

InterACTIONS

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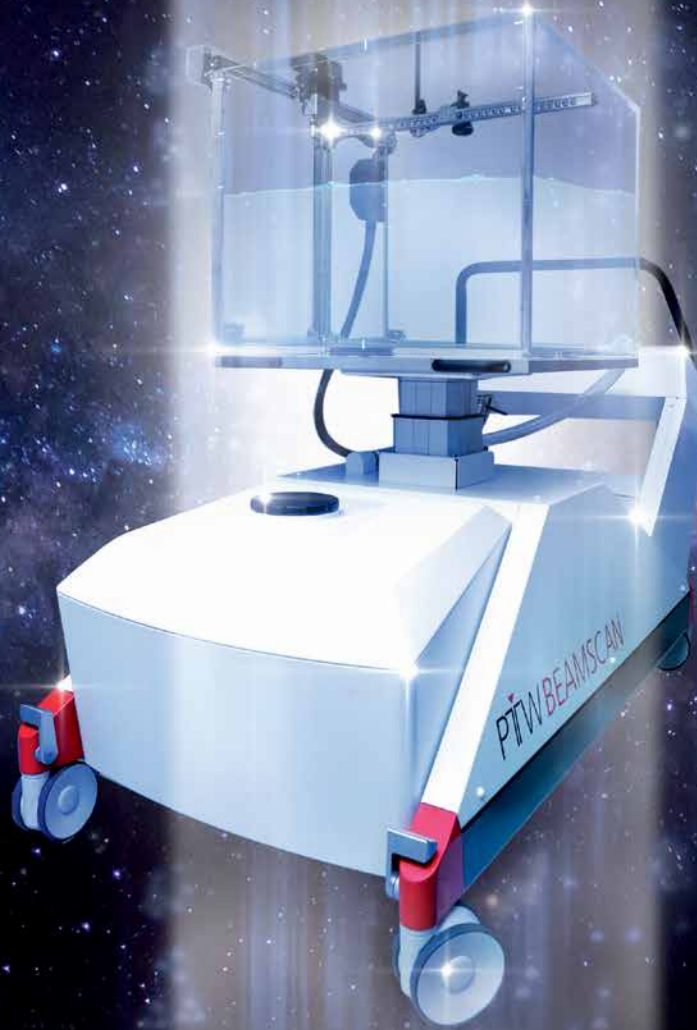
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Please submit stories MS Word or ASCII text format. Images in Tiff format at 300 dpi resolution are preferred.

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MESSAGE FROM THE COMP PRESIDENT

About two years ago, I got a message from Luc Beaulieu (COMP's current past president, but then president) with a copy to Chris Thomas, the InterACTIONS editor. It was a brief message in the number of words, but it had bigger implications. "Marco, I am not sure if you know Chris. He is the InterACTIONS editor. You are going to have to send him texts starting in three months."

Well, it is now two years later, and here I am writing my final message for InterACTIONS.

It has been the time of my life.

I would like to say that serving you as COMP's president has been one of the greatest privileges that I have enjoyed in my career – and I am fortunate enough to have had many privileges in my career. The past two years have been two of the most thrilling and rewarding in my work life. The wonderful experience and rewards this has brought me is very difficult to describe. I believe that COMP, and the Canadian medical physics community is full of special people that are committed to making our profession better, and for that I am very grateful.

To prepare writing this message, I went back and re-read the messages that I wrote over the past two years. What I have tried to write over this time is why I believe our profession is special, why all medical physicists, those of us in hospitals, universities, standards labs, and in industry, are essential components of our health care system, and that we are critically important for its future and success. The reason I got involved in COMP was to help promote this message, and I hope I have done the message the credit it deserves.

I have been sitting on the COMP board in some capacity since 2008, and in this time much has changed in what COMP does and how we do our business. COMP is now much better organised, our sense of purpose is better defined, and because of this, our confidence is showing more. I say this from the point of view (perhaps it is biased) of someone who has been lucky enough to meet and interact with physicists and other professional colleagues from all over the world. We have many people to thank for this, and I would like to start with our current board. I can say that this is a board full of individuals committed to teamwork, to cooperation, and to the spirit of volunteering. Without exception, the people that I have served with on the COMP board and other committees, past and present, have all worked extremely hard and they have used the force of their convictions to make COMP an organisation that always strives to better serve its members and to elevate the medical physics profession.

COMP is also very fortunate to be managed by three very talented and professional people, Nancy Barrett, Gisele Kite, and Christina Mash, whose services are contracted through the association management company AMCES. Having worked closely with them for several years, I feel fortunate in knowing that COMP is in extremely good hands, and that we have benefited greatly from their skill and expertise. I owe them a debt of gratitude.

I don't think any organisation is any greater than the will of its members, and organisations that become great do it only because their members can make it happen. Nancy Barrett,



Marco Carlone

our executive director, has given our board much advice over the time I have been on the board. I would like to repeat one of the things she said to us in regards to what sets COMP apart from other organisations. In a discussion about membership engagement, she explained to us that the best way to keep members engaged is when there is a good relationship and engagement between the senior and junior members. With COMP, she said, we have something very special, where not only do senior members welcome, engage, and interact with our junior members, we do this naturally, where medical physicists seek each other out on their own without being forced to. Before she told us this, I thought that every profession did this in the way we do, but apparently I was mistaken. The grassroots engagement by our membership and the genuine interest by our members to help each other and improve what we do are invaluable. It cannot be realized by any board or president; it can only come from you. The Canadian

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MESSAGE FROM THE CCPM PRESIDENT

In May, the oral exams for the membership to the CCPM were held in Montreal. Thirty-six candidates were eligible to sit the oral exam for three separate sub-specialties: radiation oncology physics, diagnostic radiology physics, and nuclear medicine physics. In all, 86% of the candidates were successful. Congratulations to all the successful candidates. They will become official members of the college at the annual general meeting of the CCPM in St. John's. I would like to thank Renée Larouche and Alasdair Syme for coordinating the exam activities. This year was particularly challenging with three parallel sessions for the RO oral exam. Everything flowed quite well. Great work, Renée and Alasdair! I would also like to recognize the 25 examiners that participated in the oral exams. This important work performed by the college cannot take place without the participation of our members. Thank you all sincerely!

This year was the first year that the new CAMPEP requirement (see CCPM Regulation D.2.7) was in place to be eligible to sit the radiation oncology physics exam. This year's success rate was particularly high with 79% passing the written exam and over 95% passing the oral exam. Although we shouldn't come to conclusions too quickly with only one year's results, it is hoped that, as the standards to become eligible are tightened, the quality of the candidates attempting the exam will increase. We certainly hope to see similar results in the future.

In March, a survey on bone mineral densitometry was circulated to all COMP members

in order to gauge the interest (and the need) for a BMD certification similar to the mammography certification currently offered by the college. Fifty-four members completed the survey with the majority (40.7%) coming from Ontario. This is not necessarily surprising since Ontario has a more structured approach for the accreditation of BMD programs through the Ontario Association of Radiologists. Workshops have been organized to train and identify qualified physicists to perform quality control activities in BMD. Accredited programs in Ontario must have qualified medical physicists participating in their quality control. The rest of the survey participants came from BC, Alberta, Saskatchewan, Manitoba, Québec, and PEI. Of those who responded, 28% were currently involved in supporting BMD activities in their region. Almost all respondents felt that medical physicists should be involved in supporting BMD activities. However, only half indicated they would be interested in obtaining the certification if it were available. This is probably understandable since no national or provincial organisation currently requires a BMD certification. I would also like to thank those respondents that did provide comments. These were much appreciated and provided a different perspective on BMD activities across Canada. The Board will continue reviewing and evaluating the need for certification in BMD. However, there are no immediate plans to proceed with this certification.

