InterACTIONS

CANADIAN MEDICAL
PHYSICS NEWSLETTER
Le BULLETIN CANADIEN
de PHYSIQUE MÉDICALE

PUBLICATIONS MAIL AGREEMENT
NO. 40049361

RETURN UNDELIVERABLE
CANADIAN ADDRESSES TO:
COMP/CCPM Office
PO Box 72024
Kanato North RPO
OTTAWA, ON K2K 2P4
CANADA

COMP OCPM

A publication of the Canadian Organization of Medical Physicists and the Canadian College of Physicists in Medicine

http://www.medphys.ca

ISSN 1488-6839

THE CANADIAN COLLEGE OF PHYSICISTS IN MEDICINE

LE COLLÈGE CANADIEN DES PHYSICIENS EN MÉDECINE

59 (4) October/octobre 2013

MINIMIZE DISTURBANCE

EXRADIN W1 SCINTILLATOR

SIMPLY, DOSE

The Exradin W1 Scintillator is a new detector whose unrivaled near-water equivalent characteristics produce a more natural dose measurement.

- **Minimal Disturbance, Fewer Corrections**
  The W1's components closely mimic water, significantly reducing beam perturbation and negating measurement corrections necessary with other detectors.
- **Ideal Characterization and Measurement of Small Fields**
  1mm spatial resolution makes the W1 a perfect tool for SRS and SBRT with Gamma Knife®, Cyberknife®, BrainLab®, Varian®, Elekta® and TomoTherapy® systems.
- **Automatically correct for Cherenkov Effect**
  Pair the W1 with the SuperMAX Electrometer to effectively eliminate Cherenkov effect without the need for extraneous calculations.

Exradin W1 Scintillator
IMAGED AT 35 kVp IN AIR

Other detectors
IMAGED AT 70 kVp IN AIR

Visit us on the web!

www.standardimaging.com/scintillator

STANDARD IMAGING®

1336-20, 08/12

COMP OCPM
THE CANADIAN COLLEGE OF PHYSICISTS IN MEDICINE
LE COLLÈGE CANADIEN DES PHYSICIENS EN MÉDECINE

InterACTIONS

Volume 59, Number 4 – October/octobre 2013

Contents

COMP BOARD

President:
Luc Beaulieu, PhD
CHUQ—Hôtel-Dieu de Québec
Québec, QC
Tel: (418) 525 4444 ext 15315
beaulieu@phy.ulaval.ca

Past President:
Peter McGhee, PhD, FCCPM
Thunder Bay Regional HS Centre
Thunder Bay, ON
Tel: (807) 684-7325
mcgheep@tbh.net

President Elect:
Marco Carlone PhD, MCCPM
Princess Margaret Hospital
Toronto, ON
Tel: (416) 946-4501 ext: 2409
marco.carlone@rmp.uhn.on.ca

Secretary:
Isabelle Gagné, PhD, MCCPM
BC Cancer Agency
Vancouver Island Centre
Victoria, BC
Tel: (250) 519-5500 ext 693783
imgagne@bccancer.bc.ca

Treasurer:
Crystal Angers, MSc, MCCPM
The Ottawa Hospital Cancer Centre
Ottawa, ON
Tel: (613) 737-7700 ext 70030
cangers@ottawahospital.on.ca

Councillor for Communications:
Parminder Basran, PhD, FCCPM
BC Cancer Agency — Vancouver Island Centre
Victoria, BC
Tel: (250) 519-5624
pbasran@bccancer.bc.ca

Councillor for Professional Affairs:
Craig Beckett, MSc, FCCPM, dABR
Allan Blair Cancer Centre
Regina, SK
Tel: (306) 766-2682
craig.beckett@saskcancer.ca

Councillor for Quality Assurance and Radiation Safety Advisory:
Michelle Nielsen MSc, FCCPM
Carlo Fidani Regional Cancer Centre
Mississauga, ON
Tel: (905) 813-1100 ext 5072
mnielsen@cvh.on.ca

Councillor for Science & Education:
Stephen Breen PhD, MCCPM
Princess Margaret Hospital
Toronto, ON
Tel: (416) 946-4501 ext 5421
stephen.breen@rmp.uhn.on.ca

CCPM BOARD

President:
Matthew G. Schmid, MSc, FCCPM
BC Cancer Agency — Southern Interior
Kelowna, BC
Tel: (250) 712-3917
mschmid@bccancer.bc.ca

Vice-President:
Clément Arsenault, PhD, FCCPM
Centre d'oncologie Dr. Léon-Richard
Moncton, NB
Tel: (506) 862-4151
clement.arsenault@vitalitenb.ca

Registrar:
Horacio Patrocinio, MSc, FCCPM
McGill University Health Centre
Montreal, QC
Tel: (514) 934-8052
Horacio.patrocinio@mcgill.ca

Chief Examiner:
Boyd McCurdy, PhD, FCCPM
CancerCare Manitoba
Winnipeg, MB
Tel: (204) 787-1966
boyd.mccurdy@cancercare.mb.ca

Deputy Chief Examiner:
Renée Larouche, MSc, FCCPM
CHUM - Hôpital Notre-Dame
Montreal, QC
Tel: (514) 890-8000 ext 24860
renee.larouche.chum@ssss.gouv.qc.ca

Secretary-Treasurer:
Glenn Wells, PhD, FCCPM
Ottawa Heart Institute
Ottawa, ON
Tel: (613) 798-5555 ext 18175
gwells@ottawaheart.ca

General Board Members:
Sherry Connors., MSc, FCCPM
Cross Cancer Institute
Edmonton, AB
Tel: (780) 432-8775
sconnors@ualberta.ca

Darcy Mason, MSc, FCCPM
Durham Regional Cancer Centre
Oshawa, ON
Tel: (905) 576-8711 ext 2816
damason@lakeridgehealth.on.ca

COMP/CCPM Office
P.O. Box 72024
Kanata North RPO
Ottawa, ON, K2K 2P4 Canada
Telephone:(613) 599-3491
Facsimile: (613) 435-7257
E-mail: admin@medphys.ca
Website: www.medphys.ca

The Canadian Medical Physics Newsletter, which is a publication of the Canadian Organization of Medical Physicists (COMP) and the Canadian College of Physicists in Medicine (CCPM) is published four times per year on 1 Jan., 1 April, 1 July, and 1 Oct. The deadline for submissions is one month before the publication date. Enquiries, story ideas, images, and article submissions can be made to:

Christopher Thomas, PhD, MCCPM
Nova Scotia Cancer Centre
Medical Physics Dept.
5820 University Avenue
Halifax, NS B3H 1V7
Email: chris.thomas@cdha.nshealth.ca
Phone: (902) 473-1302

Members of the Editorial Board include:
Idris Elbakri
Luc Beaulieu
Parminder Basran

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

ADVERTISING (both corporate and job)
Enquiries can be made to:
COMP/CCPM Office
P.O. Box 72024
Kanata North RPO
Ottawa, ON, K2K 2P4
Canada
Telephone:(613) 599-3491
Facsimile: (613) 435-7257
E-mail: admin@medphys.ca
Website: www.medphys.ca

Job Advertising Options

OPTION 1 ($240): Job posting on COMP/CCPM website only (active for 2 months)
OPTION 2 ($360): Job posting on COMP/CCPM website AND in InterACTIONS (single page)
OPTION 3 ($400): Job posting is immediately e-mailed to COMP/CCPM members (no website or InterACTIONS posting)

Message from the COMP President

As you get your copy of InterACTIONS, the 2013 COMP annual meeting will have passed. Stephen Breen and his counterparts from CARO worked very hard to bring you an exciting meeting. I hope you have enjoyed it, taken the opportunity to network with your colleagues across the country and made new friends among our partners from CARO. As you may now have learned, the next two meetings to put on your agenda is the Winter School in Quebec City at the end of January 2014 and the next COMP ASM in Banff, Alberta in July 2014.

One of the funny things about the timing of this message from the president is that it must be written before the ASM but will be reach you a few weeks after. Thus, I have to assume how you the members have received and voted on the new Bylaws document. I sense a positive vibe a a and will assume that you have voted in majority for it! I have to say that the NPF Act has taken a large fraction of our time the past years, enough to slow down other things we would have like to tackle more seriously. But even with a positive vote, lots remain to be done. Documents must be submitted and approved by the federal government. COMP must also look at all of its policies and procedures documents. These documents dictate how we do business day-to-day. For example, the terms of reference from our committees are included in that category, how we handle requests for access to our mailing list and much more. In light of the new Act, COMP will have to update a few and create new ones, but more importantly group them in one place and, more importantly, do this while being fully transparent to you the members.

