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NOVEMBER 3 - 9, 2019



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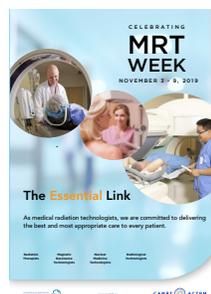
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Issue	Submission Deadline	Mailed Out
Number 1	December 5	End of January
Number 2	March 5	End of April
Number 3	June 15	End of July
Number 4	September 7	End of October

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On the cover...

The poster for 2019 MRT Week, November 3-9

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President's Message



Another year is coming to a close, and it's been a busy one at CAMRT. November has been a particularly busy month as we celebrated MRT Week, held our annual Board of Directors meetings in Ottawa and completed the CAMRT CEO hiring process.

MRT Week was amazing. It was fabulous once again to see and hear about how MRTs are building on this week year after year. Reports from the CAMRT office are that this year's orders once again surpassed all previous years—I am told that nearly 100 new sites are taking place in MRT Week activities compared to just a few years ago. This is fantastic and does much to ensure the awareness work we are doing for the profession continues to reach new eyes and ears. It's also wonderful to see the sheer variety of approaches to MRT Week. In my home province of PEI, we take the opportunity to gather together and meet amongst ourselves. It's really a great opportunity for those of us in different disciplines to find the time to come together and appreciate the contributions of each of the disciplines to quality patient care. In other provinces, there were video campaigns, public announcements and outreach, and hundreds of in-facility awareness events. Part of the CAMRT [strategic plan](#) for the future is dedicated to increasing and amplifying this awareness activity; and starting next year we will be working on tools that you can all use to share over this week, and at other times throughout the year.

We are our own greatest advocates, and CAMRT is working hard to equip all of you for that important role.

Throughout the Fall, myself and the other members of the Board Executive were also very busy finding CAMRT's new chief executive. We were very pleased after this rigorous process to announce Irving Gold as our next CEO. Irving comes to CAMRT with two decades of experience in research environments, government relations and advocacy, and association leadership. His career has been defined by an unrelenting commitment to education in healthcare and the health of Canadians. From 2015 to 2019, Irving led Resident Doctors of Canada, representing over 10,000 resident doctors across the country. Prior to this, he held Vice President roles at two healthcare organizations, the Canadian Resident Matching Service (CaRMS) and the Association of Faculties of Medicine of Canada. Irving has also served on several Boards of Directors as both President and in other executive roles. He holds three post-secondary degrees: a Bachelor's in Sociology from McGill University, a Master's in Sociology from the University of Ottawa, and a Master's in Applied Criminology, also from the University of Ottawa. He also holds the status of PhD (ABD) in Sociology from McMaster University.

I have had the pleasure of working with Irving for a few weeks now, and on a number of occasions in person, and I am certain he will lead our organization in positive new directions. His diverse experience, extensive professional network, and palpable enthusiasm will serve us well into the future.

Both myself and the CAMRT Board want to express our sincere thanks to the CAMRT staff, who kept the organization ticking in the interim between CEOs. We are lucky to have such a capable and dedicated team working on behalf of the profession.

A handwritten signature in black ink that reads "Gaylene MackPherson". The signature is written in a cursive, flowing style.

A Toolkit For Building Positive Change in Mental Health



With its partners, the Canadian Society for Medical Laboratory Science (CSMLS) and Sonography Canada (SC), CAMRT undertook a national study of mental health and wellness among the professionals represented by these groups. The survey helped our organizations to gauge the extent of mental health issues among our members and provide insight and opportunities for future initiatives.

In total, 4,366 professionals responded from all the groups. 1,903 of the 11,000+ MRTs contacted responded, making up the largest professional group. Response rates for MRTs were also substantially higher than for the other two professional groups, suggesting an interest in this topic among Canadian MRTs. In general, the profile of the respondent group closely resembled the profile of the general membership being sampled, and so the findings of the survey are representative of CAMRT membership.

You can view the summary of these results published in the last newsletter, by clicking [here](#).

Part of the CAMRT commitment to mental health and wellness is to help provide its members—whether dealing with workplace stress, psychological distress or any mental health issue—some form of support. As a beginning, the CAMRT has an agreement with its partner in this survey, the CSMLS, to direct MRTs to a series of well-researched and diverse tools on the CSMLS website.

Here we highlight three trends identified by the survey results, and corresponding resources in the CSMLS toolkit that readers may find helpful.

<https://mentalhealth.csmls.org/>

1 Gauge Your Mental Health

<https://mentalhealth.csmls.org/i-am-an-individual/>

Benefit from an understanding of what is “Mental Wellbeing”, “Mental Health”, and “Mental Illness” by reading the definitions found in this section of the toolkit. In addition, at the link above, you will find quizzes based on Canadian Mental Health Association- indicated characteristics to help you gauge your: ability to enjoy life, resilience, ability to balance, self-actualization, and flexibility. By evaluating where we stand with these indicators, we can determine if they require improvement to build our mental health buffer and effect positive change.

2 Workplace Stress and Emotional Exhaustion

<https://mentalhealth.csmls.org/i-am-an-employee/>

Across all of survey results, a common story began to emerge. In general, MRTs that responded to the survey indicated higher than typical levels of emotional exhaustion and workplace stress, and substantial instances of personnel shortages to accomplish the work at hand. Emotional exhaustion was reported as high among MRTs, with more than 57% of MRTs in every discipline reporting moderate or high levels of emotional exhaustion.

A frequent source of workplace stress is interpersonal conflict, the results of which can be: lost productivity; poor relationships; mental health problems; workplace violence and bullying; absenteeism and/ or presenteeism; employee loss and turnover, to name a few. A good understanding of the conflict resolution process, as well as the resources and supports available to you through your workplace, can go a long

way to alleviating some of the stress of situations when conflict does arise.

By visiting this section of the toolkit, you can learn about the general steps behind conflict resolution, understand your own conflict style, receive guidance on how to have difficult conversations, check out some of the myths associated with conflict resolution, see an example of an organizational conflict resolution process so you know what to expect if you elevate a conflict within your workplace to involve management, and so much more!

3 Effective Strategies for Organizations

<https://mentalhealth.csmls.org/i-am-an-organization/>

Did you know that mental health problems and illnesses account for more than \$6 billion in lost productivity costs due to absenteeism and presenteeism? Or that on any given week, more than 500,000 Canadians will not go to work because of mental illness (The Mental Health Commission)?

There are steps that all organizations can take to help create an emotionally healthy and safe work environment, decrease illness and injury, and at the same time, increase productivity and decrease the costs associated with high employee turnover, burnout and presenteeism.

This section of the toolkit outlines strategies, policies and programs that organizations can use to put the mental health and psychological safety of its employees first. It challenges senior leadership to understand the barriers to a better work environment as well as to evaluate whether the organization is currently providing a mentally healthy and safe environment.

Newly APRT(T) Certified!



Submitted by: **Natalie Rozanec, RTT, Advanced Practice Registered Technologist, Radiation Therapy, APRT(T)**

As a radiation therapist, I have always felt that our profession has the ability to profoundly effect change. We see the results of this day-to-day as we work directly with our patients, and within the broader Canadian healthcare system, where we have established a reputation as early adopters, researchers and innovators. In collaboration with our radiation medicine colleagues, we have developed and implemented new technologies, improved and developed new models of care, and expanded the evidence-base driving our practice, all of which result in better care and better outcomes for patients.

APRT(T) Certification Process

I am proud and happy to have completed the APRT(T) certification through the CAMRT, which I feel will be an asset in continuing to contribute to the field of radiation therapy. As a profession, the APRT(T) certification allows us to demonstrate that we have met a national standard, akin to other advanced practice roles in the healthcare system and provides a platform to expand our practice to a new recognized level.

The certification process is meant to ensure that all APRT(T)s have the knowledge, skills and judgement required to safely and effectively work in advance practice roles within a defined patient population as defined by the [APRT\(T\) Competency Profile](#).

