

AAPM NEWSLETTER

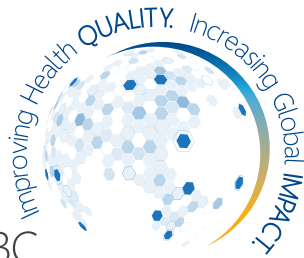
March/April 2020 | Volume 45, No. 2



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 - ▶ President-Elect's Report
 - ▶ Treasurer's Report
 - ▶ Education Council Report
 - ▶ Annual Meeting Subcommittee Report
 - ▶ IROC Houston Report
 - ▶ 2019 Brazilian Congress of Medical Physics Report
- ...and more!

2020 JULY 12–16
VANCOUVER, BC



#AAPM2020
www.aapm.org

JOINT AAPM | COMP MEETING



ALREADY PLANNING TO REGISTER?

The following affiliated electives can be purchased separately from **OR** in addition to your Joint AAPM | COMP registration. All are optional items that will be offered when you register online. In addition to CAMPEP credits, the following will be submitted for SAM approval. **Registration opens March 4.**

■ Transformational Medical Physics for Excellence in Patient Care and Value-Based Practice

July 9–10

Room 220, Vancouver Convention Centre

This workshop is the first of its kind to embody MP3.0 aspirations to define, express, grow, and practice sustainable innovative precision care and to inform every patient care by the practice of physics in medicine. The program aims to delineate effective models of transformational practice and effective activities at the point of care.

■ AI Workshop

July 11 | Room 211, Vancouver Convention Centre

A hands-on introduction to the concepts of medical image processing and analysis, including segmentation, registration and feature extraction.

*IMPORTANT: All participants are **required** to bring a laptop with WiFi capability and a power cord to participate in this workshop. Participants **MUST** be able to access their Google drive and install software.*

■ Review Courses

These courses provide a good review of medical physics for physicists entering the specialty, physicists in need of continuing education credits, and physicists who would benefit from a refresher course taught by experts in the field. All learning materials will be provided to registrants on a thumb drive (no paper handouts). The courses will be held concurrently on Saturday and Sunday, July 11–12 in the Vancouver Convention Centre.

Radiation Therapy Physics

Diagnostic Physics

Nuclear Medicine

Nuclear Medicine and Diagnostic PACKAGE

w3.aapm.org/meetings/2020AM/programInfo/affiliatedElectives.php





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AAPM Headquarters
Attn: Nancy Vazquez

[Submission Information](#)

PUBLISHING SCHEDULE

The AAPM Newsletter is produced
bi-monthly.
Next issue: May/June
Submission Deadline: April 10, 2020
Posted Online: Week of May 4, 2020

CONNECT WITH US!



Editor's Note

I welcome all readers to send me any suggestions or comments on any of the articles or features to assist me in making the AAPM Newsletter a more effective and engaging publication and to enhance the overall readership experience. Thank you.



Congratulations

to the Recipients of the Following
Awards, Achievements & Honors in 2020!

All of the award, achievement and honor recipients will be recognized during the
2020 Joint AAPM | COMP Meeting in Vancouver, BC at
the Awards and Honors Ceremony and Reception

Monday, July 13 | 6:30 pm – 8:00 pm | East Ballroom AB, Vancouver Convention Centre

Please join us in congratulating all of the recipients:

**WILLIAM D. COOLIDGE
GOLD MEDAL**

Randall Ten Haken, PhD

**EDITH H. QUIMBY LIFETIME
ACHIEVEMENT AWARD**

Frederic Fahey, DSc
X. George Xu, PhD

**MARVIN M.D. WILLIAMS
PROFESSIONAL ACHIEVEMENT
AWARD**

Priscilla Butler, MS
Christopher Serago, PhD

HONORARY MEMBERSHIP

John Buatti, MD
Donald Frush, MD

**JOHN S. LAUGHLIN
YOUNG SCIENTIST AWARD**

Xiaofeng Yang, PhD

FELLOWS

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Parham Alaei, PhD
Frank Ascoli, MS
Laura Cervino, PhD
Karen Drukker, PhD
Jonas Fontenot, PhD
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Habib Zaidi, PhD
Jie Zhang, PhD

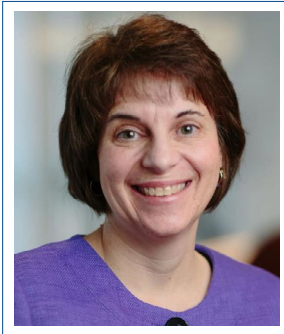


JULY 12–16
VANCOUVER, BC

JOINT AAPM | COMP MEETING

THE VALUE OF A CODE OF CONDUCT FOR AAPM EVENTS

CHAIR OF THE BOARD'S REPORT Cynthia McCollough, PhD | Rochester, MN



Recently, I had a conversation with a member regarding AAPM's Policy Against Harassment and Disruptive Behavior at Meetings (PP 31B). In fact, when this policy was initially rolled out, several members reached out to AAPM Officers and Headquarters Staff with questions and concerns. Some members asked why AAPM needed such a policy. They felt that the policy reflected poorly on the organization, seeing it as a public admission of poor behavior at AAPM events. Others bristled at the requirement to formally promise that they

would behave in a professional fashion at AAPM events. Finally, some worried about how the fine line would be drawn, and who would draw it, to distinguish between an animated discussion about a difference of opinion and unprofessional behavior. These are all valid points that I would like to address in this article.

Why does AAPM need a policy?

Most professional societies and scientific organizations now have a "code of conduct" or other "professional behavior" policy in place, or in the works. The [National Science Foundation](#) states, "Establishing explicit standards of professional behavior, codes of conduct, and/or other written policies, and implementing plans to enforce them are foundational to fostering harassment-free environments." They provide a list of examples of written policies/codes of conduct and implementation plans that have been tailored to specific communities, and include examples from organizations such as the [American Association for the Advancement of Science](#), [CERN \(Large Hadron Collider\)](#), and [Scripps Institution of Oceanography](#).

In an article entitled, "[Your Science Conference Should Have a Code of Conduct](#)," the authors state, "Most workplaces have explicit anti-harassment policies, while conferences often do not." This is surprising considering that professional conferences represent an important extension of the academic/professional workplace. The Professional Convention Management Association has an excellent article on [Why Your Meeting Needs a Harassment Policy](#). In it, they reference a *New York Times* best-selling author who speaks at many conventions and conferences and created a [viral post](#) that received over 1,100 co-signs when he stated that he would no longer attend a convention unless it had a written harassment policy that clearly defines what is unacceptable behavior and what people can do if they feel harassed or see others engaging in harassing behavior. The University of Michigan has published a resource guide for [Developing Anti-Harassment Programs in Academic Societies and Meetings](#). All of these articles point to clear reasons why organizations need to develop and implement policies and programs —

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Links of Interest:

https://www.nsf.gov/od/odi/promising_practices/standards_of_behavior.jsp

<https://www.iadr.org/IADR/About-Us/Policy-Statements/Meeting-Professional-Conduct-Policy>

<https://www.agu.org/Plan-for-a-Meeting/AGUMeetings/Meetings-Resources/Meetings-code-of-conduct>

<https://www.aps.org/meetings/policies/code-conduct.cfm>

<https://meetings.aaas.org/policies/>

<http://meeting.spsp.org/general-info/code-of-conduct>

 CHAIR OF THE BOARD'S REPORT, Cont.

before one is actually needed. These include, but are not limited to, the following.

