

Osteoporosis Canada's
Scientific Advisory Council

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ASBMR Breakfast 2019

OC will be hosting a breakfast at ASBMR in Orlando for members of the SAC and Canadian students. It is planned for Saturday September 21st at 6:30 AM at: Hyatt Regency Orlando in the Rock Springs Room.

Please RSVP to Kerry if you are planning to attend no later than September 12th: kgrady@osteoporosis.ca

CMC 2020

Plans for the 3rd Canadian Musculoskeletal Conference are underway. The conference will be held on Nov. 20, 2020 at the **SHERATON CENTRE TORONTO HOTEL**

123 Queen Street West in Toronto. A Young Investigator's day will be held on Nov. 19th.

Save Nov. 20, 2020 in your calendar and watch the SAC Link and your mailbox for further details.

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Addresses

Please inform Kerry at kgrady@osteoporosis.ca if any of your contact information changes.

Upcoming Events

OC Annual General Meeting

This year's AGM/Board of Directors face-to-face meeting will be held in Toronto on September 13th and 14th at the Crowne Plaza Toronto Airport Hotel, 33 Carlson Court, Toronto, ON. SAC members are welcome to attend the AGM portion of the meeting on Saturday, September 14th 9:00AM-10:00AM.

COI Forms

The annual Conflict Of Interest form has recently been sent to your mailbox. All SAC members are required to complete annually. It should be returned to Kerry no later than **August 19, 2019**. If the COI form is not returned, we can only assume you wish to step down from the SAC.

Clinical Practice Guidelines Update

Work continues on the Osteoporosis Canada Clinical Practice Guidelines Update. The steering committee chaired by Bill Leslie, includes Sandra Kim, Rowena Ridout, Sid Feldman, Suzanne Morin, Heather McDonald Blumer, Nancy Santesso and Larry Funnell. They continue to meet on a frequent basis. The Working groups established - Fracture Risk Assessment, Pharmacotherapy, Exercise, and Nutrition - have identified their primary questions. As part of the GRADE guidelines development process, these questions serve as the basis for searching specific databases in the systematic review of current and relevant data. Working Groups are currently at various stages of their systematic reviews and working towards developing evidence-to-decision tables for each question in order to formulate recommendations. The rigor of the GRADE methodology (in consultation with Nancy Santesso) and workload of the guidelines development has proven to be tremendous. At present, the publication release of the updated guidelines is anticipated for the fall of 2020.

There is also a stakeholder committee and a Conflict of Interest (COI) oversight committee. The COI group keeps track of committee members and their conflicts of interest in order to be aligned with international standards. A Knowledge Translation (KT) committee has been organized by Dr. Suzanne Morin which is tasked with looking at perceived barriers and proposed solutions to Guidelines uptake and implementation.

**Breaking the Cycle of Recurrent Fractures
2019 Implementation Science Team Project Grant Recipient**

After rigorous peer review, the Michael Smith Foundation for Health Research (MSFHR) recently awarded the Fraser Health Authority team in British Columbia (BC), a three-year project team grant worth \$500,000. The project, titled "Breaking the cycle of recurrent fracture: Scaling up a secondary fracture prevention program in Fraser Health to inform spread across British Columbia", is co-led by Dr. Sonia Singh (Fraser Health clinician-researcher,) Larry Funnell (Patient partner researcher) and Dr. Tania Bubela (Simon Fraser University, Dean of Health Sciences). This project may well be the tipping point for Fracture Liaison Service (FLS) implementation in BC. This project will explore how the FLS model implemented at the Peace Arch Hospital (White Rock) in Fraser Health can be successfully adapted and scaled-up to other hospital sites within the health authority.

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This leading-edge project aligns with the mandate of Osteoporosis Canada in supporting nation-wide implementation of effective secondary fracture prevention. One key expected outcome is to inform an FLS implementation strategy that can be used to spread the FLS model across BC, thereby improving patients' quality of life after low-trauma fractures and decreasing health care costs related to recurrent fractures. The research findings from this project may result in dramatically improved access to appropriate osteoporosis care for fracture patients in BC and will impact future program planning of secondary fracture prevention across Canada.