This involves submission of a portfolio, case studies, and a final case-based oral exam within the candidate's area of specialty. While the certification process was challenging, it was rewarding to progress through each phase and reach the ultimate end goal. I would strongly encourage anyone who is thinking about pursuing a career in radiation therapy to also consider pursuing the APRT(T) certification. It has been an extremely humbling but rewarding path and has presented new opportunities for continued improvements in patient care and palliative radiotherapy.

Improving the Patient Experience

In my clinical work as an APRT(T), I see patients requiring urgent/emergent radiotherapy through the Rapid Response Clinic at the Stronach Regional Cancer Centre. I am also involved in research, leadership initiatives, teaching, and quality improvement. I have been working in this role since 2012, where we developed and launched the Rapid Response Clinic with the goal of expediting care for palliative patients. This has allowed patients to access care in two business days or less of referral and start treatment three to four days later.

When compared with patients seen through the standard oncology clinics, these patients can start treatment an average of four days earlier.

We have also developed and implemented several initiatives such as cone beam CT simulation, automated contouring tools, palliative VMAT spine treatment, automated discharge summaries, and community outreach initiatives, all to improve the palliative radiotherapy patient experience at Southlake. It has been extremely rewarding to see the results of this work over the last few years, and I look forward to taking on more of these projects in future.

Looking Ahead

With today's constantly changing healthcare landscape, the APRT(T) role is well positioned to improve efficiencies in our health care system while ensuring delivery of high-quality patient care. We are currently working and making an impact across the province in several different areas, and I am excited at the possibilities for the future as our profession continues to grow and expand.

I would like to take this opportunity to thank Dr. Woody Wells and Dr. Charles Cho, James Loudon, Elen Moyo, Nicole Harnett, Lilian Doerwald-Munoz, the Radiation Medicine Team at Southlake, and my family for their support, encouragement and mentorship over the last several months—I could not have done this without you and feel privileged and honoured to work with such a dedicated and inspiring team.

“**When compared with patients seen through the standard oncology clinics, these patients can start treatment an average of four days earlier.**”

A Look at the Ottawa Rad Tech Roadshow 2019

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Rattle My Bones

This year's Radiological Technology Roadshow was themed *Rattle My Bones*. An education day pertaining to radiological technologists with presentations addressing pathology and treatment options from cross disciplinary perspectives included: *Contemporary approach to imaging of the adult hip - A surgeon's approach*, *Airbag for the brain: Facial trauma and brain injury*, *3D Printing in Medicine* and much more.

For upcoming events, head to the [CAMRT event listing page](#).



Airbag for the brain: Facial trauma and brain injury - Dr. Thomas Jenkyn



3D Printing in Medicine - Dr. Adnan Sheikh



Management of Bone Metastases: Complicated or Un-Complicated? - Kelly Linden



A Positive Experience

Working with a Difficult Patient



Submitted by **Simone Smith**

I am at the end of my third year of Radiation Therapy studies as a student in the Laurentian University and Michener Institute of Education at UHN joint program, and I'm currently on a placement at the Thunder Bay Regional Health Sciences Centre's cancer care program. Through my transition from CT-simulation to working on a treatment unit, I've had the privilege of working with some patients every day during treatment. As part of an assessment for my clinical placement, I have been completing monthly reflections to initiate and internalize reflection of clinical practice. One such experience is recounted below, with the patient's name changed to maintain confidentiality.

A Distressed Patient

While placed in CT-simulation, an elderly patient named "John" with highly progressed dementia presented with a cancer in the head and neck region. John was quite

confused and constantly asked questions such as, "Where am I?" and "Why am I here?" It was obvious he was unable to provide consent for the procedure and was thankfully accompanied by a substitute decision maker. To set him up for his CT scan, we had to mold the aquaplast mask to his head and face to ensure treatment accuracy and reproducibility. Unfortunately, while this was happening, he would not stop screaming while kicking his legs and thrashing his arms around him. During this appointment, I stayed to the side—I was only observing, and I did not want to get in the way of the therapists. I was also having a difficult time observing him in such a distressed state.

The Power of Music

Three weeks later, I transitioned onto the treatment unit where all of John's appointments were scheduled. Just prior to treating, the therapists turned the speaker inside the radiation bunker to a Frank Sinatra playlist. They explained that this helped calm John down. When I heard this, I was very interested—he struggled so much during CT-simulation—would it really make that much of a difference? As I was contemplating this, John and his daughter walked into the room. He was pushing his walker and stopped to dance! What a difference. He was no longer the agitated man I met before. We helped him onto the treatment couch and put the mask on. During this sequence of events, he shouted out a few times, but was quickly calmed down. The therapists would assure him that "everything is okay", tell him he is doing a great job, and explain what was happening one step at a time. I can only imagine

the importance of having constant reminders about what is happening when you have progressed dementia.

The therapists and I were able to set him up quickly and left the room. However, we had to interrupt the treatment twice: he was dancing too much! The first time, we needed to ask him to relax his feet, which were moving to the beat of the music, and then to put his arms down so they were not in the treatment field. After we completed his treatment, he began to get off the bed towards his right side because he was sore and wanted to sit upright. This was unexpected because it is the opposite side of where we usually help patients down. I quickly moved the stool over to the other side to help him down and he asked me, "Am I causing trouble?" We then helped him to his walker, and he was out of the room with a smile on his face (and still dancing, of course).

A Learning Experience

This was a fantastic learning experience for me because it opened my eyes to what all medical radiation technologists are capable of doing to improve a patient's care through simple actions. The radiation therapists treating John went above and beyond to help make sure that his difficult situation could result in an overall positive experience. I learned a few lessons:



1. How to work with patients with dementia. It is important to ensure they feel acknowledged and to answer their questions, no matter how many times they may ask. I also learned about the value of compassion and empathy—when John asked me if he was causing trouble it was clear that he knew he was being difficult, but he had no intentions of doing so.

2. Find ways to change the environment for patients to be more comfortable, including turning on a specific song or radio station, making sure the lights are turned off, and modifying the patient setup for extra comfort if deemed appropriate. This can be documented to ensure continuity when multiple therapists are treating.

3. The importance of putting in the extra effort to gain a deeper understanding of patients. Patients are rarely difficult to work with because they want to cause issues. There are so many other factors such as pain, confusion, fear, financial stressors, and so much more they are dealing with. This has been a reminder to rid my mind of assumptions about patients and to have a clean slate with them every day.

4. Facilitating the inclusion of family members. Throughout John's treatments, his daughter helped him onto the bed, stood beside him during setup, held his hand, and reassured him. Their relationship was quite obviously very positive, and her presence brought him a lot of comfort.

5. Recognize the balance of accuracy and comfort. The radiation therapists concluded that it was preferable for John to be content and moving slightly than to be agitated, screaming, and trying to get out of the mask. Of course, they would not do anything to jeopardize his health or treatment, but this still showed their dedication to patient satisfaction.

Concluding Thoughts from a Student's Perspective

Overall, this was a wonderful learning opportunity for me. After watching John become so uncomfortable in CT-simulation, seeing him on treatment gave me hope for a more positive outcome. As a student, I will make sure to continue learning about ways to adapt to situations by observing the therapists' actions. Further, I will make sure to consciously find ways to make every patient more comfortable whether they seem like they "need" it or not. This experience has changed my thinking about what all medical radiation technologists can do for patients. The options are endless and I am looking forward to working with more patients and improving their cancer journey.



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Quantitative Ultrasound Markers for Radiation Response in Head and Neck Cancer

Submitted by **William T. Tran, MRT(T), MSc, PhD**, Radiation Therapist Clinician Scientist, Sunnybrook Health Sciences Centre, Assistant Professor, University of Toronto

Quantitative ultrasound spectroscopy (QUS)

Quantitative ultrasound spectroscopy for tissue characterization has many medical applications such as detecting cardiac ischemia, characterising liver histology and renal imaging¹. In oncology, QUS is aimed to provide acoustic data about tumour microstructure (cells and cell nuclei) that can be used for diagnosis and treatment-response evaluation². The major advantage of analyzing the radiofrequency data from acoustic signals, in comparison to conventional B-Mode “greyscale” ultrasound is the added information about tissue properties such as attenuation, integrated backscatter, scatterer size and concentration³. Additionally, a significant advantage to using QUS data to characterize tumours is to mitigate operator dependent variations associated with conventional greyscale imaging such as time-gain compensations and image contrast adjustments.