La période qui suit la réunion annuelle en sera aussi remplie pour les membres du comité de direction de l'OCPM qu'elle celle qui ont conduit à la préparation et la soumission à l'assemblée de membres des nouveaux statuts. En effet une fois entériné par les membres, les documents doivent être envoyés et acceptés par le gouvernement fédéral. Il nous faudra aussi reviser l'ensemble des documents touchant à nos politiques internes, celle qui nous guide dans le fonctionnement au jour le jour de l'association. C'est le cas pour l'ensemble de nos comités, mais aussi pour des choses aussi courantes que les demandes d'accès à notre liste de membres ou encore notre liste d'envoi courriel. Il est probable que la nouvelle réglementation nous oblige non seulement à revoir certains de ces documents, mais aussi en écrire des nouveaux. Évidemment, ceux-ci seront en tout moment consultable par les membres.

By the time you get your copy of InterACTIONS, another important meeting will have taken place: the 20th International Conference on Medical Physics, held in Brighton, UK from September 1st to 4th. During this meeting, the 50th anniversary of the International Organization of Medical Physicists (IOMP) was celebrated. As one of the founding members (Canada, USA, UK and Sweden were the four founding members), COMP got to deliver a special anniversary note and also to invite the community to attend the 2015 World Congress on Medical Physics and Biomedical Engineering that will be held in Toronto. Furthermore, IOMP used this opportunity to acknowledge the outstanding contributions of 50 medical physicists in the period ranging from 1963 to 2013. COMP had put forth over 10 names, all of its gold medal winners plus Harold Jones. In the end, five COMP members were picked by IOMP from its worldwide pool of candidates(!): Jack Cunningham, Aaron Fenster, Ervin Podgorsak, Dave Rogers and Jake van Dyk. Sincere congratulations to all of these great ambassadors for the Canadian medical physics community.

Over the last year, COMP has become more much involved on the medical imaging side of things. Creation of the Imaging Task Force (ITF) has greatly helped in tackling important issues involving medical physicists across the country. Within the next few weeks, expect COMP to unveil key position statements, not only regarding Safety Code 35 but also for medical imaging in general. COMP is also actively following, through the ITF, new regulation changes being proposed in Ontario with regards to diagnostic imaging (HARP Act) and in particular the issue of radiation protection officer positions in x-ray imaging, which have been inaccessible to qualified medical physicists up to now. Furthermore, the Professional Affair Committee (PAC), together with the ITF, have been involved in the careful review of a document proposed by the Canadian Association of Radiologists (CAR) on equipment lifecycle, at the request of CAR.

Luc Beaulieu

La prochaine année s'annonce bien remplie pour l'OCPM, non seulement par la mise en place des nouveaux statuts et des nouvelles façons de procéder qui en découlent, mais aussi par la participation et le leadership de l'OCPM dans plusieurs projets d'intérêt pour nos membres autant en radio-oncologie qu'en imagerie médicale. Plus de détails vous parviendront dans la prochaine édition d'InterAction. D'ici là, l'OCPM est toujours à la recherche de bénévole. Si cela vous intéresse, n'hésitez pas à nous contacter.

Do not forget the International Day of Medical Physics on November 7th (http://www.iomp.org/?q=content/international-day-medical-physics). The theme of the day is: Radiation exposure from medical procedures, ask the Medical Physicist!

Message from the CCPM President

By the time you read this, our 2013 AGM will have taken place in Montreal. We will have welcomed new Members and Fellows, and the board will have reported on the business of the College. More significantly, however, all members who attended will have had an opportunity to express their opinions about our proposed bylaw changes and propose amendments to them.

Within the preceding few months, three dial-in teleconferences were arranged by COMP and CCPM at which time members were given the opportunity to comment and ask questions about the new proposed bylaws prior to the AGM. One of these three teleconferences was designated specifically for CCPM members. As well, you have received a number of communications explaining the rationale for the proposed changes.

One aspect of the new bylaws that has raised some attention relates to Fellowship in the College. The proposed new bylaws introduce new wording surrounding the granting of Fellowship:

"The designation of Fellow of the Canadian College of Physicists in Medicine is an honorific distinction bestowed by the College upon individuals who have demonstrated excellence in the practice of medical physics and fulfilled other professional requirements as determined by the Board from time to time."

The new NFP Act requires a level of clarity around membership classes that wasn't present in our old bylaws. Under the new bylaws, Fellowship is an honorific distinction bestowed by the College upon individuals demonstrating excellence in the practice of medical physics. It is not a separate class of membership. This is no way diminishes the role or importance of Fellowship. The process by which Fellowship is granted will not be changing. The same eligibility criteria will still be in place and the examination process will remain unchanged. Although the wording in the new bylaws seems different, I want to make it clear that there has not been any attempt to change any significant aspect of Fellowship within the College.

I sincerely hope that all members now feel that they are well-informed about the proposed changes. At this point in time, it is too late to propose any further changes to the draft bylaws, but if you would like any further clarification of any of the information provided thus far prior to casting your vote, don't hesitate to contact me.

In my previous column, I encouraged all members to attend the AGM if possible. Now I would like to encourage all members to take the time to vote on the new bylaws. As dictated by our present bylaws, amendments to the bylaws must be approved by the members via an electronic vote to take place following the AGM. The last day that voting will be available will be October 31, 2013. This new electronic voting provision allows all members of the College, not just those who were able to attend the AGM, the opportunity to vote on these important issues. I strongly encourage all members to take advantage of this opportunity.

Preparing for our transition to the new Canada Not-For-Profit Corporations Act has preoccupied the board for a few months now, and it will still require a significant time commitment from our Board members for a few more months. The extra effort required has been on top of the already substantial effort required by Board members to deal with the on-going business of the College. I would like to thank all the board members for their dedication to this work.

Matthew G. Schmid

The AGM in Montreal also marked the end of Sherry Connors' second three-year term on the board. Sherry served three years as a board member at large and three years as Secretary-Treasurer. Over the past six years, Sherry has made a huge contribution to our organization. Sherry's presence on the board has been especially valuable over the past few months during which time the Board has had to rewrite our bylaws and Regulations, and draft a contract with COMP. This process has led us to consider in detail how our organization should be structured in the future. An important aspect of this has been to look back at our past. Sherry has provided exemplary service to the medical physics community throughout her career, having previously served on the boards of both COMP and AAPM. Her depth of understanding of the workings of such organizations, and her historical perspective on our own organization, has been invaluable in planning our new organizational structure. We all owe Sherry a great deal of thanks and wish her all the best in the future.

Executive Director Report

Although the season of fall is now upon us and a whirlwind of activities is well underway for upcoming COMP programs and events, it is great to reflect on all that has happened since the July issue. As Luc mentions in his article, as I write this column I am not sure of the outcome of the vote at the AGM for the proposed bylaws. I do know that the Boards of both COMP and CCPM committed a considerable amount of time to develop the proposed bylaws and made a concerted effort to effectively communicate the proposed changes. Thank you to all who provided feedback and participated in the open teleconferences. The whole process was slow, deliberate and effortful and I am hopeful that the membership supported the changes. I am sure all of the Board members would agree that a lot was learned from going through the process.

It was a pleasure working with the CARO team to plan and deliver the joint ASM in Montreal. Thank you to Stephen Breen, Clément Arsenault, Cynthia Araujo and François DeBlois for all of their work on the planning committee. I would also like to thank Gisele Kite for her effort to ensure that details that are important specifically to COMP were well taken care. We look forward to your feedback on the joint meeting. We are already gearing up for the Banff ASM and Wendy Smith and her team are looking forward to welcoming you at the Banff Centre from July 9th to the 12th. We are very fortunate to have such beautiful destinations in Canada and I hope that you plan on spending some time in the mountains either before or after the ASM.

At this year's annual general meeting (AGM), we had the opportunity to thank outgoing Board member Isabelle Gagné, who served as COMP Secretary for the past three years. We are grateful for Isabelle's contribution and at the time of the writing of this column, we do not know who Isabelle's replacement will be but are very fortunate to have two talented and capable nominees for the position.

As a founding member of the International Organization of Medical Physicists, COMP was very involved in the celebrations that took place in September in Brighton, England. Past-President Peter McGhee was our representative and took on this responsibility with great enthusiasm. The Canadian medical physics community was positively profiled an article on Medical Physics in Canada written by Ervin Podgorsak for the new Medical Physics International Journal (reproduced in this issue of InterACTIONS). As well, 5 of our community members: Jack Cunningham, Aaron Fenster, Ervin Podgorsak, Dave Rogers and Jake Van Dyk were honoured via posters outlining their outstanding contribution to science, healthcare and society. You can read more about this celebration in Peter's article in this issue. The Canadian medical physics community truly has a lot to be proud of and celebrate.

Under the very capable leadership of Beibei Zhang, plans are well underway for the 2014 Winter School that will be taking place from January 26th to 30th at the Fairmont Chateau Frontenac in Quebec City. The planning committee is comprised of physicists, radiation oncologists and therapists and the program is being built on past successes but will also include new content, expanded interactive sessions and both new and returning faculty. Mark your calendars for this excellent continuing education opportunity.

