSRTs are having on the patient capacity of the system. While these data are easier to aggregate and report, the downstream impact of these time savings are more difficult to quantify. The variability in this data remains consistent and is directly attributable to the job description of the individual CSRTs. In some cases, CSRT's work is almost exclusively focused on activities related to patient care that do NOT take place at the patient/caregiver interface. These are activities that ROs would complete outside of clinic time (eg. contouring, image approval, first day set up checks, etc.). For example, the H&N CSRT in London assumes activities in her program that reduces RO workload by approximately 36 hours per month. A full time RO in Ontario dedicates approximately 113 hours per month to clinical activities (1350 hours per year). A 36 hour time saving represents a 30% saving for the relevant RO(s) which is a signficant amount of time to redirect to other activities. An upward trend in this kind of impact speaks to increasingly competent CSRTs who are building trust and confidence and can been entrusted with a growing number of shared activities. This can also be evidenced by the growing list of medical directives being approved for CSRTs in their local clinical environment (see Appendix Q).

Attempts have been made to measure an increase in new patient cases seen by the RO. In one instance, data could be collected that showed ROs, all of whom worked with the CSRT, were all billing for new patient consultations above the "department average". While this cannot be directly linked to the CSRT, there may be mechanisms of tracking this kind of data in the future. Other concepts considered include tracking academic production, other billing patterns, or teaching involvement. Furthermore, it is important to note that the time that CSRTs save for ROs has been taken into account at the provincial human resources planning level.

Table 6: Summary of Indirect CSRT Impact on Quantity

CSRT Grouped by experience	RO hours saved per month* (Indirect Impact) per CSRT
Senior CSRTs **(**8+ years experience)	**Ave. = 23 hrs/mo** Range 13 – 66 hrs/mo n = 7/7 CSRTs have some duties that result in indirect impact depending on job description
Junior CSRTs **(**3+ years experience)	**Ave. = 15.4 hrs/mo** Range 2 – 37 hrs/mo n = 6/10 CSRTs have some duties that result in indirect impact depending on job description
New CSRTs **(**2+ years experience)	**Ave. = 24 hrs/mo** Range 16 – 39 hrs/mo n = 4/7 CSRTs have some duties that result in indirect impact depending on job description
COMBINED AVERAGE	**Average = 21 hrs/mo**

As well, as will be reported in more detail in the next section, the reassignment of some work to the CSRT from the ROs resulted in "other" unintended impacts beyond capacity building. It was routine for reassignment of specific activities to the CSRT to result in improved quality of care, identification of technique inconsistencies or the identification of opportunities to further streamline practice.

4.2.2 QUALITY

CSRTs provided an important lens through which to evaluate current practice and find better ways of working within the existing team. In response to their process evaluation, they strive to design and implement defined and discrete intiatives to improve patient care. Examples include the development of a “online” support group for patients who had completed radiation treatment for breast cancer, specifically targeted at those patients from geographically distant locations so they could ask questions and obtain answers or suggestions for self care activities. Numerous data points confirm that CSRTs are key to improving how service is delivered, resulting in both improved patient and provider satisfaction with the program services. Many of their improvements also provide a platform for possible gains in patient outcomes as well. For example, as daily volumetric imaging became prevalent (which calls for “localization images” to be taken every day instead of weekly as was previously practiced), it became evident that new knowledge was being presented to the RTTs every day. Deciding how and when decisions will be made with this new information was led, in many cases, by the CSRTs. This also applied to the advent of hypofractionation in RT – where much larger doses are delivered over fewer treatments. The requirement for precision and accuracy are much greater with increased dose/fraction and the existing model for approving imaging before treatment could not support the necessary checks and balances required to maintain that level of accuracy. Once again, the addition of the CSRT to various teams around the province provided the additional competencies to be able to redistribute some of these activities to prevent over-taxing of the ROs in each particular instance.

Furthermore, activities that add consistency to patient treatment will permit decreased variability, thereby allowing easier and more direct comparisons of patient outcomes outside of issues generally related to variations in treatment technique or volume delineation. Activities that result in a higher level of quality assurance also provide the promise of improved outcomes by facilitating the identification of unacceptable variations or errors in the treatment care plan by the interprofessional team before treatment begins. CSRT quality of care initiatives also empower patients to use self-care techniques to deal with side effects and to comply with treatment regimens. They also facilitated an increase in recruitment to clinical trials which provides a vital service to improving treatment for cancer in the future. And while Table 7 provides a snap shot of the numerous activities underway at this time, the magnitude of improvements made by the CSRTs cannot be denied. Over the duration of the project, they identified and resolved hundreds of small, medium and large-scale gaps or bottlenecks in the Ontario RT domain, impacting thousands of patients around the province.

Over the duration of the project, CSRTs resolved hundreds of small, medium and large gaps and bottlenecks in the radiation therapy workflow, permitting more timely and higher quality patient care.

Table 7: Quality of care activities 2015/16

Activity/Initiative Category	Number of initiatives COMPLETE All CSRTs	Number of initiatives IN PROGRESS All CSRTs	**TOTAL**
Improving patient experience	21	21	**42**
Improving patient outcomes	22	15	**37**
Improving provider experience	26	20	**46**
Increasing throughput	8	10	**18**