Quantitative ultrasound spectroscopy (QUS) uses the spectral information of radiofrequency (RF) backscatter signals that are typically discarded in conventional greyscale sonography; thus, it is unique from other types of sonography since the information collected is based on the frequency-dependent power spectrum. QUS can employ either low or high (>20MHz) frequency ultrasound for tissue characterization based on the desired acoustic resolution, and required depth for imaging⁴. QUS parameters using spectral analysis, such as the mid-band fit (MBF), 0-MHz intercept (SI) and spectral slope (SS) are determined by applying a linear regression function within a discrete frequency bandwidth of the computed power spectrum^{1,3,4,5}. In early studies by Lizzi et al, QUS parameters were studied for therapy response monitoring in hyperthermia-treated ocular tumours¹. The results of their study showed an increase in the SI in responsive lesions, in comparison to the

surrounding normal tissue ($p=0.003$). This increase in the backscatter intensity was explained as corresponding to changes in tissue microstructure caused by focal areas of increased cell death¹. It was hypothesized that changes in the scattering surfaces at subcellular levels from cell death, such as fragmented nuclear structures, may modulate acoustic scattering in tissue. Later reports by Czarnota and colleagues applied Lizzi et al's theoretical framework to study the effects of apoptotic cell death and QUS in acute myeloid leukaemia (AML) cells treated with chemotherapy *in vitro*⁵. That work used QUS methods as markers for apoptotic cell death. Chemotherapy-treated AML cells demonstrated a 2.92-fold to 5.83-fold increase in backscatter intensity compared to non-treated cells, and histological data revealed morphological changes resulting from cellular pyknosis, karyorrhexis and apoptotic cell death⁵. In another study, Kolios et al demonstrated an increase in the MBF (+13 dB) after treating AML cells to chemotherapy *in vitro* and linked these findings to morphological changes from chromatin condensation³.

These studies demonstrated the link between changes in tissue features, nuclear morphology and the resulting acoustic scattering in tissue² (Figure 1). Theoretical frameworks in these early QUS studies for cancer imaging have driven efforts to study chemotherapy response in breast cancer *in vivo*^{6,7}. To date, QUS has been used to monitor treatment response in photodynamic therapy, chemotherapy, and radiation therapy; both in animal and human studies⁵⁻¹⁰.

The sensitivity of QUS to measure the biomechanical features of tumours is dependent on two main factors: 1) Tissue-dependent features (i.e., scatterer size, distribution, organization) and; 2) the ultrasound (wave) properties^{1,11,12}. In this section, important principles of ultrasound imaging are discussed since the experimental QUS parameters used in this study should be interpreted in terms of its relationship to the tumour response and biology. The important factors discussed here include image resolution, image reconstruction and system corrections that have a critical role in the



American Society of Radiologic Technologists

CAMRT partners with the American Society of Radiologic Technologists (ASRT) to identify speakers for their events. Speakers are selected through a competitive process from among the CAMRT membership.

William Tran presented at the 2019 ASRT Radiation Therapy Conference in Chicago, USA, this past September.

Nancy Talbot was selected to attend the 2019 ASRT@RSNA in December – look for her experience in the next issue!

The competition for speaking opportunities in 2020 has closed, but please check out the [CAMRT website](#) under the “MRT Professional Recognition” tab for opportunities in 2021!

QUS data that represents the tumour's biological characteristics.

Head and Neck Cancer

Head and neck (H&N) cancers account for 550,000 new cases in 2014, and the mortality rate reported by the World Health Organization was 300,000 (2014). Approximately 90% of cases are squamous cell carcinomas and presentation for advanced non-metastatic H&N cancers that are stage 3 or 4 (i.e. T3-T4, N0-N3, M0), may present as large (>4 cm) primary tumours with lymph node involvement. Treatment for node-positive, H&N cancer will include primary tumour resection, followed by post-operative chemoradiation. However, the five-year overall survival rate of patients with H&N cancer is about 40-50%; thus, a significant number of patients do not achieve sufficient locoregional control. To address this clinical problem, the purpose of this

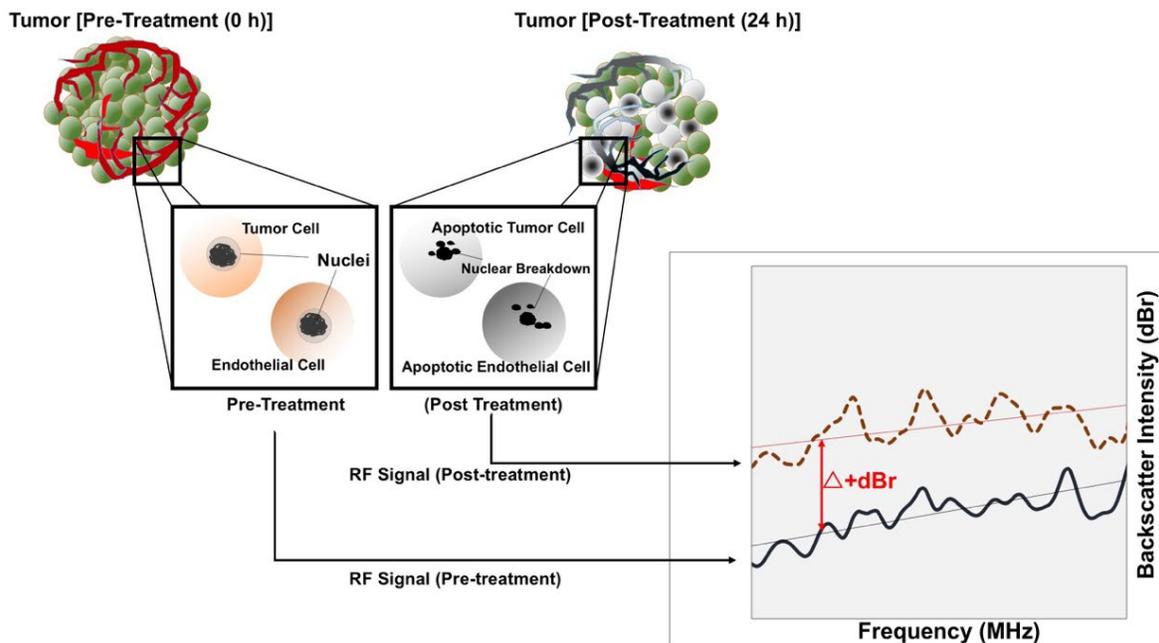


Figure 1: Quantitative ultrasound using spectral analysis can be used to estimate morphological changes in cells. Increased nuclear fragmentation caused by treatments can affect the intensity of the spectral form.

study was to use quantitative ultrasound (QUS) to monitor patient responses to chemoradiation in node-positive H&N patients before their treatment initiation.

Ongoing Clinical Study: Preliminary Results

We are carrying out an ongoing clinical study focussed on identifying QUS radiomic markers that can predict treatment response. Below are details of our preliminary results demonstrating early-response QUS radiomic markers.

There were 37 patients enrolled in the study following a biopsy confirmed diagnosis of H&N carcinoma, which included the following types: 1) squamous cell carcinoma (SCC); 2) non-keratinizing undifferentiated nasopharyngeal carcinoma and; 3) small cell carcinoma. Patients were treated with post-operative, platinum-based chemotherapy (Cisplatin, 100 mg/m² IV, days 1, 22,43) concurrently with radiation (70 Gy/33 fractions). QUS data were collected in the lymph nodes at four time points: 1) before treatment, 2) 24-hours post the initial radiation treatment; 3) week 1 and; 4) week 4 of radiation treatment, using a custom-built ultrasound device, operating with a 4-D transducer, centre frequency of 8 MHz, and a sampling frequency of 40 MHz. Radiofrequency (RF) data were acquired from the acoustic backscatter signal, along 256 lateral scan lines and an axial distance (depth) of 5 cm. Spectral analysis of the RF data were completed to obtain spectral and backscatter coefficient

parameters, as well as obtaining texture features from QUS parametric maps. Texture features were obtained from using a grey-level co-occurrence matrix (GLCM) analysis of the QUS parametric maps. Patients were evaluated for treatment response using radiological endpoints, and response-monitoring models were calculated from QUS and QUS-texture features. Classifier models included machine-learning algorithms from k-nearest neighbour (k-NN) and naïve Bayes classifiers.