Ms Nancy Barrett

COMP is working on a developing a new website which is a very significant undertaking. Thank you to Parminder Basran and the Communications Committee for their work on this project.

As always, please feel free to contact me or Gisele or at any time with your feedback and suggestions.

CNSC Feedback Forum

Discussion paper on proposed changes to the Radiation Protection Regulations open for public comment until December 9th, 2013!

Jeff Sandeman,
Senior Project Officer

Accelerators and Class II Facilities Division (ACFD) / Directrice,
Division des installations de catégorie II et des accélérateurs (DICA)
Directorate of Nuclear Substance Regulation /
Direction de la réglementation des substances nucléaires
Canadian Nuclear Safety Commission / Commission canadienne de sûreté nucléaire

For over a year now (starting with InterACTIONS 58(3), July 2012) CNSC Feedback Forum articles have been giving alert readers a "heads up" regarding the impending release of a CNSC Discussion Paper on proposed changes to the Radiation Protection Regulations (RPRs). The InterACTIONS 58(3) article outlined the history and development of the RPRs, as well as some of the significant events which have occurred since and which have prompted the need to update these regulations. These include the publication of the new ICRP recommendations (ICRP 103) in 2007, and the CNSC Fukushima Task Force report in October 2011 (http://www.nuclearsafety.gc.ca/pubs_catalogue/uploads/October-2011-CNSC-Fukushima-Task-Force-Report_e.pdf). That article also discussed some of the broad topics that were being considered for revision, but did not include any details regarding the proposed changes.

At long last the Discussion Paper was finally released for public comment on August 9, 2013. **The comment period ends on December 9th, 2013.** We have contacted individual RSO's on this already by email. The RPR is a very broad impact regulation and we feel that everyone should be aware of the proposals in the discussion paper. You can find a link to the paper and instructions for submitting comments at:
http://www.nuclearsafety.gc.ca/eng/acts-and-regulations/consultation/index.cfm

To help you along, here are some of the key proposals that have the most potential to impact upon the Medical Physics community (note: this is NOT an exhaustive list):

- revision of the wording in section 2 which exempts patients and volunteers from the application of the RPRs;
- incorporation of new requirements for informing "caregivers" of the potential doses that they may incur;
- extending the requirements for provision of information to Nuclear Energy Workers (NEWs) to encompass all workers involved in licensed activities, regardless of whether or not they have been declared NEWs;
- specification of a maximum one-year period for informing workers of their doses, with the additional requirement that this be done on an individual basis, in writing;
- specific inclusion of the responsibilities, duties and associated risks in the event of emergencies within the information which must be supplied to each worker ;
- specific inclusion of potential radiological risks for breast feeding mothers within the information which must be supplied to pregnant workers;
- expanding the requirement to use a Licensed Dosimetry Service (LDS) to include annual equivalent doses in excess of 50 mSv to the skin, hands or feet;
- extensive changes to the definition of effective dose and the methodology for deriving it, including removing all reference to radiation weighting factors and tissue weighting and replacing them with "dose coefficients" for various exposure pathways;
- changes to the equivalent dose limit for the lens of the eye for NEWs only;
- significant changes to the dose limits and requirements related to emergency situations;
- removal of the requirement to remove non-NEWs from work when they exceed the General Public dose limit, as well as other changes related to the Authorization of Return to Work provisions;
- changes to record keeping requirements for dose records;
- inclusion of survey meter calibration requirements which specifically reference IAEA Safety Report Series No. 16, *Calibration-of-Radiation-Protection-Monitoring-Instruments* (http://www-pub.iaea.org/books/iaeabooks/5149/Calibration-of-Radiation-Protection-Monitoring-Instruments);
- inclusion of a new section dealing with the general qualification and competencies required for Radiation Safety Officers for all licensees.

continued on page 118

GOLD MEDAL AWARD
CALL FOR NOMINATIONS

The COMP Gold Medal will be awarded to a member of COMP (or retired former member) who has made an outstanding contribution to the field of medical physics in Canada. An outstanding contribution is defined as one or more of the following:

1. A body of work which has added to the knowledge base of medical physics in such a way as to fundamentally alter the practice of medical physics.
2. Leadership positions in medical physics organizations which have led to improvements in the status and public image of medical physicists in Canada.
3. Significant influence on the professional development of the careers of medical physicists in Canada through educational activities or mentorship

The Gold Medal is the highest award given by the Canadian Organization of Medical Physicists and will be given to currently active or retired individuals to recognize an outstanding career as a medical physicist who has worked mainly in Canada. It will be awarded as appropriate candidates are selected but it will not generally be given more than once per year. Nominations for the 2014 medal are hereby solicited. Nominations are due by **February 7th, 2014** and must be made by a Full Member of COMP. Nominations must include:

1. the nominator's letter summarizing the contributions of the candidate in one or more of the areas listed above;
2. the candidate's CV;
3. the candidate's publication list (excluding abstracts) which highlights the candidates most significant 10 papers;
4. additional 1 to 2 page letters supporting the nomination from three or more members of COMP.

Please forward nominations electronically to Nancy Barrett at the COMP office (preferably in pdf format, nancy@medphys.ca).

A committee of COMP members appointed by the COMP Board will consider nominations and recommend award winners to the COMP Board by April 30th, 2014. The COMP Board makes the final decision and the recipient will be notified by May 31st, 2014 to give time to arrange to be at the COMP annual meeting in Banff.

Candidates selected for the medal will be invited to attend the COMP Annual Scientific Meeting where the award will be presented by the COMP President. Travel expenses will be paid for the medal winner. The medal winner may be asked to give a 30 minute scientific presentation at the COMP meeting in addition to a short acceptance speech when the medal is presented.

The following article written By Dr. Podgorsak was originally published in Medical Physics International (Volume 1, Number 2, March 2013), a journal of The International Organization for Medical Physics. Many thanks to Slavik Tabakov and Perry Sprawls, Co-Editors for allowing us to republish the article.

Medical Physics in Canada

Ervin B. Podgorsak

Professor Emeritus, Department of Oncology,
McGill University, Montreal, Canada

I. Historical Perspective

Medical physics has a long and illustrious history in Canada. Röntgen discovered X rays in November 1895 and the first medical use of X rays in Canada occurred soon thereafter in early February 1896 at McGill University in Montreal and at the University of Toronto. Becquerel discovered natural radioactivity in 1896 and Rutherford carried out his seminal work on radioactivity at McGill University during the early years of the 20th century. These events laid the foundation for medical use of X rays and radioactivity in Canadian clinical and academic institutions, generated employment for physicists in Canadian medical centres, and paved the road for eventual formation of Canadian medical physics organizations.

Many physics departments across Canada had already during the 1930s and 1940s made significant contributions to efforts in making the use of ionizing radiation in medicine safe and efficient. There were many pockets of significant early contributions to medical physics spread across Canada; however, none of them was as important, far-reaching, and visionary as the programs developed by Harold E. Johns, first in Saskatoon and then in Toronto. Dr. Johns completed his Ph.D. studies in Physics at the University of Toronto and his first job was with the University of Saskatchewan and the Saskatchewan Cancer Commission in Saskatoon.

While in Saskatoon in the late 1940s and early 1950s, Dr. Johns invented the cobalt-60 teletherapy machine for cancer therapy, built the first such machine for clinical use, and developed a first rate medical physics graduate program. This program trained many graduate students who upon graduation made significant contributions to medical physics in their own right and formed the early links in Johns's medical physics dynasty, now already extending into five generations.

In the mid 1950s Johns moved to Toronto accompanied by some of his former graduate students. Together with medical staff they built the Princess Margaret Hospital (PMH) and the University of Toronto into pre-eminent and world-renowned centres for radiotherapy and medical physics. The research carried out by PMH staff and students was at the forefront of medical physics and Dr. Johns' book "The Physics of Radiology" which he co-authored with his former student and colleague Dr. John R. Cunningham, is still considered, after four editions, the most authoritative and complete text on radiological physics. Dr. Johns had a profound influence on the practice of medical physics in Canada and its current high standards can to a large extent be attributed to his vision and dedication to the medical physics profession.

The year 1980 was a watershed year in Canadian medical physics. Notably, Harold Johns' retirement that year forced a redistribution of leadership in the Canadian medical physics community. Several other important events also took place during that year which helped to distribute the concentration of Canadian medical physics away from Toronto and the PMH to other centres across Canada: (1) the Canadian College of Physicists in Medicine was formed, (2) several new radiotherapy centres were established and many older centres were expanded or rejuvenated, (3) several new graduate education programs in medical physics were inaugurated, and (4) the X-ray section of the National Research Council (NRC) in Ottawa was reorganized and its dosimetry work expanded.

