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On the Cover: L to R: Dave Mellenburg, Mary Coffey, Michael Brundage, Jean-Yves Fiset, Stan Mansfield, Jan Davies, Todd Pawlicki, Joanna Cygler, François Chiocchio, and Mona Udowicz. Missing from the photo are Laurie Hendren and Ward Flemons who were unable to attend the full Winter School due to other commitments.



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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

As I hope all of you are aware, COMP and the Canadian Medical and Biological Engineering Society (CMBES) are hosting the World Congress of Medical Physics and Biological Engineering in Toronto, June 7 – 12. Not to overstate the significance of this event, but to my knowledge, this will be the biggest and most significant event COMP has ever taken a leading role in organising. As of this writing, we have over 1700 proffered abstracts (and counting) going into 19 tracks, as well as 200 Continuing Education abstracts and 100 exhibitors from 86 countries representing all corners of the World. FIFA may have over 200 member countries, but it seems that medical physicists and biomedical engineers can also bring in a large international delegation.

As well as a fantastic scientific program, there will be an extraordinary program of invited and plenary speakers featuring world leaders in areas such as cancer control, bioinformatics, human factors, gender innovations in health & technology, health and the urban environment and technologies for the next generation healthcare. Among these speakers is Jeff Immelt, the CEO of General Electric, one of the most important technology companies in the world. We are delighted he is coming to Toronto just to talk to medical physicists and biomedical engineers about technology in healthcare. The plan of the organising committee has always been to prepare a meeting that will be of interest to anyone who has thought about how human health and technology

relate to each other. This means any type of technology used in hospitals, as well as in the community and broadly in society. The slogan for the meeting is Health * Technology * Humanity, which I think perfectly reflects both the intent of the meeting, but also how physicists and engineers can uniquely contribute to improving peoples lives by doing what only we can do.

When one thinks of better healthcare, we may think of things like less invasive surgeries, better drugs, or understanding the biology of diseases. I would suggest that behind all of this is some sort of medical device that is critical to the success of the medical problem. Today, technology in healthcare is as important as any other aspect of medicine. It is with this thinking in mind that this world congress has been organised. The breadth of topics that will be discussed will literally cover all areas of medicine as well as related areas where technology is used, such as informatics, public health, and gender issues.

I have been personally involved in the planning of this event since the spring of 2009, when the idea first came to the COMP Board. However, the planning of this event has been a tremendous collaboration between a very large number of individuals from COMP, CMBES, and internationally. Most notable is the tremendous contributions of the co-chairs, David Jaffray and Tony Easty, who deserve great credit for their commitment and vision of this event. For about 18 months now, a very dedicated group of individuals



Marco Carlone

have been attending weekly conference calls (or more often in many cases) to prepare this complex event. I would like to thank the following COMP members for their outstanding volunteer efforts: Crystal Plume Angers, Jean-Pierre Bissonnette, Parminder Basran, Jerry Batista, Luc Beaulieu, Young Lee, Marc Mackenzie, Doug Moseley, Nadia Octave, Horacio Patrocinio, John Rowlands, Mike Sharpe, Jake Van Dyk, and Conrad Yuen.

I hope that you will be able to attend the World Congress, not only because it will be the best medical physics meeting you have ever attended, but also because I would like as many COMP members to share in what I hope will be COMP's world coming out party. In Canada, we all know that COMP members have a history of punching well above our weight in contributing to the science and profession of Medical Physics. I would like you to join me in Toronto so that we can show it to the world.



Message from the CCPM President

I want to begin this column with an important note. In my last column, I stated "...that next year's membership exam will be the last chance for persons who have not completed a CAMPEP-accredited graduate program or residency to obtain certification by the CCPM." It was only hours after this hit the press that I was contacted by concerned individuals seeking clarification. The CAMPEP requirement applies only to those persons seeking certification in the Radiation Oncology Physics sub-specialty. I apologize for the oversight and any undue concern it might have caused, and I thank those who brought it to my attention.

Likely related to this new requirement is the fact that we have received a larger than normal number of applications for membership this year. This will keep our board members busy but it is nice to see the College continue to grow at a healthy pace.

Two important initiatives that I reported on last time are still underway; these being the review of the CCPM Fellowship distinction and the establishment of an alternate pathway for certification. Progress on these has been steady, but these are large projects that will take some time to come to fruition. The issues are complex and controversial, so all aspects will be carefully studied by the board prior to making any final recommendations.

By now, you will have received an opportunity to respond to a survey about the Fellowship issue. We are hoping to get an accurate reading on the feelings of our members about the value, relevance, and appropriateness of the Fellowship distinction and the process by which it is bestowed. The results of the survey and the feedback we have already received

will guide the Board in formulating a strategy for dealing with the Fellowship issue. Please be patient and rest assured that if you have submitted comments to the review panel, they have been and will continue to be taken into consideration in this process.

Switching topics now, I want to bring to the attention of our members some information for those who might be considering retiring in the next few years. This is one area that has been clarified in our new Regulations, which replaced our old Policies and Procedures last year.

Our old policies and procedures were unclear about the requirement of a member to be employed in order to retain his or her status as a certified physicist. The College recognizes that some members may want to work on a casual or reduced work time basis after they officially retire, and they would like to maintain their certification status while doing so. One of our new Regulations states "Members retain their certification status and are listed in the registry until they fail to recertify or fail to renew their COMP membership, whether or not they are employed".

In order to recertify, a member must have been employed at least 40% FTE over the previous five years. However, once recertified, a member normally retains his or her certification status for a period of five years. During this time, there is no requirement to maintain any particular level of employment. Members who retire have the option to retain their certification status until their next recertification date, providing certain conditions are met. In practice, this means that if members retire the year after they last recertify, they will retain their certification status for the



Matthew G. Schmid

next four years, and may practice as a certified physicist during this time. If they wish to do so, however, they must continue to be members in good standing of COMP (which includes membership in the "retired" category), as this is a requirement for membership in the CCPM. Of course, they must also meet the other requirements of membership in the College, including abiding by the College's code of ethics.

I'm sure you're all aware that the COMP ASM this year will be held in conjunction with the World Congress on Medical Physics and Biomedical Engineering. The meeting will be earlier than usual (June 7-12), and the agenda will be very full.

Dr. Geoff Ibbott (who serves on the Board of the ABR) and I will be co-presenting an educational session at the World Congress entitled "Professional Standards and Certification of Qualified Individuals". We were invited to speak on this topic by the Continuing Education Committee of the Congress. I expect there will be interest in this presentation from many attendees from outside of

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Executive Director Report

The winter has been very cold this year, but a positive effect has been that Ottawa's Rideau Canal has been open to skaters for 47 consecutive days — the longest stretch in its 45-year history. The good news is that by the time you receive this issue of *InterACTIONS*, we will be talking about Spring!

COMP has had a great start to 2015 with a most successful Winter School, Board meeting and CPQR meeting in Kelowna, BC. I am always amazed at how the Winter School continues to improve every year. This year's program included a talk and workshop by a patient and increased collaboration among faculty and participants. Congratulations to John Kildea, Chair of the Winter School planning committee, who lead a very successful meeting! We are very pleased that John will be leading the 2016 Winter School program and look forward to more innovative programming that will lead to the implementation of improvements in cancer centres across the country. Thank you to the planning committee and also to our very supportive Winter School sponsors: Varian Medical Systems, Elekta, and the Canadian Nuclear Safety Commission. We are working on firming up a location for the 2016 Winter School and expect that it will likely take place in Quebec or Ontario.

The COMP Board met for two days in Kelowna and a great deal was accomplished. In addition to dealing with the ongoing business that needs to be addressed, the meeting also provided the Board with an opportunity for development as the agenda included a Board orientation, an overview of the roles and responsibilities of Directors, and a discussion of best practices of not-for-profit Boards. As well for the first time, we conducted a follow-up online survey of the Board members to get their input on the meeting and suggestions for improvements. All this to say, the Board is working hard on your behalf

and is making efforts to continuously improve its effectiveness — COMP is fortunate to be led by such a committed team. Perhaps you might be interested in joining this team? Serving on the Board is a great opportunity to contribute to your profession, share your ideas and develop new skills. There will be vacancies on the Board as of the next AGM and I would be happy to provide further information on this leadership opportunity. Information about the nominations process can be found in this issue.

We have just closed the financial books for 2014 and the audit is now underway. I am pleased to report that COMP is in good financial health and as a result has been able to make investments this past year to support its strategic priorities. These investments helped to increase the profile of Canadian medical physicists both in Canada and globally, support continuing education, and engage future members. Some examples of support include:

- The UICC Global Task Force on Radiotherapy for Cancer Control for which Jake Van Dyk was COMP's very able representative.
- The Canadian Conference for Undergraduate Women in Physics.
- The International Workshop on Monte Carlo Techniques.
- The BC Cancer Agency VMAT Course.
- The Symposium on Small Animal Image Guided Radiotherapy.
- The Forum sur le cancer de la prostate.
- Target Insight VIII: 4PRT - Photons, Protons, Particles & Progress in Radiation Therapy.

COMP also continues to invest in the future by having intentional programs to support graduate students, and, as a result, has an active and engaged Student Council. Not only did COMP continue its tradition of offering students subsidized registration fees for the ASM, the Board



Ms Nancy Barrett

also granted six \$500.00 student travel awards for the ASM in Banff.

Work on a comprehensive policy manual to support the new Not-for-Profit Corporations Act is ongoing under the very capable leadership of Emilie Soisson. This is a considerable effort and the goal is to have it complete by the June Board meeting.

Work on the new website continues. While the delays have been considerable, we are looking forward to the new site which will have considerably more functionality than the previous site.

The 2015 World Congress will be here before we know it. COMP has an extensive team of volunteers working on this very significant meeting that promises to be an excellent opportunity for Canadian medical physics to shine. More information is available at www.wc2015.org. Registration is now open!

COMP's communications requirements have increased over the past few years and AMCES resource Sue Thompson will be providing additional part-time support to COMP in the area of communications. In the next few months, Sue will be working

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CNSC Feedback Forum

Safety Culture

Jeff Sandeman and Mark Broeders
Accelerators and Class II Facilities Division, CNSC

Have you ever been involved in a discussion about “safety culture” at your institution? In August 2012, the CNSC published a discussion paper on safety culture, DIS-12-07: *Safety Culture for Nuclear Licensees*. The goal of this paper is to come to a common understanding between industry and the CNSC of what safety culture is and how its health should be evaluated. While the discussion paper proposes “enforcing” safety culture expectations only at class I nuclear facilities, the principles still apply to class II nuclear facilities and other licensees.

What is it?

If you have kind of a gut feel for what safety culture is, but find it hard to put down in words, you’re not alone. Even experts in the area of human performance management and safety management cannot agree on a common definition. However, a good working definition is:

“The assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority, protection and safety issues receive the attention warranted by their significance.” (IAEA)

Clear as mud right? Well, in the context of your institution, what it’s really all about is how you and your colleagues, from the most junior employee all the way up to the most senior management, respond to perceived safety risks within your facility.

How do we gather “safety culture” information?

During an inspection, licensee documents and records may provide some limited information relating to safety culture. For example, if the Radiation Safety Committee isn’t meeting regularly, or the minutes seem to indicate that any safety related issues which are raised seem to get ignored or “swept under the rug”, this could be a sign of weakness in the organizational safety culture.

Similarly, observations made while inspecting the site can also provide some insight into the overall safety “mindset” of staff. Are they wearing their dosimeters? Do they consistently adhere to documented safe work practices and procedures?

But, to really get to the deeper levels where safety culture lives, interviews of staff at all levels of the organization are essential. This is where we can ask critical questions relating to how feedback on safety issues is dealt with within the organization. Is there evidence that the licensee encourages staff to ask questions on issues of safety? Is management willing to make improvements in response to staff comments or experience from other licensees?

Are changes applied to address the symptom rather than the problem?

Following the publication of the discussion paper, we developed a simplified framework for assessing safety culture during a type I inspection of class II facilities. The use of this framework is in its pilot phase now and you may have already seen elements of safety culture mentioned in the type I inspection reports.

The table opposite provides a list of safety culture “indicators” which may be used during an inspection.

By combining the data obtained using each of these three inspection tools, we try to get the best picture possible of each organization’s safety culture.

How do we give feedback to licensees related to “safety culture”?