Stakeholder Feedback

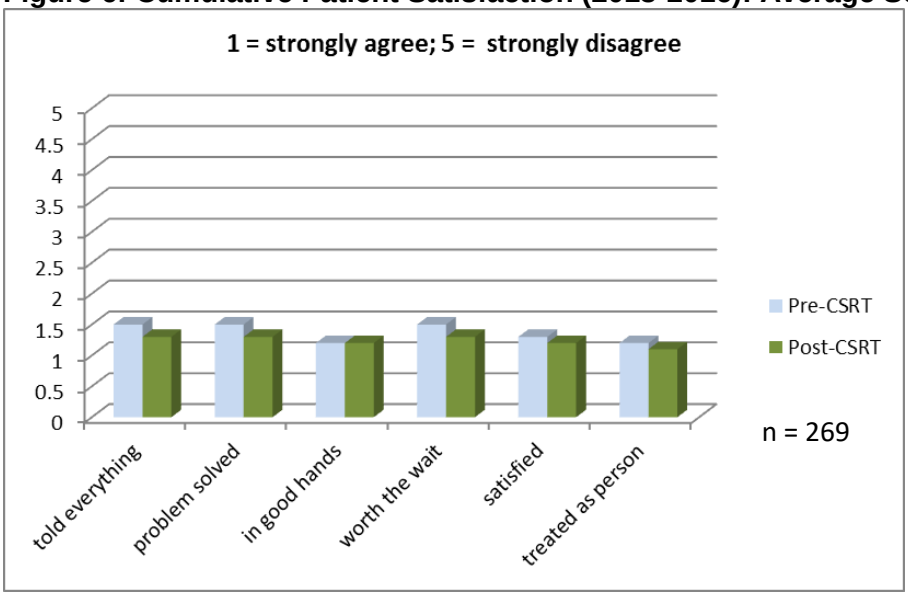
As with any change initiative, it is important to ensure that all the stakeholder groups are heard regarding the change. To that end, the CSRTs have systematically collected feedback from several critical stakeholder groups – patients, team members, supervisors and managers. Each group is impacted differently by the proposed changes to the model of care and brings important information that informs the project about what is working and what needs to be reviewed or addressed. Data shows that, overall, stakeholders are pleased with this new model of care

i. Patient Satisfaction

As one of the most important stakeholder groups, it is vital to investigate potential patient benefits from the CSRT role within the Ontario Healthcare system. Since 2012, a pre- and post-mail out survey design or a one-point dissemination survey design have been used to capture patient satisfaction from two sub-populations within the same clinic or department. The two sub-populations are: 1) patients who received care from the CSRT and 2) those who received care from other HCPs (for a time period prior to the activation of the CSRT position.

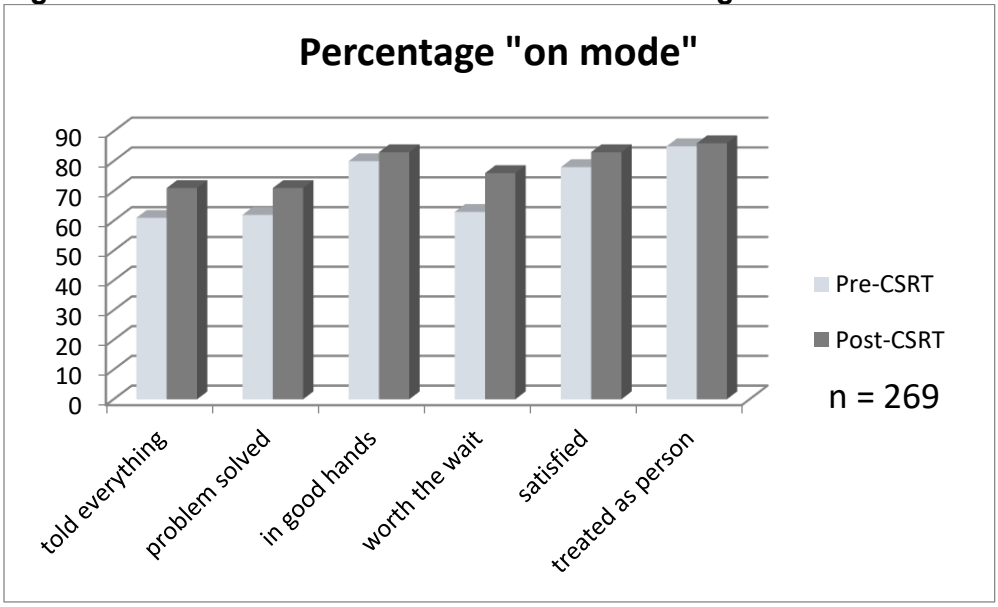
Overall patient satisfaction continues to remain high whether a CSRT is involved or not involved in a specific patient's care. Furthermore, data shows that when the CSRT is involved, satisfaction levels remain consistently high and indicate that the CSRT position does not burden the patient. The below graph illustrates compiled data from 2013 – 2016 (N=269; pre n = 116, post n = 153).

Figure 6: Cumulative Patient Satisfaction (2013-2016): Average Score



In addition to the consistency in average scores on the survey questions, data demonstrates consistently higher "percentage on mode" scores when patients were cared for by a CSRT.

Figure 7: Cumulative Patient Satisfaction: Percentage of "on mode"



> "(The CSRT) made a bad time into a good experience for my mother. I believe the CSRT position is a great addition to any team dealing with cancer patients." Patient's daughter at Ottawa RCC (2016)

For the post-CSRT survey, three additional questions were added to the standard survey relating specifically to the patients' interaction with the CSRT. Cumulative data shows that the average score of 4.8 (1 = poor; 5 = excellent) in response to "*Overall, my experience with the Clinical Specialist Radiation Therapist was:*" has been maintained across the project. Comments attesting to the value the CSRT brings to the team have been consistently extremely positive with patients appreciating the time the CSRT can take to further clarify the situation, the plan moving forward, and to respond to patient questions. The complete set of results from the 2015/16 implementation of the survey can be found in Appendix R.

The project has shown local and provincial patient care improvements in various dimensions as discussed in earlier sections of this report (e.g., expedition and improved quality of patient care), which can be extrapolated to potential national initiatives in the future. As a greater number of positions contribute - altering and improving the patient experience at the local level - the next natural phase of the CSRT role is to look beyond the local experience to greater collaboration and standardization across larger regions. Project experience shows the ability of CSRTs to collaborate with each other and with other professions (e.g., Head and Neck Communities of Practice[85], Aboriginal Navigators[86]) to best service the patient population. As time progresses and the local needs are better understood, larger projects can be initiated by CSRTs as well the other Project investigators. For example, a movement towards provincial collaboration as well as alignment with other AP professions can occur; and a possible move towards the issue of

[85] Head and Neck Community of Practice of the Radiation Treatment Program of Cancer Care Ontario. (2014). Dose objectives for head and neck IMRT treatment planning. Retrieved from https://www.cancercare.on.ca/common/pages/UserFile.aspx?fileId=300041