The COMP Annual Scientific Meeting is quickly arriving upon us. COMP and the CCPM will be meeting in St. John's, NFLD in mid-July. The agenda for the meeting



Clément Arsenault

is quite full. Board meetings, committee meetings, a half-day symposium, scientific sessions, COMP, and CCPM annual general meetings all have to find a place in a very busy week. The CCPM board would like to thank the COMP ASM committee for all their hard work in organising such a complex week. I am confident this will be another excellent meeting.

This year's fellowship exams will take place, as always, prior to the ASM. The designation of Fellow of the Canadian College of Physicists in Medicine is a distinction given by the college to individuals who have demonstrated excellence and leadership in the practice of medical physics.

Seeing as this is my last message before the summer months, I hope to see many of you in St. John's in July and best wishes to all for the summer! Or as they say in Newfoundland, "Long may your big jib draw!"

EXECUTIVE DIRECTOR REPORT

We are in the final stages of preparation of what we know will be a stimulating and exciting annual scientific meeting (mixed in with a little St. John's hospitality of course). As you know, the COMP leadership is always looking for ways to improve and expand programs and services to meet the needs of members. For example, the following new elements will be included in the program for the 2016 ASM:

- A Young Professional Workshop. The purpose of this workshop is to provide residents, graduate students, and early-career medical physicists with education on professional and job-readiness skills. This is intended to complement academic and research training, and prepare them for successful careers in clinical, research, industry, government, and academic fields. The response and the support for this new offering has been very positive. We are very pleased that leaders in the medical physics community, including Jerry Battista and Aaron Fenster, have made themselves available to participate as speakers.
- We will also be hosting our first ever Women in Medical Physics gathering. This new initiative is being led by Nadia Octave. Nadia put forward a proposal to the board to establish a COMP Women's Committee after she and Michelle Hilts participated as speakers at the Women in Physics Conference in 2015. Several years ago Nadia served as our first ever student council co-chair and we are pleased that she is continuing to share her energy and enthusiasm to this new initiative.

As you know, support for students is an important value of COMP, and we were pleased to be able to continue providing travel grants to students. The Imaging Committee will also be hosting a meeting for all imaging medical physicists in attendance to share what the Imaging Committee has been up to and to discuss issues of mutual concern. I would also like to thank Elekta and Varian for sponsoring the conference. Without their support, this meeting would not be possible.

In my message in the April issue, I mentioned two important activities of the board this year: the strategic planning process and exploring the creation of another educational program focused on quality and safety that would be geared toward the various professions in medical imaging. We invited representatives of the Canadian Association of Radiologists (CAR), the Canadian Association of Medical Radiation Technologists (CAMRT), and the Canadian Association of Nuclear Medicine to join us in Montebello to participate in the Winter School and to explore how we could move forward with a similar initiative for the imaging professions. I am happy to report that an inter-professional planning committee has been established and plans are underway. The chair of the committee is Thor Bjarnason from Kelowna. The program will be taking place in the winter of 2017 - stay tuned for more information!

With respect to the strategic planning process, the board set up a taskforce to finalize the priorities established at the meeting in Montebello and to develop an implementation plan for the board's consideration and approval at its July meeting. Once it is finalized, the strategic plan will be shared with the membership.



Ms Nancy Barrett

Through the research conducted by our strategic planning consultant, Meredith Low, we learned that COMP has a positive reputation in the community for being a collaborative and innovative organization with the ability to bring groups together for a common purpose. For this reason, we are often called upon by other organizations to provide support for their programs and initiatives. These requests have increased over the years, which indicates that our sphere of influence is expanding.

For example with support from COMP, under the leadership of Daniel Rickey, chair of the COMP imaging committee, the Canadian Agency for Drugs & Technologies in Health (CADTH) was able to collect data on how CT, MRI, PET-CT and PET, SPECT, SPECT-CT, and PET-MRI are being used, where they are located, and how many exams are conducted annually. This information helps to guide planning and other decisions and helps identify gaps in service. As well, the data captured in

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MESSAGE FROM THE EDITOR

Hello, all! By the time you read this, hopefully you're preparing for COMP in beautiful St. John's. Have fun and learn lots!

Just a couple of things from me. First off, we have our new annual list of graduate students who have finished their theses from the past year. We have had 35 this past year! Excellent work, everyone, and congratulations! Second, we have the first of four columns to come over the next year (and maybe it'll continue after that). At the communications committee meeting at the World Congress we decided to solicit articles on legal and ethical issues that would be of interest to the medical physics

community. The first column is by Robyn Grant, a partner at Borden Ladner Gervais LLP in Toronto. As a lawyer, Robyn specializes in senior living and housing, health advocacy, healthcare risk management, medico-legal defence, and health law. We'll have one more from Robyn and two from Lynette Reid, a bioethicist at Dalhousie University.

Have a good summer, everyone! Just as a reminder, YOU help make InterACTIONS work, so please submit articles. Take care and see you soon



Chris Thomas

LETTER TO THE PRESIDENT OF COMP

Tomas Kron, Peter MacCallum Cancer Centre, Melbourne, Australia

Dear Marco,

I always enjoy reading InterACTIONS from the other side of the world. It is interesting to see that the successes and problems of our profession are very similar and the discussions centre on similar issues (we just centre instead of center). In the April 2016 issue, I found particularly the message from the president very stimulating. Leadership is such a key issue and this year our college, ACPSEM, will for the first time run a leadership course. I must admit I also dabbled in this by running a half-day leadership introduction for our senior medical physics staff. Engaging an outside person made sure we did not just focus on technical excellence. It was really just me as the dinosaur in the room who tried to get at least a mention of scientific competence as a prerequisite for leadership in our field in. The consultant focused much

more on communication, inspiration, and vision which are clearly where the money is. However, I find also trust is important. And trust in what we do is often difficult to justify given our small numbers and the complexity and 'mission criticality' of our subject. Documented peer review can help.

Back to the situation of medical physicists in our Australian state of Victoria which has a system of medical physics classification based on grades (certified = grade 3, senior = grade 4, principal = grade 5) and advancing on 'years' within each grade. Progression from year to year is more or less automatic and usually ends at year five. As such, more than 75% of our physicists are at the final year of their grade and career progression is a major issue. Unless there is a vacant position, it is very difficult to regrade someone, as classification is based on

the job description. If I, as head of a department, want to reward and keep a good person, well, it's tough luck... Universities have a merit system where people can apply for promotion based on achievements. These systems are based on peer review, but we do not have such a system in our hospital system, partially because there are just not enough of us. Here an FCCPM or similar comes handy. We don't have anything like it in Australia, and on several occasions I have wished we had. It is the tool that assists with professional progression and helps to build trust in the broader advice we offer. FCCPM in its present form may not be perfect but professional organisations should have this 'tool' to promote our profession beyond technical excellence.