How does anyone manage to convert this data into a meaningful evaluation of such an abstract concept?

First off, we can’t really quantify this type of information. By its very nature, the inspection findings in the area of safety culture are largely qualitative in nature. At this time, there is no requirement for a licensee to maintain something specifically called “safety culture” within the regulations. However, virtually everything which promotes a strong safety culture does have a corresponding regulatory requirement. Just read section 12. (1) “Obligations of Licensees” in the *General Nuclear Safety and Control Regulations* (<http://laws-lois.justice.gc.ca/eng/regulations/sor-2000-202/page-5.html#docCont>) or section 17 on the “Obligations of Workers”, and you’ll see that virtually every clause speaks in some way to the overall safety culture while conducting a licensed activity.

Consequently, we cannot simply say “the licensee has a satisfactory safety culture” as we might do with other, more prescriptive regulatory requirements. However, when we see consistent evidence indicating strengths in one or more areas related to safety culture, we can and do commend licensees for those positive elements.

Conversely, when we identify weaknesses related to safety culture, we have two options:

- In those cases where specific weaknesses constitute clear non-compliance with a regulation or a licence condition, we will cite the licensee for non-compliance using the appropriate regulatory reference. In such cases, the required corrective



Criteria (indicators)	Comment
Questioning attitude	Is there evidence that the licensee encourages staff to ask questions on issues of safety? Is prospective risk identification and mitigation embraced?
Promotion of just (“no-blame”) culture	Are there records indicating that personnel were unfairly blamed when safety issue reported? When there is an incident, is the primary goal to address issue so that it doesn’t reoccur or to seek individuals to blame?
Willingness to improve	Is management willing to make improvements in response to staff comments or learnings from other licensees? Are changes applied to address the symptom rather than the problem? Are improvements applied system-wide or only to the local cause of the threat?
Personnel take responsibility for safety	Do personnel think mgmt. or RSO responsible for their safety (be careful of terminology: accountability vs. responsibility). Ask staff and mgmt. about responsibility for safety – do you get different answers? Is there an “internal responsibility” philosophy/system in place?
Safety vs production balance	RSO also responsible for production? Shortcuts taken to meet isotope production deadlines? Greater emphases on patient wait times vs. safety? Do licensee documents emphasize safety over production?
Accountability for safety	Is there a disproportionate weighting on patient safety vs. staff safety (medical licensees). Are managers willing and able to respond to inevitable safety risks? Is there evidence of commitment to safety at all levels of management?
Visibility of leadership	Are managers & RSOs seen as “safety champions”. Is the importance of safety stressed? Is there a mechanism for staff to provide feedback or engage in discussions with management/ RSO?
Transparency	Were previous inspection reports shared with staff? Do staff and management willingly share information about mistakes/errors with others in their industry?
Promotion of teamwork	Multidisciplinary approach to ensuring safety? Does the licensee take responsibility for verifying their own safety via self-audits or peer-audits.
Bilateral Communication	Evidence that staff feel they have the ability to share safety concerns with mgmt. and that they are receiving timely and relevant information? Is feedback provided and welcomed following a change? Is there a documented, formal process for feedback?
Adherence to radiation safety committee terms of reference	Frequency, committee composition, evidence that the RSC has the ability to act if there is an issue identified. Does the RSC get reports about safety performance metrics?

action will involve a very specific deliverable on the part of the licensee, in order to ensure that the licensed activity is conducted safely.

- In cases where there no clearly defined non-compliance with regulatory requirements, and the perceived weakness in “safety culture” does not pose an immediate threat to safety but may lead to a degradation in safety in the future, we will provide a recommendation for the licensee to improve work practices.

In all cases, whether positive or negative, any statements made relating to safety culture will be supported with references to the specific supporting findings/ evidence.

Conclusions

Safety culture is a concept which really addresses everything an organization does to ensure that licensed activities are conducted safely. While it can be somewhat difficult to define and quantify, there are indicators which can be used to at least qualitatively evaluate organizational safety culture. The indicators provided in this article are used by ACFD (Accelerators and Class II Facilities Division) to help evaluate licensee safety culture during regulatory compliance inspections. Such indicators could also readily be adapted to a licensee’s own, internal audit program. While it is not possible to definitively state that a licensee has a “good” or “bad” safety culture based solely on these indicators, strengths

and weaknesses related to safety culture can be identified. In general, significant weaknesses can be related to and cited against failure to comply with specific regulatory requirements which address one or more aspects of the licensee’s safety program. The feedback from industry in response to the discussion paper, together with feedback from class II licensees, will guide the refinement of this safety culture assessment framework in the coming months.

If you would like more information or to provide feedback on this pilot project, please contact Mark Broeders (mark.broeders@cncs-ccsn) or Jeff Sandeman (jeff.sandeman@cncs-ccsn.gc.ca).



2014 COMP Professional Survey

The 2014 edition of the COMP professional survey provides comprehensive documentation of compensation and benefits currently provided to members. The survey was sent out to all members in April 2014 concerning their 2012 and 2013 salary information. This survey was sent to 527 members of COMP.

There were 242 respondents to the survey. This is a 4% decrease in response rate from the 2012 Survey which received 252 responses.

Thank you to all who responded to the survey; we appreciate your feedback. Congratulations to Alasdair Syme, Jewish General Hospital, Montreal, winner of the \$200 gift card from Amazon.

1. Age (n = 242)

Age	21 – 30	31 – 40	41 – 50	51 – 60	61+	Average
Men (n = 183)	5	68	43	47	20	46.1
	2.7%	37.2%	23.5%	25.7%	10.9%	
Women (n = 59)	1	33	21	4	0	40.3
	1.7%	55.9%	35.6%	6.8%	0	

Since 2012, the average age of female respondents has increased by one year, while the average age of male respondents has increased by 0.4 years.

2. Gender (n = 242)

In total, 183 men (76%) and 59 women (24%) responded to the survey.

3. Location (n = 242).

BC	AB	SK	MB	ON	QC	NB	NS	NL	PEI	World
28	31	7	15	83	26	5	20	5	3	19
116%	12.8%	2.9%	6.2%	34.3%	10.7%	2.1%	8.3%	2.1%	1.2%	7.9%

The distribution of the respondents has varied somewhat since 2012. Most notably, the number of respondents from Ontario has dropped from 102 in 2012 (or 40.5% of all respondents) to 83 (34.3%), while respondents in Nova Scotia have nearly tripled from 7 in 2012 (or 2.8% of all respondents) to 20 (8.3%).

4. Please indicate the highest level of education that you have attained (n = 242).

Of those who responded to the question, 66.9% (162 respondents) had earned their Doctorate as their highest level of education, 30.1% (73 respondents) had earned a Master's Degree and 1.6% (4 respondents) had earned a Bachelor's Degree. The distribution between the levels of education varied slightly from the 2012 survey, whereby those with Doctorates dropped

from 70.2% to 66.9%, and those with Masters increased from 28.2% in 2012 to the current level of 30.1%. However, this is likely statistically insignificant given the variance in respondents between those surveys.

5. Please indicate your certification (n = 242).

Since the 2006 Survey, the number of respondents who indicated they have a CCPM certification (either Membership or Fellowship) has grown from 64% to 75%, an increase of 17%. A professional certification of some form is held by 82% of respondents, which has held steady from the 2012 survey (83%). Of those who had a certification other than the CCPM, the majority (7 of 16) held the ABR certification.

6. Who is your primary employer (n = 242)?

The primary employer for 129 of the 242 respondents was a Hospital (53%). Seventy-one were employed by a Cancer Institute (29%), 27 were employed by a university, government, or research institute (11%), while eight were employed by a private company (3%). Of those that responded "Private Company", the majority (5 of 8) were self-employed consultants.

7. How many years of experience do you have within your field (n = 242)?

The most statistically significant trend in the past three surveys is in the five to ten years of experience range, which went from 29% in 2010, down to 22% in 2012, and back up again to 29% for the 2014 survey.

- 39 (16%) had worked in the field for less than 5 years, significantly down from the 22% of respondents of the 2012 survey.
- 71 (29%) had worked in the field for a period between 5 to 10 years.
- 45 respondents (19%) had worked in the field for a period between 11 to 15 years, down slightly from 21% in 2012.
- 25 respondents (10%) had worked in the field for 16 to 20 years, down from 12% in 2010.
- 62 respondents (26%) had worked in the field for more than 20 years, up from 23% in 2010.

8. What is your specialty (n = 242)?

Of the 242 respondents, 204 (84%) were specialists in Radiation Oncology Physics, up slightly from the 83% of respondents from the 2012 survey. Twenty-two were specialists in Diagnostic Radiological Physics (9%, down from 11% in 2012), 15 were specialists in Nuclear Medicine Physics (6%, up slightly from



5% two years ago), six were specialists in Magnetic Resonance Imaging (2.5%, down from 3% in 2012 and significantly down from the 6% in 2008), with the remainder (7 or 3%) having a specialty in another field.

Please note that eight respondents (3%) identified that they had one, two or even three specialties. These multiple responses account for the discrepancy between the sum of the responses noted above (254) and the total number of respondents to the survey (n = 242).

9. Are you a Medical Physics Resident or a Physics Associate or Assistant (n = 242)?

Twenty of the 242 respondents (8.3%) identified themselves as a Medical Physics Resident or a Physics Associate or Assistant.

10. If you are a Medical Physicist, please indicate the percentage of time that you engaged in each of these activities within your workplace (n = 218):

Workplace Activity	Percentage of time engaged in activity
Administration	13.0%
Clinical Service	55.4%
Radiation Safety	5.7%
Research and Development	15.9%
Teaching	8.4%
Other	1.6%

11. Do you hold a Faculty position (n = 218)?

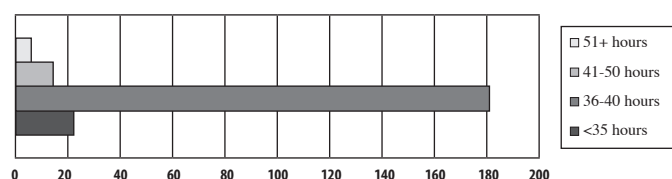
Of the 218 respondents, 119 (54.6%) hold a Faculty position.

12. In which of the following teaching activities do you participate (n = 111)?

Lecture radiology or oncology residents	73.9%
Deliver all or part of a graduate-level course	66.7%
Deliver all or part of an undergraduate-level course	32.4%
Supervise graduate students	61.3%

Please note that respondents were allowed to choose more than one response for this question, hence the increased percentage of responses. Of the 18 respondents that chose "Other", seven noted that they "lecture and mentor medical physics residents".

13. How many hours are you paid to work in a week (n = 221)?



Similar to past surveys, the vast majority of respondents (81.5%) noted that they were paid to work between 36-40 hours per week.

14. Income by Category (note that incomes have been normalized to 1.0 FTE)

Please indicate your level of employment in 2010 as a component of an FTE (n = 221)¹.

FTE	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0
For 2012 salary period (n = 221)	204	0	6	0	0	3	1	1	1	2	3
For 2013 salary period (n = 221)	209	0	4	0	1	2	1	1	1	1	0

2012 Income by Gender (n = 215)

Income (\$CDN)	Less than 50,000	50,000 – 75,000	75,001 – 100,000	100,001 – 125,000	125,001 – 150,000	150,001 – 175,000	175,000+	Average
Men (n = 164)	3 1.8%	14 8.5%	20 12.2%	32 19.5%	37 22.6%	29 17.7%	29 17.7%	136,064
Women (n = 51)	5 9.8%	3 5.9%	9 17.6%	12 23.5%	11 21.6%	10 19.6%	2 3.9%	117,596

Between 2011 and 2012, the average income for women decreased 5.0% from \$123,464 to \$117,596. During that same timeframe, the average income for men decreased 1.0% from \$137,485 to \$136,064. Given the difference in respondents, the decrease in income for both men and women is likely a statistical anomaly and does not represent an actual decrease in income.

Please note that the gender-based rates of increase calculated here are not adjusted for age, years of experience, or other factors.