[86] Jackson, L. D., Blain, J., Doerwald-Munoz, L., Seed, S., Styres-Loft, L., Zychla, L., & Harnett, N. (2010). *Multi-site clinical specialist radiation therapist collaboration: Increasing aboriginal people's access to cancer care.* RTi3: Inquire, Inspire, Innovate Conference. Award: Best Poster Presentation
Jackson, L. D., Blain, J., Doerwald-Munoz, L., Seed, S., Styres-Loft, L., Zychla, L., & Harnett, N. (2010). Multi-site clinical specialist radiation therapist collaboration: Increasing aboriginal people's access to cancer care. *Journal of Medical Imaging and Radiation Sciences,* 41, 113-23.

global access to RT and how CSRTs could play a role in improving access in lower to middle income countries.[87] [88] [89]

ii. Radiation Therapist Satisfaction

Througout the project, RTTs have been surveyed to ascertain their overall job satisfaction as well as to solicit their opinions on how the development of the CSRT role would impact on overall satisfaction. In the first implementation of the survey[90], RTTs identified three areas of existing dissatifaction with their current jobs:

- Lack of career advancement opportunities
- Low wages with little opportunity to earn more
- Few opportunities to specialize within the field

Subsequent to those findings, questions were added to the existing survey to ask whether respondents felt that the advent of this new role would have an impact on those areas of low satisfaction.

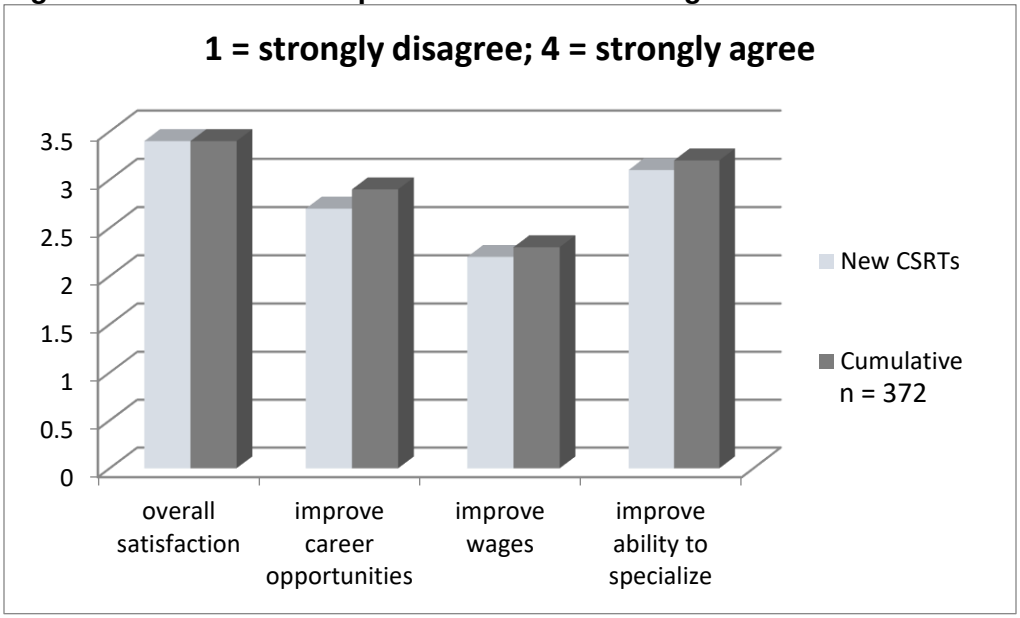
In this last year, RTTs were surveyed ***only*** in centres implementing a CSRT position for the first time. In reviewing the results, this year's collected data (n = 61) were reviewed independently, then added to the cumulative data base (n = 372) for comparison.

The analysis and qualitative comments for the most current data set align with the previous project data collection using the same survey. The data represents a respectable level of job satisfaction for RTTs and the ability of the CSRT role to provide expansion of the profession (lack of career opportunities, low wages, and opportunities to specialize). The number of comments per CSRT position had great variability for this iteration and, therefore, themes should not be considered across all the positions. However, the quantitative analysis does reveal similar data and can be considered representative.

For comparison purposes, the graphs below (Figure 8 and 9) show great similarity between the current ("new") and the cumulative data sets. Specific questions have been pulled out of the survey for illustration purposes.

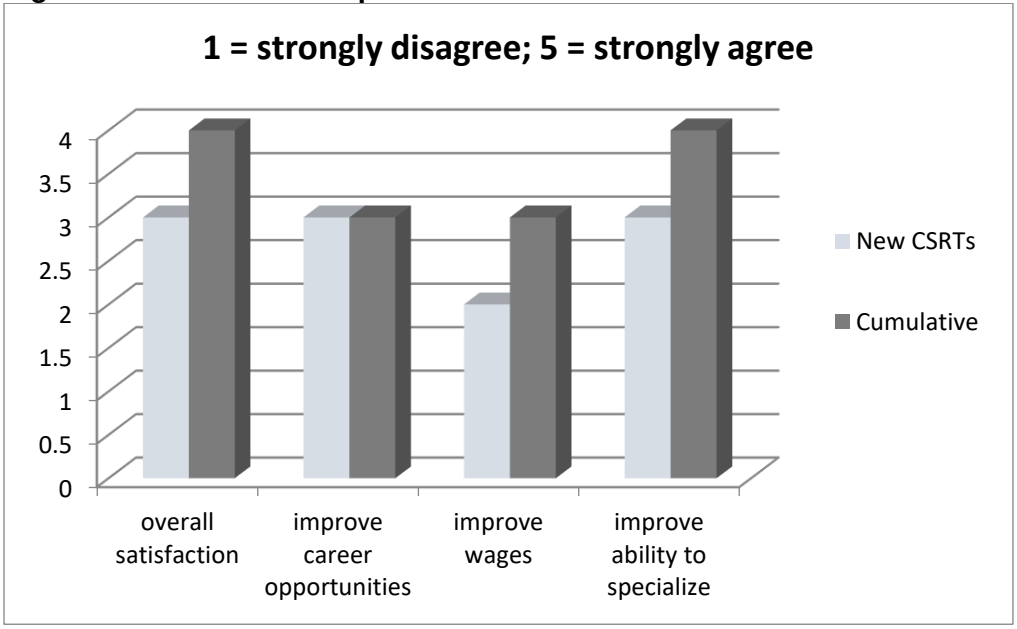
[87] Rodin, D., Jaffray, D., Atun, R., Knaul, F. M., Gospodarowicz, M., Global Task Force on Radiotherapy for Cancer Control and the Union for International Cancer Control. (2014). The need to expand global access to radiotherapy. The *Lancet Oncology, 15*(4), 378-380.
[88] Atun, R., Jaffray, D. A., Barton, M. B., Bray, F., Baumann, M., Vikram, B., Hanna, T. P., Knaul, F. M., Lievens, Y., Lui, T. Y. M., Milosevic, M., O'Sullivan, B., Rodin, D. L., Rosenblatt, E., Van Dyk, J., Yap, M. L., Zubizarreta, E., Gospodarowicz, M. (2015). Expanding global access to radiotherapy. *The Lancet Oncology, 16*(10), 1153-1186.
[89] Poortmans, P., Valentini, V., Lievens, Y. (2015). Expanding global access to radiotherapy: the European Society for Radiotherapy and Oncology perspective. *The Lancet Oncology, 16*(10):1148-1149.
[90] Cancer Care Ontario. (2008). Clinical Specialist Radiation Therapist Demonstration Project Perliminary Report.