After 1980 medical physics service, teaching, and research spread rapidly to major provincial centres across Canada. Canadian imaging physics also underwent a major expansion, most notably with the opening of the Robarts Research Institute in London, Ontario and the Reichman Research Institute in Toronto, both staffed with many eminent medical physicists who proved that radiotherapy physics was not the only exciting and important branch of contemporary medical physics.

Toward the end of the 1980s many senior medical physicists believed that radiotherapy physics was a completed discipline with exhausted research opportunities and that imaging physics became the most innovative area of research in medical physics. However, the early 1990s proved that this sentiment was

premature considering the explosion in radiotherapy physics research engendered during that period by rapid advances in treatment planning, technology of dose delivery, and imaging for radiotherapy. The advent of the CT-simulator, intensity modulated radiotherapy, and image guided radiotherapy has significantly increased the complexity of dose delivery in radiotherapy and highlighted the importance of medical physics in imaging and treatment of cancer.

In recent years, the new technological developments in dose delivery caused the convergence of imaging and radiotherapy physics and introduced the PET functional imaging to radiotherapy. Just like during the introduction of medical use of ionizing radiation in diagnosis and treatment of disease more than a century ago, Canada of today offers its population state-of-the-art technological developments in imaging as well as in radiotherapy, and medical physicists form an important component in development and delivery of these services.

II. Treatment Technology and Techniques

The Canadian approach to cancer therapy is focused on provincial cancer foundations. This approach, despite some practical drawbacks, has enabled Canadian institutions to build relatively large cancer therapy centres with an assortment of modern equipment and a critical mass of medical physicists. Access to state-of-the-art imaging and therapy equipment is of benefit not only to patients but also to medical physicists who, in addition to gaining the most up-to-date practical experience, can carry out applied research on modern and sophisticated imaging and dose delivery equipment. For example, the installation of a third generation 25 MV clinical linac in Toronto in the early 1970s stimulated research into the basic properties of high-energy X-ray and electron beams used clinically. Another example is Winnipeg that, during the 1980s gained a worldwide reputation as an important centre for portal imaging research.

Since the invention of cobalt-60 teletherapy during the 1950s, Canada has maintained its position on the forefront of radiotherapy and medical physics. As a result of a strong collaboration between physicians and medical physicists in large Canadian cancer hospitals several new imaging and treatment techniques were developed in Canada and rapidly translated into clinical use. Examples of Canadian innovations are half-body and total body photon irradiation as well as cone beam imaging developed in Toronto and moving beam techniques, such as rotational total skin electron irradiation and dynamic stereotactic radiosurgery, developed in Montreal.

III. Medical Physics Organizations

The first Canadian national medical physics organization was formed in 1955 as the Division of Medical Physics (DMP) under the auspices of the then 10-years-old Canadian Association of Physicists (CAP). The DMP developed its own constitution and objectives, obtained funding through individual CAP members who opted to join and pay dues to the division, and met annually as a component of the CAP congress at the time and location chosen by the CAP.

For a number of years this arrangement was satisfactory; however, with the ever-increasing growth of the DMP membership, it became apparent that an independent organization of Canadian medical physicists would offer more flexibility and better funding opportunities. This sentiment eventually prevailed in 1989 and lead to the formation of the Canadian Organization of Medical Physicists (COMP) that is independent from the CAP, has its own constitution, by-laws, membership requirements, and head office, organizes its own annual meetings, and funds its operation through membership dues and proceeds from annual meetings and exhibits.

The COMP seamlessly continued the medical physics tradition of the original DMP-CAP and during the past two decades grew into a very strong national medical physics organization that is well respected nationally as well as internationally and maintains strong links to the International Organization for Medical Physics (IOMP), the American Association of Physicists in Medicine (AAPM) as well as the CAP. Current COMP membership stands at 511, producing a rate of 15 medical physicists per million people in Canada. Considering that the mean rate of medical physicists per million people in the World is about 3, the rate of 15 ranks Canada among highly developed countries in the medical physics domain.

An elected 10-member board chaired by the President runs the COMP with support from an Executive Director and administrative staff. In addition to various standing and ad-hoc committees, the COMP has a prestigious awards program with the COMP Gold Medal its highest honour. The COMP also bestows Fellowship upon selected senior medical physicists and endorses the Sylvia Fedoruk Prize in medical physics that is sponsored by the Saskatchewan Cancer Agency and recognizes the best medical physics research paper that originated in Canada in a given calendar year. Jointly with the CAP, the COMP sponsors the Peter Kirkby Memorial Medal for outstanding service to Canadian physics.

As part of its annual meeting the COMP conducts a highly successful young investigators' symposium. The symposium competition, a highlight of annual meetings, is named in honour of John R. Cunningham, a highly respected and decorated Canadian medical physicist.

IV. Certification of Medical Physicists

In order to deal with professional issues specific to medical physicists the Canadian College of Physicists in Medicine (CCPM) was formed in 1980 with a mandate to organize procedures for professional certification, continuing education, and maintenance of certification for Canadian medical physicists. The original "grandfathers" of the CCPM were six senior medical

physicists from across Canada: S.O. Fedoruk, A.F. Holloway, H.E. Johns, J.C.F. MacDonald, R.M. Mathieu, and M.E.J. Young.

The CCPM certifies medical physicists on two levels. The CCPM Membership level is attained through a written and oral examination aimed at establishing candidate's competence for work in medical physics; the advanced level CCPM Fellowship is attained through a rigorous oral examination of candidates holding the rank of senior medical physicist. An eight-member board chaired by the President runs the CCPM; the chief examiner and the examination board run the examination process, and the COMP and examination fees provide funding for the CCPM.

The minimum requirements for admission to CCPM Membership examination are an advanced degree in Physics (preferably in the medical physics specialty) and 2 years of clinical experience. A CCPM Member can apply for CCPM Fellowship examination upon completing 7 years of clinical experience. Currently, the CCPM comprises 235 Members and 161 Fellows, highlighting the high degree of professional certification among Canadian medical physicists with 396 Member or Fellow certifications among the 511 COMP members.

V. Accreditation of Medical Physics Educational Programs

To promote and ensure quality of academic programs in medical physics the American Association of Physicists in Medicine (AAPM) started to offer formal accreditation of medical physics academic programs in 1988. The first U.S. institutions with accredited programs in medical physics were the University of Wisconsin in Madison and Wayne State University in Detroit, both accredited in 1988; the first Canadian institution with such an accreditation was McGill University in 1993.

During the 1990s the responsibility for accreditation of medical physics educational programs was transferred to a new independent commission, referred to as the Commission on Accreditation of Medical Physics Educational Programs (CAMPEP) that is currently sponsored by five organizations. In addition to the AAPM and the COMP, the organizations sponsoring the CAMPEP are: the American College of Radiation Oncology (ACRO), the American College of Radiology (ACR), and the Radiological Society of North America (RSNA). Currently the CAMPEP accredits the following educational programs in medical physics: M.Sc., Ph.D., radiation oncology physics residency, imaging physics residency, certification of didactic coursework in preparation for residency, and continuing education.

With regard to accreditation Canadian medical physics educational programs are doing well considering the population ratio of 9 : 1 between the U.S. and Canada. Of the 43 graduate programs currently accredited by the CAMPEP, nine (21%) are in Canada; of the 64 radiotherapy residency programs, 8 (12.5%) are in Canada, and of the 8 imaging residency programs, one (12.5%) is in Canada.

VI. Medical Physics Research and Innovation

Medical physics research and innovation have a strong tradition in Canada and plenty of role models, most notably in Harold Johns and a number of his contemporaries who were active in medical physics during the 1950s through 1970s. One of the benefits of the Canadian model of nationalized health care delivery is that it resulted in a concentration of cancer therapy in large hospitals in major Canadian cities. This, in turn, produced the formation of relatively large medical physics departments with a critical mass of medical physicists that are involved not only in service work but also with teaching and applied research.

The respectable research productivity by Canadian medical physicists is evident from the "Medical Physics" journal, the official science journal of the AAPM with co-sponsorship by the COMP and the CCPM. To every five articles in "Medical Physics" originating from U.S. institutions there is, on the average, one article that originates in Canada. This ratio exceeds significantly the population ratio between the two countries, and simply reflects better opportunities for medical physics research in a few larger medical centres of Canada in comparison with a large number of relatively small physics operations with no protected research time that are prevalent in the U.S.

VII. Canadian Versus American Medical Physics

A unique characteristic of Canadian medical physics is its strong collaboration with the AAPM. The AAPM has close to 8000 members and 440 of these are Canadians, members of the COMP, and work in Canadian institutions. From its formation in 1958 the AAPM accepted Canadians with full membership rights and privileges and one can find Canadian members on the AAPM Board of Directors, various councils, committees, task groups and as recipients of various AAPM honours and awards. The relationship between Canada and the U.S. as far as medical physics is concerned is truly exemplary and of obvious benefit to both sides. It is notable that, on the average, every 10 years the AAPM holds its annual meeting in Canada jointly with the COMP. These meetings are always memorable and strengthen the ties between the two organizations and the two countries.