2013 Income by Gender (n = 219)

Income (\$CDN)	Less than 50,000	50,000 – 75,000	75,001 – 100,000	100,001 – 125,000	125,001 – 150,000	150,001 – 175,000	175,000+	Average
Men (n = 167)	1 0.59%	10 6.0%	22 13.2%	30 18.0%	40 24.0%	33 20.0%	31 18.6%	141,311
Women (n = 52)	4 7.7%	4 7.7%	8 15.4%	7 7.7%	14 26.9%	12 23.1%	3 5.8%	122,580

Between 2012 and 2013 the average income for women increased 4.2% from \$117,596 to \$122,580. During that same timeframe the average income for men increased 3.9% from \$136,064 to \$141,310. In all, excluding the variance between 2011 and 2012, the increase in average income between men and women was virtually the same.

¹Please note those respondents who indicated a level of employment of FTE 0 did not factor into any of the income calculations



2012 Income by Location (n = 215)

	BC (n = 27)	AB (n = 30)	SK (n = 6)	MB (n = 13)	ON (n = 76)	QC (n = 24)	Atlantic Canada (n = 22)	World (n = 17)
Income (\$CDN)	120,818	144,151	130,833	135,188	138,960	98,100	122,929	150,764
Change from 2011	-5.3%	+3.3%	-5.0%	-1.8%	+1.8%	+6.7%	-13.9%	-13.0%

While the decrease in the world category is likely insignificant, the decrease in the Atlantic region is of interest and may be significant (n = 22).

2013 Income by Location (n = 231)

	BC (n = 27)	AB (n = 31)	SK (n = 7)	MB (n = 14)	ON (n = 77)	QC (n = 24)	Atlantic Canada (n = 22)	World (n = 17)
Income (\$CDN)	124,818	151,087	137,333	136,390	147,518	100,433	122,751	158,738
Change from 2012	+3.3%	+4.8%	+5.0%	+0.9%	+6.2%	+2.3%	-0.1%	+5.3%

Of note, growth in Manitoba and Atlantic Canada stagnated between 2012 and 2014, while the rest of Canada and the international group experienced similar solid growth of 3-5%.

Income by Specialty (n = 215 in 2012, n = 219 in 2013)

Specialty	2012 Income (\$CDN)	Change from 2011	2013 Income (\$CDN)	Change from 2012
Radiation Oncology Physics (n = 180 in 2012, n = 184 in 2013)	131,415	-4.3%	136,727	+4.0%
Diagnostic Radiological Physics (n = 19 in 2012 and 2013)	136,221	+3.9%	147,009	+7.9%
Nuclear Medicine Physics (n = 10 in 2012 and 2013)	144,065	+15.0%	145,231	+0.8%
Magnetic Resonance Imaging (n = 6 in 2012 and 2013)	120,462	-9.3%	124,753	+3.6%

The most statistically significant trend for income by specialty is the increase in income for Diagnostic Radiological Physics, which had a healthy 7.9% increase in income during the time period of this survey.

Income by Level of Education (n = 214 in 2012, n = 217 in 2013)

Level of Education	2012 Income (\$CDN)	Change from 2011	2013 Income (\$CDN)	Change from 2012
Bachelor's Degree (n = 4 in 2012 and 2013)	130,950	+20.7%	120,850	-7.7%
Master's Degree (n = 65 in 2012 and 2013)	119,085	-3.1%	125,642	+5.5%
Doctorate (n = 145 in 2012, n = 148 in 2013)	137,638	-1.2%	143,121	+4.0%

Given the small sample set for respondents with a Bachelor's

degree, the increase from 2011 to 2012 is statistically unreliable.

15(a). Did you perform any consulting work (n = 221 in 2012, 218 in 2013)?

Thirty of 221 (13.6%) respondents performed consulting work in 2012, down significantly from 16.7% in 2011. In 2013, there were 30 of 218 (or 13.8%) respondents that performed consulting work.

15(b). Please indicate your total income from consulting fees.

Income (\$CDN)	1 – 5,000	5,001 – 10,000	10,001 – 15,000	15,001 – 20,000	20,001 – 25,000	25,000+	Average
2012 (n = 27)	9	4	7	3	2	2	12,989
2013 (n = 28)	11	3	4	2	4	4	14,870

Please note that the numbers shown exclude respondents whose income was solely derived from consulting fees. Including them would bias the overall average income from consulting.

It should be noted that total income from consulting fees increased significantly from the last survey, going from \$9,414 in 2011 to \$12,989 in 2012 and \$14,870 in 2013. This upwards slant is bucking the trend of previous two surveys where consulting income had decreased.

15(c). Please indicate your nominal consulting hourly rate.

Hourly Rate (\$CDN)	0 - 50	51 - 100	101 – 150	151 – 200	200+	Average
2012 (n = 25)	2	9	7	5	0	134.72
2013 (n = 31)	0	8	9	9	2	144.95

The hourly rate for consulting decreased from \$160.00 in 2011 to \$134.72 in 2012. However, the total income derived from consulting increased within that same period, indicating that more time was being devoted to consulting.

16. Do you foresee your income increasing, decreasing, or remaining the same for the next year (n = 220)?

Of the 220 respondents, 131 (60%) felt that their income would increase over the next year. This is up from the 54% of respondents who felt that way in 2012. Seventy-six (34.5%) felt that it would remain the same, while 13 felt it would decrease (5.9%).

17. If you expect your salary to increase, why (n = 135)?

Answer	Response Percent*	Response Count
Cost of living increase	38.5%	52



Movement within the salary scale	46.7%	63
Global increase in the salary scale	11.9%	16
Change of employers	3.0%	4
Other (please specify)	8.1%	11

*Please note that the responses do not total 100% given that respondents could choose both an option and the 'Other' category

Of those who voted "Other", the predominant factor was a change in their full-time status (i.e. moving from Resident to Full-Time, coming off of leave, etc.)

18, 19. What was your Annual Professional Allowance (including all travel allowances)?

Year	Annual Professional Allowance	Change from Previous Year
2012 (n = 153)	\$2,880	-16.9%
2013 (n = 157)	\$3,019	+4.8%

Whereas growth in the annual professional allowance was quite consistent from 2006 to 2010, it has decreased in the past four years, with a significant drop from \$3,464 in 2011 to \$2,880 in 2012. While it did go back up in 2013, this will be a significant trend to watch if it continues into the future.

20. On what are you permitted to spend your professional allowance? (check any that apply) (n = 167)?

Answer	Response Percent*	Response Count
Books	77.2%	129
Conference Travel	83.2%	139
Memberships	80.8%	135
Electronic Devices	62.9%	105
Other (please specify)	12.0%	20

*Please note that the responses do not total 100% given that respondents could choose both an option and the 'Other' category

The majority of respondents who chose 'Other' identified that their professional allowance allowed them to purchase software of some form.

21. Please indicate which benefits are covered (in part or in whole) by your employer (n = 219).

Benefit	Yes	No	Unknown or N/A
Medical Coverage	205 (93.6%)	10 (4.6%)	4 (1.8%)
Dental Coverage	194 (88.6%)	20 (9.1%)	5 (2.3%)
Term Life Insurance	183 (83.6%)	20 (9.1%)	16 (7.3%)
Disability Insurance	189 (86.3%)	19 (8.7%)	11 (5.0%)
Retirement Pension Plan*	206 (94.1%)	10 (4.6%)	3 (1.4%)
Sabbatical Leave	75 (34.2%)	101 (46.1%)	43 (19.6%)
Tuition Benefits (self)	41 (18.7%)	135 (61.6%)	43 (19.6%)

Tuition Benefits (dependents)	26 (11.9%)	151 (69%)	42 (19.2%)
Parking	29 (13.2%)	177 (80.8%)	13 (5.9%)

*Exclusive of CPP or QPP

22. How many vacation days do you get during a year exclusive of statutory holidays (n = 209)?

Vacation time	Percentage Response
<15 Vacation Days	3.3%
16-20 Vacation Days	45.0%
21-25 Vacation Days	33.0%
26-30 Vacation Days	13.9%
>31 Vacation Days	4.3%

23. At what age do you expect to retire (n = 219)?

The average expected age of retirement for respondents was 64.

24. Are you willing to volunteer time in support of COMP (n = 219)?

Response	Percentage Response
Yes	47.5%
No	37.9%
I already volunteer for COMP	14.6%

25. If you are interested in volunteering, what would be your preference (n = 83)?

Preferred Volunteer Activity Type	Percentage of Respondents
Member of the Professional Affairs Committee (PAC)	30.9%
Member of the Communications Committee	18.5%
Member of the Science and Education Committee	48.1%
Member of the Quality Assurance and Radiation Safety Advisory Committee	40.7%
Member of the Imaging Committee	12.3%
Member of the Board of Directors	12.3%
Expert Resource	23.5%
Other (please specify)	11.1%

Of those that responded "Other", the majority of the respondents were uncertain as to which committee they wanted to join.

26. How useful you found the information published from past COMP professional surveys (n = 217)?

Usefulness of information	Percentage of Respondents
Not useful at all	1.8%
Neither useful nor useless	12.0%
Somewhat useful	58.5%
Most useful	25.3%



2014-15 COMP Student Member Survey Results

In December 2014 and January 2015, the Student Council for the Canadian Organization of Medical Physics (COMP-SC) conducted an electronic survey of all current, student COMP members. Our goal was to explore and understand student perceptions and opinions about the importance of student COMP membership and the role of the SC within COMP. This article is a summary of the results corresponding to questions asked in the survey. Going forward, the SC will use these survey results to address issues of importance to our membership. New developments will be posted to www.medphys.ca and on our Facebook page.

The survey was sent to all 117 COMP student members, yielding a total response rate of 38%. If you haven't already participated and are interested, you may do so at: <https://www.surveymonkey.com/s/XRY5PDD>.

The survey included two categories: Membership and Annual Scientific Meetings.

Membership: Demographics and Satisfaction

The demographics of our survey population were assessed to understand where our efforts might best be focused. The charts in Fig. 1 show that the majority of our members are currently in Ph.D. programs. Fifteen percent of members indicate that they are at the M.Sc. or undergraduate levels. Curiously, another 15% report that they are either employed, or currently in a residency program. This suggests that they may be new graduates or that medical physics residents retain their student membership status for cost savings. This is something that COMP might like to investigate further and possibly provide a resident-specific membership. The fields of study/work reported by our members are more diverse than expected. The imaging and academic fields appear to be catching up to dosimetry and radiotherapy. Further comments by some of these responders lead us to believe that members in these fields feel under-represented at COMP events and in the organization. As such, we are working to develop more inclusive student council activities and programs.

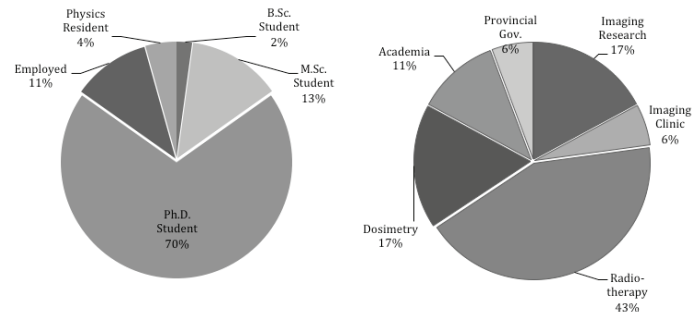


Fig 1. Current education status (left) and Field of Work (right) of the surveyed students.

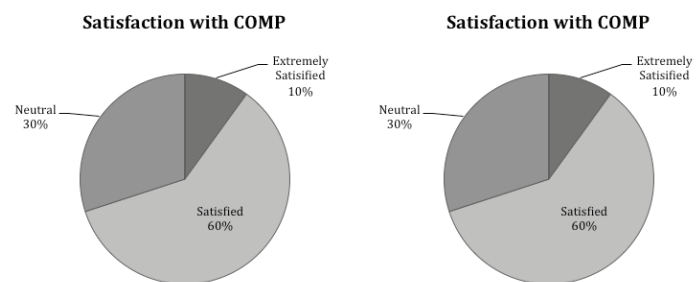


Fig 2. Overall satisfaction with COMP (left) and COMP Student Council (right). Zero percent of responders were dissatisfied or extremely dissatisfied.

Overall, student member satisfaction with COMP and COMP-SC (Fig. 2) was optimistic with no dissatisfied responses, however, there were a significant number of students that reported being neutral in terms of satisfaction. Such a passive attitude towards both organizations suggests that these students may not care if they are members or not. Some students were unaware of the existence of a student council and its activities. Encouragingly, many other student members expressed their willingness to participate in further student related activities beyond the Annual Scientific Meeting. The SC is committed this year to continue serving the student community and to strive to meet the needs of more members. Please read the "Message from your COMP Student Council" in this issue of InterACTIONS for updates.