Figure 8: Radiation Therapist Satisfaction: Average Scores



While not statistically significant, the trends show a slight decline in satisfaction across the board with slightly lower averages, and consistently lower modes. The root of this trend is not directly clear nor measured in this survey, but may be linked to current issues in the sector including budget cuts and hiring freezes that may be leading to a decreased morale in departments.

Figure 9: Radiation Therapist Satisfaction: Mode



The full report of the 2015/16 results can be found in Appendix S.

iii. Frontline Stakeholder Impact

The impact on the existing interprofessional team is a vital consideration when implementing a new HCP role. The team is instrumental in the eventual success or failure of the implementation and also provides key training and support that is required for optimal integration. With that in mind, it was imperative that the team members be given the opportunity to provide feedback regarding how their job satisfaction was being impacted by the addition of the new team member. Of utmost importance was the desire to avoid any negative impact on their current situation and hopefully improve their perceptions of their working conditions.

In order to capture this information, several validated tools were selected and employed during the demonstration phase of the project:

- Quality of Work Life: *Minnesota Satisfaction Questionnaire Short-Form* (MSQ; Weiss et al., 1977)
- Burnout: *Maslach's Burnout Inventory* (Maslach et al., 1996)
- Intrinsic Clinical Satisfaction: Specific clinic-related questions from the *Physician Worklife Survey* (Thomas et al., 1999)

"(The CSRT) generally improves the patient's care - in that the patient feels almost like they have 1:1 care." Radiation Oncology supervisor, Simcoe-Muskoka RCC, MRCC (2016)

Detailed results from these tools showed that the integration of the CSRT into the existing team did not negatively impact the team members. This was evidenced through no change in their quality of work life scores, nor in the level of burnout scores. Significant feedback was received from the team that the requirement to complete the series of forms was daunting, and as such, the use of this indepth set of tools was discontinued for future phases of the project. In their place, a simple five-question survey was developed to address the key areas identified as important by the team members:

- Value for the team
- Value for the patient
- Progress of the CSRT and future aspirations of the team for the position

Using a five-point Likert scale, respondents answered the question "*Do you feel the CSRT is a valuable role within the health care system?",* with a high level of agreement. The mode score was 'a lot' (59%, 17/29) with 83% (24/29) of stakeholders selecting "moderate" (4) or "a lot" (5) despite the fact that the CSRTs are not functioning to full capacity yet (average = 4.5, SD = 0.8). Insightful and positive comments were received across the board that show promise for the future of the individual positions, and demonstrate an understanding of the journey of the CSRT to reach full potential.

All of these results are in complete alignment with findings earlier in the project. They reflect the promise of new positions and the real time development and evolution that takes place at the local site to optimize the position within the current model of care.

The full 2016 results from frontline stakeholders can be found in Appendix T.

4.2.3 Innovation, Research and Knowledge Translation

As the RTT profession continues to evolve in the contemporary radiation medicine milieu, CSRTs are increasing, and in unprecedented ways, being seen as the leaders of this evolution. Their work as part of the interprofessional team has resulted in the acceleration in knowledge discovery, translation, adoption and dissemination. These activities are critical to longterm endorsement of the CSRT as a legitimate and sustainable member of the academically inclined clinical team.

These kinds of activities are a relatively new undertaking for practicing RTTs. Tracking the involvement and productivity of the CSRTs has uncovered some impressive and incomparable contributions – not only to RT practice, but to the broader radiation medicine specialty. As radiation therapy pivots towards an evidence-based practice approach, CSRTs lead the discipline specific landscape with their ground breaking work. The table below summarizes the kind of work the CSRTs have been engaged in throughout the duration of the project. Appendix U provides an list of published manuscrips, abstracts and book chapters completed by CSRTs in 2015.

Table 8: Summary of Knowledge Creation and Dissemination (KCD) Activities (2008-15)

Activity/Initiative		Number of activities/initiatives - ALL CSRTs							
		2008	2009	2010	2011	2012	2013	2014	2015 (Full)
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	5	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/Honors		4	3	5	9	10	14	11	7
Total Activities/ Initiatives		57	74	90	85	116	156	170	158

One indication of the magnitude of impact of this body of work is examining the CSRTs' presence at the 2016 RTi3 conference – North America's only scientific meeting for radiation therapists. Of the peer-reviewed sessions (proferred papers and posters), CSRTs were the author on almost one quarter of the total program (23%, 17 of the 75 sessions).