While the AAPM benefits from the contribution of Canadian members, the AAPM also provides Canadians with a world-class medical physics forum; over ten times the size of the COMP. It turns out that Canadian medical physics measures up in this forum quite well. For example, to date Canadian medical physicists won 34% of the Farrington Daniels awards (13 of 38) and 24% of the Sylvia Sorkin-Greenfield awards (7 of 29). The AAPM bestows the two awards annually for the best articles published in "Medical Physics" journal, respectively, on the subject of radiation dosimetry and on any other medical physics subject with the exception of radiation dosimetry.

Canadian medical physicists also won 10% of the highest-honour

continued on page 118

NOTE FROM THE EDITOR:

In the last issue of InterACTIONS, one of the figures for Brenda Clarke's article was unfortunately duplicated. With apologies to Dr. Clarke and our readers, we have decided to reprint in this issue the entire article.

Report from the Ontario Radiation Incident and Safety Committee (RISC)

Brenda G. Clark

RISC Chair, Ottawa Hospital Regional Cancer Centre, Ottawa, ON

The Ontario Provincial Radiation Treatment Program under the auspices of Cancer Care Ontario has been monitoring and recording incidents occurring during radiation treatment for a period of five years. The initiative is managed through a multidisciplinary committee comprising radiation therapists and medical physicists from all Ontario cancer centres. The committee reviews and discusses incidents reported quarterly via teleconference. This article summarises an analysis of some of the incidents reports to RISC.

A total of 563 actual incidents were reported from 14 cancer centres in Ontario during the fiscal year 2011 to 2012; 497 (88.3%) of these were classified as minor with no impact to any patient and a further 61 (10.8%) were classified as major with a moderate impact to the patient. Only five were classified as having a severe impact to a patient corresponding to, for example, a dose deviation greater than 25% of the prescription dose. The number of cases treated during the same period was 46,463, giving an incident rate of 1.2% per treated case. These incidents were classified according to the categories initially set by RISC as indicated in the plot below (figure 1). In retrospect, this classification proved to be somewhat ambiguous with some terms descriptive, e.g., patient positioning, and others referring to a root cause, e.g., documentation. The incidents allocated to documentation in particular proved to be resistant to further analysis. However, a subset of incidents in the Patient Positioning and Accessories categories was further explored in an attempt to identify corrective actions for some of the more commonly reported incidents.

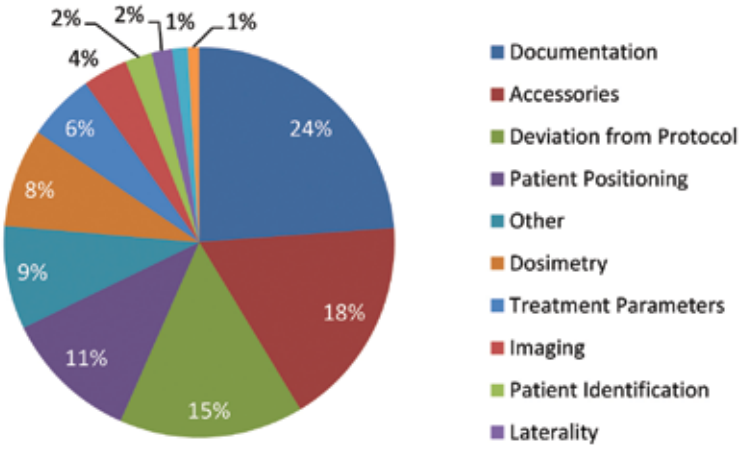


Figure 1: Distribution of Ontario Radiation Incidents Reported in Fiscal 2011-12

The distribution of the 48 incidents relating in some measure to treatment accessories are shown below (figure 2), the vast majority (83%) relating either to the use of bolus or immobilisation devices. Only one of these incidents involved a dose deviation of between 5% and 10% from the total prescription, the remainder either incurred a dose deviation of less than 5% or none at all.

CURRENT CORPORATE MEMBERS
2013

CDR Systems Inc.

Phone: 1-855-856-7035 (ext 3)
www.cdrsys.ca

Contact: Mike Wallace
mikewallace@cdrsys.ca

CSP Medical

Phone: 1-800-265-3460
www.cspmedical.com

Contact: Steve Gensens
sg@cspmedical.com

Donaldson Marphil Medical Inc

Phone: 1-888-933-0383
www.donaldsonmarphil.com

Contact: M. Michel Donaldson
md@donaldsonmarphil.com

Elekta Canada

Phone: 770-670-2592
www.elekta.com

Contact: Doris AuBuchon
Doris.AuBuchon@elekta.com

Harpell Associates Inc.

Phone: 1-800-387-7168
www.harpell.ca

Contact: Ron Wallace
info@harpell.ca

Landauer Inc

Phone: 708-755-7000
www.landauerinc.com

Contact: Amy Cosler
sales@landauerinc.com

LAP of America

Phone: 1-800-498-2674
www.lap-laser.com

Contact:: Don McCreath
d.mccreath@lap-laser.com

Modus Medical Devices Inc

Phone: 519-438-2409
www.modusmed.com

Contact: John Miller
jmiller@modusmed.com

NELCO

Phone: 781-933-1940
www.nelcoworldwide.com

Contact: Cliff Miller
cmiller@nelcoworldwide.com

Philips Healthcare

Phone: 1-877-744-5633
www.philips.com/healthcare

Contact: Chris Montgomery
chris.l.montgomery@philips.com

PTW

Phone: 516-827-3181
www.ptwny.com

Contact: May Thunil
may@ptwny.com

Standard Imaging Inc

Phone: 1-800-261-4446
www.standardimaging.com

Contact: Ed Neumueller
ed@standardimaging.com

Sun Nuclear

Phone: 321-259-6862 ext 251
www.sunnuclear.com

Contact: Konstantin Zakaryan
konstantinzakaryan@sunnuclear.com

Varian Medical Systems

Phone: 650-424-5801
www.varian.com

Contact: Lucy Huerta
lucy.huerta@varian.com

StereoPHAN™

Ma
MACHINE

End-to-End Stereotactic QA

StereoPHAN™ is for end-to-end quality assurance testing; from CT & MRI image acquisition to dose delivery QA. Designed with ease-of-use in mind, StereoPHAN requires no tools and features user-friendly interchangeable inserts.

- Multi-functional inserts increase efficiency
- Design allows for interference-free dose measurements
- Easy ion chamber cross-calibration to water

DONALDSON MARPHIL
Medical

1 888 933-0383
Exclusive Canadian Distributor

SUN NUCLEAR corporation

Your Most Valuable QA and Dosimetry Tools

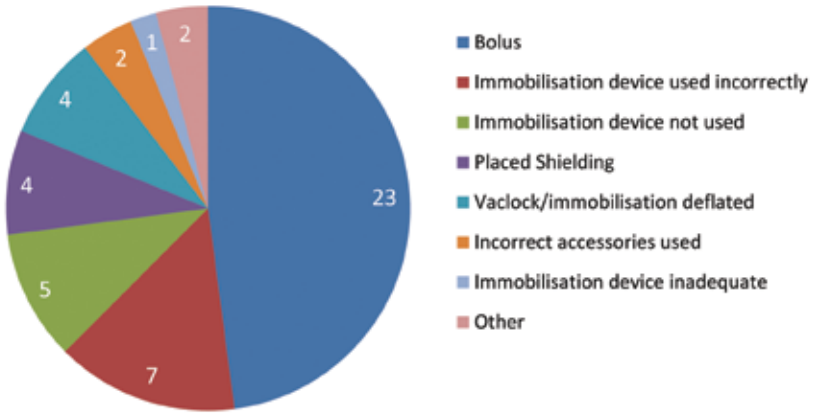


Figure 2: Distribution of 48 Incidents Relating to Accessories

Of these 48 incidents, 23 (48%) involved the use or misuse of bolus: either the bolus was not used at all, left on too long, placed in the wrong position, or not made the right thickness or area, etc. Several centres have made attempts to reduce these persistent errors but robust solutions have yet to be identified. A further 17 (35%) of the accessory incidents related to immobilisation devices which were either used incorrectly (7; 3 of which related to breast boards), spontaneously deflated (4), not used (5) or inadequate (1).

Fifty three incidents were reviewed relating to patient positioning (figure 3) and in this group, three of these incidents involved a dose deviation of between 5% and 10% from the total prescription. The remainder either incurred a less than 5% dose deviation or none at all.