The survey also explored whether the student community feels they have benefited from the membership: 88.1% of the students



felt they have benefited from the membership while 11.9% did not. We also want to encourage the student community and the non-member students to know the benefits that encompass the student membership. Ten key reasons on why to be a member were summarized in the January issue of InterACTIONS by Nancy Barrett, the executive director of COMP.

Annual Scientific Meetings and Student Events

Only 53.8 % of the students surveyed were able to attend the 2014 Annual Scientific Meeting in Banff, Alberta. Of these, participants reported their overall satisfaction with the student night out and the student luncheon (Fig. 3).

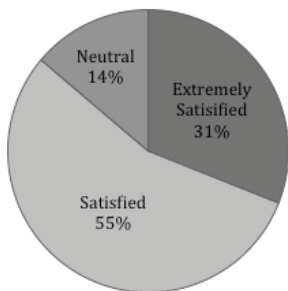
Members provided several useful recommendations for the 2015 students luncheon in the comments section of the survey. Some students requested short presentations about residency programs in Canada and in the USA, while others expressed interest in information sessions for M.Sc. students looking for Ph.D. projects.

Of those surveyed, 55% are planning to attend the 2015 World Congress on Medical Physics and Biomedical Engineering, 33% are not sure, and 12 % are not attending. Attending the annual meetings is a great opportunity for students to interact with the medical physics community, as well as to find new opportunities for research, collaboration, and future employment. The COMP-SC is however aware of the financial limitations students face when attending these meeting without full support from their supervisor or institution. The SC, in collaboration with COMP has established some funding opportunities for the student members. Each year COMP conducts a J. R. Cunningham Young Investigator competition; ASM fees are waived for each of the 10 finalists and have a chance of winning up to \$500. Additionally, all student members that register for the ASM are eligible to win one of six \$500 travel awards (three M.Sc. and three Ph.D.) by random draw to subsidize their conference costs.

All additional comments made in the survey will be addressed during the upcoming year. We will also be working together with the editor of InterACTIONS to accommodate a column in which students could voice topics of their concern.

We would like to thank all of our student members, especially those that completed our survey for submitting their valuable feedback. Your answers will help improve our efforts and better the communications we offer you and other student members.

**Satisfaction with
COMP Student Night Out**



**Satisfaction with
COMP Student Luncheon**

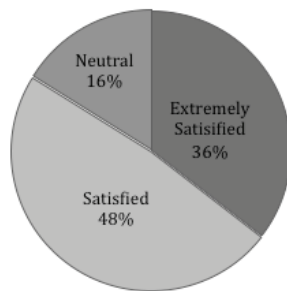


Fig 3. Overall satisfaction with the Student Night Out (left) and the Student Luncheon (right) in Banff.

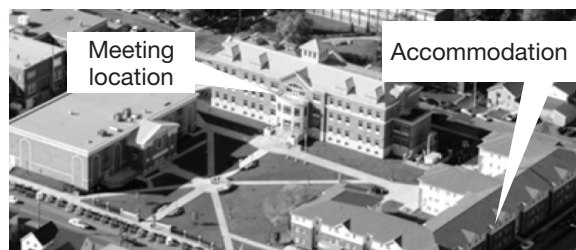
Atlantic Medical Physics Meeting, Charlottetown, PEI, July 31 – Aug 2, 2015

AMP History: For a decade beginning in 1999, the Atlantic medical physicists, dosimetrists and equipment service technologists held annual meetings to discuss topics of common interest. The meetings were called AMP (Atlantic Medical Physics) meetings, were held on a Friday and Saturday in the fall of the year, and were hosted by one of the five Atlantic cancer clinics on a rotational basis. There was a strong consensus that these meetings fostered better communication between the physicists, dosimetrists, and equipment service technologists of the Atlantic Province's clinics and helped to create efficiencies and improved patient care.

AMP 2015: The PEI Cancer Treatment Centre physics, Dosimetry, and bio-medical staff believe that it is time to continue the tradition and are organizing an AMP meeting from noon on Friday July 31st to noon Sunday August 2nd, 2015 in Charlottetown. We are planning a guest speaker and are encouraging proffered papers, which can either be of a research nature (planned, underway, or completed), an update on treatment approaches, or physics, Dosimetry, or equipment maintenance topics that would be of interest to staff from other clinics. Relevant posters, even ones from other meetings, are welcome. Students are encouraged to participate as well in a dedicated session on Friday afternoon.

The midsummer timing will allow participants to take their families to the meeting and to add a PEI vacation. During the meeting we are planning organized recreational activities that will help attendees and their families to get to know each other and to enjoy PEI in the summer. There will be a Friday evening lobster (or other option) dinner, the chance to attend the musical *Anne of Green Gables* or *Anne & Gilbert, the Musical*, on Saturday evening, and a wind-up BBQ Sunday at noon. Attendees from outside the Atlantic Provinces or in related disciplines are welcome and encouraged to participate.

Meeting Location and Accommodation: The meeting will be held at Holland College, Prince of Wales Campus, in Charlottetown, which is four blocks from historic Province House and the Confederation Centre of the Arts. There are many hotels within walking distance. However, a block of 25 apartments in the new Holland College residence have been reserved for the meeting. The apartments have a kitchen, living room, bathroom, and two or three bedrooms with double beds. The 21 two bedroom units are each \$99 per night and the four reserved triple bedroom units are \$119 per night, plus taxes. All rooms include continental breakfast. The apartments are also available before or after the meeting but book early. Please see http://www.hollandcollege.com/summer_accommodations/index.php.



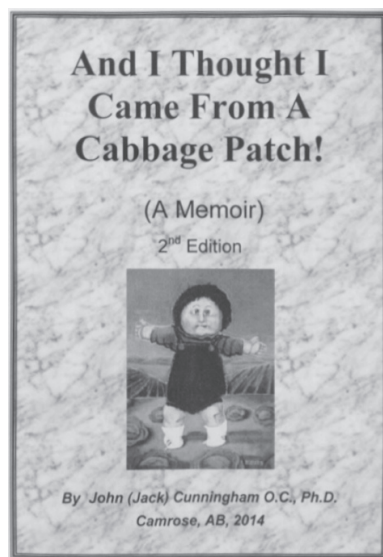
More Information: Please go to our website at www.atlanticmedphys.ca for meeting information. Go to www.tourismpei.com for information about summer on PEI. Come play (and do professional development) on our island!

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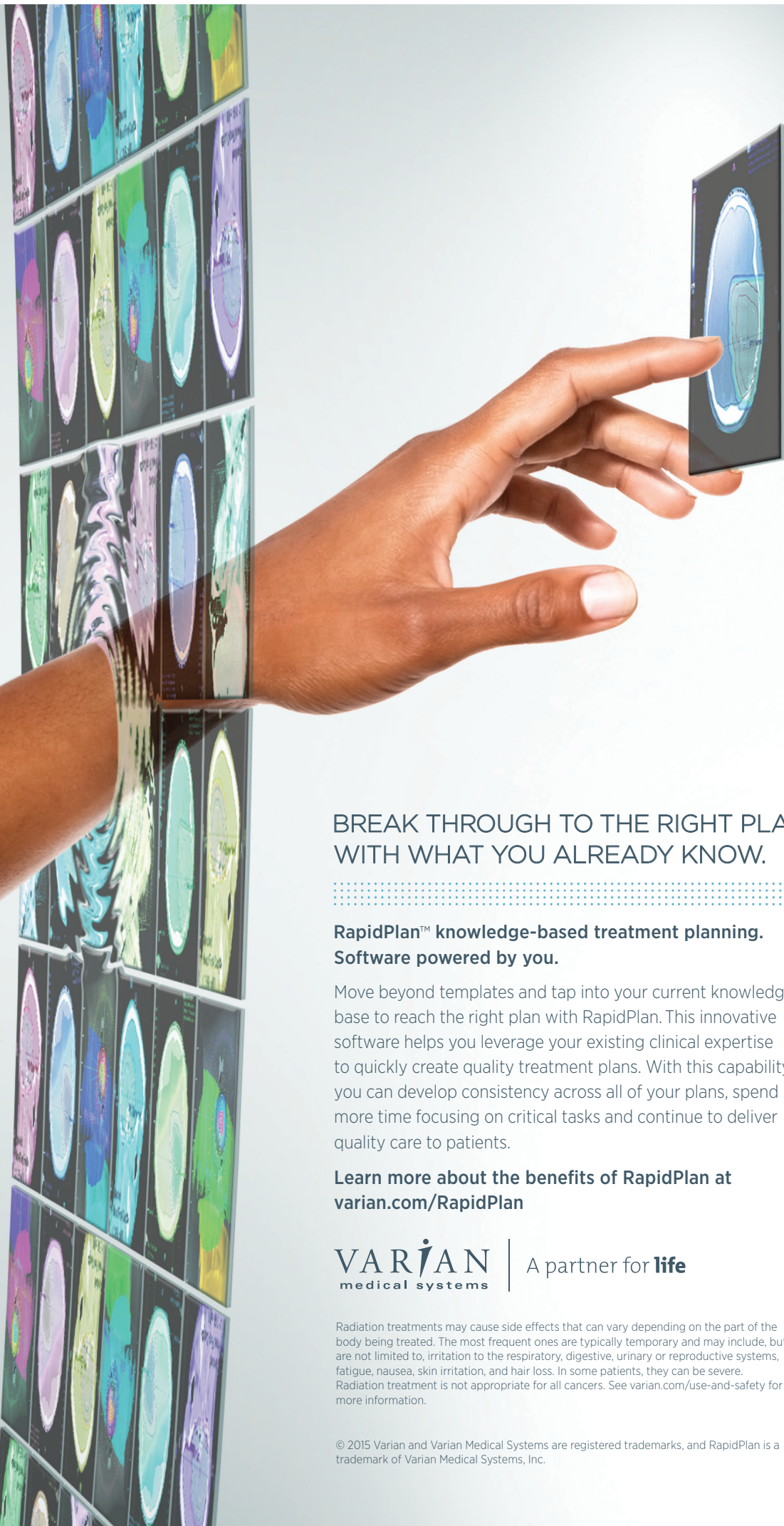
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A book review, prepared by Crystal Plume Angers, was published in the October 2014 edition of Interactions.



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Message from your COMP Student Council

Happy April everyone! Over the last while, your COMP Student Council has been hard at work planning some exciting upcoming activities! We would like to thank the many students who took the time to fill out our survey – based on your feedback; we’ve included some information here on who we are and what we do.

Who is the Student Council? What do you do?

The Student Council, a sub-committee of the Science and Education Committee, is comprised of eight active members from across the country all working toward their M.Sc. or Ph.D. degrees in Medical Physics. We meet roughly once per month (via conference call) to plan events and activities, and to generally work towards improving the student experience in COMP.

What events are you working on right now?

We’ve been quite busy for the last couple of months! Some of our recent projects include:

- Organizing the Student Exchange Program – the deadline for

this year has passed, but make sure to look out for ads for the 2016 exchange later this year!

- Conducting an electronic survey of all COMP student members – check out the summary of our results in the article entitled “2014-15 COMP Student Member Survey Results” in this issue of InterACTIONS.
- Planning student events for the World Congress on Medical Physics & Biomedical Engineering in Toronto – stay tuned for all of the information for a fun Student Night Out (tentatively Tuesday, June 9) and our annual Student Luncheon (Thursday, June 11, 12:00-1:30pm)!

How can we stay up to date with what you’re doing?

Join our group on Facebook (COMP Student Council) or follow COMP on Twitter (@MedphysCA) where we’ll keep you posted on all of the upcoming deadlines and activities. Additionally, look out for our messages in all-upcoming issues of InterACTIONS!

2015 Student Council Election

The COMP Student Council (SC) is lead 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. An election will be held at the annual Student Luncheon (12:00-1:30pm, Thursday, June 11, 2015) at the World Congress meeting in Toronto. Every student member of COMP is eligible to vote.

The 2015 Nominees for Student Council Vice-Chair are:

- Emilie Gaudin, Centre d’imagerie moléculaire de Sherbrooke, Sherbrooke, Quebec
- Parisa Sadeghi, University of Calgary, Calgary, Alberta
- Hali Morrison, University of Alberta, Edmonton, Alberta

Please visit medphys.ca or the COMP Student Council Facebook page for more election details. 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 (Sarah Cuddy-Walsh, sarahcuddy3@gmail.com). We always love to hear your opinions!