The volume of work being produced by this group of CSRTs is difficult to appreciate in the absence of a comparator. Given the newness of this kind of activity in the profession overall, a valid comparison cannot be found as this time. One indication of the magnitude of impact of this body of work is examining the CSRTs' presence at the 2016 RTi3 conference – North America's only scientific meeting for radiation therapists. Of the peer-reviewed sessions (proferred papers and posters), CSRTs were the author on almost one quarter of the total program (23%, 17 of the 75 sessions), as highlighted in Appendix V. In addition, several CSRTs served in various other capacities for this important annual meeting including

partaking in the planning committee, as well as acting as a session moderator or panel member, etc. It is clear that CSRTs' work is valuable not only at the front lines where they work but also in academic circles where their innovations and investigations are deemed to be important contributions to the professional body of knowledge and to leading the profession forward. CSRT innovations are highlighted in Appendix W.

A further indication of the CSRTs' value in this realm, is the fact that they are being increasingly sought after as opinion leaders for invited presentations, provincial, national and international committee membership, expert panels and communities of practice. Finally, the list of awards being won by the CSRTs continues to rise, including local, provincial and national acknowledgements. It is clear that CSRTs are leading the RTT profession to the next level – a level that will serve the RT patient population to the highest degree.

Grace Lee, a Patient Assessment and Symptom Management, Breast Cancer CSRT at PMCC was awarded the Editor's Choice award for her article titled *Radiotherapy Treatment Review: A Prospective Evaluation of Concordance between Clinical Specialist Radiation Therapist and Radiation Oncologist in Patient Assessments* by the Journal of Medical Imaging and Radiation Sciences (JMIRS) in 2012.

On a separate note regarding academic production, the IST and PMT also continue to document their work and findings throughout the project. With the first article published in the Journal of Allied Health and a second submitted for publication, an additional 5 papers are in progress. It is the intention of the IST and PMT to disseminate its findings and tools to contribute to future health care provider role development initiatives.

4.4 Other notable project outcomes

The CSRT project created impact in ways that were not originally comprehensively conceptualized, as it was either not possible to predict the outcome or the concept was only partially understood and required the progression of the project to be more fully understood. These indirect impacts were not formally evaluated, but are identifiable as smaller themes gathered across the data sets and through the general communications and discussions held throughout the project. Although it is not possible to provide statistical evidence of these concepts, they are included in this report for consideration and represent concepts for assessment in future endeavors should the task be surmountable.

4.4.1 Managers' Perspectives regarding CSRTs

Throughout the CSRT project, radiation therapy departmental managers have been integral to the development and the subsequent implementation of each CSRT within local radiation treatment programs. As key stakeholders in developing this new model of care, perspectives from the departmental managers were gathered using an exploratory approach that was guided through targeted purposeful one-to-one interviews.

Successes highlighted by the managers focused predominantly on impact to the patient experience and academic practice as seen in the strength of all pillars of practice: clinical, education, research and leadership. There was affirmation of previous quantitative indicators of efficiency such as wait time and through put. However, all had highlighted that as the CSRT project has evolved, so has the impact on the experience of both patients and families within the cancer journey as a respected, integral member of the interprofessional healthcare team.

Challenges discussed highlighted three major themes that are common to many advanced practice health professional roles: scope creep associated with nursing duties, difficulty with communicating how the role would evolve across time given multiple unknowns, and the need for continued reinforcement to senior administration of the position importance and value (associated with budgetary constraints and leadership changes). Evident throughout was that overlap of scope with other health professions, in particular nursing, was the greatest challenge faced in both developing and implementing each of the roles. Intentional and purposeful conversations were required to influence all stakeholders as to the benefit of maximizing scope and optimizing the role of each CSRT. It was imperative that proposals were supported through evidence from a patient care/outcome, strategic alignment and process perspective to ascertain role acceptance within the radiation treatment program from all levels of leadership.

Managers all affirmed that the CSRT positions would be sustained within each of their programs. This was especially evident for positions that were based within a disease site group (ie. breast, gynaecology, etc.) or program (ie. palliative, SBRT, etc.) – as the CSRTs' contribution were more integrated into the current care pathways. Managers were all supportive of the positions and did elaborate on the value not only to the department, but to the profession as a whole – their support was imperative to their success given their influence at a senior leadership level. However, all did discuss the continued fiscal challenges that they face and the discussions that ensue regarding the CSRT positions and their value to the program given they are not part of the formalized staffing standard used for radiation therapy human resource planning. Challenges were identified as "different" over time – with many identifying the CSRTs ability to adapt to change as the biggest challenge given the evolution of the needs of the program over time. The CSRTs were able to reframe and transfer their skills as required, therefore this challenge was seen more as an opportunity of growth.

Managers felt that CSRTs were seen as transformational leaders, change agents, challengers of the status quo, teachers and researchers and moreover, as exemplars of the profession. Their success also was based in their ability to be collaborative with the ability to mediate, facilitate and continually question and inquire. All agreed that the CSRTs, collectively, represented the pinnacle of the profession serving as role models to not only radiation therapists but other disciplines within the medical radiation sciences and beyond.

Graduate level training was not unanimously supported as required to better perform as a CSRT. However, all agreed that graduate level training did increase critical thinking and the decision making skills required for CSRTs, as well as providing a level of confidence and proven elevation of the role beyond the radiation therapist. In particular, citing how graduate level studies provided the knowledge and skills to strengthen the research and leadership pillars of the CSRT portfolio. Indicative throughout the discussions was that although this is not mandatory, graduate education would be an expectation and potentially a requirement in future. This is similar to other advanced practice health professional roles citing the acceptance and respect of other members of the health professional team.

Evident throughout all interviews was the overwhelming benefit that the CSRT project has produced within each of the radiation therapy departments. All managers agreed that the role has added value to the quality of care they currently provide their patients and families and they would not consider elimination of the role at the close of the project. Support from the provincial leadership team should be formalized through the continued capture of collated outcome data that can be used to support the continuation of the roles as well as their expansion. Outcome data should be accompanied by continued communication to decision makers using narrative

stories to profile and showcase the CSRTs and their impact to the cancer program locally, provincially and nationally. The full interview report can be found in Appendix X.