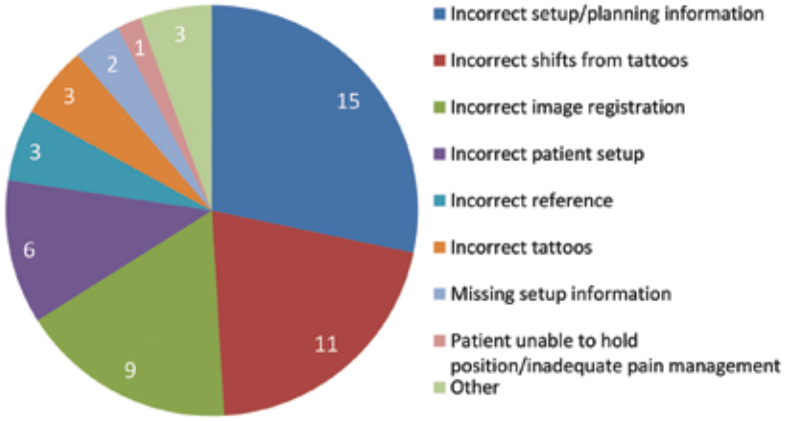


Figure 3: Distribution of 53 Incidents Relating to Patient Positioning

The take-home message from this analysis is primarily that almost all incidents arise from some type of human interaction, a well accepted principle. There are, fortunately, very few failures of equipment or software. Secondly and more importantly, data of this nature must be collected in a standardised way to be useful. A recent publication from the AAPM Working Group on the Prevention of Errors has proposed common terminology including causal taxonomies for radiation treatment incident reporting [1]. We have used this analysis together with these recommendations to modify our provincial reporting practice with the aim of strengthening the data collected to aid the identification of potential corrective actions and learning. We anticipate submitting a follow up report to InterACTIONS when sufficient data has been recorded.

Reference:

1. Ford EC, Fong de Los Santos L, Pawlicki T, Sutlief S and Dunscombe P. Consensus recommendations for incident learning database structures in radiation oncology. Medical physics. 2012;39:7272-90.

Acknowledgement: Thanks to all the radiation therapy and medical physics members of the CCO Radiation Incident and Safety Committee who participate in this initiative.

FELLOW OF COMP AWARD
NOMINATION PROCESS

Nominations are being accepted for the Fellow of COMP Award. This honour recognizes an active member who has made a significant contribution to the field of medical physics and to COMP. This contribution is to be in *one or more* of the following:

- Service to the COMP.
- A demonstrated body of work showing an outstanding contribution to research and development in the medical physics profession.
- A demonstrated body of work showing an outstanding contribution to professional practice.
- Through educational activities or mentorship, particularly regarding the education and training of medical physicists, medical residents, and allied health personnel.

OTHER CRITERIA THAT MUST BE MET:

- Nominees must have a minimum of 10 years experience in the field of Medical Physics.
- Nominees must have a minimum of 5 years as a member of COMP and be a full member in good standing.
- The nomination must be made by two COMP members who have previously been awarded the FCOMP distinction. **PROCESS FOR NOMINATION AND AWARDING OF THE HONOUR:**
- A letter of support for the candidate by each of the nominating members must be submitted to the Awards Committee.
- Should the Awards Committee deem the candidate to be eligible, he/she will be asked to complete an application and submit a *curriculum vitae* prior to a final recommendation to the COMP Board.
- Nominations may be submitted at any time.
- Nominees who are eligible and who submit the completed application by **April 30th, 2014** will be informed prior to the AGM of the outcome of the application and successful applicants will be announced at the AGM

International Conference on Medical Physics 2013

Peter L. McGhee
Director, Medical Physics Program, Regional Cancer Care, Thunder Bay Regional Health Sciences Centre, and Past-President of COMP

As Past President, I recently had opportunity to represent COMP at the 2013 International Conference on Medical Physics. This meeting is conducted under the auspices of the International Organization for Medical Physics (IOMP) and this year it was hosted by the Institute for Physics and Engineering in Medicine (IPEM) in the delightful seaside English city of Brighton located southeast of London.

This meeting was particularly notable because the 50th anniversary of the founding of the IOMP was being celebrated. Along with the United Kingdom, the United States, and Sweden, Canada was one of the four original founding members of the IOMP. The four were invited to participate in the opening ceremonies. After some words of greeting, pre-recorded words of reflection and congratulations were provided by Jack Cunningham. As part of the celebrations, organizations affiliated with the IOMP were asked to nominate distinguished medical physicists for recognition during the meeting. Apparently whittling down the submitted list to just 50 was a challenge, but there were five Canadians that made the cut: Jack Cunningham, Aaron Fenster, Ervin Podgorsak, David Rogers, and Jake Van Dyk. And if you are counting COMP members, Tomas Kron can be added to the list.

Not so coincidentally, this is also the year chosen to introduce the honour of Fellow of IOMP (FIOMP). There were 18 recipients, many of whom have well established international profiles. The group included one Canadian, our very own George Mawko, who is in very lofty company (not that you weren't before). Congratulations to George! Along with a number of others who were involved, George was also recognized for his efforts in assisting with the creation of the newly established Middle East Organization of Medical Physics.

In addition to the celebrations, I represented COMP at two Board meetings: one for the IOMP and a second for the International Union for Physical and Engineering Services in Medicine (IUPESM). In both instances the representation was with regard to the upcoming World Congress for Medical Physics and Biomedical Engineering taking place in Toronto in 2015 (WC2015). Unless you are familiar with the relationships, putting things in context takes a bit of explanation. The World Congress is a triennial event organized and coordinated by the IUPESM. The member organizations of the IUPESM are the IOMP and the International Federation for Medical and Biological Engineering (IFMBE). In Canada the IFMBE affiliated organization is the Canadian Medical and Biological Engineering Society (CMBES) while for the IOMP it is…us! Drs. David Jaffray and Tony Easty, respectively representing COMP and CMBES, are co-Chairs of the organizing committee for the Toronto event. As neither was available to go, the obligation fell to our President, Luc Beaulieu. Turned out Luc was unavailable (some lame excuse about expecting another child or something) and so on down the totem pole until I, with tremendous reluctance, leapt at the opportunity. (So, for the curious masses, that is why I am the one providing this update.)

Aside from of all this, the meeting itself was an excellent experience both scientifically and socially. There were presentations on a broad spectrum of topics: imaging and therapy of course (with a bit more emphasis on the former than at our own meeting), new areas of medicine that do not particularly fit into either slot but where physics has potential to have a role, regulations and guidelines, radiation safety, medical physics education, and experience in medical physics in specific areas of the world (Africa was the focus during this go round). There was a variety of prestigious awards given throughout the meeting and a number of notable recipients, such as Charles Mistretta of the University of Wisconsin, but for those details I would refer you to the IPEM and IOMP.

All in all, an excellent meeting. I would certainly encourage you to consider adding this to the roster of meetings that you consider attending each year. And, regardless, this particular venue is definitely worth a visit even if there is no scientific meeting…

International Day of Medical Physics
November 7, 2013

Radiation Exposure from Medical Procedures: Ask the Medical Physicist!

Like us on Facebook

International Organization for Medical Physics

@intDayofMedPhys

MEDICAL PHYSICS *International*, a New Online Journal

Slavik Tabakov, Ph.D. and Perry Sprawls, Ph.D.,Co-Editors

MEDICAL PHYSICS *International* (MPI), the Journal of the International Organization of Medical Physics (IOMP), is now available with open access at http://www.mpijournal.org/ .

With the First Edition published in April 2014 the MPI introduced a new realm of publishing for the field of Medical Physics. The purpose is to provide publishing opportunities that are not available with the other traditional journals. The MPI does not publish research papers, as in other journals, but provides literature to support a variety of Medical Physics activities including education, professional development, recent innovations in medical physics procedures and technology, and the sharing and preservation of the profession's history and heritage.

Of special interest is the article, "Medical Physics in Canada" by Ervin Podgorsak, published in the current edition and reprinted here in InterActions.

With the advances in worldwide communications Medical Physics has become a highly-connected global community in which all will benefit by sharing ideas, information, experiences, and resources. The vision is that the MPI journal will serve as a major node in this global network.

The journal will be published twice each year. To learn more and begin to benefit from this publication go to http://www.mpijournal.org/

2014 Sylvia Fedoruk Prize in Medical Physics

The Saskatchewan Cancer Agency is pleased to sponsor a competition for the 2014 Sylvia Fedoruk Prize in Medical Physics. This award is offered annually to honour the distinguished career of Sylvia Fedoruk, former Lieutenant-Governor of Saskatchewan and previously physicist at the Saskatoon Cancer Centre.

The prize will comprise a cash award of five hundred dollars ($500), an engraved plaque and travel expenses to enable the winner to attend the annual meeting of the Canadian Organization of Medical Physicists (COMP), which will be held from July 9th to 12th, 2014, in Banff, Alberta.