Best wishes
Tomas

NEW COMP MEMBERS

Please welcome the following new members who have joined COMP since our last issue:

Last Name	First Name	Institute/Employer	Membership Type
Alhakeem	Eyad	University of Victoria	Student
Bazalova-Carter	Magdalena	University of Victoria	Full
Blais	Danis	CHUM	Full
Bowman	Wesley	Dalhousie University	Student
Fan	Michael	Cancer Specialists of North Florida	Full
Frederick	Amy	University of Calgary	Student
Gholampourkashi	Sara	Carleton University	Student
Grouza	Vladimir	Odette Cancer Centre	Student
Hough	Cameron	University of Alberta	Student
Hubley	Emily	Tom Baker Cancer Centre	Student
Kim	Bryan	Jack Ady Cancer Centre	Full
Le	Vinh Nguyen Du	McMaster University	Student
Liu	Ming	Carleton University	Student
Martin	Peter	Western University	Student
Martin	Dominique	Hôpital Maisonneuve-Rosemont	Full
Montgomery	Logan	McGill University Health Centre	Student
Moradi	Hamid	Carleton University	Student
Mouawad	Matthew	Western University	Student
Murtha	Nathan	Dalhousie University	Student
Penner	Crystal	National University of Ireland	Student
Poon	Justin	University of British Columbia	Student
Rahmani	Slimane	Centre Hospitalier de l'Université de Montréal	Full
Rezaee	Mohammad	Princess Margaret Cancer Centre	Full
Singh	Khushdeep	Montreal General Hospital	Full
Timmaraju	Kanakadurga Phanisree	McMaster University	Student
Zerouali Boukhal	Karim	Centre Hospitalier de l'Université de Montréal	Full

Congratulations to our past student members who are now full members: :

Glass	Lisa	Allan Blair Cancer Centre
Paudel	Moti	Odette Cancer Centre

We wish the following COMP members a happy retirement:

Gerig	Lee	Ottawa, ON
Lewis	John	Winnipeg, MB
Patterson	Michael	Ancaster, ON
Rogers	Dave	Ottawa, ON
Subramanian	Hari	West Carrollton, OH
Szabo	Joseph	St. Catharines, ON
Wilcox	Ellen	Cheshire, CT
Wyman	Doug	Hamilton, ON

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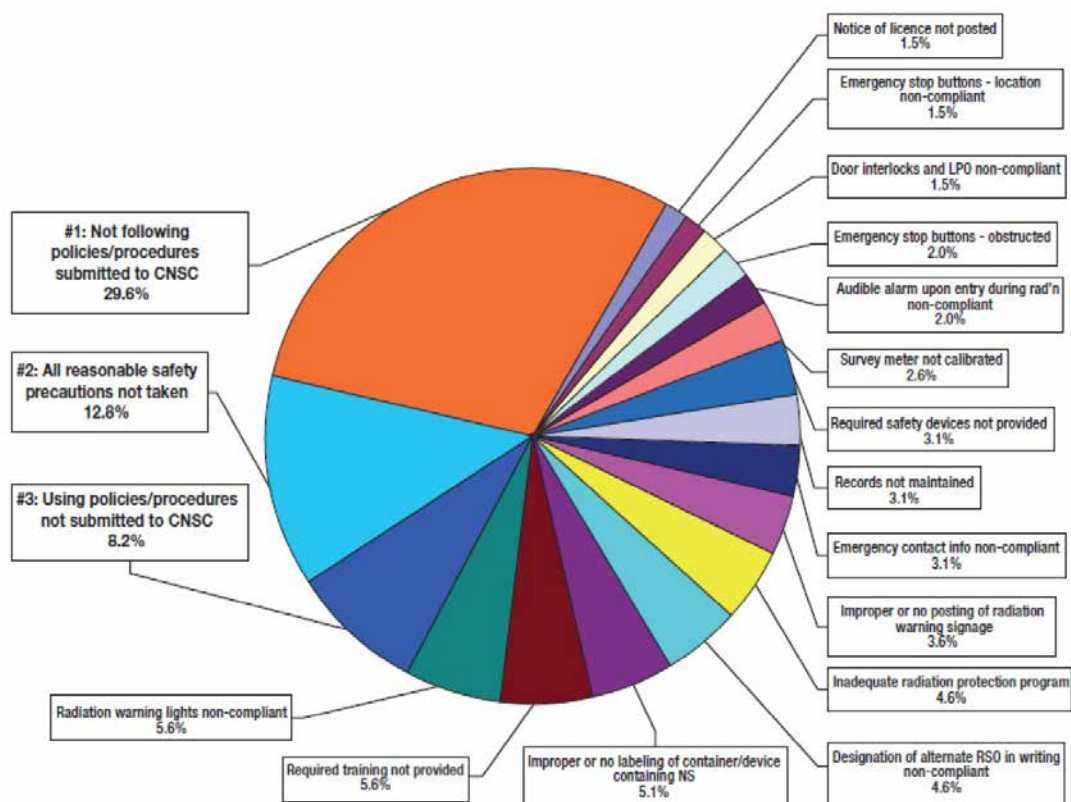
THE MOST COMMON NON-COMPLIANCES FOUND DURING INSPECTION OF CLASS II FACILITIES - UPDATE

Devon Foote

CNSC Co-op Student: Accelerators and Class II Facilities Division

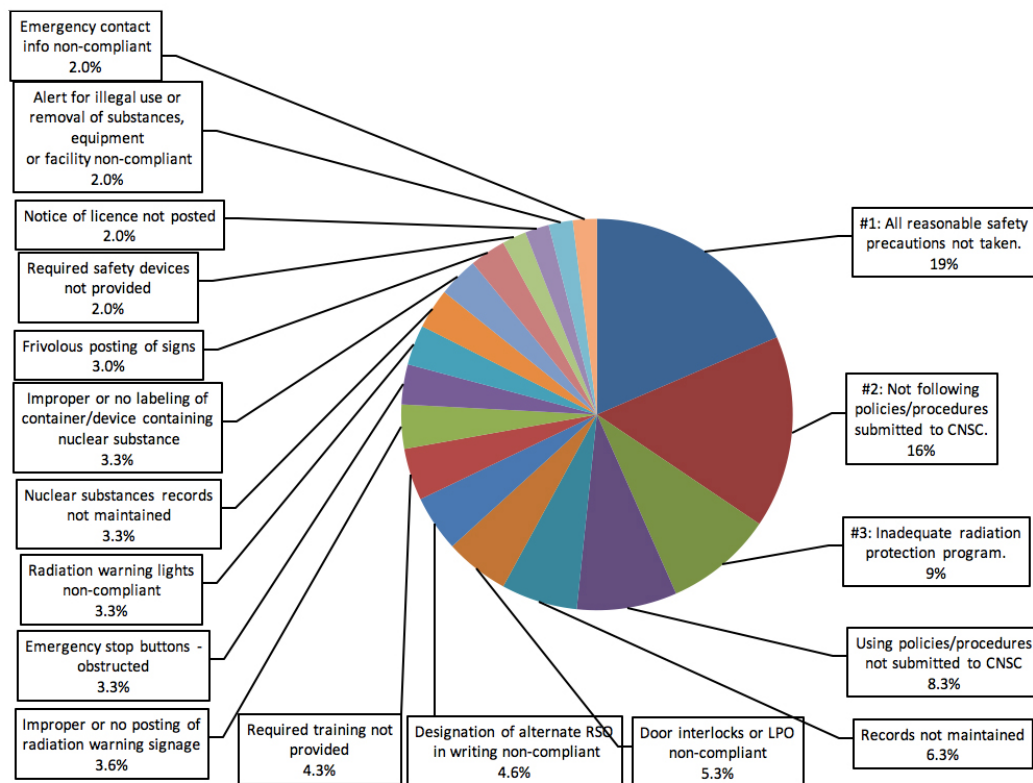
I was asked by colleagues in the Accelerators and Class II Facilities Division to update the non-compliance frequency list with the ultimate goal of being able to recognize and define the non-compliances that might result from a typical inspection. Using previously tabulated data, as well as data I compiled while looking through inspection reports issued over the past two years, I was able to notice trends representative of the most common cited non-compliances. This information serves as an update to the article from the April 2014 issue of InterACTIONS written by my colleague, Mike Heimann.