4.4.2 CSRT development, implementation and experiences

First and foremost, there has been an indirect impact on the CSRTs themselves which was expected but could not be fully understood until the individuals were in their position for some time. Derived mainly from general communication, focus group with senior CSRTs (Appendix L) and surveys completed by the remaining CSRTs (Appendix K), the CSRT reflection reports, competency assessments comments and supervisor interviews, there is a noticeable transition by the CSRTs from novice and nervous individuals entering a new role/position to confident and independent advanced practitioners. This transformation was most apparent in CSRTs who had not been previously in a similar position or within a specific clinic prior to entering the project.

Over time, and with additional phases within the project, a pattern of progression began to emerge related to how RTTs traversed their journey from neophyte to autonomous, confident practitioner. Three phases were recognized and witnessed repeatedly (Table 9).

Table 9: Summary of CSRT Phases of Progression

Phases	Decription of phase	Duration
Phase I	characterized by enquiry, learning and testing of newly acquired skills	~ 8 – 12 months
Phase II	CSRT conducts work under independently but with direct supervision	~ 12 – 24 months
Phase III	Autonomous decision making and creative practice	~ 24+ months

Further study of this trajectory may result in a more detailed breakdown of the phases that might align with the Dreyfus and Dreyfus model of expertise[91], but that is not known at this time. It is important, however, to note that the envisioning of a new health care professional role, in the absence of a de facto educational preparatory program or professional credential, will require several years to reach full implementation. This impacts the timeline for the collection of robust data set.

In addition to the patterns noted with respect to development of expertise and autonomous practice, a pattern of acceptance also emerged as similar and repeatable. In most cases, as discussed earlier in the report, CSRT positions would be developed with the support of a single champion (or team) in a particular area of practice. In the first phase of the CSRT development, the champion/team would work one on one with the CSRT assisting with the development of the new knowledge and competence. As the CSRT developed more confidence and increased competence, the visibility of their work would expand beyond the confines of the individual program or service. At this point, it was commonplace for feedback to begin filtering back to the CSRT or the supervisor about interest in the position and a desire to explore how it could be applied to an additional area of practice. This would occasionally lead to proposals for new positions or modification of the existing CSRT job description. This pattern was especially prevalent in departments implementing their first CSRT position.

[91] Dreyfus, L. and Dreyfus S.E. (1986). *Mind Over Machine: The power of human intuition and expertise in the era of the computer.* Oxford: Basil Blackwell.

4.4.2.1 Stress

Besides the identification of the phases of CSRT evolution over time in their respective positions, a high degree of stress and burden comes with the learning associated with advancing one's skills and knowledge to a higher level of practice was also identified. This observation is consistent with similar experiences in residency training.[92] As Steinberg wrote about residency, "…reflect on the perspective that residency training is a pivotal life-cycle event for trainees that converts them from Ms or Mr to Dr, which will be their mystique, moniker, and identity for life."[93] So, too, can be said of the CSRT experience. Misiaszek and Potter[94] described the transitional stress associated with psychiatry residence into independent practice and is likely that the CSRTs experience follows a similar pathway in their experience as well:

- **Termination** - a time of separation and grief over losses (e.g., no longer completing previous duties, separation from radiation therapist team);
- **Adjustment** - a time of ambivalence and uncertainty (e.g., integration into new interdisciplinary team or new clinical setting, collaboration with other individuals in areas outside of normal realm such as research and policy development, new areas of knowledge gathering);
- **Identity Formation** - a time of increased productivity and comfort (e.g., progression of concordance data collection, residency training model in place, greater solidification in the team environment, gain in trust);
- **Consolidation** - a time of accomplishment and compatibility of life goals (e.g., autonomy in practice, self-initiated innovative projects, achievement of competencies, recognition from profession and coworkers for work completed).

Given this preliminary knowledge in relation to CSRTs, consideration for the stress model on the implementation of new roles or specific positions in future projects should be included. Dedicated measures to evaluate the psychological and life stresses that occur due to the position and a monitor protocol as part of the project should be created. To date, there have been no reported events to the project team of psychological burden resulting in absenteeism or removal from the project has occurred.

Although the transitional stress was identifiable in the CSRTs, there is also a consistent awareness of increased job satisfaction and an increase in the perceived value for themselves, the care that they provide to patients, as well as their ability to impact the future of their profession. CSRTs have consistently, across all stages of their positions, advocated for the successful continuation of the role within the province and expansion across Canada, in addition to conveying the personal satisfaction they received from contributing to this change. The CSRTs also consistently speak to the expansion of the profession and the positive impact that career laddering opportunity of the role may provide to their colleagues and the future workforce. The positive benefits to their personal and professional identifies have contributed to an inherent cultural drive within the CSRT population to further themselves and the role as a whole.

Although the transitional stress was identifiable in the CSRTs, there is also a consistent awareness of increased job satisfaction and an increase in the perceived value for themselves, the care that they provide to patients and their ability to impact the future of their profession.

[92] Rich, P. (2014). Transition to residency is tough everywhere. *Canadian Medical Association*. Retrieved from https://www.cma.ca/En/Pages/transition-to-residency-is-tough-everywhere.aspx
[93] Steinberg, J. (2010) Residency as identity transformation: The life stages of the *homo medicalis*. *Journal of Graduate Medical Education, 2(4):* 646-648.
[94] Misiaszek J., Potter R. L (1984). Transition from residency training to academia. *Psychiatry Quarterly, 56(3)*:209-214.

4.4.2.2 Relationships

The role has increased the bond between the CSRTs on a personal and professional level, as they strive together as a group to achieve their goals. A network system (CSRT CoP) for the CSRTs has been created and will be maintained after the project closes. The structure provides mentorship opportunities for new positions, collaboration on projects between cancer centres, sharing of information and knowledge, and a social environment to support collegial interaction. The network consists of: a yearly formal face-to-face gathering of the CSRTs to discuss items such as, but not limited to, important advancements in their positions and the CSRT role in general; a CCO maintained an online collaborative platform for information sharing and discussion boards; a list serv of updated contact information for all of the CSRTs and a description of their position; and use of ResearchGate to showcase publications, posters and asbtracts that the CSRTs and IST have created. Although not conceptualized as part of the initial project, the creation of such a networking model provides evidential support that the CSRT role is solidifying itself naturally as a cohesive and progressive group which is consistent with the practices of other AP positions such as nursing.