1. First, there is growing evidence of harassing behavior taking place in professional venues outside of the traditional 9-to-5 academic work environment. For example, [E. Parsons](#) reports witnessing numerous unsavory events ... such as: delegates stealing and damaging property, verbal abuse (including racist and sexist comments), drug taking and dealing, drunken brawls, and instances of sexual harassment. An incident of a conference delegate throwing a metal mug at the head of a volunteer is also recounted.
2. The second reason for an organizational policy is that a written policy sets clear expectations for appropriate speech and conduct, which can help to prevent inappropriate incidents, which is the primary goal of the organization. People generally act on what they deem to be acceptable, and we can't assume that everyone at a meeting defines "acceptable" behavior in the same manner. Hence, a policy defines types of behavior that are not acceptable in a professional setting.
3. Third, a written policy details how to report behaviors that are felt to be inappropriate, how the organization will respond when a report is received, and what processes are followed to ensure confidentiality and careful consideration of statements from all individuals involved. It's essential that AAPM has a well vetted and carefully thought out response plan before incidents occur; after an incident is reported is the worst time to figure out how we want to handle such reports. A written response policy also ensures consistency in AAPM's approach so that actions and decisions are not arbitrary. Rather, AAPM has contracted with professionals with experience in handling of these sorts of issues, including both the investigation and resolution processes. The use of neutral, 3rd party experts ensures that decisions will be based on objective, consensus standards regarding professional behavior.
4. Finally, a clearly communicated written policy on behavior expectations at AAPM events demonstrates our organization's values and our commitment to providing a safe, open, and welcoming meeting environment to all attendees. Harassment, intimidation, bullying, and discrimination should be rare within our community, but offering a means to report incidents,

should they occur, demonstrates that we expect professional behavior from all attendees and will take action, if needed, when those expectations are not met.

How does AAPM's policy work?

AAPM has been very proactive in dealing with this important issue. TG 289 — TG on AAPM's Harassment Policy was formed under the Meeting Coordination Committee back in 2016. [PP 31 — AAPM Policy Against Harassment and Disruptive Behavior at Meetings](#) was first approved by the AAPM Board in April 2018. Clearly, illegal activities like assault or stalking are directed to legal authorities. However, we do see some members making poor choices, particularly when alcohol is involved.

The policy clearly states AAPM's expectations. This is essential so that processes can be put in place to address problems, when (not if) they occur. Without a clear statement of expectations, it is difficult to decide if a particular incident is not professional. The policy sets our benchmarks so that we can take action when the incident is clearly not consistent with our expectations.

The current policy (and an upcoming revised policy does this better) details the process for addressing concerns that have been reported to AAPM through the appropriate, anonymous, and well-publicized channels. It prescribes how to deal with a complaint so that the process is fair, clearly articulated, and consistently followed, no matter who is serving in a leadership role. The process involves professionals trained in discussing and reviewing harassment complaints, so that these sensitive issues are not dealt with by member volunteers, who may or may not have adequate background in such things, or be aware of legal requirements and limitations related to this topic.

When a complaint is reported (either via a professionally-staffed hot line or professionally-developed website), the policy prescribes the individuals who are to be notified, namely the Executive Director, the President, and the chair of AAPM's Ethics Committee. Additionally, a Human Resources (HR) professional has been retained by AAPM to serve as the person to follow up with the complainant and the person about whom a complaint is made. The number of involved individuals is very small to protect confidentiality of all parties. If one of those on the initial contact list is cited

CHAIR OF THE BOARD'S REPORT, Cont.

in the complaint, the hot line staff exclude that person from notification.

The on-site team described above meets as soon as the complaint is received from the hotline staff to determine if immediate action - at the meeting - is required. With advice of the HR professional, action would be taken if it was necessary to protect the rights of an attendee to participate in the meeting and associated social events without being subject to unprofessional behavior. This could include expulsion of the person who was determined to have behaved unprofessionally from the meeting. This determination is made after a fair and impartial discussion with all parties.

Having a clear written policy regarding unacceptable behavior is critical to facilitate action at the meeting. Without publicizing our expectations, and having attendees acknowledge that they will conform with such expectations, it would be very difficult to force an individual (who has paid for travel, hotel, registration) to leave the meeting, short of illegal behavior and police involvement. By agreeing to behave professionally, and being made aware of possible sanctions if they do not, attendees then have only themselves to blame for consequences of their behavior.

AAPM is committed to fair and professional treatment of every attendee. If a complaint is received, and if the individual provides his or her contact information, the complainant would be contacted to hear his or her story and understand the events from the perspective of the complainant. If any illegal or threatening behavior is described, law enforcement would be brought in to investigate and take any needed actions. If the alleged behavior does not rise to that level of seriousness, discussions continue and will include conversations with both parties (individually and anonymously) to learn more about the event from each person's perspective. This can occur after the meeting if the complaint does not rise to the level of requiring (or asking for) action at the meeting.

To date, we have received under a handful of complaints and these have all been handled through discussions after the meeting. No guilt is presumed; rather the HR professional talks through the events with each party and, to date, the results have been very positive: the

complainant feels "heard" and valued, and knows that the AAPM is committed to addressing inappropriate behavior in a clearly described, consistent, and proactive manner. Additionally, the discussion with the HR professional was appreciated by the subject of several complaints (involving the same incident), as the person was truly unaware that his behavior was interpreted as offensive and was quite distressed to learn that he had caused such concerns. The discussions provided a space for educating the individual that things he perceived one way were widely seen as offensive (and certainly unprofessional). The outcome was a win-win. The complainants were grateful for the follow up and to have been taken seriously, and the offender, though distressed and embarrassed, was appreciative of the education, without which he would have unknowingly continued behavior that did not reflect his true intent.

This process does not take the place of those prescribed by AAPM's Code of Ethics for complaints involving AAPM members. It has been established to allow AAPM to respond to complaints of inappropriate or unprofessional behavior at AAPM events, which can involve non-members. Members may file a complaint with the Ethics Committee related to an incident at an AAPM event if they believe another member has violated AAPM's Code of Ethics. At that point the Code of Ethics policy and procedures take over.

How has the policy been received?

As I noted at the onset, we have heard from a dozen or so members, certainly not many more, questioning why we needed this policy. We have also received many positive comments. Of note, at the 2019 inter-society meeting of organizations in our field (AAPM, ACR, RSNA, ASTRO, ASRT, Image Gently, etc.), this topic was a main agenda item. AAPM was the only group to have thought through the need for a clear and consistent policy on how to deal with unprofessional behavior at our meetings and implemented a policy and plan to address this topic. AAPM's Executive Director saw the increasing importance of this topic and urged our volunteers to develop a policy, which they did in a timely fashion.

Be assured that the development and implementation (which we will continue to refine) of a policy and process

CHAIR OF THE BOARD'S REPORT, Cont.

related to harassment, or any sort of inappropriate behavior, was not due to an alarming number, or severity, of complaints arising from AAPM events. I am sure that we all feel that it is extremely unfortunate that these policies and procedures are needed, but the evidence from professional societies across the country (and likely globe) is that they are.

My hope is that members will now see this issue in a different light, and feel a sense of appreciation and respect for the AAPM, and its volunteer leaders, for being willing to proactively tackle this sometimes uncomfortable topic.

If you have additional questions, or would like to help AAPM efforts in this space, please contact me or our Executive Director, **Angela Keyser**. And, if you are interested in seeing what other societies are doing in this area, the links below provide several different examples.

Finally, I hope that you are considering attending the AAPM Spring Clinical Meeting, which will be held in my home state of Minnesota this year. Though I can't promise 100%, I expect that all our snow will be gone and our early spring flowers will be out. But regardless of the weather, I guarantee that you will enjoy the warmth of "Minnesota Nice" locals and our own AAPM community. I hope to see you there. ■



Make a Plan to MAKE A DIFFERENCE

Learn how a charitable gift can support medical physics research and education AND fit into your long-term financial future with **AAPM's new Planned Giving website!**

<https://aapm.myplannedgift.org/>

LETTER TO THE MEMBERSHIP

PRESIDENT-ELECT'S REPORT James T. Dobbins III, PhD | Durham, NC



Dear AAPM Members,

As I write this newsletter article, the attention of the world is focused on the growing global epidemic of the novel coronavirus. Through my daily work at Duke, partnering with our colleagues in China, we have had the issue of this global health crisis first and foremost on our minds the last few weeks. Although medical physicists don't deal directly with infectious disease outbreaks, this current health crisis reminds us that when major health issues arise,

we drop all else and focus on what needs to be done to address medical issues for people around the world. Healthcare is such an important human need. There are few higher callings than working to improve the health of people in our communities and beyond.

Especially in this context, it is important for us to remember as medical physicists that we work to serve the world's people in a fundamentally important way. We have the privilege of using our knowledge of physics, mathematics, engineering, computer science, and statistics in direct service of the world's healthcare needs.