Quality Matters – Travaillons Ensemble!

Notes from the 6th Canadian Winter School on Quality and Safety in Radiation Oncology

Deidre Batchelar

Medical Physicist, BC Cancer Agency, Kelowna, BC

John Kildea

Medical Physicist, Montreal General Hospital, Montreal, QC

The 6th annual Canadian Winter School on Quality and Safety in Radiation Oncology took place from February 1st to 5th, 2015 at the Delta Grand Okanagan resort and conference centre in Kelowna, BC. Although the weather was much milder than is traditionally the case for the Winter School, a large snowfall on the first day made sure that the conference nevertheless started off on a wintry note. This year's meeting was chaired by Dr. John Kildea and was attended by 96 delegates (see Winter School Delegates photo), including 10 faculty members. Delegates came from across Canada, the US, UK, Ireland, and Australia. The breakdown of professions in attendance was 39 physicists, 28 radiation therapists, 12 radiation oncologists and 17 administrators, regulators and industry representatives.

The multi-professional organizing committee (see Winter School Organization Committee photo) held 21 conference calls in advance of the Winter School. The planning paid off and the combination of topics, faculty members and delegate-presented project galleries was well received. The four days of presentations were organized such that each day built upon the lessons of the previous day. The first day was spent identifying the areas where quality and safety can be improved in radiation oncology, including from the patient's perspective, and summarizing the data that are required. Day two and three each

focused on the tools that are needed in order to make the improvements identified on day one. These tools included topics as diverse as statistical process control, human factors, safety management systems, in-vivo Dosimetry, and change management. The final morning put everything together and identified the way forward for radiation medicine.

This year's Winter School had an excellent faculty including mostly new members but a few veterans (see Winter School Faculty photo on cover). The keynote speaker was Dr. Jan Davies. Dr. Davies is an anesthesiologist and professor in the Department of Anaesthesia at the University of Calgary. She is a safety systems expert and has consulted for a major Canadian airline, an Australian aviation safety organization, and numerous other organizations with a focus on safety. She is also a vocal patient advocate and argues strongly for patient-centered care and patient involvement in healthcare, not just mere engagement. Dr Davies' keynote presentation helped set the scene for the Winter School by highlighting the link between aviation safety and medical safety. There is certainly a lot in common between these two fields, and a lot of the safety tools and techniques that were discussed at the Winter School have their origin in aviation - think checklists, standard operating procedures, standardization, and incident reporting/investigation.

The keynote address was followed up by a provocative presentation by Mona Udowicz, radiation therapist from Calgary, AB. Mona described the concept of quality boards - notice boards that track key quality indicators for the department. Mona made the point that these boards shouldn't be hidden in back offices but should be out in the public corridor for patients and staff to see. Dr. Todd Pawlicki, a veteran faculty member of the Winter School, built upon Mona's message and talked about the kind of data that one might display on a quality board and where one might look to find them. Following Todd's presentation, he and Mona led a joint workshop on developing a quality board.

For the first time a radiation oncology patient was invited to attend Winter School as a faculty member. When the committee made the decision it was a little unclear how well it would work. In the end however, the patient representative, Prof. Laurie Hendren from McGill's School of Computer Science vindicated in every sense the committee's decision. Laurie delivered a very engaging and thought-provoking presentation on her cancer "schlep" - defined as a tedious or difficult journey. Her main message was to encourage us to be more transparent, to provide patients with their medical data, and let them help by involving them in the decision-making process for their own treatments. Prof. Hendren also led a workshop on patient education material



with Mona Udowicz, where she and Mona had the audience compare official patient education material with blogs taken from the internet to see how well we are doing at addressing actual patient concerns.

The Canadian Partnership for Quality Radiotherapy also played a significant role in this year's Winter School. On the first afternoon of the school, Erika Brown and Dr. Michael Milosevic, together with a group of colleagues from the Canadian Institute for Health Information, presented NSIR-RT (the National System for Incident Reporting in Radiation Therapy). Delegates then watched videos of two incident reenactments, filmed by Dr. Todd Pawlicki and his team in San Diego, and used a paper version of the NSIR-RT taxonomy to categorize and report them.

Day one of the Winter School was an action-packed day and it finished with the first of three project gallery presentations, in which delegates who had abstracts accepted presented their projects to the conference. In an effort to increase the participation of our therapists colleagues in the Winter School, the organizing committee initiated a therapist attendance scholarship this year. Competing therapist abstracts were ranked by a multi-professional committee in a blinded peer review. The top two abstracts were offered complimentary registration to the Winter



Winter School Delegates

School. The scholarship competition was very popular with 12 therapists applying from across Canada. The winning abstracts were:

“Enhancing Continuity of Care and Symptom Management with the Use of Palliative Radiotherapy Treatment Summaries (PaRTS),” presented by Michelle Lau from the Princess Margaret Cancer Centre on behalf of co-authors Jolie Ringash and Andrea Bezjak.

“A Collision Detection Software Program to Minimize Treatment Re-Planning for Patients Treated with External Beam Radiation Therapy,” presented by Gail Murray from the BC Cancer Agency CSI on behalf of co-authors Duncan Szarmes, Leigh Bartha, and Rasika Rajapakshe.

Both of the therapist scholars (see

Therapist Scholars photo) made a short presentation on their projects before providing the details in the project gallery.

Day two started off with a very interesting breakfast presentation by Stan Mansfield from Varian Medical Systems, one of the gold sponsors of the Winter School. Stan presented the system by which Varian deals with incidents, as well as an interesting case study that sparked lots of discussion. This set the scene for two safety-focused presentations by Dr. Jean-Yves Fiset and Dr. Ward Flemons. An engaging talk by Dr. Michael Brundage and his colleague Michelle Hart on peer-review in radiation oncology and Laurie and Mona's workshop on patient education materials rounded out day two. As the second afternoon was designated as “free time” many delegates participated in the organized Winery Tour that took in four wineries in the beautiful Okanagan Valley.

Dave Mellenberg from Elekta, another gold sponsor of the Winter School, set the scene on Wednesday morning with an overview of Elekta's quality and safety program. A post-breakfast address by Dr. Michael Milosevic to mark World Cancer Day put the work of the Winter School into context. The remainder of Wednesday morning was dedicated to an overview of in-vivo dosimetry by Dr. Joanna Cygler and a presentation on change management in a multi-professional context by Dr. Francois Chiochio from the Telfer School of Management at the University of Ottawa. Joanna and Francois then demonstrated exemplary multi-professional teamwork by leading



The Winter School Organizing Committee

L to R: Nancy Barrett, Christiaan Stevens, Deidre Batchelar, Conrad Yuen, Kathryn Moran, Todd Pawlicki, Gisele Kite, Mona Udowicz, John Kildea, and Carolyn Freeman. Missing from the photo are Dan LaRussa and Vicky Huang who were unable to attend.



Therapist Scholars

Left Gail Murray, right Michelle Lau

a joint workshop on how to set up a new in-vivo dosimetry program as an example of a change management project. Indeed, Joanna and Francois had met in Ottawa on two occasions in advance to prepare their workshop!

Wednesday afternoon finished off with a round of workshops on incident analysis and a discussion on inter-professional teamwork in radiation oncology. Wednesday's project gallery session was dedicated to CPQR document updates. Amongst the updates was an important presentation by Dave Wilkins on behalf of the Quality and Radiation Safety Advisory Committee of COMP. Dave's presentation dealt with improving communication between the Canadian Nuclear Safety Commission and licensees in the radiation therapy clinic. The CNSC were a gold-sponsor of the Winter School. After an action-packed full day of presentations and workshops the delegates got to unwind at the Winter School banquet in the splendid Laurel Packinghouse, just a stone's throw from the conference centre.

Thursday morning provided a fitting end to the conference with a number of concluding presentations, panel discussions, and a project gallery. Dr.

Michael Brundage asked the question "What does the future hold for quality on radiotherapy in Canada?" and delivered a thought-provoking presentation that addressed the topics of outcomes, peer-review and accreditation among others.

Overall, the annual Canadian Winter School on Quality and Safety in Radiation Oncology lived up to its slogan, and, once again, a multi-professional group of faculty and delegates got together, engaged each other in lively discussions, and went home inspired to improve the quality and safety of patient treatments at their centres across Canada and beyond. The COMP board, which met in Kelowna in conjunction with the Winter School, decided to hold a 7th edition of the Winter School in 2016. The organizing committee with old and new members will re-convene in March 2016 to decide on the date and location. Stay tuned and follow the Winter School Facebook page ([Facebook.com/COMPWinterSchool](https://www.facebook.com/COMPWinterSchool)) for more details.



CALL FOR NOMINATIONS

The COMP Awards and Nominations Committee is responsible for presenting a slate of nominations for the COMP Board of Directors to ensure that the organization is governed with excellence and vision. There will be three openings on the Board of Directors for Directors-at-Large as of the 2015 Annual General Meeting.

Directors-at-large serve for a term of three years and have the following responsibilities:

1. To work in conjunction with other Board members in the best interest of the organization.
2. To prepare for, attend, and actively participate in all Board meetings and relevant committee meetings. In-person meetings take place in November and at the Annual Scientific Meeting and there may be up to 4 teleconferences.
3. To be prepared and willing to Chair a committee or lead special projects as required.

On the last point, at present Chairs are being sought for the Professional Affairs Committee (PAC), the Communications Committee and the Science and Education Committee.

The nomination **must be accompanied** by a duly signed *Expression of Interest and Nomination Form* endorsed by no fewer than two (2) voting members of COMP. To access the nomination form, please visit www.medphys.ca or contact the COMP office at admin@medphys.ca.



Prof. Laurie Hendren - Patient Researcher at the Winter School

John Kildea

Medical Physicist, Montreal General Hospital, Montreal, QC

Prof. Laurie Hendren is a Full Professor and Canada Research Chair at McGill's School of Computer Science. She completed her B.Sc. and M.Sc. degrees in Computer Science at Queen's University, and obtained her Ph.D. from Cornell University. She has been an active professor and researcher at McGill University since 1990, has led many large software projects, and was made a Fellow of the Royal Society of Canada for her contributions to research in compilers. She was recently treated for breast cancer at the McGill University Health Centre, which led to her current involvement with an interdisciplinary research project there analysing radiation oncology patient data. This in turn led to her invitation to join the Winter School faculty. Below is a brief summary of her presentation.

Over the course of her 45-minute talk to the Winter School delegates Laurie outlined the various hats that she has worn - first computer scientist, then breast cancer patient, and now "patient

researcher". The delegates learned that designing an optimizing compiler to produce efficient code is not totally unlike treating a patient for cancer. The code and the patient are similar. They each need to pass through a number of transformations - surgery, chemo and radiotherapy in the case of the patient - so as to emerge new and improved. The main difference though is that the clinician only gets one go at it with the patient whereas the computer scientist can try over and over again...

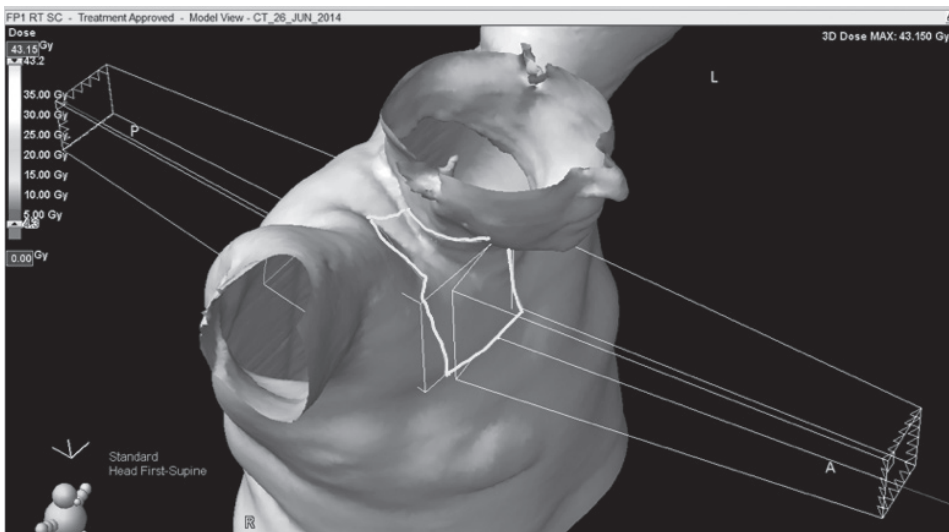
Laurie talked about her medical data, and how she got a letter in the mail congratulating her on a cancer-free mammogram, while her family doctor got the actual data that in fact indicated the need for further tests. Upon being diagnosed, Laurie consulted with colleagues, did her own research and decided she didn't want breast conserving surgery, but rather discovered another option, a bilateral Goldilocks mastectomy (The Goldilocks mastectomy, Heather Richardson, and Grace Ma International



Journal of Surgery, 2012-01-01, Volume 10, Issue 9, Pages 522-526). Realizing that she only had the standard 10 minutes with her surgeon, she prepared a 10-slide powerpoint presentation to convince him to try this new procedure. It worked, with both the surgeon and Laurie very happy with the outcome.