Frequency of Non-Compliances, by Regulation, Found During Inspection of Class II Facilities, 2011-2013



Results of the original study conducted in 2014

Frequency of Non-compliances, by Regulation, Found During Inspection of Class II Facilities 2013-2015



Results of the original study conducted in 2014

The data sample in the updated study followed similar parameters to those used in 2014:

- To keep the sample size manageable, but to ensure the data was still relevant, only inspection reports generated between January 2013 and December 2015 were included.
- Recommendations issued as a result of the inspection were not included.
- Only the most common non-compliances are listed. The threshold is a frequency of 2% over the sample period.
- 403 unique non-compliance occurrences were cited over the sample period. The frequency threshold for inclusion eliminated 101 non-compliances, leaving 302 to be represented in the chart.

Regulatory Reference	Regulation	Frequency (%, 2013-2015)	Frequency (%, 2011-2013)
GN 12(1)(c)	All reasonable safety precautions not taken	19	12.8
LC 2917	Not following policies/procedures submitted to CNSC	16	29.6
RP 4	Inadequate radiation protection program	9	4.6
LC 2920	Using policies/procedures not submitted to CNSC	8.3	8.2
CII 21(2)	Records not maintained	6.3	3.1
CII 15(2)	Door interlocks and LPO non-compliant	5.3	1.5
CII 15.1	Designation of alternate RSO in writing non-compliant	4.6	4.6
GN 12(1)(b)	Required training not provided	4.3	5.6
RP 21	Improper or no posting of radiation warning signage	3.6	3.6
CII 15(9)	Emergency stop buttons obstructed or not accessible	3.3	2.0
CII 15(5)	Radiation warning lights non-compliant	3.3	5.6
NSRD 36(1)	Nuclear substances records not maintained	3.3	N/A
RP 20(1)	Improper or no labelling of container/device containing nuclear substance	3.3	5.1
RP 23	Frivolous posting of signs	3	N/A
GN 12(1)(d)	Required devices not provided/maintained	2	3.1
GN 14(1)	Notice of licence not posted	2	1.5
GN 12(1)(g)	Alert for illegal use or removal of substances, equipment or facility non-compliant	2	N/A
CII 15(11)	Emergency contact information non-compliant	2	3.1

NOTE: GN = General Nuclear Safety and Control Regulations | LC = License Condition | RP = Radiation Protection Regulations | CII = Class II Nuclear Facilities and Prescribed Equipment Regulations | NSRD = Nuclear Substances and Radiation Devices Regulations

Comparing this data to the previous study shows that as much as things change over time, they are equally prone to remaining the same. In other words, despite the overall changes to the frequency of occurrence or to which non-compliances showed up in the study, the majority of the most frequent non-compliances are still present in the top tier. This is especially true for the two most commonly occurring non-compliances, which, over the course of the study, consistently remained in, or near, the top spots. Changes to the frequency of the remainder of the non-compliances can be attributed to a shift over time of regulatory focus by inspectors, the adoption of different technology by licensees, or the addition of new technology. Perhaps it could even be attributed to the release of the previous study, or outreach/education sessions held between licensees and the CNSC.

To the holder of a Class II Facility License, this information can provide insight into where attention should be focused when reviewing radiation protection programs. If nothing more, this data indicates that many licensees face similar challenges when it comes to ensuring that their programs remain compliant.

UPDATE FROM THE BC ASSOCIATION OF MEDICAL PHYSICISTS (BCAMP)

Parminder Basran,
BCCA-Vancouver Island Centre

THE COLLEGE OF DIAGNOSTIC AND THERAPEUTIC HEALTH PROFESSIONS WORKING GROUP

Over the last year, the BCAMP Task Group on Professional Matters has been actively working on regulating the profession of “Medical Physicist.” The focus of activity has been largely the Coalition for a Joint College of Diagnostic and Therapeutic Health Professions, after the BC Ministry of Health responded to BCAMP that they will not consider establishing a separate college of medical physicists. This Coalition consists of a large number of professions that are not recognized as professions within the existing Health Care Professionals Act (1996), including medical radiation technologists, laboratory technologists, cardiology technicians, pulmonary technologists, and respiratory therapists.

Momentum for establishing an “umbrella” college gained momentum over the last few years through a receptive ear of the government, who proposed the coalition draft legislation for consideration.

Because of the wide scope of professions covered in this umbrella college, it became clear that more granularity of professions, based on educational requirements, training, certification, and extent of supervision, was required. A test for establishing the ‘designation’ was created by the Coalition consisting of the distinct classes of professions: a Unique Profession, a Separate Registered Class, an Advanced Practice, or Support Personnel.

BCAMP approved funds to apply the designation for medical physicists. A report of that application yielded the following recommendations for the coalition’s consideration:

(a) Medical Physicists be recognized within the College as part of the new broad

profession of diagnostic imaging and radiation medicine;

(b) Medical Physicists be recognized as a new and separate class of registrants within the profession of diagnostic imaging and radiation medicine;

(c) Medical Physicists be granted the restricted activity of “to issue an instruction or authorization for another health professional to apply ionizing radiation to a named individual for the purposes of controlling or curing a cancer or tumour”, and that this activity would be triggered by an order of a medical doctor.

Furthermore, the report recommends that medical physicists should be regulated under the Health Professions Act along with other diagnostic and therapeutic health professions proposed by the Coalition.

After two town-hall information sessions, BCAMP held a special meeting of the members to determine whether BCAMP should formally join the coalition in March 2016. BCAMP members overwhelmingly voted in favour of the motion to formally join the College of Diagnostic and Therapeutic Health Professions Working Group.

SOME USEFUL RESULTS FROM THIS EXERCISE

A concise draft definition of a medical physicist scope of practice was developed. It should be noted that the scope of practice published on the COMP website proved to be quite helpful in creating the (required) succinct definition of our profession:

Medical Physicists are health professionals responsible for assuring the safe and effective delivery of radiation to achieve a diagnostic or therapeutic result by overseeing and managing technical aspects of the use of radiation in medical applications; implementing and overseeing quality assurance programs for accurate patient dosimetry and quality imaging; and, assuring compliance with relevant legislation and regulations.

The task group identified a significant restricted activity that was not protected: the application of radiation for therapeutic purposes. This has resulted in a modified restricted activity to include therapeutic uses of radiation:

To issue an instruction or authorization for another person to apply, to a named individual ... x-rays for diagnostic, therapeutic or imaging purpose, including x-rays for the purpose of computerized axial tomography.

The task group has also suggest a new restricted activity, which may be necessary for radiation oncology physicists involved in procedures such as brachytherapy and radiosurgery:

To issue an instruction or authorization for another health professional to apply ionizing radiation to a named individual for the purposes of controlling or curing a cancer or tumour.

PROS AND CONS FROM JOINING THE COALITION

Added Costs and Administration

Clearly, a significant factor for joining the coalition is the cost of creation, registration, and operation of a college. It remains to be seen how this new umbrella college will look, operate, and cost. The total number of registrants in the coalition would likely approach ~17K health care professionals, resulting in annual fees somewhere in the \$500-\$1000 range. There will be significant start-up costs associated with establishing the college in the \$4-5K range, associated with registration, legal, and administrative fees.