This high calling is something that sets medical physics apart from our colleagues in other disciplines of physical science. We are one of the few areas of physical science that has the unique dual role of both developing new high-tech medical advancements through research AND delivering that high-tech medicine in clinical practice.

As I enter my year of service to you as President-Elect of AAPM, I am profoundly aware and appreciative of our dual mission. And I want to make these dual missions the hallmark of my term as President next year.

I would summarize this focus as saying that we emphasize "advancing medicine" in our roles as medical physicists. First, we as physicists have contributed immensely to the development of modern medicine, though many people (including some physicists!) are not very aware of the role that we have played in that regard. But consider what medicine would be like today if there were no x-ray imaging, CT, MRI, PET imaging, external beam radiation therapy, IMRT, nuclear medicine, brachytherapy, or molecular imaging. These are all elements of medicine that have been developed predominantly or significantly by physicists. We have played a fundamentally important role in making medicine what it is today.

We should be aware, however, that medicine is changing and is likely to be quite different 30 years from now than it is today. It is becoming more personalized, molecular, and data-driven. The challenge for us as physicists is

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PRESIDENT ELECT'S REPORT, Cont.

to discover what will be our important role going forward in advancing medicine in the next stage of its evolution. AAPM will need to take a leading role in helping to establish that future-oriented focus of physics in medicine.

But as I mentioned earlier, we also work in advancing medicine by putting our knowledge to work in the clinic today. While I have focused in my own career on our role in advancing science, I believe strongly that we also need to put effort into addressing the clinical delivery of advanced medical care. I want to work carefully with you to help us better address issues of importance to medical physicists whose primary career focus is clinical. I would like to see AAPM deliver hands-on help and useful resources to our members in the clinic, while also addressing larger professional issues such as scope of practice concerns and demonstrating our unique value in the clinical enterprise.

I look forward to working with you creatively over the next couple of years to address both the scientific and clinical aspects of “advancing medicine.”

I also want to say how much I look forward to supporting the initiatives of our current president, **Saiful Huq, PhD**. Dr. Huq is drawing important attention to global issues in healthcare delivery and to the role that medical physicists can play in advancing medicine throughout the world. We are fortunate to live in a place where we have excellent health care available to us. But there are many people around the world for whom the standard of care is not what it could be. Saiful rightly wants to find ways for us in AAPM to take the discoveries and clinical protocols we have here — including our valuable task group reports, training paradigms, and other resources — and find appropriate ways of making these available to our medical physics colleagues throughout the world.

These efforts can take place through training, education, scholarly exchange, and implementation strategies. I am strongly supportive of these efforts, and pledge to work diligently to support Dr. Huq's important initiatives in this area.

Dr. Huq is also working to improve the mentoring of our next generation of medical physicists, and I support this initiative to engage our newer members. They will carry the torch forward in the years ahead and will soon become the leaders in medicine of the future. We owe it to them to hear their voices and engage their talents in service of our field and profession.

It is a privilege to serve as your President-Elect, and I look forward to meeting many of you at chapter meetings this year. I already have several trips planned to chapter meetings this spring. Part of what I hope to do during these chapter visits is to listen to the things that are on your minds regarding ways in which AAPM can better serve you — our members — and our broader communities and the world. I encourage you to write to me as well, if you have thoughts throughout the year on things that you would like to see AAPM address. I can then take your thoughts to our leadership team as we work to prioritize our activities for the next couple of years.

Thank you again for the honor of serving you and our organization. Please let any of us in the presidential chain (**Cynthia McCollough, Saiful Huq, and me**) know your ideas on how we can best serve you as we work together to advance medicine in the years ahead.

All the best,

Jim

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MEDPHYS A 3.0 Workshop

July 9–10, 2020
Vancouver Convention Centre

Transformational Medical Physics For Excellence in Patient Care and Value-Based Practice

Planning to attend the 2020 Joint AAPM | COMP Meeting this summer?

Arrive in beautiful Vancouver a few days early to learn how you can transform your medical physics practice through new models of transformational engagement at the point of care. The workshop is the first of its kind to embody MP3.0 aspirations to inform every patient's care by the innovative practice of physics in medicine.

REGISTRATION
OPENS
MARCH 4!

<http://bit.ly/TransformationalMedPhys>

WHAT ARE THE BENEFITS OF AAPM MEMBERSHIP? PART 2

TREASURER'S REPORT Mahadevappa Mahesh, PhD | Baltimore, MD



Like so many of you, I too recently paid my annual AAPM dues for 2020. And I thank you for your support, commitment and continued dedication to the American Association of Physicists in Medicine. Through your support and efforts AAPM remains the premiere organization in medical physics.

However, when making that payment you may ask yourself:

1. What benefit am I receiving from my membership in AAPM?

2. Where are my dues dollars going?

I started answering to these questions in a previous column (March-April 2019). Here, I would like to focus on what the benefits of becoming an AAPM member are.

With the ever increasing tightening of organizational budgets, individuals and companies are seeking to maximize their return on investment. As a result, practically every expenditure faces greater scrutiny in order to control costs. Membership in the AAPM provides us with many measurable tangible/intangible benefits.

Membership in the AAPM allows you to register for society meetings (Annual Meeting, Spring Clinical Meeting, Summer School and Specialty Meetings) at a rate that is often 50% of the non-member rate. In addition, AAPM members can register for the Radiological Society of North America (RSNA) Scientific Assembly and Annual Meeting at a reduced rate. Lastly, AAPM members can receive joint membership with ESTRO at a significantly reduced rate compared to that of non-members. Registration costs for these meetings and membership dues return an economic benefit in excess of \$3,000 to you the member.

Membership in AAPM also grants you access to societal publications including the *Medical Physics Journal*, the *Newsletter*, the *Journal of Applied Clinical Medical Physics* and various AAPM Reports. In addition, as a result of agreements with other organizations, members also receive or have access to *Physics Today*, online ICRU documents, online NCRP documents and online access to the annals of the ICRP. AAPM members have downloaded nearly 70,000 documents saving more than \$5M. While not all members have accessed these reports, if you consider that we have nearly 8,000, the economic benefit to the membership is significant. While the economic benefit may vary from member to member depending upon the frequency

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I would like to thank Robert McKoy for his work on this report. Please feel free to reach out to me if you have any questions concerning this report.

TREASURER'S REPORT, Cont.

of accessing several of these publications, it is obvious that the benefit to you the member can easily exceed \$2,000.

In addition to the economic benefits listed above, membership in the AAPM also provides other benefits designed to meet members' needs. These include access to the Career Services Bulletin, Professional Liability Insurance and Travel Insurance.

Your investment in AAPM provides many tangible benefits far exceeding your membership cost. In addition to the tangible benefits there are many other intangible benefits which enhance your career that are difficult to quantify. However, the benefit and return to you the member far exceeds your annual membership dues and represents a solid investment in your professional career. ■

AAPM DUES AND BENEFITS FOR 2020												
	Full	Emeritus	Junior	Resident	Student	Corresponding	Associate	Emeritus Associate	Honorary	Professional Affiliate	International Affiliate	Society of Physics Student (SPS)
Dues	\$474 Years 1-4 \$424	\$0	\$142	\$142	\$47 Waived 1st Year (Under-graduate)	\$190	\$474	\$0	\$0	\$190	\$190	\$0
Application Fee	\$50	N/A	\$50	\$50	\$25	\$50	\$50	N/A	N/A	\$50	\$50	\$0
Full COMP Members 30% Dues Reduction	\$332 Years 1-4 \$282											
Joint membership of ESTRO (AAPM-ESTRO members) at an annual cost of €45 per member. Apply at www.estro.org .	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
AAPM Reduced Meeting Registration Rate	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Student Rates with Proof of Enrollment
AAPM Newsletter—Bi-monthly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Career Services Bulletin	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Emeritus Membership	✓						✓					
JACMP – Online only	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Medical Physics Journal Online	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Medical Physics Journal – 12 Issues	✓	\$65 In Print	✓	✓	\$65 In Print	\$130 In Print	✓	\$65 In Print	\$65 In Print	\$130 In Print	✓	\$65 In Print
Member Directory Quarterly PDF	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Online Continuing Education	\$75	\$50	\$10	\$10	\$0	\$50	\$75	\$50	N/A	\$50	\$50	N/A
Physics Today – 12 Issues	✓	✓	✓	✓	✓	Opt-In	✓	✓	✓	✓	Opt-In	Through SPS
Professional Liability Insurance	Add'l Fee											
Reduced Rate on AIP Publications	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
RSNA – Free registration if registered by RSNA's deadline	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Professional Survey Report New Each June	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Task Group Reports	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Virtual Library	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
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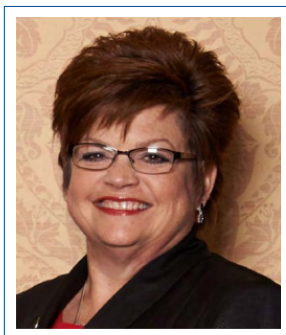


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EXECUTIVE DIRECTOR'S REPORT Angela R. Keyser | Alexandria, VA



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New Publications

AAPM TG 203's report, [Management of radiotherapy patients with implanted cardiac pacemakers and defibrillators](#), is available online.