The 2014 Prize will be awarded for the best paper (i) on a subject falling within the field of medical physics,(ii) relating to work carried out wholly or mainly within a Canadian institution and (iii) published during the 2013 calendar year. The selection of the award-winning paper will be made by a panel of judges appointed by COMP.

Papers published in Physics in Medicine and Biology and Medical Physics, which conform to the conditions of the preceding paragraph, will automatically be entered in the competition and no further action by the author(s) is required. All other papers should be submitted electronically to:

Nancy Barrett
Executive Director
Canadian Organization of Medical Physics
E-mail: nancy@medphys.ca.

Each paper must be clearly marked: “Entry for 2014 Sylvia Fedoruk Prize” and must reach the above address no later than **Friday, February 7th, 2014**.

The award winners from the last five years were:

Goulet M, Archambault L, Beaulieu L and Gingras L, ““High resolution 2D dose measurement device based on a few long scintillating fibers and tomographic reconstruction:, *Medical Physics, **39**, Vol. 8, August 2012; 4840-4849*

Andreyev A. and Celler A., “Dual-isotope PET using positron-gamma emitters”, *Physics in Medicine and Biology, 56, Vol. 14, 4539-4556 (2011).*

Frédéric Tessier and Iwan Kawrakow, “Effective point of measurement of thimble ion chambers in megavoltage photon beams”, *Medical Physics, **37**(1), 96-107* (2010).

B. Gino Fallone, "First MR images obtained during megavoltage photon irradiation from a prototype integrated linac-MR system”, *Medical Physics **36** (6), 2084-2088* (2009).

Magdalena Bazalova, Luc Beaulieu, Steven Palefsky, Frank Verhaegen, “Correction of CT artifacts and its influence on Monte Carlo dose calculations”, *Medical Physics **34**, 2119-2132* (2007)

CNSC Feedback Forum

continued from page 104

Some of the key items which are **not** included in the proposed changes are:

- incorporation of "dose constraints" from ICRP103;
- use of a sliding 5 year dosimetry "window" for determining average annual doses, as opposed to the current fixed period approach;
- inclusion of the revised ICRP103 radiation and tissue weighting factors, as these are to be replaced with the concept of "dose coefficients";
- any changes to posting requirements for linear accelerators (e.g., to address the intermittent nature of the external radiation fields or the lack of any significant quantity of nuclear substance within the treatment room);
- any changes to most of the other fundamental requirements, such as those regarding action levels, definition of a NEW, dose thresholds for requiring use of a LDS, effective dose limits for NEWs and the general public, etc.

As you know, these regulations are the foundation on which the entire CNSC regulatory program is built. Changes to these regulations may have a significant impact upon every licensee's radiation protection program. We encourage each of you to review the discussion paper and provide your feedback following the instructions on the website.

This is the opportunity for licensees to raise their concerns and try to address any difficulties they may have encountered in the past regarding the implementation of these Regulations. This early feedback will be used to shape the proposed regulatory amendments.

We're running out of ideas

One final note. Over the past 7 years we've covered a broad range of topics in the CNSC Feedback Forum. These have included: proposed changes to regulations, FAQs regarding licences and the licensing process, clarification of the expectations for satisfying specific regulatory requirements, and even a few fairly detailed technical analyses outlining the supporting rationale for some of those requirements.

Now, 26 articles later, we're struggling to come up with new ideas. So, if anyone has any specific topics they'd like to see discussed, we'd love to hear about them. If you have any ideas for future articles, please email them to either of the following addresses:

kavita.murthy@cnsc-ccsn.gc.ca
jeff.sandeman@cnsc-ccsn.gc.ca

Medical Physics in Canada

continued from page 108

awards that the AAPM bestows on an AAPM member, the Coolidge award (4 of 40). Another source of pride for Canadian medical physics is the performance of Canadian medical physics graduate students in the John R. Cameron Young Investigators' Symposium held during the annual AAPM meetings. Of the 10 students, who are admitted to the oral competition based on their abstract as well as supporting documentation and then present their talk in the competition, typically three students are from Canadian institutions and at least one of them typically finishes among the three winners of the competition.

VIII. Conclusions

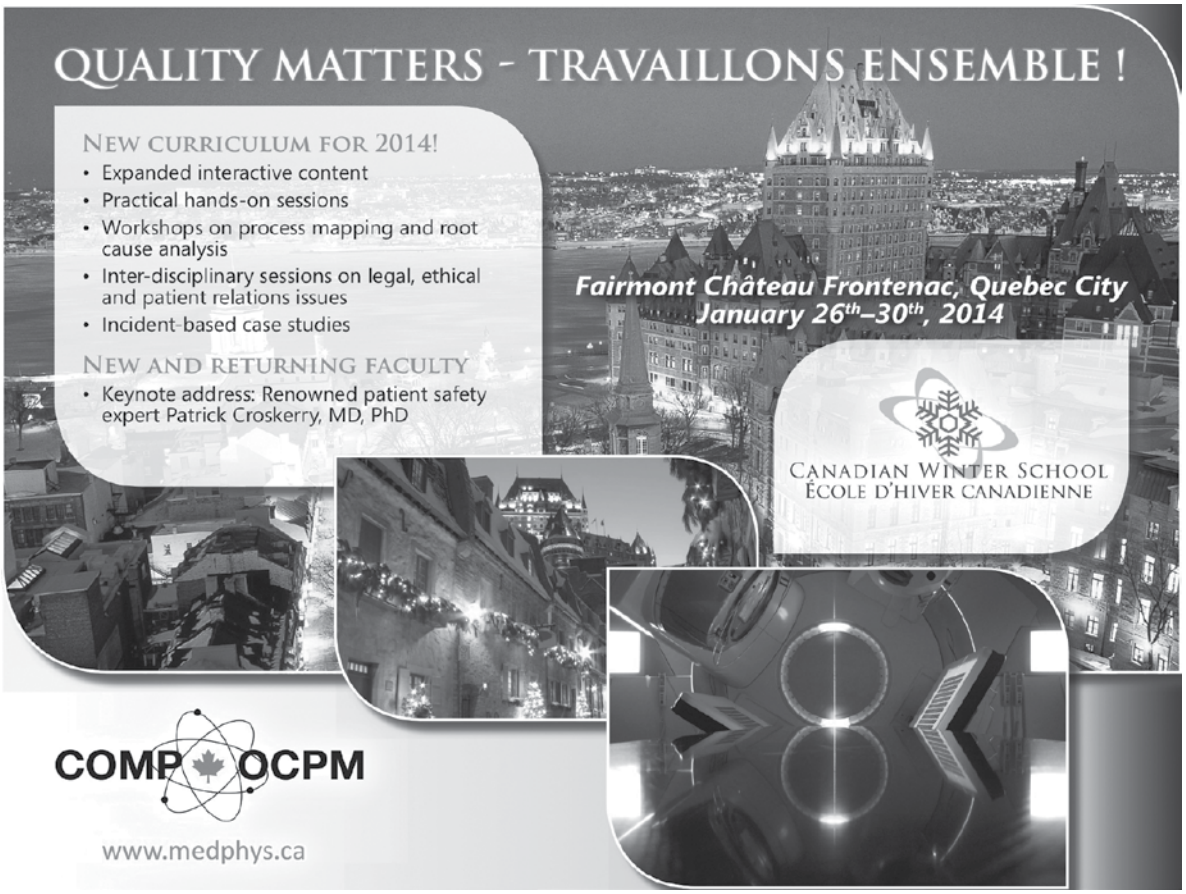
Canada has the distinction of being in the group of the four inaugural countries that in 1963 sponsored the formation of the International Organization for Medical Physics (IOMP). The other three countries are the U.K., Sweden, and the U.S. This year, as we celebrate 50 years of the IOMP, Canada's medical physics remains strong, providing excellent clinical service in imaging and radiotherapy, carrying out respectable research and innovation, and providing great educational opportunities for young physicists who aspire to a rewarding career in medical physics.

The main characteristics of Canadian medical physics are summarized as follows:

1. High level of professionalism;
2. Strong national medical physics organizations;
3. Professional certification process run by medical physicists for medical physicists;
4. Excellent graduate and residency teaching programs spread across Canada;
5. Excellent research and innovation productivity; and
6. Concentration of clinical and academic medical physics programs in relatively large centres across Canada, providing a critical mass of medical physicists.