After surgery, Laurie asked to attend her tumor board, but, despite repeated requests, she was not allowed. Thus, she required several meetings with oncologists to convince them to order the OncoType DX test, and to come to an agreement with her over the treatment plan once the results arrived. Based on her results she chose not to have chemotherapy, but did have radiotherapy.

Laurie spoke about waiting for her radiotherapy treatment plan, not knowing where she was in the system and how much longer she would have to wait. She was told that her plan would be ready in two weeks - the standard delay that patients are told. In the end it was done much earlier. Had she known, she would



3D skin-rendering plot showing the beams entering her body



have better prepared. There are many, many waits that one must endure as a cancer patient and Laurie outlined the pain that is involved. Sometimes she had to wait extended periods in the waiting room with other patients, some who were very sick, others who had been coming for weeks and were used to it. It would have been nice to have had an idea in advance of how long she would have to wait, so as to schedule her day and her life accordingly.

Laurie wondered why she, as a breast cancer patient had to wear a gown, when no sooner had she put it on that she had to take it off again. She asked the audience a question and got them to respond by holding up their hands. She then made them continue to hold their hands in the air and encouraged them to stretch them backwards as if they were on a breast board for treatment. Why, Laurie asked, do breast cancer patients have to go through this painful experience everyday? Is it necessary? Do we explain to the patients why they must do it? Do we think about

why we treat in this way or do we just do it because we always have? Likewise, why do we advise patients not to swim during treatment? Is it because of the marks - Laurie found some great waterproof markers on the internet - or is it because of damage to the skin? It was hard to get a clear answer from her treating team, and Laurie found that internet blogs by former patients were often more helpful.

As is standard practice, Laurie was not offered access to her data during her treatment and she only discovered later when preparing her Winter School talk that her treating team had a 3D skin-rendering plot showing the beams entering her body (see image). Had Laurie herself had access to it she would have known where to apply sunscreen to protect the irradiated area of her skin when outside in the summer. She has since shown her dose distribution to her physiotherapist who now better understands which of her muscles were affected by her radiotherapy so she can provide appropriate exercises.

Laurie highlighted many forms of personalized information that her planning team could have provided to her, either directly or through the therapy/nursing staff that would have made a big difference. Why don't we provide our patients with personalized information about THEIR diseases and THEIR treatments and why not let them help us help them? Laurie's talk brought home the great need for patient-centered care and the great benefits in terms of improved patient experience that such care can provide.

Just after the Winter School, in February 2015, Laurie was listed by Business Insider among 54 women who rocked the Tech World - she is the five of diamonds in their deck of cards. Laurie also rocked the Winter School and the organizing committee are delighted and very grateful that she accepted our invitation.

You can check out Laurie's blog at flatchestedwarriors.weebly.com.



COMP Student Events IUPESM World Congress 2015

Come join us for the COMP Student Night Out (June 9), and the Student Luncheon (June 11) for a chance to socialize and connect with the other student members

Stay tuned for further details



Graduating Medical Physics Graduate Students – 2014

Student	Thesis Title	Supervisor(s)	University
MSC			
Elham Abouei	Assessment of cone beam computed tomography protocols for use in dentistry	Nancy Ford	University of British Columbia
Tara Ahmadi	Investigating the myelin water fraction as a function of TR and the intra/extra cellular water geometric mean T2 as a function of refocusing interval	Alex MacKay	University of British Columbia
Kevin Alexander	Development of a novel readout system for radiochromic film dosimetry	L. John Schreiner	Queen's University
Saeid Asgharzadeh	Patient specific quality assurance tool for high dose rate brachytherapy for rectal cancer patients	Alasdair Syme & Slobodan Devic	McGill University
Ayhan Bingolbali	Response of lipid olefinic protons to in-vivo magnetic resonance spectroscopy sequences at 3 T	Atiyah Yahya	University of Alberta
Éric Bonenfant	Simulations Monte Carlo sur processeur graphique en curiethérapie à bas débit de dose pour le cancer de la prostate	Philippe Després & Luc Beaulieu	Université Laval
Audrey Cantin	Comparaison de trois méthodes de traitement adaptatives en IMRT: le cas du cancer de la prostate	Louis Archambault & Luc Beaulieu	Université Laval
Tamar Chighvinadze	A spectroscopic compton scattering reconstruction algorithm for 2D cross-sectional view of breast CT geometry	Stephen Pistorius	University of Manitoba
Charles Antoine Collins-Fekete	Étude Monte Carlo des effets de l'orientation des sources et de la présence de calcifications dans la curiethérapie de prostate à bas débit de dose	Luc Beaulieu & Frank Verhaegen	Université Laval
Joannie Desroches	Intraoperative use of Rahman spectroscopy for brain tumor resection guidance	Frédéric Leblond & Jan Seuntjens	McGill University
Mathieu Gaudreault	Modèles d'identification de tissu basés sur des images acquises avec un tomodensitomètre à double énergie pour des photons à faible énergie en curiethérapie	Luc Beaulieu & Frank Verhaegen	Université Laval
Dominique Guillet	Use of the Microsoft Kinect for applications of patient surface data to radiotherapy	François DeBlois	McGill University
Susannah Hickling	Feasibility of x-ray acoustic computed tomography as a relative and "in vivo" dosimeter in radiotherapy applications	Issam El Naqa	McGill University
Leila Lukhumaidze	Electron Impact Ionization in EGSnrc	Dave Rogers	Carleton University
Hillgan Ma	Age quality and quantitation accuracy of penalized - likelihood reconstruction methods for 18F and 90Y	Anna Celler	University of British Columbia
R. Lee MacDonald	Dynamic trajectory-based couch motion for improvement of radiation therapy trajectories	Christopher Thomas	Dalhousie University
Robert Maglieri	A study of photoneutron spectra around high-energy medical linear accelerators using Monte Carlo simulations and measurements	John Kildea	McGill University
Francois Marshall	Reconstruction of the spatial distribution of surface activity concentration for an in-situ, Gamma-Ray Truck-borne Survey	Laurel Sinclair	Carleton University



Student	Thesis Title	Supervisor(s)	University
Chrystian Quintero Mateus	Radiochromic film dosimetry system for clinical CTDI measurements	Nada Tomic & Slobodan Devic	McGill University
Joel Mullins	Evaluation of dose calculations and couch positional accuracy in the context of dynamic couch trajectories	Alasdair Syme	McGill University
Philip Novosad	Atlas-based segmentation for HRRT brain PET	Andrew Reader	McGill University
Cathryn Parsons	Surface dose enhancement using low-Z electron/photon beams	Robin Kelly	Dalhousie University
Paul Prior	An iterative-triple-energy window approach to cross-talk correction in quantitative small-animal Tc-99m and In-111 single photon emission computed tomography	Glenn Wells	Carleton University
Simin Razavi	Sensitivity and distortion studies of PeTrack	Tong Xu	Carleton University
Shiqin Su	Design and production of 3D printed bolus for electron radiation therapy	James Robar	Dalhousie University
Mohammadreza Teimoorisichani	Development of scatter reconstruction algorithms to 3-dimensional positron emission tomography	Harry Ingleby & Stephen Pistorius	University of Manitoba
Frances Viel	Developing quality assurance procedures for gated volumetric modulated arc therapy in stereotactic ablative radiation therapy	Cheryl Duzenli	University of British Columbia
Sharlie D. Vincent	Développement d'un fantôme anthropomorphique pour validation inter et intra modalités d'algorithmes de déformation d'image	Louis Archambault & Luc Beaulieu	Université Laval
Jared Wiebe	Monte Carlo model of the Brainlab Novalis Classic 6 MV linac using the GATE simulation platform	Nicolas Ploquin	University of Calgary

PhD			
Olivier Alonzo-Proulx	Estimation of Volumetric Breast Density from Digital Mammograms	Martin Yaffe	University of Toronto
Tanner Connell	The feasibility and accuracy of Modulated Electron Radiation Therapy delivery and the design of novel scattering foils	Jan Seuntjens	McGill University
Mathieu Goulet	Application of tomography techniques to plastic scintillation dosimetry	Luc Beaulieu, Louis Archambault & Luc Gingras	Université Laval
Amr Heikal	Biochemical imaging of gliomas using MR Spectroscopic imaging for radiotherapy treatment planning	B.Gino Fallone	University of Alberta
Melissa Hill	Imaging performance in contrast-enhanced mammography	Martin Yaffe	University of Toronto
Xinchi Hou	Cyclotron based production of radioisotopes for medical imaging studies	Anna Celler	University of British Columbia
Nahid Jetha	Advances in nanopore sensing for DNA and protein analysis	Andre Marzali	University of British Columbia
Andrew Waters Joyce	Crossed-array transducer for real-time three-dimensional ultrasound imaging	Geoffrey R. Lockwood	Queen's University
Derek Man Chun Liu	Permanent prostate brachytherapy dosimetry: critical assessments and advancements	Ron Sloboda	University of Alberta
Moti Raj Paudel	Metal artifact reduction in computed tomographic (CT) images for radiotherapy treatment planning	Satyapal Rathee & B. Gino Fallone	University of Alberta
Yannick Poirier	An x-ray source model and characterization method for computing kilovoltage radiation dose	Mauro Tambasco & Wendy Smith	University of Calgary
Gang Wu	Image quality of digital breast tomosynthesis: optimization in image acquisition and reconstruction	Martin Yaffe	University of Toronto



The Profession of Medical Physicist should be Regulated

Colin Field

Medical Physicist, Cross Cancer Institute, Edmonton, AB

Horacio Patrocinio

Medical Physicist, Montreal General Hospital, Montreal, QC

Craig Beckett (moderator)

Medical Physicist, Allan Blair Cancer Centre, Regina, SK

Background

The concept of regulated professions is inherited in Canada and the United States through our legacy of English law. Although the body of Canadian law has evolved over the years reflecting changes in society, the elements of regulated professions remain largely unchanged. Regulated professions are the established means by which our society mitigates the risk posed by professional activities.

For the most part, the regulation of labour is a provincial jurisdiction. Provincial justice departments see the primary purpose for the establishment of regulated professions as protection of the public. "In our society, certain professions and occupations perform work activity of such a nature that if it is carried on in a negligent or fraudulent way, it can be dangerous to the public or contrary to the public interest. As a result, it has been the accepted practice to regulate the activities of groups such as doctors and nurses, engineers and lawyers, real estate and insurance brokers, carpenters and electricians..." [Saskatchewan Provincial Secretary's Department 1990,1]. The justice departments in each province maintain a list of criteria by which they assess requests for regulated status, the most important criteria being the protection of the public.

The enabling legislation for self-regulated professions authorizes two functions with the associated responsibilities: 1) granting licenses to qualified individuals and 2) disciplining licensed individual members of the regulated profession. The granting

of licenses leads to exclusive rights to practice. "The regulation of professional practice through the creation and the operation of a licensing system, then, is a matter of public policy; it emanates from the legislature; it involves the creation of valuable rights; and it is directed towards the protection of vulnerable interests." (Casey 2005, 2-12) A code of ethics is mandated for any self-governing regulatory body.

Four U.S. states have passed legislation establishing medical physics as a self-governing regulated profession. No Canadian Provinces have yet done so, although it is being more actively investigated.

Arguing for the proposition is Colin Field.