Also, AAPM Members have access to a new [Online NCRP Publication Report](#) : Report No. 177 - Radiation Protection in Dentistry and Oral & Maxillofacial Imaging (2019)

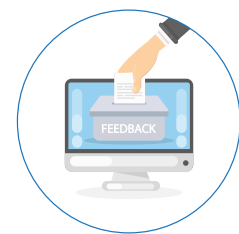
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2020 Exhibitor Site Visit

A successful Pre-Meeting Exhibitor Site Visit was held in Vancouver, BC in early February. Sixteen individuals



representing eleven exhibiting companies participated, along with Annual Meeting Subcommittee Chair Robin Stern, Technical Exhibits Subcommittee Chair **Norman Brown**, The Expo Group Vice President of National Sales Bobby Rispoli, myself and other members of the AAPM HQ team. The group toured the exhibit hall and meeting room space, discussed new initiatives planned for the 2020 meeting and had the opportunity to meet with key personnel from the convention center.

2020 Funding Opportunities

- **AAPM / RSNA Imaging Physics Residency Grant**

(Application deadline: May 4, 2020)

The AAPM Board of Directors has approved \$420,000 in support over 6-years (\$70,000/year starting in 2019) to fund six spots in existing or new imaging residency programs. The RSNA Board of Directors approved \$210,000 in funding for 3 additional slots in existing or new imaging residency programs. The purpose of the AAPM funding is to provide 50% support of a resident's salary for two imaging physics residents. The awardee institution(s) will provide the other 50% support. After the period of the award is over, the intent is that the awardee institution(s) will continue to fully support this new imaging physics residency position. CAMPEP accreditation is expected within the first year of the funding period if a program is not currently accredited. Open to existing or new imaging residency programs.

[View additional information and access the online application »](#)

- **Research Seed Funding Grant**

(Application Deadline: May 4, 2020)

Three \$25,000 grants will be awarded to provide funds to develop exciting investigator-initiated concepts, which will hopefully lead to successful longer-term project funding from the NIH or equivalent funding sources.

Funding for grant recipients will begin on July 1 of the award year. Research results will be submitted for presentation at future AAPM meetings.

Applicants must be a member of AAPM at time of application (any membership category).

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- **AAPM BEST Award**

(Application deadline: May 11, 2020)

BEST Medical will provide ten fellowships in the amount of \$500 each, to be used for travel, food and lodging expenses to attend the 2020 Joint AAPM/COMP Meeting. AAPM will provide complimentary Annual Meeting registration for each recipient, including social function tickets. Eligibility limited to Student, Resident

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or Junior Members of the AAPM and first author on an accepted abstract for the 2020 Joint AAPM/COMP Meeting.

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- **AAPM Graduate Fellowship**

(Application Deadline: May 18, 2020)

The AAPM Graduate Fellowship is awarded for the first two years of graduate study leading to a doctoral degree in Medical Physics (Ph.D. or DMP). Both BSc. and MS holders are eligible to apply. Applicants must be a member of the AAPM at the time of application, (any membership category). Pending membership status not eligible. A stipend of \$13,000 per year, plus tuition support not exceeding \$5,000 per year will be assigned to the recipient.

Graduate study must be undertaken in a Medical Physics Doctoral Degree program accredited by the CAMPEP.

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- **AAPM Annual Spring Clinical Meeting**

April 4 – 7, 2020

The Renaissance Minneapolis Hotel, The Depot, Minneapolis, Minnesota

The [Spring Clinical Meeting Program](#) is available online. Also, note that several AAPM groups plan to meet during the 2020 AAPM Spring Clinical Meeting. A list of [AAPM activities](#) is available online. Please make time during the meeting to [visit the vendors](#) and thank them for their support of AAPM and the medical physics profession.

- **AAPM 2020 Summer School Advances in Quality Assurance in Radiotherapy**

June 8-12, 2020, Lewis & Clark College, Portland, Oregon

[View program](#) and [register now!](#)

This 4.5-day school will focus on QA in radiotherapy, highlighting existing methods, best practices and emerging trends. We will review established QA

methods, physics plan and chart review, clinical trials data, the science of QA, emerging methods including automated techniques and machine learning, and the impact of changing payment models. Program didactics will be combined with a hands-on component in the form of workshops.

Please take a moment to review the [program outline](#) for more details of material to be covered.

- **Transformational Medical Physics for Excellence in Patient Care and Value-Based Practice**

July 9 – 10, 2020, just prior to the 2020 Joint AAPM/COMP Meeting, Vancouver, British Columbia

Make plans to attend this Medical Physics 3.0 Workshop.

- **Joint AAPM/COMP Meeting**

July 12 – 16, 2020, Vancouver, British Columbia

This year's program focusing on "Improving Health **Quality**, Increasing Global **Impact**." Sessions and exhibits will be held in the Vancouver Convention Centre, which offers a downtown waterfront location with a dramatic mountain backdrop and is just a short walk from many surrounding hotels.

Meeting registration and housing information will be available on March 4. The program will be posted by May 5.

AAPM will once again offer childcare. Camp AAPM welcomes children ages 6 months – 12 years. The program will be managed by Accent on Children's Arrangements, Inc., a national childcare company also used by RSNA. Children participate in age-appropriate activities including arts and crafts projects, active games and much more in a safe, nurturing environment. ACCENT's professional, trained supervisors are CPR and Pediatric First Aid certified. They are teachers, professional children's program providers, or mothers who simply love working with children and have completed ACCENT's specialized training program.

To assure that your child has a place, please preregister by **July 3, 2020**. This deadline ensures proper staffing, which is in the best interest of your child(ren).

[Click here](#) to register your child for Camp AAPM.

Questions? Email registration@accentoca.com

EXECUTIVE DIRECTOR'S REPORT, Cont.

Orchid Event Solutions is the official housing provider for our meeting.

Convention Data Services is the official registration service provider.

If you are approached by any other company regarding meeting registration or hotel rooms in Vancouver, please be aware that they have no relationship with AAPM. You put yourself at financial risk if you provide them your credit card information. Look for the logo to instantly identify a legitimate AAPM service provider.

AAPM HQ Team at Your Service

Who does what on the AAPM HQ Team? See a list with contact information and brief descriptions of responsibilities [online](#). An [Organization Chart](#) is also provided. ■

OUR CONDOLENCES

Christopher J. Amies, PhD

John "Jack" R. Cunningham, PhD

John C. F. MacDonald, PhD

John C. Stovall, MS

Our deepest sympathies go out to the families. We will all feel the loss in the Medical Physics community.

If you have information on the passing of members, please inform HQ ASAP so that these members can be remembered appropriately. We respectfully request the notification via e-mail to: 2020.aapm@aapm.org (Please include supporting information so that we can take appropriate steps.)

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More and more AAPM Members are wearing this custom designed, signature merchandise with pride. Isn't it time you ordered yours?

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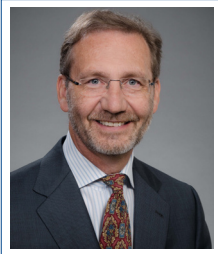
- Neck ties
- Bow ties
- Scarves [rectangular, square, and infinity]
- Pocket squares

www.aapm.org/merchandise

Because AAPM branded merchandise is made to order, please allow 4-5 weeks for delivery.