4.4.2.3 Workforce and culture

As the role moves beyond those that are currently in positions, it is likely that there are some subtle changes occurring in the radiation therapy workforce and future culture. The project has provided some evidence on RT satisfaction associated with career laddering concepts. Opening up an opportunity to expand a very linear role into something that is more abstract, administrative, clinical/technical and research focused, has likely provided those innovative individuals who seek to this type of opportunity to consider staying in a career that they may have otherwise left. Although the overall attrition rate of radiation therapists is unlikely to be high given the specialized nature of the roles, the IST does suspect that the implementation of the CSRT role within the profession provides ambitious individuals an option to stay and increases the potential for greater job satisfaction. The role has also changed the future culture of the workforce. Students across time will ultimately not understand the limitation cap prior to the CSRT role. With the view of the profession that incorporates a more strategic career laddering model, it is possible that new, additional types of students who value these concepts may be more drawn to the profession.

The changes in the profession, with regards to the current and future workforce, have also been noted by the stakeholders within the project. Comments and discussion from interviews, surveys and general meetings with the stakeholders have produced general comments that speak about the expansion of the understanding of the profession and a heightened awareness of the capabilities of those within it. There is a general consensus that the CSRT role expands the credibility of the RT profession and proves radiation therapists' ability to act within the academic and research setting in a manner which is comparable to leaders in oncology (physicians and nurses). Furthermore, the role demonstrates radiation therapists' ability to provide innovative policy and process improvements, which was previously not expected from this group of practitioners. These lines of comparisons

There is a general consensus that the CSRT role expands the credibility of the RT profession and proves radiation therapists' ability to act within the academic and research setting in a manner that is comparable to leaders in oncology (physicians, physicsts, nurses).

showcase the CSRTs as leaders to move beyond a standard position and alignment with advanced practice. Refer to Appendix Y and Z for a summary of CSRT's completed and in progress process improvements.

4.4.2.4 Replication and Formalization Beyond Ontario

The goal of the project was to evaluate the role within a single province. Since its conception, Project Leads have acknowledgement the role's potential to spread across Canada if positive results were obtained, although evaluation of this was outside of scope. This national support, however, has gained momentum parallel to the Project as a direct result of the Ontario based model. Not only has general support been discussed with stakeholders and via regular communications with CSRT teams, the CAMRT has formally announced their commitment to the AP role as attainable and implementable across all jurisdictions in Canada. They acknowledge and support the role using the Ontario model, and have acted upon this through their continued support for the Project in addition to working towards creating "a national certification process to benefit CAMRT members by providing standards for each role, leading to credibility and recognition across centres, provinces and healthcare professions." [95] In order for provinces such as British Columbia and Alberta to implement the CSRT role, materials from the CCO CSRT projects will be used to expedite their processes. These materials are currently considered the gold standard in AP radiation therapy implementation.

The CAMRT has formally announced their commitment to the AP role as attainable and implementable across all jurisdictions in Canada. They acknowledge and support this new role using the Ontario model developed by the CSRT Projects.

National support for the advanced practice position can also be derived through the launch of the Master of Health Science (MHSc) in Medical Radiation Science at the University of Toronto (UofT) and the blended format it uses to deliver the curriculum.[96] Although not directly tied to the CSRT project, the creation of this program during the Project life's paralleled the educational requirement of CSRTs which were documented throughout the course of the CSRT pilot project. The Master's program, the first of its kind on Canada, signaled a change in the RT profession and culture to emphasize the growing need for advanced studies. It also launched on the auspices of the competencies required from the Ontario CSRT model, providing AP education in alignment with the current project. At this time, 10 CSRTs have completed a graduate degree, 8 are currently completing one, with 1 more being accepted for the fall term. To date, 6 of the project's CSRTs have completed the Canadian-based program and this trend is expected to continue.

Formal and informal communication with stakeholders, the national and provincial RT bodies, and the incorporation of a MHSc program at a renowned university to enhance AP education in the profession, all provide evidence of the national support of the CSRT role and are a direct or indirect result of the CSRT Project within Ontario.

4.4.2.5 Professional Impact

It was assumed that there would be implications for the radiation therapy profession as a whole, including job satisfaction due to an improvement in the career ladder, contribution and improvement of the knowledge base and professional modernization activities. Data

[95] Canadian Association of Medical Radiation Technologists. Advanced practice in medical radiation therapy. Retrieved from http://www.camrt.ca/wp-content/uploads/2015/02/Advanced-Practice-in-Medical-Radiation-Technology-A-Canadian-Framework.pdf
[96] University of Toronto, School of Graduate Studies. Medical Radiation Sciences. (2013). Retrieved from https://www.sgs.utoronto.ca/prospectivestudents/Pages/Programs/Medical-Radiation-Sciences.aspx

demonstrates these positive impacts on the CSRTs themselves, administrators and other stakeholders, as well as the current and future radiation therapist workforce. Traditionally, these concepts have been discussed in CSRT reports from the perspective of the sub-project that was completed. For the purpose of the larger implications to the profession, in addition to the CAMRT certification and graduate level program previously discussed, the CSRT role provides additional benefits are well. As change agents, researchers, directors of patient care and policy informers, the role is able to contribute to a cultural shift in what a radiation therapist can contribute to the radiation medicine enterprise and elevates the profession to stand beside the other allied professions in the areas of research, academia, and health system policy change. As noted by stakeholders across the project, the CSRT role provided a spring board for reimagining how care can be delivered and how the interprofessional team can work together to deliver that care.

As noted by stakeholders across the project, the CSRT role provided a spring board for reimagining how care can be delivered to our patients and how the interprofessional team can work together to deliver that care.

4.5 Evaluation

While the core mandate of the CSRT Sustainability/Integration 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 permanentatly intergrating 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”[97]– 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 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;

[97] World Health Organization. (2011). Beginning with the end in mind: planning pilot projects and other programmatic research for successful scaling up. Retrieved from http://apps.who.int/iris/bitstream/10665/44708/1/9789241502320_eng.pdf

- *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

These areas form the basis of future work for the permanent integration of the CSRT into the radiation treatment team.