Colin Field is a medical physicist at the Cross Cancer Institute (Edmonton, Alberta) and a Clinical Professor at the University of Alberta. He obtained an MSc in medical physics from University of Alberta (1988), MCCPM in 1999, and FCCPM in 2008. Colin is currently co-chair of the NCIC CTG Radiation Oncology Quality Assurance Group (2006-present), and Planning Committee co-chair of the Integrating the Healthcare Enterprise in Radiation Oncology initiative (2007-present). In 2009, Colin was instrumental in the formation of a non-profit society, the Association of Medical Physics in Alberta, and was the President from 2009-2011. Colin has thoroughly enjoyed his medical physics career, and is a strong advocate for medical physics becoming a regulated profession.

Arguing against the proposition is Horacio Patrocinio.

Horacio Patrocinio is a medical physicist at the McGill University Health Centre, and an Assistant Professor in the department of Oncology of McGill University. He is board certified in radiation oncology physics by the CCPM and the ABR, and is a fellow of the CCPM. Horacio was president of the Association Quebecoise des Physiciens Médicaux Cliniques from 2008 to 2011, and was previously on the board of COMP as treasurer. He is currently on the board of the Canadian College of Physicists in Medicine, holding the office of Registrar. He has also participated in numerous technical cooperation missions on behalf of the IAEA and volunteered for the ABR.

For the Proposition: Colin Field

Opening Statement

"The Supreme Court of Canada has concluded that it is difficult to overstate the importance in our society of the proper regulation of our learned professions. The primary purpose of the establishment of self-governing professions is the protection of the public. This is achieved by ensuring that only the qualified and the competent are permitted to practice and that members of the profession conform to appropriate standards of professional conduct." [1] Regulating the profession of Medical Physics will protect the public from the risks associated with incompetent, unethical, or impaired practice and thereby elevate the quality of medical physics services and ultimately



lead to better healthcare in the country. About 20 per cent of the jobs in Canada are regulated occupations. These include regulated professions and skilled trades [2]. The regulation of professions is a provincial matter. CCPM provides a national certification process, and the COMP/CCPM Code of Ethics states that "Medical Physicists shall always actively promote and safeguard the well-being and interests of the patient, public, and co-workers." This is consistent with a self-governing regulated profession. However, it does NOT provide the provincial legislation to ensure qualified medical physicists are hired to perform specific activities. As long as medical physics remains an unregulated profession, public safety is at jeopardy. Employers, who are subject to time and fiscal pressures, and who may not appreciate what medical physicists do, and may not understand what constitutes a qualified medical physicist, may put the public at risk by hiring less qualified and less expensive personnel. Provincial regulation is consistent with the CARE act in the US which is being introduced to license medical physicists in each state.

In Alberta, the Health, Dental & Emergency Services category [3] contains 28 regulated health care professions. Regulation supported by provincial legislative acts is aimed at protection for "the physical and psychological health and safety of the public from incompetent, unethical or impaired practice of the profession" (Health Professions Act, Alberta, 25(4)a). With regulation, the standards and guidelines established by the profession are legislated and are overseen by a Regulatory College who is answerable to the government authority. Along with title restrictions, the HPA includes a list of 'restricted activities.' These restricted activities can only legally be performed by members of regulated professions as specified by the HPA. Medical physics is not currently one of the regulated professions, although the Association of Medical Physicists in Alberta has been pursuing regulation since 2009. Recently,

the Alberta government has suggested a joint application with the Clinical Laboratory Doctoral Scientists (CLDS) to the College of Physicians and Surgeons of Alberta (CPSA). The initial response from the CPSA has been very positive.

Regulation can be inconvenient, time consuming, and comes with a cost. Some individuals interpret it as elitism and an attempt to restrict the practice of medical physics to those that are 'in the club.' Others see it as an attempt at self-preservation in a time when boundaries between professions are increasingly blurred. However, as indicated by the Supreme Court of Canada, "it is difficult to overstate the importance in our society of the proper regulation of our learned professions". It is imperative that our learned profession of medical physics joins the regulated world of our colleagues (radiation oncologists, radiation therapists, nurses, X-ray technologist, etc.) in protecting the public by ensuring that only qualified and the competent medical physicists are permitted to practice.

References:

1. James T. Casey, *The Regulation of Professions in Canada*, Toronto, Carswell Thomson Professional Publishing, 1994, pp. 1-1 - 1-3.
2. MacDonal, R. Adachi, *Regulation of Social Work Practice in Canada*, Social Work Summit, Montreal, 2001, <http://www.ucalgary.ca/SW/caddssw/projects/Registration%20in%20Canada%20-%20social%20work%20summit.pdf>
3. Alberta Regulated Professions, <http://www.albertacanada.com/immigration/working/occupations-regulated-professions.aspx>

Against the Proposition: Horacio Patrocinio

Opening Statement

Licensure is one means of regulating access to a profession with the goal of ensuring the protection of the public. While there are many noble justifications for seeking the protection of licensure, there are also self-serving reasons, often centered around advancement of a group's own causes such as salaries or bargaining power.

Clinical medical physicists already work in a regulated or self-regulated environment. For radiation safety, our work is scrutinized by organizations such as the CNSC. In our day-to-day practice, we voluntarily and diligently follow practice recommendations from numerous national and international bodies such as CPQR, AAPM, and IAEA. Many employers require certification by CCPM, ABR, and ABMP, organizations that impose increasingly strict requirements on the educational background, experience, and continuing education needed to obtain and maintain certification. The credentials needed to obtain employment are well defined in Canada and the US.

What will licensure in medical physics add, other than recognition? Is it the ability to protect reserved activities? Yes, though to date organizations such as COMP have done well in defending the scope of practice of medical physicists. Is it to further protect the public? This isn't clear. There is little data on accidents resulting from medical physics practice and none comparing the incidence of accidents in places where medical physicists are licensed versus where they are not. Ironically, in the US, several of the most high profile accidents in recent years occurred in US states where licensure exists.

When we in Quebec applied to have medical physicists form a professional Ordre, we were told that we had not made a strong enough case for our impact on safety, and that our numbers were too few to be viable. Professions must maintain infrastructure for admissions, grievance, liability, and continuing education. The smallest profession at that time in Quebec was that of midwife, a very small group by Quebec standards with about 300 members. We had 70 physicists at the time, second only to Ontario. The costs of applying for licensure and of maintaining the infrastructure to keep it going are great and borne by the members of the profession. What infrastructure would small provinces with around 10 physicists or less be able to maintain? Even



if physicists attempted to join with other similar professionals, such as chemists, the total numbers could still be too few.

The Quebec government also seemed more inclined to deregulate professions in favour of self-regulation, so as to decrease barriers to the flow of professionals from other provinces and countries. Would adding licensure make it difficult to find medical physicists willing to work in remote areas?

Licensure of medical physicists may yet become a reality in Canada, but we should only seek it for the right reasons. In Quebec, for example, support for licensure dropped significantly once our professional association settled a new salary agreement with the government. The motivation cannot be to control access to the field in order to improve our bargaining position. We would need to build a stronger case with regards to our impact on safety.

Rebuttal: Colin Field

My honorable opponent's claims that 1) "Clinical medical physicists already work in a regulated or self-regulated environment. ", and 2) "The credentials needed to obtain employment are well defined in Canada and the US." are not strictly true. Both claims are subject to the voluntary support of administrators. Until medical physics becomes regulated, there is no legislation that mandates either claim. Work force metrics are similarly recommended by various international organizations, yet many provinces choose to ignore them. In times of cost savings measures, administrators may decide to hire less expensive staff, which would unwittingly put the public at risk. Regulated professions require the legislation to protect the public from unqualified individuals, and ensure that specific tasks are performed by qualified individuals. It also provides a mechanism for dealing with complaints from the public. My honorable opponent raises numerous legitimate examples of the support for providing high quality medical physics services by organization such as

CNSC, CPQR, and AAPM. Unfortunately, these resources do not protect the public from the practice of unethical or unqualified personnel posing as medical physicists. Provincial legislation through regulated professions is the only means of protecting the public.

While regulation cannot guarantee an absence of errors, it is the established state of diligence for safeguarding against errors for the other professions that work in our field (physicians, radiation therapists, radiological technologists, nurses, etc.). Recently reported incidents that occurred in states requiring licensure may have been found because the state was licensed. Similar, and other, errors are potentially occurring in other states that are not licensed, and the errors are just not being recognized and/or reported.

Alberta's experience with trying to become a regulated profession has been very similar to Quebec's prior experience. We were also told that our numbers were too small (about 40) even when compared to midwives who at the time were about 30. This has initiated a joint application with the Clinical Laboratory Doctoral Scientists (CLDS) to join the College of Physicians and Surgeons of Alberta (CPSA). The strong support for this application from the CLDS, CPSA, and the provincial government is encouraging.

With support from the CPSA and the Alberta government, medical physics may actually become a regulated profession in Alberta. The model of joining the provincial College of Physicians and Surgeons in each province may be the way forward for medical physicists from across the country. COMP and CCPM in conjunction with the Canadian College of Physicians and Surgeons could take a leadership role in helping to develop these provincial contacts to help regulate the medical physics profession. As my honorable opponent says, "Licensure of medical physicists may yet become a reality in Canada, but we should only seek it for the right reasons." – Protection of the public !

Rebuttal: Horacio Patrocinio

My honourable opponent states that as long as medical physics remains an unregulated profession public, safety is in jeopardy. This statement suggests that the public is currently at significant risk from malpractice events in medical physics. It also suggests that there is no protection against this risk in Canada. However, the argument for the proposition provides no evidence in support of the first claim. The number of accidents in Canada resulting from medical physics malpractice is likely too small to provide a good argument. Perhaps the reason for this low number of adverse events is that medical physics is not entirely unregulated. Certification is a recognized proof of competency in Canada. In many provinces, it is a requirement imposed when hiring medical physicists. Perhaps it is this "self-regulation" that is instrumental in achieving our good record. Provincial regulation would likely only enshrine the requirements associated with certification into law.

The model presented for Alberta involves a joint application with chemists made through the physicians' group. Joint applications are an attempt to avoid the viability problem by bringing smaller groups together to pool resources and reduce costs. The downside is that some of the autonomy of being an independent group can be lost. This happens in labour unions when the needs of a small subgroup get lost in the needs of the majority. It also happens in any multi-disciplinary group where decisions always seem to gravitate to the average or towards the side that is either strongest or loudest.

One of the strongest arguments in favour of regulation is to protect "reserved" activities. Few will dispute that measuring radiation doses, for example, is a job we are most qualified to do. However, before we can argue this, we need to make sure our practice reflects it. Are medical physicists calibrating linacs, for example, or have they delegated this job to physics

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Citation Award 2014

Michael S. Patterson
Juravinski Cancer Centre, Hamilton, ON

Once upon a time I wrote an article for *InterACTIONS* (Vol. 50, pp. 29-32) in which I suggested that the ground rules for the Sylvia Fedoruk Award should be changed. I argued that it is laborious and inevitably subjective to try to identify the “best” paper published in our field each year. Many papers are never even considered because the range of journals in which medical physicists publish is so broad. Furthermore, as measured by citations, papers that win the award usually prove to have no more impact than an average paper in the field. I proposed a simple, objective solution that would recognize the paper published in a given year that was cited most often over the next ten years. The response to my plea has been underwhelming, but, nevertheless, I have announced a winner in *Interactions* for eleven years. The rules (invented by this author) are simple and similar to those established for the Sylvia Fedoruk Award: the work must have been performed mainly at a Canadian institution, only papers in peer-reviewed journals are considered, review or

popular articles are not eligible, and the paper must be “medical physics” – for example, articles dealing with clinical application of a mature imaging technology are not included, even if medical physicists are co-authors. The winner is determined from data in the Web of Science maintained by the Institute of Scientific Information (ISI) including citations from all databases.

For 2014, we had a clear winner cited 328 times from publication until the end of 2014:

T. Pan, T. Y. Lee, E. Rietzel and G. T. Y. Chen, 4D-CT imaging of a volume influenced by respiratory motion on multi-slice CT, *Medical Physics* 31: 333-340 (2004).