AAPM PUBLIC EDUCATION WEBSITE UPDATE

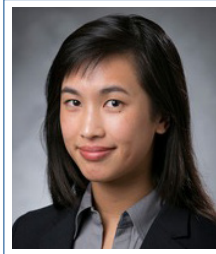
EDUCATION COUNCIL REPORT George Sandison, PhD | Seattle, WA
Yusuf Erdi, DSc | New York, NY ■ Titania Juang, PhD | La Jolla, CA
Eric Gingold, PhD | Philadelphia, PA



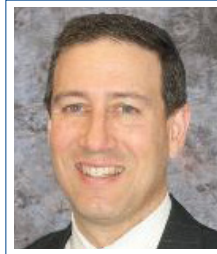
G. Sandison



Y. Erdi



T. Juang



E. Gingold

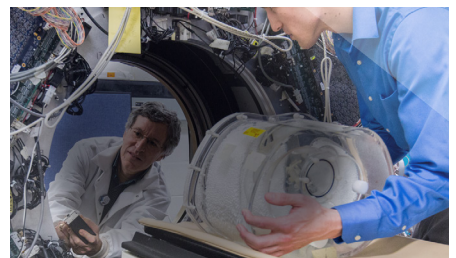
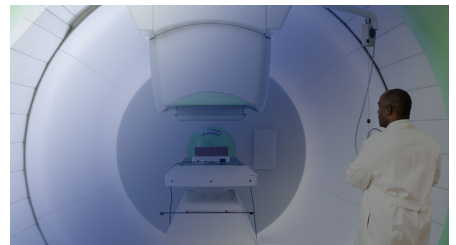
Among our fellow professional medical physics and engineering organizations around the world, AAPM is renowned for its impact through scientific innovation and publication of technical reports and guidelines. We are a small organization with a big impact on a multi-national professional domain. Recognition of our profession outside of this domain is limited, but this is a status the AAPM Public Education Committee (PEC) is charged with changing for the better. Our committee exists to disseminate medical physics information to the general public and thereby increase recognition of our professional roles as medical physicists in healthcare, industry, education, and government agencies.

One of the important ways we are doing that job now is by giving a new public face to AAPM with the introduction of a website devoted to public education outreach. Its domain name, www.medicalradiationinfo.org, was created to elicit more search engine hits by members of the public worldwide than "AAPM" might have alone. This site also provides an opportunity for visitors to engage directly with the medical physics community via an "Ask the Experts" (ATE) question and answer experience for specific concerns or interests regarding physics in diagnostic imaging and radiation therapy, including issues of quality and safety. Development of the ATE component was funded in part by a \$40,000 grant from the American Institute of Physics (AIP).

Great effort has gone into creating website content that is easily intelligible to a broad section of the public. Primarily, this is achieved by avoiding highly technical language in the content or highly detailed graphics, tables and flowcharts. A rough guide for our communications is to ensure content is understandable to a person having a grade 8–11 education in the United States. This is not an easy task to accomplish since our discipline is based in science and technology, so, when considered appropriate, we adopt a Wikipedia-like approach of providing either a link for further reading or a mouse-over dropdown explanation note for words or phrases that may be unfamiliar to a public audience.

Twitter: @egingold

MEDICAL PHYSICS PUBLIC EDUCATION



EDUCATION COUNCIL REPORT, Cont.

The initial content presented on the Public Education (PE) website will deliberately be kept at a minimum since establishing the presence of the website early this year was a priority. It also ensures that the backlog of developed content will undergo all AAPM required approvals before posting. PEC hopes to go-live with the website Spring 2020, and wishes it will be something all AAPM members will value and appreciate. We expect its development will be one of regular updates and continuous improvement in an effort to remain relevant and informative. If this is achieved, it may even outlast the careers of a generation or two of medical physicists.

During 2020, the PEC has a goal to develop a publicly accessible page on the PE website devoted to a Public Education Speakers Bureau. In collaboration with AAPM's Chapters and the Regional Organization Outreach Subcommittee, the bureau will comprise volunteer medical physicists, listed by state and city, who are interested in engaging with their local community to organize, present and participate in events that will benefit from their expertise. To make these efforts less burdensome, medical physicists engaging with the public will be able

to download educational materials such as videos, PowerPoint slide decks, posters, recommended interactive demonstrations, and other resources to practically assist their engagement. A selection of that material will also be available for general use by school teachers wishing to talk about medical physics careers with their students. In this way, speakers will highlight their role and expertise within the local communities they serve.

A notice to all members will be sent announcing the go-live date for the public education website once formally approved. This will be quickly followed by an effort to generate public awareness of the site through social media. Please then visit the site and send any ideas and recommendations for improvement to the PEC Chair. As the face of AAPM to the world we want all of you to be proud of our site and the role it plays in educating the public on medical physics. We also thank all of you in advance for participating in ATE as experts by answering questions from the public and also promoting the medical physics field and our profession through your direct public engagement. ■

OSTP CONTINUES ASSESSMENT OF U.S. RESEARCH ENTERPRISE

LEGISLATIVE AND REGULATORY AFFAIRS' REPORT Richard Martin, JD | Alexandria, VA

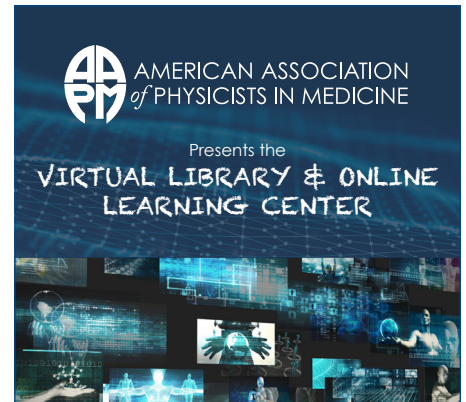


The White House Office of Science and Technology (OSTP) continues to look at issues that will shape the US research enterprise of the future, while its focus appears to be on access to and management of research data. OSTP's review has been much broader, and its policy goals are not completely clear.

In November 2019, OSTP issued a request for information (RFI) on the "American research environment." That RFI sought feedback from stakeholders on topics including "research rigor and integrity," "coordinating administrative requirements," "research security," and "safe and inclusive research environments." Subsequently, OSTP sought public comments on a draft set of characteristics of research data repositories to improve consistency in agency-provided information for those repositories. In addition, late in 2019, the research community learned that the White House was considering issuing an executive order that would mandate immediate free access to all published federally funded research. Pro-active advocacy by scientific societies and commercial journal publishers urged President Trump to abandon such an executive order, arguing for the current 12-month embargo to be maintained. In response to stakeholders' concerns, OSTP broadened its stakeholder outreach on the embargo and other research data issues, and OSTP's position appears to be evolving.

Accordingly, as OSTP seeks to influence and shape the scientific research community of the future, it is important for AAPM and other professional organizations within that community to keep a seat at the table. We are working with the American Institute of Physics (AIP) and other professional organizations to monitor developments and collaborate on advocacy supporting our members.

Contact **Richard J. Martin, JD, AAPM Government Relations Program Manager**, at richard@aapm.org if you have any questions or would like additional information. ■



Unlimited access to the Virtual Library is included as a benefit of AAPM membership at no extra charge.

Presentations Posted in the Virtual Library include:

- Streaming Audio of the Speakers
- Slides of the Presentations
- 2019 Spring Clinical Meeting
*Kissimmee, FL
March 30–April 2, 2019*
- 2019 AAPM Summer School —
Practical Medical Image Analysis
*Burlington, VT
June 3–7, 2019*

Coming Soon:

- 61st AAPM Annual Meeting & Exhibition
*San Antonio, TX
July 14–18, 2019*

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[www.aapm.org/
education/ce/info.asp](http://www.aapm.org/education/ce/info.asp)

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MEDICAL PHYSICS — ONLINE LONGITUDINAL ASSESSMENT (OLA)

ABR NEWS Kalpana M. Kanal, PhD , Matthew B. Podgorsak, PhD,
Robert A. Pooley, PhD, ABR Trustees ■ J. Anthony Seibert, PhD, ABR Governor

So far, the response has been very good!