Overall the collective body of work of the CSRTs and the CSRT Project represents a mammoth contribution to radiation therapy, radiation medicine, health services research, competency assessment, and prior learning assessment and recognition (PLAR) beyond the boundaries of this project in this province.

Section 5: CONCLUSIONS AND FUTURE WORK

This section summarizes the work of the CSRT Project Series and presents points for consideration as efforts to ensure the integration of the CSRT role continue.

Section 5: CONCLUSIONS AND FUTURE WORK

5.0 Conclusions

Contemporary radiation medicine is at a turning point. Several paradigm shifts in combination with the projected increase in cancer incidence and prevalence, will pose incredible challenges for this jurisdiction:

- Personalized medicine – the convergence of high precision radiation therapy taking into consideration both the individual tumour microenvironment and molecular characteristics of the specific patient.
- The pace of innovation – it is expected that the pace of innovation in radiation medicine will only continue to escalate requiring a highly responsive, discipline-specific team of experts to keep pace with the knowledge translation required to keep abreast of these changes.

Upon reviewing the data presented across the CSRT Project series, it can be concluded that a CSRT-based model of care can have a number of positive impacts on the radiation treatment domain. Using an established set of tools and processes developed and validated during the project, data has been collected that demonstrate the many ways CSRTs can have a positive impact on patients, providers and the overall radiation treatment program in Ontario and in alignement with the stated goals of the Project:

4. **Increase access to care** – CSRTs can add patient capacity to the existing system. The extent of their impact is dictated by job description, local need and practice, patient population being served, among other factors. Through direct patient care activities and the assumption of indirect patient care work that results in significant time savings for ROs, the system can accommodate more patients in a more timely fashion with the same high quality care. In many instances, CSRT are also key to increasing access to care for previously underserviced populations and to increasing appropriate utilization of radiation therapy in their local community.
5. **Improve patient care** – There is compelling evidence that CSRTs can contribute to the high quality care already provided in our radiation treatment programs. In addition to this, they have documented hundreds of small, medium and large initiatives that either enhance current service or add services that previously did not exist. Direct and indirect evidence has demonstrated that patients are pleased with these enhancements and benefit from greater continuity in their care and greater access to important care providers.
6. **Improve the health of Ontarians** – Many activities undertaken by the CSRTs carry the promise of improved care for Ontario's cancer patients. Through a variety of initiatives using patient- and family-centred ideologies, CSRTs developed and implemented many ideas that impact positively on patients receiving radiation therapy and those in follow up to treatment received. Activities, developed by CSRTs, that lead to improved patient compliance, improved consistency of treatment, augmented quality control measures, etc. all contribute to the provision of higher quality care and could lead to improved short and longterm outcomes for patients.

When a CSRT positions is designed appropriately, these goals can be realized in a cost-neutral or even cost-effective way. Therefore, funding policy and processes need to be taken into account in the design of the position to ensure financial stability. In addition to the major goals

articulated above, many other positive outcomes – notable and unanticipated - were identified during the Projects. These results show CSRTs as faciilitators of interprofessional practice within existing teams and highlight CSRTs as professional leaders contributing at high levels to practice and policy decisions. There is evidence that the new role added to the existing career ladder could reduce attrition and enhance recruitment as professional leaders seek out environments that support career advancement for RTTs.

In the evolving radiation medicine world, it will no longer be sufficient to do "more of the same" to manage the many challenges being faced. It will be necessary to consider creative and non-traditional solutions and to look at how we work differently. The CSRT Projects provide one possible strategy for rethinking our team and how we work together. The data presented throughout the project have formed a maturing body of knowledge that compels decision makers to consider this amongst their tool kit for maintaining Ontario's ability to provide timely, high quality, safe radiation treatment in a cost-effective way.

5.1 Future Work

The results outlined in this report articulate strong, positive evidence that the implementation of a CSRT-based model of care in the radiation medicine jurisdiction provides added effectiveness while providing good value for money spent, and in some instances, increasing revenue for the department. Much work has been done to articulate a clear and understandable scope of work and to ensure consistent understanding of what advanced radiation therapy practice looks like and what it can accomplish. In Ontario, the provincial Radiation Treatment Program that oversees radiation therapy services in the province, has accepted that the new model of care is effective and efficient and is taking steps to support the integration of CSRTs into the permanent fabric of the existing interprofessional team. Nationally, the professional association has adopted advanced practice as a viable career option for medical radiation technologists focusing currently on the radiation therapy community. Their endorsement came in the form of sponsoring a project to develop a nationally validated certification for advanced radiation therapy practice that is currently being piloted and evaluated. This combination of formal support puts the CSRT-mediated model of care in a good position for widespread recognition and uptake. Some work is left to be done.

The next step in this integration aligns with jurisdiction-wide health services funding reform taking place in Ontario. This reform, designed to reduce historical inequities related to global funding and to provide the kind of incentives inherent in "activity-based funding" approaches, will modify how cancer centres are paid and is expected to create motivation for centres to improve efficiency and access.[98] It is anticipated that this new remuneration approach in the radiation treatment sector will provide renewed impetus for radiation oncology departments to consider alternative models of care to maximize efficiency and effectives and that the CSRT-mediated model will be one of the strategies considered in that effort. With the ability of an appropriately educated advanced practice radiation therapist to deliver the same high quality care, it is predicted that fruitful redistribution of activities at each local centre will include the possible addition a CSRT to the existing team. This may allow, in some cases, the optimal use of expensive health human resources and lead to cost and capacity efficiencies that will enhance the patient's journey in the radiation treatment care p

[98] Sutherland, J. M., Repin, N., Crump, R. T. (2012). Reviewing the potential roles of financial incentives for funding healthcare in Canada. *Canadian Foundation for Healthcare Improvement.* Retrieved from http://www.cfhi-fcass.ca/Libraries/Reports/Reviewing-Financial-Incentives-Sutherland-E.sflb.ashx