There were 14 complete responders (CR) and 23 partial responders (PR) based on radiological endpoints (RECIST 1.1), as determined from the patient's clinical magnetic resonance imaging (MRI) before and after treatments. Spectral Intercept (SI)-energy ($p=0.044$), and the SAS-homogeneity ($p=0.021$) demonstrated a significant difference between CR and PR, 24-hours after the initial radiation treatment. None of the QUS or QUS-texture features showed significant differences between CR and PR at week 1 or at week 4 of radiation treatment.

In general, univariate naïve Bayes classification performed better between the classifier models; for the 24-hour time point, average acoustic concentration (AAC)-Contrast (Gaussian) feature demonstrated a classification accuracy of 80.0% whereas an accuracy of 85.6% and 84.6% was demonstrated at week 1 and at week 4 of treatment for spectral slope(SS)- correlation and attenuation coefficient estimate (ACE), respectively.

For the k-NN classifier, multivariate models improved the classification accuracy at week 4 of radiation treatment; in the univariate case, acoustic scatterer diameter (ASD)-energy (Anderson) demonstrated a classification accuracy of 77.3%. Using two features, the accuracy increased to 78.8% (SS-energy + ASD-energy (Anderson)); whereas, using three features (SS-energy + SI-energy + ASD-energy (Anderson)) demonstrated an increase in the accuracy to 79.6%.

Future Directions and Forward Commentary

There are immense opportunities to further develop personalized radiation oncology, which include response-guided and/or radiomics-guided radiotherapy. At the forefront of these endeavours are clinician researchers, such as radiation oncologists, and radiation therapists that have the immense privilege of interacting with patients and attaining greater insight into the clinical challenges that impact our daily practice. As we move ahead with our research and within the scope of our clinical practice, we should be asking ourselves, "how can we do better for our patients?". This is the central motivating factor within my own research program. One of the most important aspects of a successful research program is the research team. I am fortunate to work with a multidisciplinary team, which comprises physicians, scientists, and other allied health professionals who provide unique insight and contribute



Millenium Park in Chicago (author photo)

meaningfully to a better understanding of clinical problems, designing robust and transparent clinical research, and tackling scientific problems with rigour. Collaboration and teamwork have been the most rewarding aspect aside from the potential impact that we can make for our patients.

In summary, aiming for high-impact research is very challenging and, in many cases, a very difficult path. However, there are great rewards, which include learning something new every day, potentially making a difference in patients' lives, and contributing to the future of radiation oncology practice. My hope is that our profession continues to be curious about improving treatments, and to fully implement individualized treatments for patients based on their intrinsic biology.

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Interested?

If you're interested in getting involved, send me an email at [william.tran@sunnybrook.ca!](mailto:william.tran@sunnybrook.ca)



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- ◆ Ethics & Patient Care
- ◆ Trauma & Forensic Radiography
- ◆ Radiographic Positioning & Pathology
- ◆ Medical Terminology
- ◆ Computed Tomography
- ◆ Bone Densitometry
- ◆ Vascular & Cardiac Interventional Radiography
- ◆ MR Imaging
- ◆ Fluoroscopy Management & Safety
- ◆ Anatomy for Imaging Professionals
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One to Watch! Nuclear Medicine Technologist: Shelby McNair



CAMRT member Shelby McNair was recently named as the Society of Nuclear Medicine and Molecular Imaging's "Ones to Watch" – 30 Early Career Professionals Making a Difference in 2019. SNMMI members were asked to identify early career professionals who are working to shape the future of nuclear medicine and molecular imaging, and Shelby was nominated and ultimately selected. Impressively, she is the only technologist on the list! Shelby is currently working as a Nuclear Medicine Manager at East Surrey Hospital in Redhill, UK; but in her short (but busy) career she has also worked in Manitoba, Alberta, and the United Arab Emirates. We asked her to tell us more about the responsibilities she took on after graduating in 2012 that led to her nomination.

Quite early after graduating from the Nuclear Medicine program at SAIT, I briefly worked as a receptionist/booking coordinator in the nuclear medicine department until other clinical positions were available. This position gave me an understanding of how to schedule patients to improve productivity and efficiency within the department. Following this, I obtained a position as a radiopharmacy technologist and researcher in the PIPE Project, researching alternative production methods of Tc99m. My time in the radiopharmacy and doing research gave me a more thorough understanding of the production of radiopharmaceuticals and how the environment in which they are produced can greatly affect their quality.

After 6 months in the radiopharmacy, I obtained a clinical position at the Royal Alexandra Hospital in Edmonton where I worked with amazing nuclear medicine physicians. In my 3 years at this department, I learned so much from the physicians—they were so eager to teach and challenge our thought processes to make us better technologists. I also had the opportunity to precept many students, which improved my knowledge as well as my teaching capabilities.

In January 2015, three and a half years after graduating, I started a position with Cleveland Clinic Abu Dhabi (CCAD). There had already been a manager, radiopharmacy manager, 2 NM physicians and three other staff there since October 2014, so when I started, I thought a lot of the procedures and processes would have been decided/set up. However, this was not the case! The radiopharmacy was not prepared, there were no standard operating procedures, nor was there a single imaging protocol. I played a pivotal role in setting up the radiopharmacy (thanks to my experience early in my career); and, with the assistance of my nominator, wrote all our imaging protocols.

Aside from writing and being responsible for all imaging protocols and standard operating procedures, I was also responsible for working with the Siemens

application specialist to set up all our technical protocols on our cameras and maintain these protocols. Furthermore, I set up the processing applications and maintained/updated these as necessary. As we were getting ready to open the department in May 2015, I also played a central role in setting up the patient scheduling matrix to maximize productivity and efficiency (thanks to my first role after graduating). Since I created the matrix, I was also the person who trained our booking coordinators in scheduling patients and developing an understanding of how/why patients are booked in the manner that they are. This helped create independence for the booking coordinators, so that they did not need technologist input for when/where to book patients. During the following 2 years at CCAD, I continued to develop the service and update/maintain all areas of my current role.

What I love about this job is that it is ever evolving. If you compare nuclear medicine to other imaging modalities, the other modalities have not changed much in the last 20 years, apart from improved imaging technology. Although there are certain studies that are going the way of the dodo bird because the field is advancing, this also means that new studies are being introduced. This is thanks to the development of new tracers, mainly PET/CT tracers, but also thanks to the advancement of technology such as SPECT/CT (now using diagnostic CT in some instances) and PET/MRI. More specifically what I love about the job is the role I get to play in change management while the field evolves. I obtained my Bachelor of Business Administration December 2017 and have been thrilled that I have been able to apply this education in my current role as manager, but also to use the methods of change management to help my own department grow and evolve.



Fall Issue now Available

Listed below are great articles written by fellow CAMRT members in this issue. If you have any feedback on an article, consider writing a Letter to the Editor! Contact Carly at editor@camrt.ca to get published. As a CAMRT member, you have free access to all content published in the JMIRS. You must [log-in through the CAMRT Members site](#) to unlock the content as opposed to accessing it directly at www.jmirs.org, because articles on this site are blocked by a paywall.

[A Qualitative Analysis of Human Error During the DIBH Procedure](#)

This quality assurance study analyzed human errors that occurred during the radiation treatment delivery of the deep-inspiration breath hold (DIBH) technique at a tertiary cancer centre. The intention is to recommend solutions and system changes that have the potential to decrease the frequency of errors based on human factors principles.

[Engaging the Health Care Professional](#)

Health care leaders can help to engage their teams by using effective behavioral and leadership styles that will be received favourably by most staff. With the evolution of the generations occupying the workplace, managers must adapt and vary their leadership styles, if they hope to effectively engage their teams and provide world-class patient-centered care.