Benefits of Joining Now

By joining the coalition now, BCAMP is represented in the overall creation, management, and operation of the college. Some of BCAMP concerns which must be addressed include: devising the method for assessing qualifications for medical physicists, exploring the need and/or processes for grandfathering MPs currently employed without certification, developing disciplinary process/procedures for medical physicists, and ensuring equitable cost-recovery in fees.

Necessity for Certification

As a regulated profession, medical physicists must produce evidence of competency in order to practice in a hospital setting. The task group recognizes bodies such as the CCPM can sufficiently gauge competency, but such bodies have no legal authority to regulate practice. Consultations with the CCPM will be needed to make administrative issues as seamless as possible for BCAMP members.

Gap between Resident and Certified Medical Physicist

An important difference in our profession when compared to others (in the joint college) is that medical physicists could perform restricted activities before they have obtained certification (eg, by CCPM). For most professions, a protected activity cannot be performed without certification, or must be done under direct supervision of a licensed medical physicist. The college will need to work

with employers and possibly the CCPM on further clarifying roles and responsibilities during those transitory periods.

Working with the College of Physicians and Surgeons

The other avenue for pursuing title protection was through the College of Physicians and Surgeons. There were a few reasons why this was not pursued:

- While there is specific mention of medical physicists within the Diagnostic Accreditation Program within BC (www.dap.org) and the activities they undertake, there is no exclusive title protection of the phrase “medical physicist.” The College of Physicians and Surgeons would need to be sufficiently convinced that it is in the college’s best interest to protect the title of “medical physicist”
- It is not clear whether title protection in itself could be possible through specific agreements and/or contracts the college has with the Province of British Columbia for all practicing medical physicists. There are restricted activities for diagnostic medical physicists within the Diagnostic Accreditation Program (DAP) of the College of Physicians and Surgeons. The DAP defines a medical physicist through their certification (via CCPM for mammography, DX, NM, MRI, etc). It could be possible for there to be an equivalent “Therapeutic Accreditation Program” document which could restrict activities in radiation oncology, however, such title protection - nor protection of activities - doesn’t appear to be of concern for (salaried) radiation oncologists employed by BC Cancer Agency.
- The College of Physicians and Surgeons of BC have significantly higher administrative costs and it is possible that the costs of running a college for medical physicists may be higher than through the coalition.
- Other professions do not have title protection with the BC College of Physicians and Surgeons, even though there may be a need for it (ex: microbiologists, pathologists, etc.).

Since its inception in 2003 *a raison d’être* of BCAMP was to explore title protection of the profession of medical physicist. There was opportunity to join the coalition within draft legislation prior to the public consultation phase of legislation, which forced BCAMP to move quickly. Whether medical physicists become a separate registered class and details on the operation of a coalition college remains to be seen, but BCAMP has embarked on a pathway for protecting the title of medical Physicist - and the possibility of regulating the profession itself - within BC.

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UPDATE FROM THE ASSOCIATION OF MEDICAL PHYSICISTS IN ALBERTA (AMPA)

Joel St. Aubin, Cross Cancer Institute
Charles Kirkby, Jack Ady Cancer Centre

The Association of Medical Physicists in Alberta (AMPA) has been issued a mandate from its membership to seek the professional regulation of medical physicists under Alberta's Health Professions Act (HPA) for some years now. Professional regulation is seen as a means to ensure the highest quality care in our clinical service. It would establish a provincial college that could independently define a scope of clinical practice, regulate those who may conduct that practice, and potentially restrict the practice of certain activities to those registered with the college. Most of our professional peers in Alberta, including physicians, radiation therapists, and nurses, are already regulated under the HPA.

One of the key obstacles identified by a previous application submitted in 2011 was our small numbers. Only about 40 medical physicists currently practice across Alberta. The administrative workload of operating a professional college, and the cost of potential investigations and disciplinary committee hearings (involving legal council) were deemed prohibitive to our ability to form an independent college.

Since 2014, AMPA has worked jointly with the Alberta Association of Clinical Laboratory Doctoral Scientists (AACLDS) – a group of similar numbers comprised of scientist-clinicians working in medical genetics, clinical biochemistry, clinical microbiology, toxicology, and immunogenetics – toward a common goal of professional regulation for both of our groups.

To solve the small number problem, together with AACLDS, we have approached the College of Physicians and Surgeons of Alberta (CPSA) to act as our provincial college. The CPSA is already the provincial accreditation body for ionizing radiation devices below energies of 1 MeV and our groups share common professional ground with physicians and surgeons, including a balance of clinical and academic responsibilities, and the extensive training involved in our professions. Both the CPSA and the Government of Alberta have been receptive to this initiative.

In October of 2015, AACLDS and AMPA submitted a joint application on behalf of our professions to the Government of Alberta. We have recently learned that Alberta Health expects to begin the process toward amending the Health Professions Act as early as the fall this year.

For updates from AMPA, please visit:
<http://www.abmedphys.com>.



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STUDENT EVENTS AT THE 2016 COMP ANNUAL SCIENTIFIC MEETING

COMP Student Council

THE STUDENT NIGHT OUT

Thursday, July 21st at 8 pm (after the Poster Reception)

Come and join fellow students from across the country at the social and fun-filled student night out! Hosted at an authentic Atlantic pub, your appetizers, meal, and first drink will be covered. This is a great opportunity to chat with students as well as a few members of the COMP and CCPM boards! Stay tuned for the location, and we look forward to seeing you in St. John's!

2016 STUDENT COUNCIL ELECTION

The COMP Student Council (SC) is led by a chair and vice-chair. It is their responsibility to officially represent the COMP student membership on the Science and Education Committee and to call regular meetings of the SC. Annually, the vice-chair is promoted to the position of chair (the previous chair steps down) and an election is held to select a new vice-chair. Eligible nominees must have been active members of the COMP SC for a minimum of six months. Ballots will be given out at the beginning of the Young Professionals Workshop, and will be collected at the end of the workshop (Wednesday July 20th, 2016) at the Annual Scientific Meeting in St. John's, Newfoundland. Every student member of COMP is eligible to vote.

If you are interested in joining the Student Council, or for any other feedback and ideas, please send an obligation-free email to our current chair (Olga Dona, donaleom@mcmaster.ca). We always love to hear your opinions!

The 2016 Nominees for student council vice-chair are Patricia Oliver and Sahar Darvish-Molla.

My name is **Patricia Oliver**, and I am a PhD candidate at Carleton University in Ottawa, where I work on Monte Carlo simulations for radiation dosimetry. Previously, I obtained my BSc in physics from Dalhousie University. I have been a member of the COMP student council since 2015, where I have had the opportunity to help with organizing student events for the current meeting, and have become



familiar with the organization through my position as one of two secretaries. I have previous experience in student leadership as graduate representative for the Academic Integrity Appeals Committee at my current institution. Since 2014, I have carried out various science demonstrations at schools around Ottawa through the 'Let's Talk Science' organization. As vice-chair, I would strive to represent the student voice within COMP, and would continue to aid the council in organizing events, securing funding opportunities for students, and providing avenues for student collaboration and networking.