Introduction

Since the beginning of MOC, there have been four major components:

- Part 1: Professionalism and Professional Standing
- Part 2: Lifelong Learning and Self-Assessment
- Part 3: Assessment of Knowledge, Judgment, and Skills
- Part 4: Improvement in Medical Practice

This newsletter article will address the evolution of Part 3: Assessment of Knowledge, Judgment, and Skills. A future article will address the evolution of Parts 1, 2, and 4.

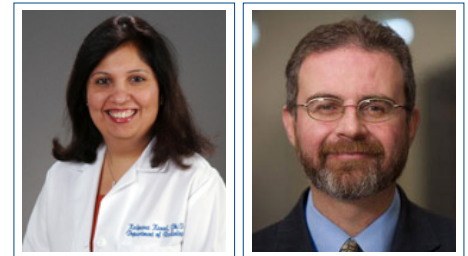
Of these four parts, the assessment of knowledge, judgement and skills (i.e., the decennial exam) has been the one that has received the most criticism.

No one likes taking any type of exam and setting the exam every 10 years made it a “high stakes” exam. This issue has been discussed in detail for physicians.¹ The need for the assessment is driven by the following:

- Many studies have shown that increased time in practice for physicians results in a decrease in knowledge and lower adherence to standards. This appears to be related to failure to acquire important new knowledge rather than decay of initial knowledge. While these studies were done with physicians, there is no reason to think that the data for physicists would be different.
- Most people overestimate their knowledge and abilities. This is called the Dunning–Kruger effect or, informally, the Lake Wobegon effect.
- Focus groups show that the public believes that such an evaluation is necessary. They note that other groups, such as pilots, are required to take regular exams.
- Regulators would likely require it.

At the same time there are major disadvantages:

- The exam becomes a “high-stakes” exam, which requires study time and time away from work. It also generates anxiety.
- Although the exam evaluates a diplomate's knowledge, it does not serve as a vehicle for improvement.
- The small number of takers for any one exam makes the statistical evaluation of the exam, especially in nuclear medical physics, problematic.



K. Kanal

M. Podgorsak



R. Pooley

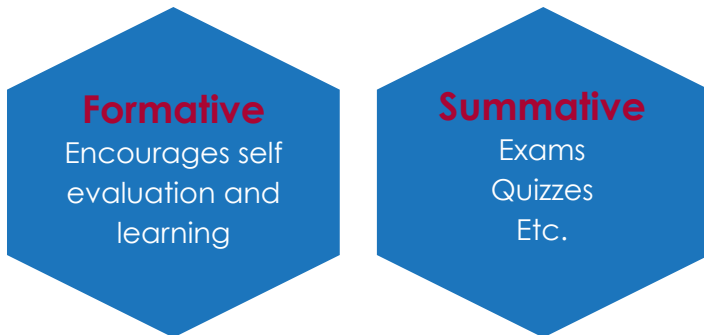
J.A. Seibert

If you have questions, please contact the ABR through our website, by phone at (520) 790-2900 or by e-mail.

Always Ask the ABR First

¹Academic Medicine: November 2016 - Volume 91 - Issue 11 - p 1509-1515

ABR NEWS, Cont.



In education and psychometrics, these assessments are called “formative” and “summative.”

Formative activities engage diplomates in a process that encourages them to analyze areas where they lack knowledge and then take action to correct these knowledge gaps. Summative activities measure the knowledge of diplomates to assure that they continue to meet a standard.

A Better Way for Part 3: Assessment of Knowledge, Judgment, and Skills

From the beginning of MOC, the ABR has been faced with the need to improve Part 3 while keeping it effective. If MOC were to become a ‘toothless tiger,’ it will be a waste of time for diplomates and a ‘laughingstock’ to our patients and medical colleagues. Many ABMS Boards struggled with this until the American Board of Anesthesiology developed an OLA-like process that was called the “MOCA Minute.” This was piloted in 2014 and was immediately popular. The MOCA Minute and ABR’s Online Longitudinal Assessment (ABR OLA) solve many of the problems associated with the previous 10-year exam.

In the ABR OLA process, all questions (once answered) provide the correct answer, a short rationale, and at least one reference, so diplomates can increase their knowledge. Evaluation against the standard is ongoing but transparent, so diplomates can track their performance before an annual review.

The many advantages of ABR OLA include:

- ✓ A strong formative component — the main purpose of MOC
- ✓ Elimination of the stress of the MOC exam
- ✓ No travel needed to complete Part 3 requirement

- ✓ Little impact on workday
- ✓ Immediate feedback after question is answered
- ✓ Supplemental information provided (i.e., answer rationale and references)
- ✓ Option to “decline” up to 10 questions in each item set per year
- ✓ Flexibility in how frequently questions are answered
- ✓ Literature-proven educational model
- ✓ Potential for retesting in areas of weakness
- ✓ Participating as a question rater

ABR OLA was implemented for diagnostic radiologists in 2019 and for the rest of the ABR specialties on January 6, 2020. ABR OLA for Medical Physics off to a very good start.

OLA Review

The key components of OLA are noted here with differences identified for Nuclear Medical Physics as discussed further below:

- ✓ 104 question opportunities provided per year (52 questions for NMP)
- ✓ Must answer 52 questions per year
- ✓ 2 question opportunities offered weekly with a 4-week shelf life (1 question opportunity per week for NMP)
- ✓ 1 or 3 minutes to answer a question
- ✓ Ability to decline 10 questions per year (not available for NMP)
- ✓ Learn immediately whether you answered correctly
- ✓ Receive immediate explanation with references
- ✓ Topics answered incorrectly will be repeated and a very similar question is soon provided (not available for NMP)
- ✓ Optional participation as a question rater

A SUCCESSFUL FIRST
YEAR FOR DIAGNOSTIC
RADIOLOGY

96.7% Participation

1,444,404 Questions
Answered

27.1% Question
Raters

25 seconds average
response time for a 60
second question

ABR NEWS, Cont.

ABR-OLA for MP The First Month

- 3094 (88%) MP diplomates had answered at least one OLA question.
- Over 24k questions have been answered.
- <2% of MP questions have been declined
- 34% of MP diplomates have opted to be an OLA question rater

OLA is based on the concept of “walking-around knowledge” and the program is comprised:

- questions that are based on material that you may be asked during a routine day by trainees, referring MDs, medical physicists, and patients,
- questions that would provoke the reaction “yes, I should know that” , and
- questions that are not necessarily “easy” but that the diplomate would feel are fair.

Scoring

The OLA process, like all ABR exams, is criterion-referenced. Criterion-referenced exams/assessments have a fixed passing score that is determined by the questions and does not change to conform to a curve. This passing score is called a cut score that is determined using a two-step process. The first step is a psychometric process called the Angoff, which is an evaluation of the question

by a group of experts. The unique thing about OLA is that the diplomates participate in the Angoff by rating each question they answer. We strongly encourage every diplomate to register as a question rater. The training is online and only takes a few minutes, and rating each question only takes a few seconds. You can find out more at ola.theabr.org. There also have to be a certain number of answers to each question to ensure statistical validity. Because of these factors, OLA requires diplomates to answer 200 questions before a “meeting/not meeting” judgement is rendered for a diplomate. The ABR, however, recognizes that diplomates may wish to know their status in the OLA program before they have answered 200 questions. It is the intention of the ABR to provide an interim status report when a diplomate has answered enough questions and when the questions are properly calibrated. This functionality will likely be enabled late in 2020.

Why Is Nuclear Medical Physics Different?

The ABR is committed to making the OLA process sound in every way. Because of the small number (~100) of nuclear medical physicists (NMP), a statistically sound result cannot be obtained unless the number of questions is reduced, and the possibility of declines is removed. While we recognize that NMP diplomates may find this inconvenient, the value of a statistically sound program is of utmost importance.

The OLA process is now in place for Medical Physics diplomates. For newly certified physicists it starts on January 1 of the next year. ■

AAPM 2020 AI Workshop

July 11, 2020 | Vancouver Convention Centre

Immediately Prior to the Joint AAPM | COMP Meeting

REGISTRATION
OPENS
MARCH 4!