[Utilizing Quality Improvement Methods to Examine the Radiation Therapy Pathway for Patients Requiring Palliative Radiation Therapy at a Community Cancer Center](#)

At a community cancer center, during weekly quality improvement huddles, the radiation therapy team expressed stress and frustration with the pre-treatment pathway for patients requiring palliative radiotherapy. As the department was meeting provincial targets with respect to wait times, it was unknown why the consensus around the department reflected discomfort and stress. The team focused on the four principles of quality improvement: the patient, team, process, and data to address the expressed discomfort around this specific radiation therapy pathway.

[Evaluation of Target Volume Location and Its Impact on Delivered Dose Using Cone-Beam Computed Tomography Scans for Patients with Head and Neck Cancer](#)

Within radiation oncology, treatment of head and neck cancer is known for its unique challenges with patient weight loss and body contour changes. This study sought to quantify these changes through measuring the volume and position of specific target structures over the course of radiation treatment and determining if changes in these factors affected what dose was ultimately delivered.

[Stability of Intracavitary Applicator Placement for HDR Brachytherapy of Cervix Cancer](#)

Cervical cancer is often treated with a combination of external beam radiation therapy and high-dose-rate intracavitary brachytherapy. The goals of this study were to investigate the stability of intracavitary applicator placement during patient transfer and to evaluate the dosimetric impact of displacement.

Continuing Medical Education article!

This CME article provides the equivalent of 2 hours of continuing education that may be applied to your professional development credit system. A 12-question multiple-choice quiz follows this reading. Please note that no formalized credit (Category A) is available from CAMRT.

[The Pathogenesis and Clinical Management of Cutaneous Melanoma: An Evidence-Based Review:](#)

Cutaneous malignant melanoma (CM) is the leading cause of skin cancer-related mortality and accounts for approximately 1,250 deaths in Canada each year. The past decade has brought significant growth in our understanding of the pathogenesis and clinical management of CM. This evidence-based review synthesizes that knowledge, beginning with a review of the epidemiology and etiology of the disease followed by a broad review of the roles of diagnostic imaging in its management.

JMIRS Studies in the news!



[AI may facilitate personalized breast cancer treatment](#)



AuntMinnie.com @AuntMinnie · Aug 26

In a new paper, researchers discuss AI's potential for detecting breast cancer and for predicting treatment response and the risk of cancer-related mortality. [#ImagingAI](#) [#radiology](#)

CAMRT-BC Site Ambassador Program - An Example of Volunteer Engagement

Submitted by **Louise Kallhood**,
CAMRT-BC Provincial Manager

Over the past eighteen months, the CAMRT-BC has been building and supporting a growing Site Ambassador program—a network of MRTs who are enthusiastic about their profession and keen to promote the values and activities of the CAMRT-BC. Starting in early 2018, when there were about ten site ambassadors, the team has grown to include 85 MRTs around the province.



What is a Site Ambassador?

The primary contribution of a site ambassador is to watch for information coming from the CAMRT-BC or directly from the Provincial Manager. This might be newsletters, flyers for educational events, MRT week promotional material or calls for volunteers. First and foremost, site ambassadors share this information with their coworkers. They talk about it, distribute information electronically or print off and post flyers.

Site ambassadors can also choose to engage on a deeper level. Through an online survey they complete when they join the team, a site ambassador can indicate interest in other areas of volunteering such as organizing educational events, setting up local journal clubs, giving presentations or doing research. Knowing what a site ambassador is most interested in helps

the Provincial Manager focus ideas and requests to those that might be the most motivated to participate, and to see opportunities for further member engagement.

Recruitment, Onboarding and Support

Recruitment happens through ongoing advertising, direct discussion with members during site visits by the Provincial Manager, and through word of mouth. When a member expresses interest in becoming a site ambassador, a welcome letter is sent out by the volunteer site ambassador coordinator. The new site ambassador is added to various communication platforms, fills out a short survey and recognized for the important work they will do in connecting their coworkers with association news. In the background, the Provincial Manager and the site ambassador coordinator maintain the volunteer information collected from the survey the site ambassador fills out. In addition, the site ambassador name and location is posted on the list and interactive map on the CAMRT-BC webpage.

Recently site ambassadors have been invited to a private Slack Community of Practice, where they can exchange ideas and questions among themselves. The CAMRT is actively promoting the use of Communities of Practice, and the new Site Ambassador group is a great example of how to use this tool. The Provincial Manager stays in regular touch with the site ambassador group—they now have their own newsletter! This keeps everyone informed of ongoing activities. The newsletters are uploaded to the [Slack platform](#), providing a central repository for information.

This fall will see the first member recognition evening for CAMRT-BC volunteers, a casual event to network and meet fellow site ambassadors, advisory council members and other volunteers.

Benefits of the Site Ambassador Program

Volunteer participation in many organizations is the key to a vibrant and engaged membership. This is certainly true for the CAMRT-BC. The questions that must be answered when recruiting volunteers are: “How does the volunteer want to be engaged?”, “what meaningful activities will the volunteer take part in” and “how can the association support and recognize the contributions of the volunteer?”

The CAMRT-BC Site Ambassador program demonstrates member engagement at a level that is tailored to each individual. It provides an extremely meaningful role for the association—one of direct connection between the “office” and the MRTs working in facilities around the province. This “closer to home” model of information dissemination means that MRTs at the site are more likely to read, remember and participate in conversations or other professional activities because it is being relayed by someone they know personally. In this way, the site ambassador plays a critical role as a key contact between the CAMRT-BC and the membership.

The program is a model of engagement that suits many MRTs since there is no committee commitment, they can join or resign at any time, and they can take on the minimum responsibility of information liaison...or do much more, if they choose. This model is turning out to be a win-win for both volunteer and association and the CAMRT-BC will be working hard to expand the program until every site has a site ambassador!

[Terms of Reference](#)

[Site Ambassador List/Map](#)

Reports from the CARO 2019 Conference

CARO 2019 was held in Halifax this past October. With the theme "Ablative radiation therapy – Mastering the art," attendees enjoyed a variety of presentations on topics relevant to the professionals working in therapeutic radiation sciences. We asked CAMRT members to report on sessions they attended and some key takeaways for our readership. Abstracts from the conference are [available online](#), so be sure to check out the research from your fellow CAMRT members!

Impact of compliance on outcomes for patients on active surveillance for prostate cancer

Presenters: Dr. Jay Detsky et al
CAMRT Reporter:
Dilshad Nathoo, MRT(T), MSc

The prostate cancer-specific mortality for patients on active surveillance (AS) is under 2% and after 10 years, about two thirds of men in AS are free from treatment, avoiding side effects. However, compliance among men who are given a protocol to follow during AS is very poor. Thus, Detsky et al hypothesized that non-compliance with an AS protocol, specifically with confirmatory biopsy, would negatively affect recurrence-free survival (RFS), metastatic-free survival (MFS) and cause-specific free survival (CFS). They conducted a prospective single arm cohort study from 1995 to 2018. Regular AS protocol at OCC includes PSA's every 3 months for the first 2 years and twice a year thereafter followed by biopsies at 1, 4, 7 years and every 3 years thereafter. Compliance was defined as having confirmatory biopsies, which allowed for 6 months grace period after the year biopsies were requested. Outcomes included RFS, MFS, CFS and overall survival (OS). Among the 1275 men in this study, 75% were low-risk, 21% were low-intermediate risk and 4% were high-intermediate risk. Four hundred fifty-three (36%) men were treated, of which 150 (12%) men failed treatment, 38

(3%) men developed metastases and 22 (2%) men died of prostate cancer. In this study, compliance rates were 74%, 52% and 43% at years 1, 4 and 7. Compliance with PSA testing was better at 91%, 69% and 51% at years 1, 4 and 7.

This study showed that PSA compliance was not correlated with biopsy compliance. The men who were compliant were younger (knowing that older men suffer from more comorbidities) and demonstrated much higher rates of failure of treatment for non-compliant patients with confirmatory biopsy, higher risk of metastases, and death from prostate cancer. Multivariate analysis indicated that the risk of failure was significant among treated men over 70 years of age. Non-compliant men with a confirmatory biopsy were 2 times more likely to fail. The risk of developing metastases also increased with non-compliance and confirmatory biopsy. It was shown that there was a statistically significant difference at 10 years for RFS in compliant men (61%) versus non-compliant men (47%). Furthermore, MFS at 12 years was shown to be 11.1% for compliant men versus 4.9% with non-compliant men. There were no differences between compliance and non-compliance in CSS and OS. In conclusion, compliance with confirmatory biopsy with an AS protocol affects the risk of failing treatment and increases the risk of developing metastases. Thus, it becomes very important for physicians who follow prostate cancer patients on AS to stress the importance of following the AS protocol in order to achieve excellent outcomes.