Sahar Darvish-Molla

is a PhD candidate at McMaster University, who has been working as a research assistant in the Department of Medical Physics and Applied Radiation Sciences since 2010. Her primary area of research has focused on the radiation detection, Dosimetry, and detector development. Sahar



joined the Student Council in 2015 while attending the World Congress on Medical Physics and Biomedical Engineering held in Toronto, where she started to volunteer and get involved with COMP SC. Since then she has been actively participating in SC regular meetings as the secretary. As being a student for about six years in medical physics, she is aware of what students needs to know and how crucial is the networking and communicating with the leaders in this field to keep students up to date, specifically for their future career perspective. If she is elected, she is looking forward to becoming more involved with advancing the goals of:

- Encouraging more undergraduate and graduate student members to join SC and having their invaluable contribution to grow this sub-committee of the COMP Science and Education Committee.
- Being all ears to students from a non-CAMPEP programs and conveying their concerns about their future career to the related authorities for the possible solutions or alternatives.
- and, being the voice of students within COMP to provide the opportunities for students to create their own LUCK.

A DEDICATED TEACHING AND RESEARCH LINAC TO INTRODUCE MEDICAL PHYSICS TO STUDENTS

Luc Beaulieu^{1,2,3}, Luc Gingras³, Mathieu Bergeron⁴, Louis Archambault^{1,2,3}

¹Département de physique, de génie physique et d'optique, et Centre de recherche sur le Cancer, Université Laval, Québec, Canada

²Centre de recherche du CHU de Québec – Université Laval et Axe oncologie, CHU de Québec, Québec, Canada

³Département de Radio-oncologie, CHU de Québec – Université Laval, Québec, Canada

⁴Département de Radio-oncologie, CÉGEP de Ste-Foy, Québec, Canada

Teaching and research time on a medical linac is often severely constrained in our busy clinical environments. On the one hand, the device must always be in a clinically ready state for patients, and on the other, any addition or modifications to the device or its software must be FDA approved. From an education perspective, these constraints limit the type of teaching that can be performed directly on a clinical linac as well as the length of time we can offer to students for 'hands-on' experiments.

A tri-institutional collaborative effort composed of Université Laval (via its CAMPEP medical physics program), CÉGEP de Ste-Foy (therapist training program) and the Department of Radiation Oncology of CHU de Québec was put together to request to the Ministry of Education (not Ministry of Health) and build an infrastructure around a linac fully dedicated to the teaching of therapists and medical physicists, as well as research projects by the institutions involved. The infrastructure and approach described in the following significantly change the teaching aspect and brings back sciences and engineering as central components, rather than simply following Task Group recommendations or in-house check lists.

This decade long project to promote the benefit of financing such educational facility in an area where all of the major training programs in radiation oncology are concentrated with a few miles of each other, finally received full financing early 2010. The excavation started in the summer of 2012 and the linac was delivered in the winter of 2013. The dedicated teaching linac facility was officially inaugurated early 2014, after years of effort. The infrastructure and bunker all meet and exceed the same radiation safety regulation as any treatment linacs and mirror perfectly all of the standard features found in hospital settings.

The facility is composed of a fully equipped and functional state-of-the-art Varian TrueBeam linac and a complete set of physics instruments (ion chambers and a dual channel electrometer, large scanning water tank, small motorized water tanks, MatriXX, etc.), QA phantoms for both the linac and imaging devices (EPID and CBCT), as well as breathing motion management phantom. The linac bunker and treatment console are oversized such that a class of 12-15 can comfortably fit, seated if needed for longer sessions (Figure 1).

A three credit undergraduate laboratory course that includes medical imaging (DeskCAT scanners), isotope production using a Be-Am neutron source, x-ray source characterization (mAs, kVp, and filtering), and many others, including an introductory linac laboratory was created. The latter is composed of one general 4-hours session for all and a weekly 4-hours session for teams of two students. The general session includes a hands-on presentation of the linac, its environment, and a formal safety and radiation protection course (with an exam). Since the winter of 2015, senior undergraduate (total of 15) pursuing either the medical physics or the biomedical engineering tracks of their undergraduate programs can register for the course. This requirement is to ensure that all students have the proper theoretical background to tackle the various experiments. At the linac, the students are allowed full control of the experiments, including setting up the small-motorized water tank, ion chambers with the electrometer, and initiating irradiation at the console (Figure 2). Supervisor intervention is limited to the safety concerns for students or the equipment only. Measurements of output factors using two chambers (regular and small field) for various field sizes (1x1 - 30x30 cm²) and of detailed depth-dose curves for 6 MV, 6 MeV, and 12 MeV beams are to be performed and discussed in a formal report.

Similarly, the experimental laboratory course part of the CAMPEP graduate medical physics program was enhanced by providing a full week access to the linac, cover-off (see Figure 1), where all linac sub-systems can be studied in details from a theoretical perspective and followed by hands-on training on the linac with modification of linac software potentials, beam optics (tuning), and so on. This component is further open to our medical physics residents. Next year, will be open also to the NSERC CREATE collaborative training program we have formed with the McGill CAMPEP graduate program.

Not surprisingly, full access to, and control of, a linac is a high point of the undergraduate course. It provides a glimpse of medical physics and generates an experimental background for those continuing to CAMPEP programs. This dedicated, non-clinical facility

further enables enhanced teaching and research activities that are not possible with a clinical device. This was clearly shown in the enhanced, multi-days linac laboratory course as part of the CAMPEP program. Outside of the teaching periods, the linac is accessible for research projects by the therapists and graduate students, and allows for experiments spanning multiple days. It must be emphasized that the facility provides unique research opportunities for the partner institutions and trainees (mainly graduate students) since this non-clinical linac can host technologies and software that have not yet received FDA, EU, or Health Canada approval.

Finally the infrastructure has proven to be an incredible showcase opportunity to outreach programs for pre-university students.



Figure 1. The linac room. The TrueBeam linac with cover-off can be seen in the background. The room is large enough to provide formal teaching space with students seated. While a sub-system can be explained from a more theoretical perspective, the hands-on for the same sub-system is only a few steps away in the same room. The room is accessible multiple days in a row. Developer mode is accessible to demonstrated particular aspects.

Figure 2. The treatment console set-up with the electrometer for the undergraduate experiment. The in-room cameras are pointing to the small-motorized water tank. The motor can be controlled from this room (controller not shown in the picture). The students are responsible to select the beam energy, field sizes, monitor unit and start the irradiation as well as setting the depth of the ion chamber for measurements and starting the electrometer. Large monitors on the wall, mirroring the two small monitors and the treatment console, allow for demonstration to large group.



COMP ANNOUNCES NEW AWARD

Scientific papers written by COMP members have had a tremendous impact on the field of medical physics. To recognize the authors of such influential papers, the Board decided to establish a new award, the Publication Impact Prize. A subcommittee of the Awards Committee was struck to draft a process for determining an annual winner which was then approved by the Board.

Peer-reviewed papers published in any scientific journal in the last ten years will be considered; for example, papers published in 2006 – 2015 were eligible for the inaugural 2016 prize. At least one author must have been a COMP member at the time of publication and the work must have been performed mainly at a Canadian institution. Review papers, task force reports, opinion pieces, and standards documents are not eligible, and publications must represent a significant advance in medical physics. Decisions about eligibility will be made by the Publication Impact Prize Subcommittee. The winner will be the eligible paper that has received the most citations in the Web of Science maintained by the Institute for Scientific Information (ISI) including citations from all data bases. A paper can win the prize only once even if it continues to be the citation leader.

The winner of the inaugural prize for 2016 will be announced at the Annual Scientific Meeting in July.