Co-organizers:

William (Bill) Sensakovic, PhD

Greg Sharp, PhD

As a warm-up to the 2020 Specialty Track on Data Science, participate in this hands-on AI workshop Saturday, July 11 in Vancouver! Based on the widely popular 2019 Summer School on Practical Image Analysis with Deep Learning, this workshop features hands-on computer labs with real-life exercises that each attendee will run in Google Colab. Teaching faculty include co-organizers **Bill Sensakovic, PhD (Mayo Clinic)**, and **Gregory Sharp, PhD (Massachusetts General Hospital)** as well as two more Summer School veterans, **Kristy Brock, PhD (UT MD Anderson Cancer Center)** and **Joyita Dutta, PhD (University of Massachusetts, Lowell)**.

Learn how to fine-tune a deep learning segmentation model! Compete with your peers for best algorithm performance!

This workshop is designed for programming experts as well as beginners — just bring a laptop and you're ready to go! Summer School Teaching Assistant **Brian Anderson (UT MD Anderson Cancer Center)** will help guide you step-by-step through computer labs from image visualization, deep learning algorithms, segmentation and registration examples — all complete with image data and computer code. Google Colab notebooks will be made available to attendees prior to the meeting.

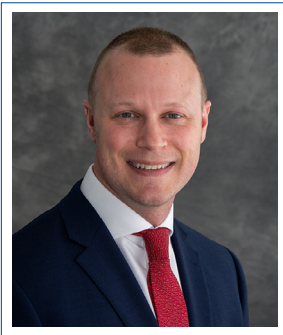
Registration is available for the workshop alone OR as an add-on to the Annual Meeting. Seating is limited, so be sure to reserve your spot now!



<http://bit.ly/2020AIWorkshop>

ACR ACCREDITATION: FREQUENTLY ASKED QUESTIONS FOR MEDICAL PHYSICISTS

ACR UPDATES Dustin A. Gress, MS, Senior Advisor for Medical Physics ACR Quality and Safety | Reston, VA



Accreditation Support

In December of 2019, the ACR Accreditation team unveiled a new [customer support platform](#). With the new system, ACR Accreditation customers have a single place to access all required accreditation resources and a help desk to submit their queries and support requests. Since rollout, we have heard valuable feedback, and we are working on solutions. Please note that where FAQs previously existed in separate documents, the new

platform has all FAQs incorporated into the articles, with revision dates.

The ACR "Toolkit," designed to assist facilities with upcoming Validation Site Surveys (CMS requirement), is still available on its [landing page within \[acraccreditation.org\]\(http://acraccreditation.org\)](#).

MRAP

Starting in June of 2019, the grid structure of the ACR Large (MR) Phantom (slice #5) has been changed. While the functionality remains the same, there are a few obvious differences in the appearance. Please see [this guidance](#) for complete details.

Radiation Oncology Practice Accreditation (ROPA)

Did you know that ACR has a [therapy accreditation program](#)? As of February 2020, [ROPA](#) has over 700 accredited sites in the United States. Everything you need to know about ROPA can be found [here](#). The most common deficiencies identified during ROPA On-Site Surveys include:

- Insufficient information in consultative note
- Incomplete patient history and physical examination
- Incomplete treatment prescriptions
- Lack of defined goals and requirements of treatment plan by radiation oncologist (i.e., dose constraints)
- No formal treatment planning quality assurance plan
- Lack of dose volume histograms

...and more. You can find a complete list of common deficiencies [here](#).

New Opportunity for Medical Physics Graduate Students

The ACR is proud to now offer an annual [travel scholarship](#) for one medical physics graduate student to attend the ACR Annual Meeting in Washington, DC. By the time this AAPM Newsletter is published, the March 2 application deadline will have passed, but while I write this, we are very excited to see and hear our first group of applicants. The competition is inspired by AAPM's

Twitter: @DustinGress

In each issue of this Newsletter, I'll present frequently asked questions (FAQs) or other information of particular importance for medical physicists. You may also check out the ACR's [accreditation web site portal for more FAQs, accreditation application information, and QC forms](#).

I am proud to share that the ACR's awardees of the Richard L. Morin, PhD, Fellowship in Medical Physics are Crystal A. Green, PhD and Marthony Robins, PhD. Dr. Green is a medical physics resident at Duke University and Dr. Robins is a medical physics resident at Ohio State University. It is a great credit to Drs. Green and Robins that they were able to distinguish themselves among an exceptional group of applicants. Reviewing the applications made it abundantly clear to me that the future of medical physics is bright. Congratulations to all of the applicants on their accomplishments, and keep up the great work!

The Morin Fellowship is ACR's eighth fellowship and the only one exclusively for medical physics residents and fellows, recognizing the importance of our incoming generations of medical physicists and the value of mentoring them in the work of the ACR. Congratulations, Drs. Green and Robins!

ACR UPDATES, Cont.

Med Phys Slam: applicants submit audio of themselves telling us why they want to attend the ACR Annual Meeting (two minutes or less), and summarize their graduate research in 500 words or less. The project summaries should be easily understood by readers with no background knowledge, and will be judged on both content and comprehensibility. We plan to feature the top submission(s) in the [ACR Bulletin](#). Good luck to all the applicants!

Mammography Toolkit

In September 2019 the ACR [released a toolkit for mammography clinics](#). The toolkit is publicly available and includes clinical decision aids, handouts, an infographic,

and screening education videos — one set of materials for referring clinicians and a second set for patients, waiting areas, lobbies, and web. The materials even have blank spaces for clinics to add their own branding. I encourage all of my medical physics colleagues to become familiar with the resources, especially those who support mammography clinics, and to share them far and wide — some of you may even want to include the [patient decision aid](#) (or another resource) with your annual mammo physics survey report, adding value to the service you provide.

Access the full free toolkit [here](#). ■

UNDERSTANDING MEDICARE'S APPROPRIATE USE CRITERIA PROGRAM

HEALTH POLICY & ECONOMIC ISSUES Russell B. Tarver, MS | Fort Worth, TX



AUC, ADIS, PLE, qCDSM, PAMA, ASC, PFS, HOPPS, CMS... what does this alphabet soup have to do with you and your practice? If you haven't heard, there are new requirements for ordering certain imaging studies.

Background: The Protecting Access to Medicare Act (PAMA) of 2014, Section 218(b), established a new program requiring the use of appropriate use criteria (AUC) to increase the appropriateness of advanced diagnostic imaging services (ADIS)

provided to Medicare beneficiaries. It's taken a few years for this to get off the ground, but January 1, 2020 marked the mandatory start of the program. The 2020 calendar year is an "Educational and Operations Testing" period. This is a "consequence free" year for providers to figure things out before reimbursement penalties for non-compliance become effective in 2021.

The AUC program applies to ADIS, including CT, MRI, PET and nuclear medicine, for which payment is made under the following applicable Medicare payment systems: Physician Fee Schedule (PFS); Hospital Outpatient Prospective Payment System (HOPPS); and Ambulatory Surgical Center (ASC) Payment System. This program applies to all providers ordering ADIS for Medicare beneficiaries in these sites-of-service. Depending on your specialty, you will be more or less scrutinized on compliance since CMS does have its eyes on specific imaging studies that it feels have a high incidence of inappropriate use.

The program is reliant upon two complimentary parts. Provider-Led Entities (PLE) are provider organizations that have been recognized by the Centers for Medicare and Medicaid Services (CMS) as experts in clinical knowledge and content. They provide the content that makes up AUC guidelines. The National Comprehensive Cancer Network (NCCN) is one example of a recognized PLE. A Clinical Decision Support Mechanism (CDSM) is a tool (usually electronic) that helps providers determine if a study they are planning to order is appropriate within the AUC guidelines given a patient's diagnosis and condition. A qCDSM is a CDSM that has been qualified by CMS to provide this service to ordering providers. CareSelect is one example of roughly 20 qCDSMs currently qualified by CMS. CareSelect encompasses content from multiple PLEs.

What answers does a qCDSM provide? After consulting AUC through a qCDSM, the qCDSM will return a result that includes several pieces of information that will be required to be passed on to rendering providers. The first piece of information is the adherence result and there are three

For an overview of the AUC program:

<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Appropriate-Use-Criteria-Program>

Direct link to a list of qualified CDSMs:

<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Appropriate-Use-Criteria-Program/CDSM>

Outreach & Educational information:

<https://www.cms.gov/Medicare/Quality-Initiatives-Patient-Assessment-Instruments/Appropriate-Use-Criteria-Program/OandE>

HEALTH POLICY & ECONOMIC ISSUES, Cont.

possibilities: The order adheres to criteria, the order does not adhere to criteria, and lastly, there is no AUC to address the patient's condition. Another piece of information is the qCDSM utilized. Each qCDSM is given a specific code by CMS. These G-Codes differentiate the various qCDSMs from one another. A third piece of information in the results is a unique consult code. There are additional data points returned, but they are not so relevant to the reporting process.