Adaptation: the next logical step for stereotactic ablative radiotherapy (SABR)

Presenters: [Dr. Robert Timmerman](#)
CAMRT Reporter:
Dilshad Nathoo, MRT(T), MSc

This was a highly motivational and thought-provoking session. Dr. Timmerman was one of the first researchers in the world to use stereotactic body radiation therapy (SBRT) to treat cancers in the brain, which then led him to develop clinical trials showing how well SABR worked in different parts of the body. His passion and motivation is derived from delivering precision cancer ablative treatments with more tolerable and fewer side effects. Dr. Timmerman's greatest success was the development of a trial that demonstrated higher tumour control with SABR in inoperable lung cancer patients compared to conventional radiation treatment. With his gifted intellect and quick wit, he took the audience through the journey of radiation from 1928 to the 1990s. Technological innovations with hypofractionation emerged. In the 1950s, gamma knife was used in the treatment of brain tumours. Protons were then used with hyperfractionation. In the 1970s, split course treatments were used to reduce toxicity. That is, instead of delivering 40Gy in 20 fractions, patients were given 20Gy in 10 fractions with a 2-week break followed by an additional 20Gy in 10 fractions. This created a problem: the tumour actually proliferated and resisted so the split course was less toxic, but the tumour liked it better! Then came SABR where phase I studies came about to try and understand boundaries of this treatment. Now we have MRI capabilities to derive treatment techniques that can utilize adaptive planning.

Then Dr. Timmerman got the audience thinking. He probed our minds to think differently. When physicians decided on the fractionation schedule early on with SABR, physicians resorted to their comfort zones and customary dose fractionation schedules (every day or every other day); becoming too focused on the routine clinical schedule. He suggested that if intervals between treatments are intentionally long, there may be more opportunities to see changes in the tumour. That is, can SABR trigger a vaccine-like effect? He compared it to immunization (virus vs tumour). For viruses typically, an immunization shot is followed by several boosters given monthly because it works better. He conceptualized the idea of PULSAR (Personalized Ultra-fractionated Stereotactic Adaptive Radiotherapy). His idea was delivering large dose pulses given in a single treatment using SABR. More than one pulse can be given but could be isolated from each other in time - greater than 7 days, but often weeks. Pulses can behave like independent treatments and can be added as needed like a booster shot in immunization. Dr. Timmerman continues to transform the realm of radiation therapy, specifically SABR. His thought process and innovative ideas of extracting features of the tumour to drive PULSAR was motivating, riveting and inspiring!

ASRT Lecture Radiation Therapy Speaker Exchange: Technical Aspects of Proton Therapy
Presenters: [Justin Pigg](#), ARRT, RT(R)(T)
CAMRT Reporter:
 Christine Baillie, RTT, MHS

This ASRT-CAMRT exchange lecture covered the basics of the physics, clinical applications, and practical considerations involved in proton therapy, as well as an overview of the speaker's experience setting up a proton therapy clinic in the U.S. setting. With 33 proton therapy centres currently operational in the United States, and 9 under development, this is an increasingly popular modality in the American cancer treatment landscape. Some of the indications and case studies shared included pediatric CNS tumours (normal brain tissue sparing), left-sided breast treatment (heart sparing), head and neck cancers, and lymphoma (sparing breast tissue in adolescent patients). The US payer model often guides the radiation treatment modality selected, but the above indications are often approved for their reduction of acute and late normal tissue toxicities.

Innovative directions in proton therapy include pencil beam scanning (intensity modulated proton therapy), the ability to verify dose in vivo using PET imaging, and future techniques such as proton arcs, and high dose rate flash therapy. Challenges and limitations discussed include: greater sensitivity to changes in motion, separation and in homogeneities than photon EBRT; work flow issues related to shared use of the cyclotron between treatment units; motion management during longer treatment-delivery sessions; imaging challenges (such as the limited availability of CBCT with some treatment systems); and the high cost of technology investment. Efforts are being made to reduce the cost of establishing access to proton therapy – building smaller centres with a single treatment unit can reduce start-up cost from \$150M USD to \$30M USD.

Evaluating Respiratory Motion of the Bony Thorax in the Context of Stereotactic Body Radiation Therapy (SBRT): Is It Necessary?
Presenters:
[Darby Erler](#), MRT(T), MHSc
CAMRT Reporter:
 Christine Baillie, RTT, MHS

Stereotactic body radiation therapy (SBRT) is increasing in use for local treatment of bone metastases. Breathing motion in thoracic bone metastases should be considered, as it has implications for appropriate immobilization, imaging at the time of simulation (i.e. 3DCT vs 4DCT) and selection of PTV margins. An assessment of 70 patients at a large centre measured motion difference in three axes, between inhale and exhale position to create a total linear distance vector (LD). Rib lesions were categorized as anterior, lateral, or posterior; and superior (ribs 1-4), middle (ribs 5-7) and inferior (ribs 8-12). Motion was compared using ANOVA.

In total, 47 rib lesions and 15 sternal lesions were assessed for motion (excluded cases had extensive bone destruction, which impacted contouring). Sternal lesions were found to have minimal motion (<1mm), while there was a significant variation in rib motion (0-8mm). There was a significant difference in motion based on location, with less motion in the sternum, posterior ribs, and inferior ribs. This study supports motion management as a necessary consideration in SBRT treatment of thoracic bony sites, as it is for the treatment of lung and abdominal sites.

Provincial Reports



Alberta

Standards of Practice

On September 1, 2019, a new version of the ACMDTT Standards of Practice came into effect thus repealing all previous versions of the document. The September 1, 2019 document incorporates a new Standard Area 5 and it is expected that all members understand and practice within its context.

Standard Area 5 provides new legally enforced concepts on –

- Who is considered to be a patient
- When a sexual relationship between a regulated member and a former member can occur
- When a person who is a spouse or in an interdependent adult relationship can also be a patient

New Legislation

As you may be aware, the Government of Alberta has introduced significant changes to the Health Professions Act (HPA). Introduced as Bill 21 – An Act to Protect Alberta Patients, Royal Assent was given on November 19, 2018. Bill 21 speaks specifically to sexual abuse and sexual misconduct by regulated health professionals and introduces a number of new requirements for regulatory health colleges, including us at the ACMDTT, and its members. Some portions of the Bill were in effect as of November 19, 2018 and some came into force on April 1, 2019.

The protection of the public is of paramount importance to the ACMDTT and it supports this legislation. The ACMDTT emphasizes that the vast majority of its members treat their patients with respect and

professionalism, it will work with the community in recognizing and addressing concerns around the power imbalance between health professionals and patients that this legislation addresses. A quick summary of changes that are happening at the ACMDTT in response to Bill 21 is provided below in the 2018 ACMDTT Annual Report –

2018 Annual Report

The College's annual report is posted at acmdtt.com/about-us/annual-reports.

This year's creative approach to the Annual Report showcases public artwork from across Alberta. We encourage you to read it and welcome your feedback.

CONNECT 2019 – Annual Conference



The event was held on May 10 & 11, 2019 in Edmonton and we received overwhelming support from the community in response to our call for collaboration.

Through our partnership with the CAMRT, we brought together over 450 diagnostic and therapeutic professionals including technologists, students, employers and industry from across Canada to learn and share knowledge of the five currently regulated specialties of the College and our colleagues in diagnostic medical sonography.

2019 Membership Meeting

The College's first Membership Meeting was held on May 11, 2019 in Edmonton. For the first time, attendees had the option of attending in-person or view the meeting online. A Q&A session was held at the end of the meeting and all attendees, in-person or online, had an opportunity to ask direct questions to members of Council.