- <https://www.msfhr.org/2019-IST-pjt-recipients>

2019-2020 OC Award Winners

CaMos Award

Sayem Borhan



Osteoporosis Canada – CaMos fellowship award provides me the timely opportunity to investigate the risk of fracture and effect of osteoporosis treatments on fragility fracture using the machine learning (ML) approach. It has been established that, the incidence of fragility fractures affects the health-related quality of life (HRQL) of older people for a long period of time. However, most of the assessments of fracture risk and treatment effect are based on traditional statistical association analysis, one-size-fits-all principle, and short-term follow-up data.

Machine learning (ML) algorithm – where methods learn from training data and assess the performance of this algorithm in independent test datasets, can be a valuable addition to assess the fracture risk and effect of treatment on preventing fracture. The available tools (e.g. FRAX) to assess the risk of fracture are based on traditional statistical association analysis and on the assumption that there is no interaction among the risk factors, which is not always. Also, these tools based on factors that are significantly associated with outcome, and these factors may not always good for prediction. Predictive analysis using ML could help to identify potential highly predictive

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factors. Moreover, we do not know the effect of osteoporosis treatments on individual with high risk of fracture, as no randomized clinical trials have been performed on these individuals. Further, these treatments are effective, in the short-term, to reduce the fracture risk among men and women. The evidence regarding fracture risk reduction with prolonged therapy is less convincing.

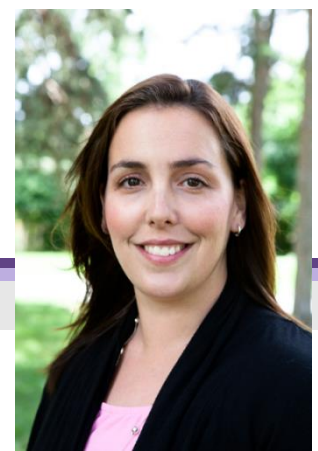
In this study, I will use 15 years of data from the CaMos, to: (I) develop a ML algorithm to assess the overall and site-specific risk of fracture; (II) investigate the effect of osteoporosis treatment on preventing fracture among individuals with risk of fracture; (III) assess the long-term impact of osteoporosis treatment on incidence fragility fractures; (IV) examine the long-term effect of treatment among different cluster or strata of individuals, which is known as stratified medicine, using ML; and (V) investigate the long-term effect of treatment on HRQL.

This study, first of this kind, will not only assess the risk of fracture using 15 years of longitudinal data and ML algorithm but also will fill a major gap in the evidence of long-term effect of osteoporosis treatment on incidence fragility fractures as millions of people suffer from fractures every year. Further, this study will examine the heterogeneity of treatment effect in preventing fracture among different cluster or strata of individuals – identified through ML, which is a step forward to precision medicine. Certainly, this study will help to make informed clinical decision and improve patients' lives.

Ph.D Studentship Research Award

Lindsie Blencowe

Lindsie Blencowe is currently a Ph.D. student in the Institute of Medical Science at the University of Toronto under the supervision of Dr. Angela Cheung. Lindsie received her Bachelor of Science (Honours) from Queen's University and her Master of Science degree at McMaster University, both in Biochemistry. Lindsie has also spent several years working with Dr. Cathy Craven, studying osteoporosis and bone biomarkers in patients with spinal cord injury.



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Lindsie's PhD thesis will explore the relationship between serum pentosidine and osteoporosis. Pentosidine is an Advance Glycation End-product (AGE). These compounds are known occur with aging and make bones more brittle and likely to fracture. Serum pentosidine in the blood may be a useful biomarker of osteoporosis and fracture.

The Osteoporosis Canada Ph.D. Studentship Research Award will support Lindsie's PhD investigations. Lindsie is currently assessing serum pentosidine in women in the Canadian Multicentre Osteoporosis Study (CaMos) to determine if there is a connection between serum pentosidine and fracture incidence in these women. Going forward, Lindsie will also compare serum pentosidine in women with atypical femur fracture (AFF) to those in controls in a case-control study.