1ST COMP WOMEN'S COMMITTEE LUNCHEON DURING 2016 ASM: COME JOIN US!

Scientific papers written by COMP members have had a tremendous impact. As announced earlier, a COMP Women's Committee (CWC) was initiated to further our building of a strong medical physics community. It is our pleasure to inform you that the CWC has been officially formed with national representation and meets bimonthly. Our 1st official event will be a luncheon during the 2016 ASM in St. John's, Newfoundland. During this meeting, you will have the opportunity to express yourself and actively participate in shaping your committee. Also, a survey is in preparation to gauge what you expect from such a committee so that it can best meet the needs of our community. We would love to hear from you, so please come and join us on Thursday at lunch for the meeting. There will be a fun game to cheer up participation. More details to follow on the ASM website and on social media. For any other feedback, ideas, or comments, please send an email to our current Chair (Nadia Octave, nadia.octave@mail.chuq.qc.ca). See you in St. John's.

MAKE NOTES, NOT JUST MEMORIES: HOW DOCUMENTATION CAN BE YOUR BEST DEFENCE

Robyn Grant, Lawyer and Partner at Borden Ladner Gervais LLP
and **Madeeha Hashmi**, Summer Student at Borden Ladner Gervais LLP

As professionals who engage in patient care, healthcare providers are typically aware of the important role that documentation plays in the clinical context. Hospital records serve as a common source of patient information and direction for all persons who are involved in the circle of care for a patient. Proper healthcare documentation is necessary to ensure that a patient's clinical notes and records communicate the relevant facts and information about such things as the patient's condition, treatment plans and chronology of care in a clear and accessible manner. If records are kept correctly and consistently, information required when making treatment decisions is readily available and helps maintain the best standard of care for patients.

Healthcare documentation plays a similarly crucial role in the legal context. In the presence of a lawsuit involving past patient care, any documentation about the patient's care at issue becomes evidence. The legal process often requires referring to past occurrences and recalling details about a patient's course of treatment. Memories are rarely precise when some duration of time has passed, and often, memories of past care do not exist. In comparison, accurate records that were made contemporaneous to the care given are a much more reliable basis for establishing the quality of care that was provided throughout a healthcare practitioner's interaction with a patient or at certain points in the patient's medical history. Courts rely on medical records for their credibility and use them to reconstruct the past, viewing them as proof that certain events did or did not take place.

This is not to say that documentation is the only source of evidence that is relevant or will be considered when past care is being considered in the legal context. Testimony as to a healthcare professional's usual practice and any memories can also be persuasive. However, as referenced above, the reality is that memories fade over time, and often lawsuits take years to be commenced, and/or progress through the legal system.

Because documentation is regarded as an authority, good record-keeping practices can be the foundation for a strong defence in legal matters. Each instance of note-taking should be done contemporaneously, or as close to the time that care was provided. In addition, notes should explain clearly all of the following that apply: what happened and/or what action was taken, to whom it happened, when it happened, why it happened, and the outcome. These details should be conveyed in a manner that makes them apparent to anyone who may need to use the record for a clinical or legal purpose. Problems can arise when records do not accurately, or in enough detail, contain the information required to reasonably reconstruct the past course of care and treatment for a patient. By way of example, let's consider a couple of Court decisions in which the Judge presiding considered documentation issues.

In the trial level decision in *McIntyre v Health Sciences Centre*, a patient sued an oncologist and medical physicist in relation to brachytherapy treatment she received in the vulva and perianal area. The treatment required an iridium implant of radioactive seeds to be placed in ribbons below the skin. The patient claimed that the radiation was excessive and she suffered serious burns, which required plastic surgery. Her claim against the physicist, Mr. Soubra, was that he failed to input seed activity into the computer when making calculations and failed to deliver an appropriate treatment plan. The Court found that there were no electronic records to demonstrate that Mr. Soubra had taken seed activity into account. Additionally, some of his treatment plans were unavailable, either because they had been lost or destroyed. Mr. Soubra was found negligent in failing to properly carry out his calculations and in failing to produce plans that would allow an appropriate radiation dose to be set.

One might suggest that Mr. Soubra may well have avoided the finding of negligence against him if he had instituted and/or followed a standard documentation procedure. Had Mr. Soubra

cultivated the habit of always tracking certain information in computer entries or notes, he would have had a better basis for proving that he had satisfied the standard of care. By developing and following a routine series of steps for note-taking, a healthcare provider can probably ensure that the required documentation will be present if their memory fails them.

In the Ontario Superior Court of Justice Case, *McClintock v Alidina*, which involved allegations that certain mammogram results were not followed up on, Dr. Alidina testified that as soon as a mammogram report recommending subsequent imaging was received by her office, she instructed one of her staff to call Ms. McClintock to book a follow-up appointment. Ms. McClintock's patient record had the notations "L/M 22/9/00" and "L/M 24/9/00," which were meant to indicate that two messages were left for the patient, but these markings were not initialled. Dr. Alidina was inconsistent in her account of who called to leave these messages and whose notations were found in the record. Ms. McClintock reported that she did not receive any messages regarding a follow-up appointment and that she did not have an answering machine installed in her home in 2000. In 2005, a cancerous lump was found after Dr. Alidina ordered an emergency mammogram when Ms. McClintock complained of a dent in her left breast. The Court found Dr. Alidina negligent for failing to follow up properly with Ms. McClintock after the mammogram in 2000.

Dr. Alidina's defence suffered due to poor documentation practices. She was unable to give a consistent account that could be verified through medical records, and her testimony was consequently found to be unreliable by the Court. Healthcare practitioners can take steps towards avoiding being in a position like Dr. Alidina was by establishing guidelines for the use of abbreviations, initialling, and the level of detail to be included in records in connection with ensuring that all of the relevant information is clearly communicated.

Based on the experiences of Mr. Soubra and Dr. Alidina, it is evident that taking the time to set up and follow good documentation practices can have a significant impact on the outcome of legal proceedings involving a healthcare practitioner. Reviewing these Court decisions shows us that making careful notes on a regular basis serves the dual purpose of contributing to a high standard of patient care as well as potentially providing a reliable account of events when faced with legal action.

¹ While this decision was reversed on appeal, the principles relating to documentation discussed by the Court remain relevant.

² *McIntyre v Health Sciences Centre*, [1995] MJ No 347, 105 Man R (2d) 199 (QB), rev'd [1997] MJ No 118.

³ *McClintock v Alidina*, 2011 ONSC 137, [2011] OJ No 49 (QL).