2019 ACMDTT Awards

The annual ACMDTT Awards were presented on Saturday May 11, 2019, recognizing and celebrating excellence in their chosen profession.

Strategic Plan 2019-2022

ACMDTT Council and staff collaboratively developed a three-year strategic plan to set direction for the College. The three focus areas and nine strategic objectives set by this plan will determine the priorities for our programs and activities, and enable their implementation.

Gender Neutrality

The ACMDTT has implemented a gender neutrality policy, meaning that the ACMDTT will not be distinguishing between roles according to a member's sex or gender. The ACMDTT wants to emphasize transcending the perspective of gender altogether through the following initiatives:

- Eliminating gender identifying words in the terms of describing people. The ACMDTT has discontinued the use of "he" or "she" and has replaced them with gender-neutral language such as "they" in places where the gender of the person is both known and unknown. This will be seen in registration applications, decisions and reasons and any other ACMDTT communication
- Applicants or former members applying for registration with the ACMDTT can now identify within three gender categories – Male, Female and X

Public Register

The ACMDTT maintains an online public register of its current members with a live link to its database. Information displayed by this system always shows a time stamp to ensure transparency and integrity of information. The ACMDTT's public register has been updated to display information of former members for a 2-year period and in perpetuity if there are disciplinary findings.

Volunteer Opportunities

ACMDTT is looking for regulated members to join various committees:

- Conference Scientific Program Committee
- Council positions

More information about these opportunities can be found on the ACMDTT website: acmdtt.com/members/volunteer.

For more information about the College please contact:

Pree Tyagi, MBA ACMDTT Registrar & CEO
ptyagi@acmdtt.com



Manitoba

MAMRT Board Updates:

The MAMRT would love to see the Nuclear Medicine Representative Board Position filled: If interested, please contact: admin@mamrt.ca. Volunteers are also needed for the Self-Regulation Committee: Contact: selfreg@mamrt.ca. Member assistance sought for the 90th Anniversary events on November 22-23: Contact: admin@mamrt.ca

We have moved! Sharing space with the College of Dental Hygienists Manitoba and the newly formed College of Paramedics Manitoba, our address is now **#610-1445 Portage Avenue, Winnipeg, R3G 3P4**. Open House for members is in the works!

After the successful June "Triad" event, July 2019 saw the launch for "MAMRT at the September Banjo Bowl" and in August, the installation of two Bus Shelter ads; bringing members together and highlighting to the public the important work MRTs perform!



The installation of two Bus Shelter ads

The MAMRT continues to provide recognition to our profession and MRTs who have made a difference through their leadership, teamwork, patient care, and more. On November 23, 2019, in conjunction with the [90th Anniversary Celebrations](#), the MAMRT Honorary Awards Ceremony took place. Receiving awards are:

Life Membership:
Sandra Luke, RTR, RTMR, ACR

(Wm) Bill Doern Service Award:
Crystal Kobe, RTT

Claude Bodle Memorial Lecture Award:
Pamela Sparkes, RTT

MAMRT Award for Early Professional Development:
Tynnille Chomenchuk Bouchard, RTT

MAMRT Award for Team Excellence:
School of Radiation Therapy Staff
(CancerCare Manitoba)

Rita Eyer Leadership Award:
Lorraine Gendre, RTR, ACR

We have also "resurrected" the ancient "President's Plaque and Gavel", which was presented at this Ceremony to Past MAMRT Presidents, Chris Zeller, Dayna (Wlasichuk) McTaggart, Jenna (Bruderer) MacLaine and Sandra Iftody.

Our Competitive Award winners, (presentation has taken place) are:

Registration Award Nuclear Medicine and Proficiency Award Nuclear Medicine: Emily Griffin

Registration Award MRI Technology and Education Award MRI and Spectroscopy Technology:
Dylan Swereda

Registration Award Radiological Technology: Ashley Tkachyk

Education Award Radiological Technology: Alexis Vickers

Registration Award Radiation Therapy and Proficiency Award Radiation Therapy: Alexandra Warburton

To learn more about the new MAMRT Awards Program, click [here](#). And to learn more about how the MAMRT celebrated its 90th Anniversary, please visit: www.mamrt90.com. CHEERS TO 90 YEARS!

Provincial Reports



British Columbia

CAMRT-BC Provincial Report

2019 has been a busy year! Now that the move to the new organizational model is finalized, it's exciting to be offering new and expanded services to our members under the CAMRT-BC banner.

Site Ambassador Program

Through ongoing site visits by the Provincial Manager, and the power of word of mouth we are up to 85 Site Ambassadors. Site Ambassadors make a real difference, ensuring information about CAMRT-BC activities reach members in a personal and timely manner. With a new Site Ambassador Coordinator and the use of the Slack platform, the program will continue to grow in the months to come. Visit for [Site Ambassadors](#) for more information.

InfoShare Educational Events

CAMRT-BC hosted three educational events this year – InfoShare North in Prince George, InfoShare Okanagan in Kelowna and InfoShare Vancouver Island in Victoria. These evening events include time for light refreshments (thank you to our vendor support!) and networking, followed by 2 hours of presentations. All sessions are complimentary to members and have been well

attended. With the bonus of being able to attend on line, InfoShare has opened up educational opportunities for our members around the province. It is anticipated that in 2020 these venues will be repeated in addition to events in Vancouver. Stay tuned!

Commencement 2019

After a five-year lapse, commencement is back! For the first time the ceremonies took place at program sites around the province: College of New Caledonia in Prince George, BCIT in Vancouver and Camosun College in Victoria. It was exciting to work with the student representatives and CAMRT-BC volunteers to welcome these student members into the profession. With family and friends present, a pinning ceremony and reciting of the CAMRT pledge, they were special events for everyone.

Regulatory Update

CAMRT-BC continues to work with our partners in advocating for the establishment of a regulatory college. While efforts have recently been stalled by the [Harry Cayton Report](#), we will continue our efforts to impress on the government the importance of self-regulation for MRTs. For more information visit [Regulatory Updates](#).

MRT Week

Ambassadors are working together to generate ideas for a "made in BC" approach to celebrating MRT week.

The goal is to engage the MRT community and encourage all members to "shout out" about all the amazing work done by MRTs. Our new presence on social media (Instagram, Facebook and Twitter accounts) will help us to spread the word!

2019 CAMRT Roadshow and Awards Luncheon

CAMRT-BC volunteers assisted with the programming for this year's Radiological Technology Roadshow held in Vancouver on October 19th. As part of the activities, the CAMRT-BC will be hosting a casual volunteer recognition evening and a refreshed Awards ceremony during the Roadshow luncheon.

Congratulations to our 2019 Awards Recipients:

WQ Stirling Award and Lecture:
Jenny Soo, RTT

Bracco Imaging Canada Paragon Award: Alisa Lattanzio, RTNM

Innovative Leadership Award:
Nicole Bemister, RTR

Excellence in Teaching Award:
David Campbell, RTR

Award of Excellence:
Andrea Pastuch RTT

Award of Excellence:
Laura Barlow RTMN

Back-to-School Back-to-Basics SALE

CAMRT  ACTRM

A limited-time Quick Self-Study Promotion for CAMRT members!

- Providing Effective Feedback to MRT Students in the Clinical Environment
- Reviewing Patient Education Skills in the Clinical Setting
- Infectious Diseases Review: Prevention, Transmission, Treatment
- ECG Imaging: The essentials
- Reflective Practice for MRTs

Only **\$45** until December 31, 2019!

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Announcements and events



CAMRT 2020
May 30-31, 2020
Ottawa, Ontario

OTTAWA • MAY 30-31



CAIR Annual Meeting
May 28-30 2020,
Montreal, QC



[ISRRT 21st World Congress - Call for abstracts](#)

August 26-29, 2020,
Dublin, Ireland

Seeking Course Instructor/Mentor: Fundamentals of Quality Management Course

The CAMRT is looking for a health leader to take over the mentorship of the Fundamentals of Quality Management course, effective Fall 2020.

The preferred applicant will have extensive knowledge and experience with quality management processes including, but not limited to: quality management models, quality tools, Accreditation Canada requirements, strategic and operational planning, project management, team development, data collection and survey design related to improving quality of care.