Should these studies identify a connection between pentosidine, osteoporosis and fracture, they will support the utility of serum pentosidine and bone outcomes in stratifying disease and fracture risk for patients. This is particularly relevant for AFF, as there are currently no reliable methods of predicting AFF. Lindsie hopes this research plays a role in preventing fracture and improving the quality of life of osteoporosis patients.



M.Sc Studentship Research Award

Madeline Dwyer

During my academic career I have developed a passion for discovery and research, particularly within the musculoskeletal field. I graduated from the University of Toronto with a Bachelor of Science majoring in human biology in 2018. During my undergraduate degree I was fortunate enough to complete a fourth-year thesis project under the supervision of Dr. Angela Cheung. After realizing my research interest in bone health during this project, I have since begun a master's degree at the University of Toronto within the Institute of Medical Science under the continued supervision of Dr. Cheung.

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Estrogen is a vital hormone to support healthy bones throughout the lifespan. However, women who are at increased risk for developing breast cancer often take drugs or undergo surgery with the goal of lowering estrogen levels, as many breast tumors grow in the presence of estrogen. It has been shown that these measures to decrease cancer risk have negative effects on women's bone health, namely increasing bone loss and risk of fracture. Previous research has evaluated bone loss using Bone Mineral Density (BMD), a measure of bone strength. My thesis project will further these findings by quantifying the effect of estrogen loss on Trabecular Bone Score (TBS), which provides information on the structural microarchitecture of bone. This research will be addressed by expanding upon two sub-projects taking place in our lab. Firstly, I will be examining TBS change over 1 year in premenopausal women with *BRCA1/2* mutations after undergoing prophylactic salpingo-oophorectomy (the surgical removal of the ovaries and fallopian tubes). Secondly, I will examine the 2-year effect of exemestane, an aromatase inhibitor drug, on TBS in postmenopausal women. Investigating the changes seen in TBS after intervention will allow for an improved understanding of fracture risk and osteoporosis development in this population.

I am truly grateful to receive the Osteoporosis Canada MSc Studentship Research Award. With the help of this award, I will be able to fund my attendance to conferences and meetings in the upcoming year. Not only will this allow me to meet others in the field, but I will also be inspired by the latest findings and develop essential skills in presenting, writing, and critical thinking; all of which are necessary to be a well-rounded researcher. I am honored to be awarded this studentship not only to support me through this stage of my academic career, but also I believe that being sponsored by Osteoporosis Canada would help model me into the researcher I wish to become; a researcher with a drive for innovation while putting patient care at the forefront of my research objectives. Ultimately, I aim to continue a career in research with the hope that I can contribute to creating guidelines and protocols for better monitoring of bone health in high risk patients.



Tim Murray Travel Awards

Anne-Frédérique Turcotte

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First, I want to thank Osteoporosis Canada for giving me the Tim Murray Award. This award will allow me to attend the American Society for Bone and Mineral Research (ASBMR) Annual meeting in Orlando, Florida, from September 19th to 23th 2019. During that meeting, I will attend multiple conferences that will allow me to gain new knowledge in my research field and participate in the numerous workshops offered to trainees and researchers. I will also present one of my Master's project in two poster presentations, during the Symposium on Muscle: The Path Forward to New Therapeutic Targets and during the Annual meeting, which is a great opportunity to network with other researchers and graduated student in the bone field, as well as with other Osteoporosis Canada members. The ASBMR Annual meeting is the largest international meeting in the bone and osteoporosis research field. Indeed, attending this meeting will add to my overall training experience by helping me reach my learning and long-term objectives to pursue a research career in bone.

Natasha Qureshi

My name is Natasha Qureshi, and I am a 5th year General Internal Medicine resident at the University of McGill. I am working on a research project with a team under the supervision of Dr. Suzanne Morin in conjunction with Osteoporosis Canada. Our research project is centered on improving acute pain management in older adults with a recent fracture. The inspiration for the project is further based upon the developing pillar of patient engagement in healthcare research.