2015 – 2016 MEDICAL PHYSICS GRADUATING STUDENTS

Student	Thesis Title	Supervisor(s)	University
MSc			
Raanan Marants	RADPOS system as a dose and position quality assurance tool for 4D radiotherapy with CyberKnife	Joanna Cygler	Carleton University
Nima Sherafati	Kilo-voltage x-ray correction factors for in-water measurements based on TG-61	Dave Rogers	Carleton University
Zaki Ahmed	Quantitative perfusion mapping using a novel reference region-based model for DCE-MRI	Ives Levesque	McGill University
Eric Christiansen	Calculation of correction factors for three detectors in small composite clinical fields for the CyberKnife	Eric van der Voort, Jan Seuntjens	McGill University
André Diamant-Boustead	Modelling lung SBRT treatment outcomes using Bayesian network averaging	Norma Ybarra	McGill University
Lalageh Mirzakhani	Investigation of the uncertainties involved in the low energy proton interactions in Geant4	Shirin Enger	McGill University
Kyle O'Grady	Monte Carlo modeling of the Varian TrueBeam linear accelerator, with chamber effects included in determination of the source parameters	Stephen Davis	McGill University
Shu Xing	Diffusion weighted magnetic resonance imaging in the characterization of soft tissue sarcoma	Ives Levesque	McGill University
D. Breitkreutz	Effect of J coupling on 1.3-ppm lipid methylene signal acquired with localised proton MRS at 3T	A. Yayha	University of Alberta
Alexandra Bourguoin	Caractérisation du détecteur à fibre scintillante plastique commercial et étude sur la réduction de dose aux appareils cardiaques implantables par blindage de plomb	Louis Archambault	University of Laval
Marie-Chantal Gagné	Élaboration de métriques basées sur la géométrie pour la planification de traitements en radiothérapie par modulation d'intensité à l'aide de l'analyse de frontières stochastiques	Louis Archambault	University of Laval
Jean-François Montégiani	GPU pour le traitement de tumeurs neuroendocrines à l'aide du ^{177}Lu -octroïtate	Philippe Després	University of Laval
Graham Schellenberg	An algorithm for automatic crystal identification in pixelated scintillation detectors using thin plate splines and gaussian mixture models	Andrew Goertzen	University of Manitoba
Geng Zhang	An algorithm for the simultaneous reconstruction of the radionuclide activity distribution and attenuation map based on PET scatter data	Stephen Pistorius	University of Manitoba
Magali Besnier	Segmentation du rein fonctionnel à partir de CT double énergie injectés		Université de Montréal
Nicolas Côté	Utilisation de la tomomodensitométrie à deux énergies pour le calcul de dose en curiathérapie bas débit		Université de Montréal

Student	Thesis Title	Supervisor(s)	University
Vincent Cousineau Daoust	Accumulation de dose à partir de champs de déformation 4D appliquée aux traitements CyberKnife et à l'IMRT		Université de Montréal
Léonie Petclerc	Utilisation d'agrafes chirurgicales dans le suivi de tumeurs hépatiques appliquée à des traitements de radiochirurgie stéréotaxique par CyberKnife		Université de Montréal
Joanna Mader	Flattening Filter Free Photon Beams for Treatment of Early-Stage Lung Cancer: An Investigation of Peripheral Dose	A. Jirasek, A. Mestrovic	University of Victoria
PhD			
Marc Chamberland	Application of three-dimensional motion tracking of low-activity fiducial positron-emitting markers in radiation therapy and positron emission tomography	Tong Xu	Carleton University
Dal A. Granville	Development of a technique to simultaneously verify linear energy transfer and absorbed dose in therapeutic proton beam	Gabriel Sawakuchi	Carleton University
Elizabeth J. Orton	Extra-cardiac interference in myocardial perfusion imaging with rubidium-82 and positron emission tomography	Glenn Wells	Carleton University
Amir Pourmoghaddas	Quantitative imaging with a pinhole cardiac SPECT CZT camera	Glenn Wells	Carleton University
Matthew A. Rodrigues	Automation of the cytokinesis-block micronucleus assay using imaging flow cytometry for high-throughput radiation biodosimetry	Ruth Wilkins	Carleton University
Sangkyu Lee	System radiobiology modeling of radiation induced lung disease	Issam El Naqa, Jan Seuntjens	McGill University
Pavlos Papaconstadopoulos	On the detector response and the reconstruction of the source intensity distribution in small photon fields	Jan Seuntjens	McGill University
Éric Poulin	Conception et validation d'un système pour la planification et le guidage en temps réel des traitements de curiethérapie à haut débit de dose du sein	Luc Beaulieu	University of Laval
D. Anderson	Dosimetry and Biological Studies for Microbeam Radiation Therapy at the Canadian Light Source	BG Fallone, B. Warkentin	University of Alberta
M. Reynolds	Dose Response of Selected Radiation Detectors in a Magnetic Field	BG Fallone, S. Rathee	University of Alberta
Peter McCowan	In vivo patient dose verification of volumetric modulated arc therapy including stereotactic body radiation treatment applications using portal dose images	Boyd McCurdy	University of Manitoba
Hongyan Sun	An investigation into the use of scattered photons to improve 2D position emission tomography (PET) functional imaging quality	Stephen Pistorius	University of Manitoba
Moulay Ali Nassiri	Les algorithmes de haute résolution en tomographie d'émission par positrons: développement et accélération sur les cartes graphiques		Université de Montréal
Warren Campbell	Readout of polymer gel dosimeters using a prototype fan-beam optical computed tomography scanner	A. Jirasek, D. Wells	University of Victoria
Conor Shaw	Investigating the use of protein-targeted pegylated gold nanoparticle probes in the surface-enhanced Raman spectroscopy of cells	A. Jirasek	University of Victoria
Reid Townson	Enhancing the speed of radiotherapy Monte Carlo dose calculation with applications in dose verification	A. Jirasek, A. Mestrovic	University of Victoria

MESSAGE FROM THE COMP PRESIDENT

Continued from page 5

medical physics profession
and community is much better
because of it.

And for that, I would like to thank
each and every COMP member.

EXECUTIVE DIRECTOR REPORT

Continued from page 7

the Canadian Medical Imaging
Inventory (CMII) report enables
CADTH to work with health care
leaders, professional and clinical
societies, and other stakeholders
to identify and address critical
barriers to the effective use of
medical imaging. For a copy of the
report, please click here: [https://
www.cadth.ca/medical-imaging](https://www.cadth.ca/medical-imaging).

As well, recently the IAEA
approached COMP for help
updating the Directory for
Radiotherapy Centres (DIRAC),
a database hosted by the IAEA
([http://www.naweb.iaea.org/
nahu/dirac/](http://www.naweb.iaea.org/nahu/dirac/)). COMP has agreed

to coordinate the update of this
database and will be contacting
those who appear in the DIRAC
database as a contact for a
Canadian cancer centre or who
is the head of medical physics,
and requesting that they update
the information listed for their
particular centre. We thank you in
advance for your cooperation in
this project.

Our partnership with Sosido, the
online knowledge sharing platform
for professional healthcare
associations and their members,
is now well underway, and you
should be receiving a weekly

e-broadcast. We hope the
e-broadcast is of value to you,
and we welcome your thoughts
and feedback. Of course if you
don't wish to participate, you are
provided with an opportunity to
opt-out.

Thank you for all of your support
and participation – I look forward
to seeing you in St. John's! Please
contact me anytime with ideas and
feedback.

DATES TO REMEMBER

July 20th-23rd: COMP Annual
Scientific Meeting, St. John's, NL

July 27-29th: Women in Physics
Canada Conference, Saskatoon, SK

July 31-Aug 4th: AAPM Annual
Meeting, Washington D.C., USA

Oct 5-7th: Course on Monte Carlo
Techniques, based on the 2003
Taylor & Francis Book, Maastricht,
Netherlands

Nov 14-15th: Innovations in
Radiation Engineered Therapy,
Sunnybrook Health Sciences,
Toronto, ON

Nov 16-17th: Innovations in
Cancer Therapy & Response
Monitoring, Sunnybrook Health
Sciences, Toronto, ON

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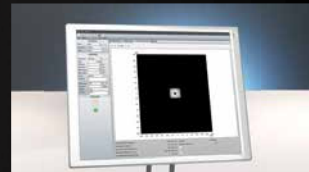
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AND THE DOSE WILL BE ON TARGET FOR
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