- A CAMRT course mentor is responsible for recommending content updates (course, assignments and final examination) to ensure the continued relevance and currency of the subject matter.
- Monitoring and responding to student enquiries in a timely fashion during two annual pre-determined terms.

This course is offered solely on a Learning Management System and requires no marking of assignments. Successful incumbent will be responsible for the marking of the course candidates' final examinations. Payment is based on the number of examinations marked plus an additional payment based on the number of course registrants.

Interested applicants must submit a comprehensive CV and a cover letter highlighting their education and leadership experience related to Quality Management **no later than March 15, 2020.**

For a list of course objectives or to submit your application, please contact mberube@camrt.ca.



CAMRT Competitive Awards Program

The CAMRT invites submissions on any radiological technology, radiation therapy, magnetic resonance, or nuclear medicine subject matter related to topic areas/categories listed in the chart below.

There are three (3) topic areas: education, technical and non-technical. Submissions for each topic can take the format of a scientific paper, a narrative paper or an exhibit.

Submissions are open to practicing medical radiation technologists and students studying in accredited programs. The competition for practicing technologists is separate from students with each having their own competition, however the categories and topics remain the same.

Entries to the competition should:

- Advance the practice of medical radiation technology
- Enhance understanding of an aspect of medical radiation technology
- Capture the reader's attention and interest

The deadline for submission is **February 15th, 2020.** Visit the [Competitive Awards](#) page on our website, for more details

2019 Continuing Professional



CAMRT VIRTUAL CLASSROOM – LECTURE SERIES

Now Available

CARDIAC CATHETERIZATION FOR THE RADIOLOGICAL TECHNOLOGIST

The future is IR! Discover the less invasive interventional radiography world in Interventional Cardiology. Establish a foundational knowledge and a base understanding of the cardiac procedures and platforms involved within Cardiac IR. Suited for any Radiological Technologist who wishes to enhance their knowledge base and widen their scope of practice. Follow the patient's journey through a cardiac catheterization from beginning to end and discover radiation safety measures and imaging practices in cardiac catheterization, IVUS, OCT, FFR and right heart studies.

Presenter: Kerri Smith RTR, PID, CVT

PET/MRI: instrumentation, current status and potential applications

Indications for PET/MRI clinical referrals and how to best utilize these systems are evolving. This lecture provides a technical overview of PET/MRI, including PET radiopharmaceutical production, PET instrumentation, MRI instrumentation, unique considerations of departmental design, current PET/MRI implementations and potential clinical PET/MRI applications. Sequence diagrams, scan parameters and protocols will be covered for both serial and parallel PET / MRI acquisitions.

Presenter: Robert Miner PhD (candidate), MSc (NM), MSc(MI), MP, BSc(MRS), MRT(N), BSc, EET, CA/P

Personal Leadership: Empowering Self

The rapid pace of change in the healthcare system requires leaders who can adapt quickly, lead through change and develop high-performing teams. The purpose of this virtual lecture is to explore ways to develop your personal leadership skills so you may be prepared to lead in complex environments. Self-leadership change management and conflict resolution are a sampling of topics addressed in the first lecture of our leadership series.

Presenter: Mona Delisle MRT(T), BA, MA

Coming Soon!

Fragility Fractures and Fracture Risk Determination

Fragility fractures are a major health care burden, particularly in the setting of an aging population, causing substantial morbidity, mortality, and health care costs. Reducing fragility fractures is dependent on determining an individual's fracture risk. Bone Mineral Density (BMD) assessment is a key component in fracture risk models, but current models also incorporate clinical risk factors, including prior fragility fractures. In this virtual lecture, the presenter describes the clinical burden of fragility fractures, addresses which fractures are considered fragility fractures and presents models used to determine future fracture risk, including the importance of BMD and the role of the BMD technologist.

Presenter: Dr. Steven Burrell, MD, FRCPC

Coming 2020

MRI Simulation and Treatment Planning

CT simulation is the current standard of care for radiation therapy treatment planning. Given MRIs superior soft tissue visualization, there has been increased utilization of MRI imaging within the simulation and treatment planning process. This virtual lecture will explore the possibilities of MR simulation and how to integrate MR simulation into Radiation therapy treatment planning.

Presenter: Ling Ho, MRT(T), MR, MRSO

Visit our [website](#) for more information or contact cpd@camrt.ca.

Development Highlights

Theranostics - Diagnosis and Treatment of Neuroendocrine Tumors - Coming 2020

Breast Imaging Certificate Program Changes in Effect January 2020

Starting January 2020, an experience requirement will be part of the CBI programs.

For the CBIS – Certificate in Breast Imaging – Screening, the candidate will require a minimum of 1450 hours as a practicing mammography technologist over the 3 years preceding entry into the CBIS program.

For the CBID – Certificate in Breast Imaging – Diagnostic, the candidate will require a minimum of 1750 hours as a practicing mammography technologist over the 3 years preceding entry into the CBID program.

CT Imaging Certificate Program Changes in Effect Fall 2020

The CTIC and PET/CT programs are being revised considering changes to the entry-to-practice requirements and to ensure the programs continue to reflect current and emerging practice. The revisions will ensure these certificate programs continue to provide MRTs an opportunity to enhance their knowledge and gain recognition for their clinical expertise in CT and PET/CT imaging.

One of the key changes coming to both programs is a mandatory Sectional Anatomy Exam.

This new sectional anatomy requirement **will be a pre-requisite for the CT Imaging 2 (CT2) and CT Imaging 3 (CT3) courses**. It will be delivered in a self-directed format and will be accompanied by a study guide, recommended textbooks and sample exam questions.

The sectional anatomy pre-requisite exam will be **available Fall 2020**. This means, anyone wanting to register in CT2 or CT3 in Winter 2021, must first successfully complete the pre-requisite sectional anatomy exam.

As sectional anatomy will be offered as a self-study exam as of Fall 2020, the sectional anatomy content in CT2 and CT3 will be replaced with enhanced coverage of CT procedures, pathologies and emerging practices. These changes to CT2 and CT3 will come into effect Winter 2021.

Additionally, for PET/CT:

Starting 2021, the new didactic requirements for the PET/CT program will as follows:

CT1, Sectional Anatomy Exam, **CT2, CT3** and PET/CT Theory & Applications. This change is to reflect the

increasing importance and prevalence of diagnostic CT in the nuclear medicine environment.

The PET/CT Theory and applications course will also be revised. Areas for revision and new content additions include:

- The role of generators in PET/CT - 82Rb, 68Ga
- Digital detectors
- New Radiopharmaceuticals: 68Ga PSMA, 68Ga DOTA TATE, 68Ga DOTA NOC, 68Ga DOTA TOC, 68Ga FAPI
- Applications in PET oncology, inflammation, cardiology, neurology, pediatrics, and radiation therapy: Additional cases and images will be added along with course content and readings expanding on each of these sections.

Revisions to the PET/CT course will come into effect Fall 2020

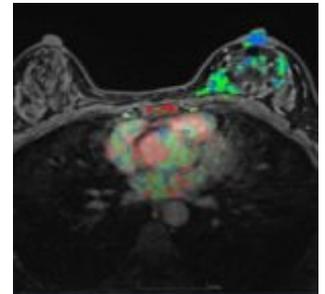
For any questions regarding the upcoming changes to the Certificate programs, please contact specialtycertificates@camrt.ca or call 800-463-9729 ext. 226

New!

The Basics of Breast MRI - New Quick Self Study

The Breast MR Quick Self-Study (QSS) is an introduction to the use and benefits of evaluating the breast tissue with magnetic resonance imaging.

This course is written for all breast imaging technologists, as well as MRI technologists. It will cover some basic MRI physics to understand how breast MRI works for the non-MRI technologists; but also gives good information for MRI technologists about the basic principles of breast imaging. In this course the learner will review how breast morphology and blood flow patterns are analyzed with MRI. Indications for breast MRI and criteria for screening and diagnostic scans will be covered. In addition, this course will address the unique requirements for technical preparation, including patient positioning, hormone interactions and contrast usage. The course will conclude with a brief overview of MRI-guided interventions, including biopsies and hook wire placement.



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