Contacts of the corresponding author:

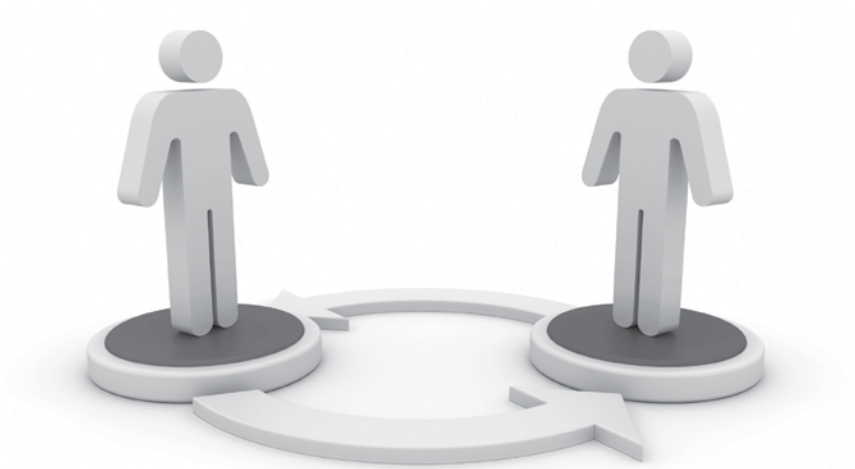
Author: Ervin B. Podgorsak
Institute: McGill University Health Centre, Department of Medical Physics
Street: 1650 avenue Cedar
City: Montreal, Quebec
Country: Canada H3G 1A4
Email: eandmp@videotron.ca


QUALITY MATTERS - TRAVAILLONS ENSEMBLE !
NEW CURRICULUM FOR 2014!
• Expanded interactive content
• Practical hands-on sessions
• Workshops on process mapping and root cause analysis
• Inter-disciplinary sessions on legal, ethical and patient relations issues
• Incident-based case studies
NEW AND RETURNING FACULTY
• Keynote address: Renowned patient safety expert Patrick Croskerry, MD, PhD
Fairmont Château Frontenac, Quebec City
January 26th–30th, 2014
CANADIAN WINTER SCHOOL
ÉCOLE D'HIVER CANADIENNE
COMP OCPM
www.medphys.ca


QUALITY MATTERS - TRAVAILLONS ENSEMBLE !
NOUVEAU PROGRAMME EN 2014!
• Plus de contenu interactif
• Séances pratiques
• Ateliers de schématisation des processus et d'analyse des causes fondamentales
• Séances interdisciplinaires sur des questions juridiques, de déontologie et de relations avec les patients
• Études de cas fondées sur des incidents
DES ENSEIGNANTS QUI REVIENNENT ET AUSSI DES NOUVEAUX
• Conférence : Patrick Croskerry, MD, Ph. D., expert renommé de la sécurité des patients
Fairmont Le Château Frontenac, Québec
26 au 30 janvier 2014
CANADIAN WINTER SCHOOL
ÉCOLE D'HIVER CANADIENNE
COMP OCPM
www.medphys.ca

ATTENTION:

COMP Principal Investigators



Would you like to have a Graduate Student come to work with your lab for Summer 2014?

COMP Student Council is now accepting Institutional Applications for the Student Summer Exchange Program

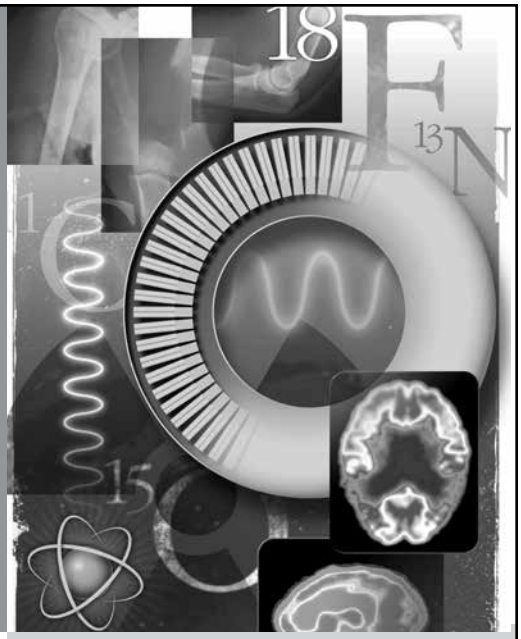
For more details please visit:

medphys.ca → "About COMP" → "Student Council"

Applications Due by December 1st, 2013

COMP OCPM

SUPPORT FOR REGIONAL CONTINUING EDUCATION PROGRAMS



Did you know that COMP provides financial support for regional medical physics continuing education programs?

One of COMP's strategic priorities is "to support accessible continuing education on a broad range of subjects". In addition to the Winter School and the Annual Scientific Meeting, COMP has set aside funds to sponsor qualifying regional medical physics continuing education programs.

CAMPEP accredited programs are eligible and an application must be completed and submitted to the COMP office for review and consideration. The application can be found at www.medphys.ca/media.php?mid=3666

For more information, please contact

Gisele Kite at

admin@medphys.ca

or 613-599-3491.

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
Ahanj	Mohsen	Ryerson University	Student
Bedwani	Stéphane	CHUM	Student
Bertrand-Grenier	Antony	Centre hospitalier de l'Université de Montréal	Student
Damyanovich	Andrei	Princess Margaret Hospital	Full
David	Sandrine	Centre hospitalier de l'Université de Montréal	Full
Delage	Marie-Ève	Université Laval/CHU de Québec	Student
Di Salvio	Anthony	Université de Montréal	Student
Dillon	John	Ryerson University	Student
Dobberthien	Brennen	Cross Cancer Institute	Student
Duguay-Drouin	Patricia	Université Laval/CHU de Québec	Student
Gagné	Marie-Chantal	Université Laval	Student
Gaudin	Emilie	Université Laval	Student
Gibson	Eli	Robarts Research Instute	Student
Hervieux	Yannick	Centre hospitalier de l'Université de Montréal	Full
Hrinivich	Thomas	Western University	Student
Jechel	Christopher	Cancer Centre of Southeastern Ontario	Student
Kamio	Yuji	Université de Montréal	Student
Labine	Alexandre	Université de Montréal	Student
Lee	Young	Odette Cancer Centre	Full
Martin	Peter	Western University	Student
Mattonen	Sarah	Western University	Student
Piron	Ophélie	CHU de Québec	Student
Racine	Emmanuel	Université Laval	Student
Yeung	Timothy Pok Chi	Western University	Student
Zerouali	Karim	Université de Montréal	Student

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

Last Name	First Name	Institute/Employer
Afsharpour	Hossein	Hôpital Charles-Lemoyne

Dates to Remember

InterACTIONS Winter Issue Deadline
December 1, 2013

International Day of Physics
November 7, 2013

5th Annual Canadian Winter School
January 26th – 30th, 2014,
Quebec City, QC

Deadline for Gold Medal and
Sylvia Fedoruk submissions
February 7th 2014

Deadline for FCOMP nominations
April 30th, 2014

60th Annual Scientific Meeting
July 9th – 12th, 2014
The Banff Centre, Banff, AB

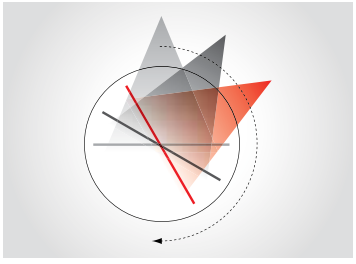
4D in Motion

NEW

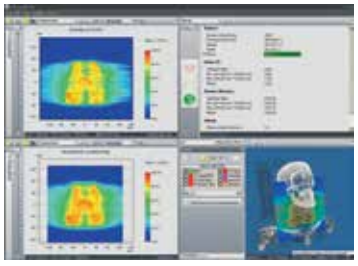
OCTAVIUS 4D

Turnkey Solution for 4D IMRT QA

- True independent 4D dose verification
- Measurements inside the entire phantom volume, always perpendicular to the beam
- 3D volume analysis and patient CT overlay
- Suitable for use with other PTW detector arrays and FFF LINACS



Unique rotating phantom which aligns the detector perpendicular to the beam, allowing true isotropic dose measurements inside the entire phantom volume.



Powerful VeriSoft® with advanced tools for dose comparison, including 3D volume analysis and patient CT overlay.

Distributed in Canada by

HARPELL ASSOCIATES

"Tag me!"

PTW

Knowing what responsibility means

WWW.OCTAVIUS4D.COM USA | LATIN AMERICA | CHINA | ASIA PACIFIC | INDIA | UK | FRANCE | GERMANY

Designed to Optimize

Featuring the popular model Piranha 657

- All in One, All at Once
- R&F, Mammo, CT, and Dental
- Easy Connectivity via Bluetooth
- Ocean – Software the way you want it
- Solid – State Performance w/2 year Warranty & Calibration Cycle

PIRANHA – Complete QA Solution

A complete X-ray QA system **instantly**

QA Software the way you want it

The Ocean is not re-built, re-used, or copied. Ocean is a pioneering and powerful tool that allows you to customize your Quality Assurance in the best way – your way!

>> Try Ocean for free

– visit www.rtielectronics.com

Ocean

Exclusive Canadian Distributor

RTI CSPMedical
Revolutionize the way you work

800.265.3460 | sales@cspmedical.com | www.cspmedical.com