Abstract: We propose a new scanning protocol for generating 4D-CT image data sets influenced by respiratory motion. A cine scanning protocol is used during data acquisition, and two registration methods are used to sort images into temporal phases. A volume is imaged in multiple acquisitions of 1 or 2 cm

For the record, here are the winners from previous years:

Year of publication	WINNER	Citations in 10 years	Current total
1994	R. M. Henkelman, G. J. Stanisz, J. K. Kim and M. J. Bronskill, Anisotropy of NMR properties of tissues, <i>Magnetic Resonance in Medicine</i> 32: 592-601.	129	261
1995	D. W. O. Rogers, B. A. Faddegon, G. X. Ding, C.-M. Ma, J. Wei and T. R. Mackie, BEAM: A Monte Carlo code to simulate radiotherapy treatment units, <i>Medical Physics</i> 22: 503-524.	310	872
1996	A. Kienle, L. Lilge, M. S. Patterson, R. Hibst, R. Steiner and B. C. Wilson, Spatially resolved absolute diffuse reflectance measurements for noninvasive determination of the optical scattering and absorption coefficients of biological tissue, <i>Applied Optics</i> 35: 2304-2314.	125	316
1997	J. S. Gati, R. S. Menon, K. Ugurbil and B. K. Rutt, Experimental determination of the BOLD field strength dependence in vessels and tissue, <i>Magnetic Resonance in Medicine</i> 38: 296 – 302.	196	320
1998 (Tie)	J. H. Siewerdsen, L. E. Antonuk, Y. El-Mohri, J. Yorkston, W. Huang and I. A. Cunningham, Signal, noise power spectrum, and detective quantum efficiency of indirect-detection flat-panel imagers for diagnostic radiology, <i>Medical Physics</i> 25: 614 – 628.	121	170
	A. Kienle, M. S. Patterson, N. Dognitz, R. Bays, G. Wagnieres and H. van den Bergh, Noninvasive determination of the optical properties of two-layered turbid media, <i>Applied Optics</i> 37: 779 – 791.	121	186
1999	D. H. Simpson, C. T. Chin and P. N. Burns, Pulse inversion Doppler: a new method for detecting nonlinear echoes from microbubble contrast agents, <i>IEEE Transactions on Ultrasonics Ferroelectrics and Frequency Control</i> 46: 372-382 (1999).	201	333
2000	I. Kawrakow, Accurate condensed history Monte Carlo simulation of electron transport. I. EGSnrc, the new EGS4 version, <i>Medical Physics</i> 27: 485-498.	333	487
2001	J. G. Sled and G. B. Pike, Quantitative imaging of magnetization transfer exchange and relaxation properties in vivo using MRI, <i>Magnetic Resonance in Medicine</i> 46: 923-931.	121	160
2002	M. Niedre, M. S. Patterson and B. C. Wilson, Direct near-infrared luminescence detection of singlet oxygen generated by photodynamic therapy in cells in vitro and tissues in vivo, <i>Photochemistry and Photobiology</i> 75: 382-391.	192	238
2003	S. C. L. Deoni, B. K. Rutt and T. M. Peters, Rapid combined T-1 and T-2 mapping using gradient recalled acquisition in the steady state, <i>Magnetic Resonance in Medicine</i> 49: 515-526.	194	231



length along the cranial-caudal direction. In each acquisition, the scans are continuously acquired for a time interval greater than or equal to the average respiratory cycle plus the duration of the data for an image reconstruction. The x ray is turned off during CT table translation and the acquisition is repeated until the prescribed volume is completely scanned. The scanning for 20 cm coverage takes about 1 min with an eight-slice CT or 2 mins with a four-slice CT. After data acquisition, the CT data are registered into respiratory phases based on either an internal anatomical match or an external respiratory signal. The internal approach registers the data according to correlation of anatomy in the CT images between two adjacent locations in consecutive respiratory cycles. We have demonstrated the technique with ROIs placed in the region of diaphragm. The external approach registers

the image data according to an externally recorded respiratory signal generated by the Real-Time Position Management (RPM) Respiratory Gating System (Varian Medical Systems, Palo Alto, CA). Compared with previously reported prospective or retrospective imaging of the respiratory motion with a single-slice or multi-slice CT, the 4D-CT method proposed here provides (1) a shorter scan time of three to six times faster than the single-slice CT with prospective gating; (2) a shorter scan time of two to four times improvement over a previously reported multi-slice CT implementation, and (3) images over all phases of a breathing cycle. We have applied the scanning and registration methods on phantom, animal and patients, and initial results suggest the applicability of both the scanning and the registration methods.

Message from the CCPM President

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North America, so it will be a good opportunity to describe our certification process to medical physicists from all over the world.

The final schedule for the Fellowship oral exams, which will also be held at the World Congress, will be posted soon on our website. Our AGM has been

tentatively scheduled for Thursday, June 11th at 5:00 p.m. I encourage you all to attend if you're going to be at the World Congress. I hope to see you all there.

Executive Director Report

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on the COMP Annual Report, the COMP and CCPM websites, working with our current service provider to update the design of InterACTIONS, templates for our ebroadcast communications, and

providing support for our social media channels. Sue has an undergraduate degree in medical physics as well as an MBA and most recently worked in product management with MDS Nordion.

As always thank you for your support – bring on Spring!

The Profession of Medical Physicist should be Regulated

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assistants? Who is actually performing the “reserved” activity? These types questions will come up when an application for licensure is reviewed, and will likely not get the same answer everywhere, making it difficult to impose a common standard.

In his conclusion, my honourable opponent correctly hints that to some

people, regulation can seem self-serving. In the mind of the public, nothing does more to discredit a profession than to see its watchdog, the licensing body, acting in the interest of its members at the expense of those it aims to protect, particularly if the needs of both diverge. That is exactly what can happen if we try to regulate the profession for our own interests. If

we embark on this path, we must do so accepting that it could cost us significantly more financially and return nothing tangible to us as individuals. The only arguable benefit would be to provide some peace of mind for the public even though the argument in support of the notion that we currently pose a significant danger is not very strong.



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
Abbasian	Parandoush	CancerCare Manitoba	Student
Anusionwu	Princess	CancerCare Manitoba	Student
Bergen	Robert	CancerCare Manitoba	Student
Dubicki	Josef		Associate
MacFarlane	Michael	London Regional Cancer Program	Student
McVicar	Nevin	BC Cancer Agency - Vancouver Centre	Full
Murrell	Donna	Western University	Student
Sinn	David	Tom Baker Cancer Centre	Full
Sun	Hongwei	CancerCare Manitoba	Student
Tamagi	Daniel	University of Alberta	Student

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

Last Name	First Name	Institute/Employer
Chighvinadze	Tamar	CancerCare Manitoba
Octave	Nadia	CHU de Québec
Viel	Francis	CSSS Rimouski-Neigette

Interested in Hosting the 2017 COMP Annual Scientific Meeting?

The COMP Science and Education Committee is looking for a location and Local Arrangements Committee (LAC) for the 2017 Annual Scientific Meeting.

The LAC works with the Science and Education Committee and the COMP office and provides the local “flavour” and hospitality for the meeting. This involves organizing the social events, the fun run and any other special activities, providing volunteer support for registration, audiovisual, exhibitor set-up, photography etc.

Hosting the ASM is a great opportunity to showcase your centre and its geographic location, team building within your centre, and provide experience and networking opportunities for both staff and students. In exchange for the time and energy required, LAC's are provided with 10 free registrations to the meeting as well as a cheque for \$2000 for the hosting centre,

If you are interested or would like more information about this opportunity, please contact Nancy Barrett at nancy@medphys.ca or 613-599-1948.

Dates to Remember

InterACTIONS Summer issue deadline:
June 1st, 2015

Harold Johns Travel Award application
deadline: April 10th, 2015

Volunteer Opportunities – COMP Director-
at-Large: April 30th, 2015

Volumetric Modulated Arc Therapy (VMAT)
Course, Vancouver, BC:
May 8th – 9th, 2015

AutoSeg 2015, Metro Toronto Convention
Centre, Toronto, ON: June 7th, 2015

World Congress: June 7th – 12th, 2015

Atlantic Medical Physics Meeting,
Charlottetown, PEI:
July 31st – Aug 2nd, 2015

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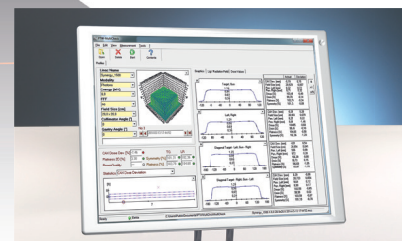
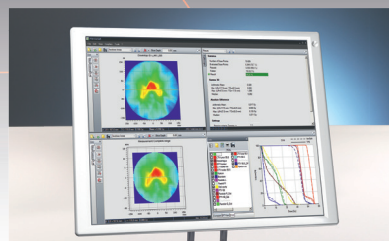
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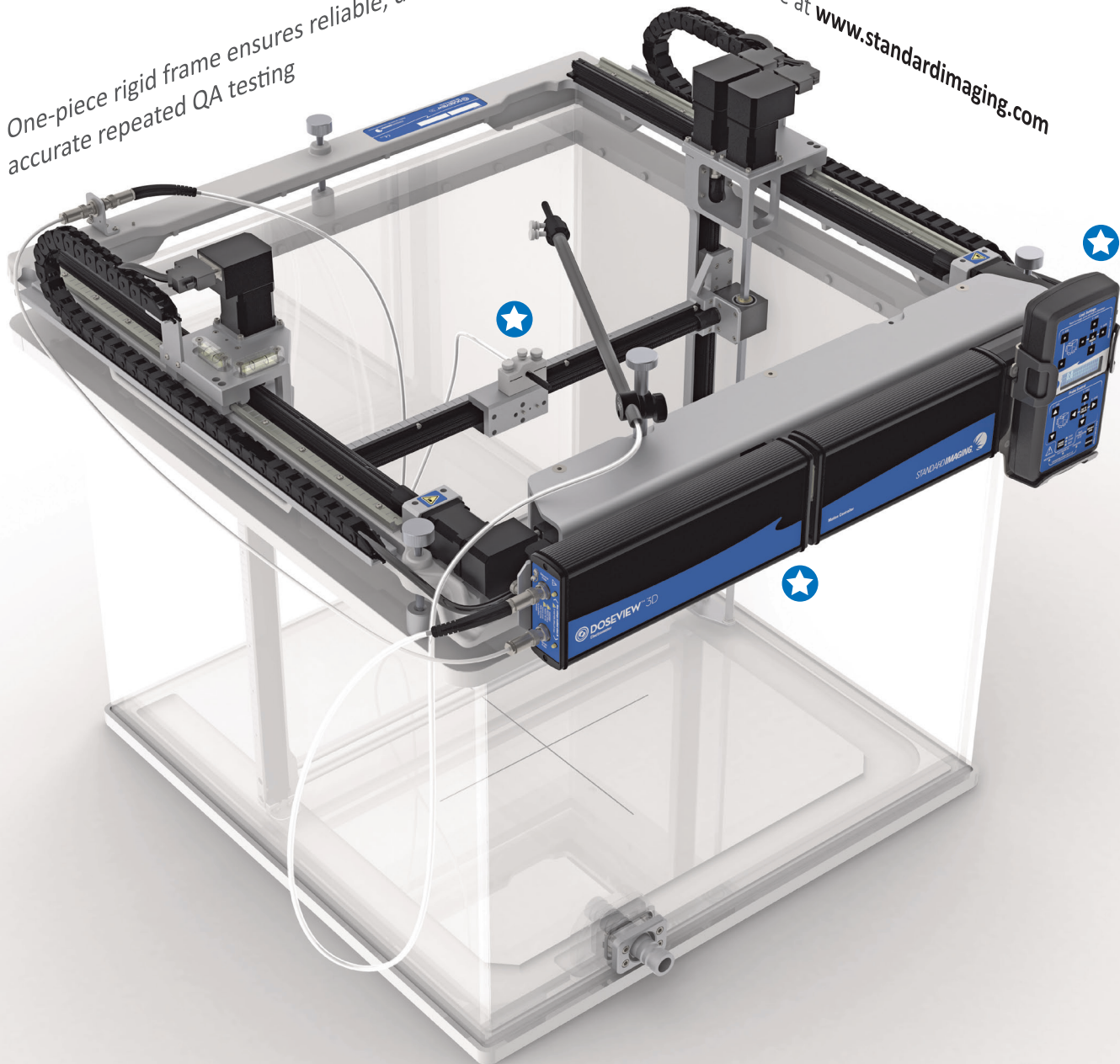
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