Acute pain management in the setting of a skeletal fracture can be challenging. Older adults in this setting often experience pain that is inadequately controlled, for numerous reasons including barriers to communication, uncertainty around medication management, and the like. Clear gaps have been identified in this population with regards to the ability for such individuals to manage their acute pain post-fracture. One avenue in which patients can participate in their own care is through the use of medical mobile device applications (apps). Considering the potential benefits of mobile apps in healthcare delivery, we wish

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to consider developing and implementing a mobile app for self-management of acute pain post-fracture. It is important to explore patient views on essential features of a mobile app for this purpose. Thus, we are currently conducting a survey with members of the Canadian Osteoporosis Patient Network (the patient arm of Osteoporosis Canada) to determine what content they feel should be included and which functionalities would be most important for them. For instance, such an app could help to document the intensity of the pain, what options should be considered to alleviate it and subsequently when they should seek help for it. Data from this survey, alongside a sister project that involves similar surveys amongst clinicians, will be used towards the development of a mobile app that would allow patients to have a better understanding of management of acute pain post-fracture as a novel tool in the patient-clinician relationship.

I plan on attending the 3rd Canadian Musculoskeletal Conference taking place in Toronto, Ontario in November 2020. This is a conference is organized by Osteoporosis Canada, where individuals with a special interest in musculoskeletal health share their research, network, and have the wonderful opportunity to hear from and engage in conversations with nationally and internationally recognized speakers in the field of osteoporosis and osteoarthritis. This award will give me the incredible opportunity to travel to the conference, take part in the conference's Young Investigator's Day, which includes an abstract poster session, as well as participating in workshops and networking amongst trainees, established researchers and clinicians. It will provide me the opportunity to share the results of our research project, and to simultaneously receive feedback on the work done so far. Overall the award will facilitate the exciting opportunity for us to present the work, to collaborate with other researchers in the field, to learn more about ongoing research in osteoporosis and to advance my existing research skills in the field.



Tessa VanDerVeeken

Tessa VanDerVeeken is an MSc student in Kinesiology at the University of Calgary in Alberta with a background as an athlete, rowing coach, and strength and conditioning coach. These experiences have increased her

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awareness and interest in the benefits of strength based exercise and their value as a therapeutic tool for osteoporosis. She would like to further explore coach understanding of bone health in athletes, as well as rowing's low-impact osteogenic potential. The Osteoporosis Tim Murray Short-Term Training Award will support her attendance at the upcoming 2019 Canadian Society for Exercise Physiology annual general meeting in October. At this conference, Tessa will present research from the ROWER study (Reducing Osteoporosis in Women who Exercise through Rowing) and preliminary findings on rowing coach's osteoporosis knowledge and misconceptions of osteogenic exercise modalities.

This award will also support Tessa as she completes another research project in the summer and early fall of 2019. This project, observing changes in bone structure and muscle tissue from an eccentric knee exercise loading protocol in rabbit hind limbs, will provide the framework for an exercise intervention in older women. Tessa is excited to have this award support as it will enable her to plan to present at the 2020 Orthopedic Research Society annual meeting. This conference also provides numerous opportunities to establish collaborations and engage with experts in the field of bone health.

Ifaz Maider

Bisphosphonates (BP) are an important mainstay of modern osteoporosis treatment, but there is concern over growing evidence that prolonged use of these and other antiresorptives may be associated with rare but serious atypical femoral fractures (AFF). Fear of AFF has been linked to recent reductions in BP use, despite the fact that only a small percentage of BP users eventually develop AFF. With this in mind, our long term goal is to better understand the etiology of AFF so that we may develop techniques for clinical risk stratification. Recent literature suggests that AFF risk may be associated with differences in radiographic measures of femoral geometry -a finding that was corroborated by computer simulation work from our group. Unfortunately, complimentary research in this area has been limited to small sample sizes, mostly in a single race (i.e., Asian), and are thus not generalizable to North America. In this work, we hypothesize that AFF patients have radiographic differences that cause elevated femoral strains during



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locomotion. We plan to test this hypothesis by developing subject specific-finite element models to simulate locomotion and compare model predicted stress/strain, as well as radiographic measures, in people with AFF against unfractured controls.

The relative rarity of AFF makes this a very challenging project. However, our host Dr. Angela Cheung, has collected one of the largest computed tomography databases of individuals with AFF. The Tim Murray Travel award has made it possible for me to travel from Calgary to her lab in Toronto, in order to collaborate on this project. In addition to the scientific value of the research, this collaboration will allow me to benefit from her mentorship and clinical expertise. As my original training was in engineering, this experience will help me be a more well-rounded and effective researcher in the field of biomedical research.

"I am very honored to receive Osteoporosis Canada's Tim Murray Award. The collaboration made possible by this award will help to broaden my training, and allow me to develop important professional relationships that would not be possible otherwise."

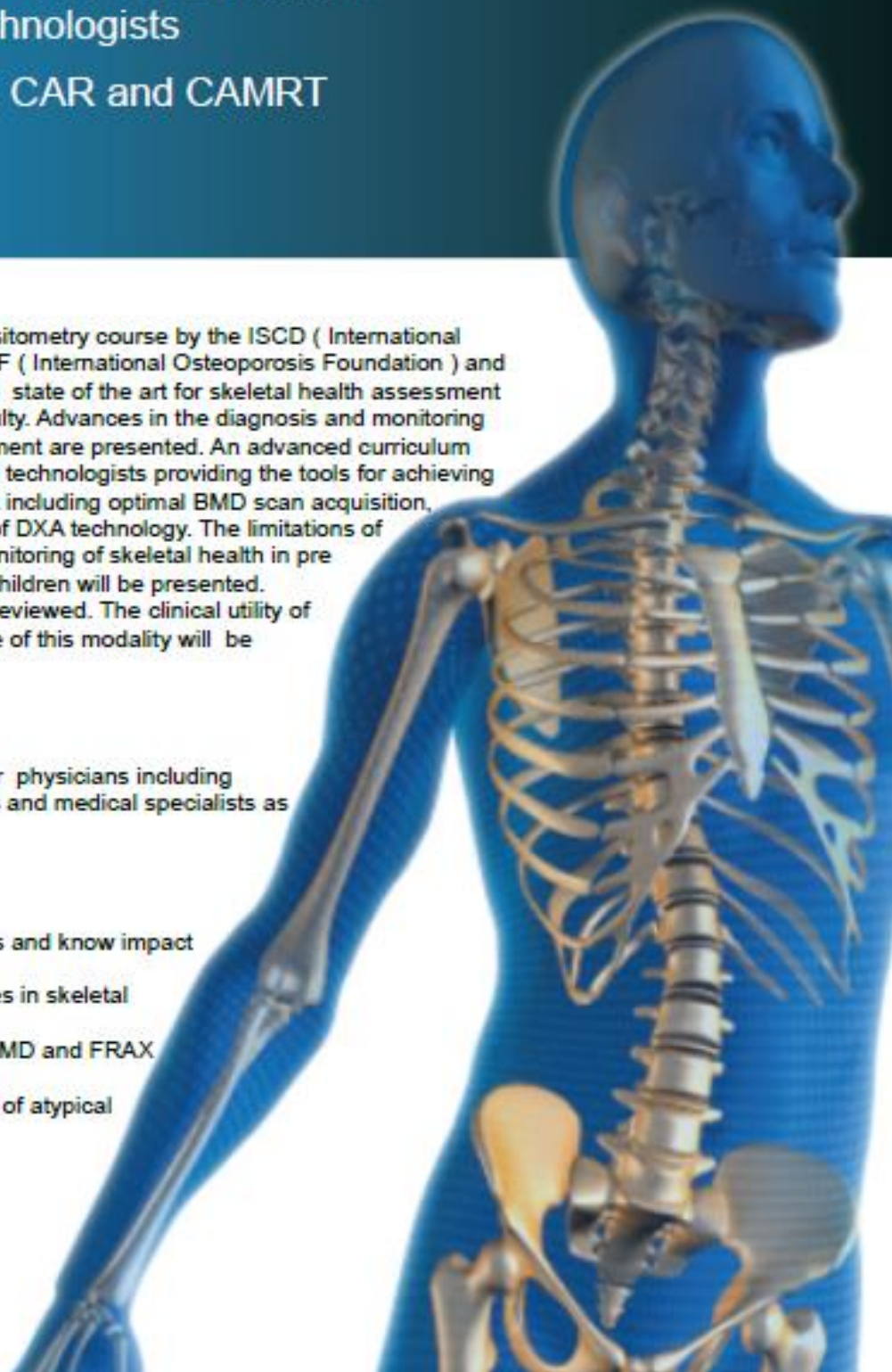
ISCD & IOF OSTEOPOROSIS ESSENTIALS COURSE AND CANADIAN UPDATE ON SKELETAL IMAGING

An International Course of the ISCD and IOF
For Physicians and Technologists

In Partnership with OC, CAR and CAMRT

October 26 - 27, 2019

Hamilton, ON



The Osteoporosis Essentials Bone Densitometry course by the ISCD (International Society of Clinical Densitometry) and IOF (International Osteoporosis Foundation) and Update on Skeletal Imaging presents the state of the art for skeletal health assessment by leading national and international faculty. Advances in the diagnosis and monitoring of osteoporosis and fracture risk assessment are presented. An advanced curriculum will be presented for both physicians and technologists providing the tools for achieving excellence in skeletal health assessment including optimal BMD scan acquisition, interpretation, reporting and application of DXA technology. The limitations of DXA technology in the diagnosis and monitoring of skeletal health in pre and postmenopausal women, men and children will be presented. Common pitfalls in interpretation will be reviewed. The clinical utility of bone densitometry and quality assurance of this modality will be reviewed.

Target Audience:

Dual track content has been designed for physicians including radiologists, nuclear medicine physicians and medical specialists as well as technologists.

Learning Objectives:

1. Recognize and report fragility fractures and know impact on fracture risk assessment
2. Evaluate fracture risk utilizing advances in skeletal imaging
3. Integrate trabecular bone score with BMD and FRAX in evaluating fracture risk
4. Recognize early radiographic features of atypical femoral fractures.

REGISTRATION INFORMATION

Registration Fees

For Day1 and Day 2

Physician

Practicing Physician \$650

Technologist

Non-member \$359

OAMRS and CAMRT Members \$299

(please provide membership information)

Food and printed materials included with registration fees

Venue Information

St. Joseph's Healthcare Hamilton

Charlton Campus

Campbell and Miller Auditoriums

50 Charlton Avenue East

Hamilton, Ontario L8N 4A6

How to Register

Online: www.oamrs.org

Phone: 800-387-4674

In Partnership with:



OSTEOPOROSIS



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Healthcare Hamilton



Credit

An application for accredited group learning activity as defined by the maintenance of certification program of the Royal College of Physicians and Surgeons of Canada 10.25 credits has been approved by the McMaster University for the physician course. Participants who complete the technologist course will receive a joint certificate of completion from the OAMRS indicating 12.5 education hours and CAMRT Category A credits. Education hours can be used to satisfy continuing professional development requirements for maintenance of certification and for site accreditation.

Visit www.iscd.org for more information.

Certification

Independent of the course, voluntary certification will continue to be offered including Certified Clinical Densitometrist (CCD) for physicians and Certified Bone Densitometry Technologist (CBDT) for technologists. The certification exams will no longer be offered immediately following the course. Individuals who desire certification should visit www.iscd.org to obtain the appropriate application form, review testing procedures and qualifications as well as information about fees and testing locations. In Canada, certification is not a requirement for technologists and physicians to practice BMD.