What does this all mean? As of January 1, 2020, providers that order ADIS in the outpatient setting are required to consult AUC and provide the results of that consult to the rendering providers (facilities and radiologists). Facilities and radiologists are required to include the AUC results on their Medicare claims. When fully implemented, failure to include the results of the AUC consultation will result in denial of payment for those services. Thankfully, 2020 is the year of testing and no claims will be denied for incorrect or absent AUC information. Also, in the initial phases of the program adherence to AUC recommendations will not be required. The consult is required, but adherence to AUC is not necessary.

How does this all work? Like many things, there are multiple ways to accomplish the requirements of this legislation. Some electronic health records (EHR) have this functionality integrated within their workflow. Some qCDSMs have portals with free access to their content that providers can use. And some insurers as well as imaging centers may have portals built into their systems so that referring providers can consult AUC while ordering imaging studies.

An example workflow might look something like this:

1. Provider feels that an advanced diagnostic imaging study is necessary or beneficial for their patient.
2. Provider (or appropriate clinical staff under their direction) consults AUC through their preferred qCDSM.
3. The qCDSM provides a result that can be copied or recorded electronically.
4. Provider includes the results of the consultation with their order to the rendering providers.
5. Rendering providers include the consultation results on their Medicare claims.
6. CMS reviews the claim and determines if AUC guidelines were consulted.

7. CMS pays appropriate claims and denies inappropriate claims (remember claims will not be denied in 2020).

What is CMS' goal with all this effort? Ultimately, CMS stated its goals are to increase the appropriate use of advanced diagnostic imaging, with a commensurate decrease in inappropriate use. Since the ordering provider's NPI and AUC results are attached to Medicare claims, CMS will be able to determine compliance rates for individual providers. Eventually, outlier providers (those who excessively order inappropriate ADIS) will be subject to prior authorization requirements. Each year, up to 5 percent of ordering providers, ranked by adherence percentage, may be put into prior authorization category based on the prior year's performance.

Does my practice have to participate? Most likely. With only a very few exceptions, all applicable advanced imaging for Medicare patients must be accompanied by an AUC consultation. CMS clarified the significant hardship criteria in the AUC program to include: 1) insufficient internet access; 2) electronic health record or clinical decision support mechanism vendor issues; or 3) extreme and uncontrollable circumstances. CMS also finalized allowing ordering professionals experiencing a significant hardship to self-attest their hardship status.

Does my provider have to personally perform the consult? This is a tricky one. CMS is allowing AUC consultations, when not personally performed by the ordering professional, to be performed by clinical staff under the direction of an ordering professional. CMS determined that it would be inappropriate to move forward with the original proposal to specify the scope of individuals who can perform the AUC consultation as "auxiliary personnel." CMS modified the proposal in response to comments, to clarify that the consultation with a qualified CDSM may be performed by "clinical staff" under the direction of the ordering professional. CMS has used the term "clinical staff" elsewhere in the Medicare program to identify individuals that may perform care management services. This will allow the ordering professional to exercise their discretion to delegate the performance of this consultation.

CMS is clear that the ordering professional doesn't have to be the one to consult AUC, but they also clarify that "auxiliary personnel" isn't sufficiently descriptive enough.

HEALTH POLICY & ECONOMIC ISSUES, Cont.



The qualifier of “clinical staff” is used instead. By inference from other uses of the term, “clinical staff” would be staff that are capable of performing care management services. Ordering professionals should exercise due diligence when delegating rights in order to remain in compliance with CMS guidelines.

How might this impact my practice? If your practice orders ADIS, your patients may ultimately be denied services by providers of advanced diagnostic imaging if they are unwilling to take the non-payment risk. If your practice provides ADIS, you’ll be required to manage the intake of AUC consult results and supply that data to CMS via Medicare claims. If your radiologist practice provides only

professional services, you are still bound by the same rules to supply the AUC consult results on your Medicare claims.

Ultimately, all three parties in the imaging chain; ordering professional, technical service provider, and radiology professionals, will have to modify processes in order to accomplish their part of the AUC consult, communicating results, and inclusion of results on Medicare claims.

Ordering professionals are likely to see the first challenge, as imaging service providers start requiring consult results before performing services. Service providers have the challenge of determining when they will start requiring consult data prior to performing services; something that could put them at risk for continued referrals. ■



**ADVANCES IN
QUALITY ASSURANCE
FOR RADIOTHERAPY**

June 8 – 12 | Lewis and Clark College | Portland, OR

This 4.5 day school will focus on QA in radiotherapy, highlighting existing methods, best practices and emerging trends. We will review established QA methods, physics plan and chart review, clinical trials data, the science of QA, emerging methods including automated techniques and machine learning, and the impact of changing payment models. Program didactics will be combined with a hands-on component in the form of workshops.



March 11:
Meeting Registration Opens

**We wish to acknowledge the following
workshop partners:**



aapm.org/school



JULY 12–16
VANCOUVER, BC

JOINT AAPM | COMP MEETING

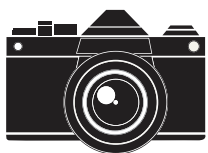
NEW MEMBER SYMPOSIUM

Tuesday, July 14 • 4:30 pm – 6:00 pm • Room TBD, Vancouver Convention Centre

As a new member of AAPM, it is easy to feel overwhelmed by the size and complexity of the association and to be unaware of the benefits and opportunities available to members. At this year's AAPM | COMP Joint Meeting in Vancouver, we will host a New Member Symposium where you can learn more about the organization, member resources, opportunities to get involved, and about topics of particular interest to new professionals. We encourage you to take advantage of this great opportunity to learn valuable information and to grow your professional network.

Registered attendees will receive a raffle ticket. Enter to win a complimentary registration for the 2021 Annual Meeting in Columbus, OH!!

In addition, all new members who register for the Symposium will receive a drink ticket, good for one complimentary soda or beer served after the New Member Symposium during the social with committee chairs from four AAPM Councils: Science, Education, Professional and Administrative.



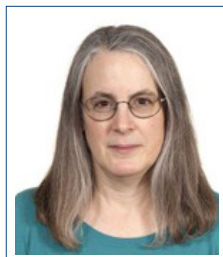
Get Your Picture Taken. A photographer will be on-site to take head shots for your AAPM Member Directory profile picture.



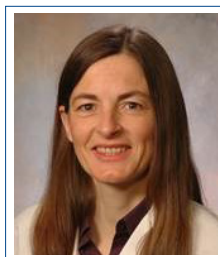
aapm.org/JointMeeting

2020 JOINT AAPM | COMP MEETING INFORMATION

ANNUAL MEETING SUBCOMMITTEE REPORT Robin Stern, PhD, Chair | Sacramento, CA
Ingrid Reiser, PhD, Vice Chair | Chicago, IL



R. Stern



I. Reiser

This July, AAPM will join with COMP, the Canadian Organization of Medical Physicists, to present a joint meeting centered around the theme of Improving Health Quality, Increasing Global Impact. The meeting will be held at the award-winning Vancouver Convention Center, downtown on the shore

of Coal Harbor, with spectacular views of the mountains across the water. Vancouver is an ethnically diverse city with thriving art, theater, and music scenes and a wide variety of world class restaurants. Plus, with the nearby harbor, ocean, and mountains, the opportunities for outdoor recreation are unmatched.

Registration and Housing for the meeting opens March 4, 2020. When you register, be sure to consider these options:

- **Early Registration Deadline is May 29, 2020.** Register early to save.
- **To be eligible to receive SAM credit, you must select the SAM attendance verification option when you register.** To do so, answer YES to the question of whether you require MOC as defined by ABR. You will then be given the option to register for SAM. A single fee covers all SAM sessions. Note that you don't need to choose this option or pay the fee if you want only regular CE credit and not SAM.
- **All Hands-on Workshop on Saturday July 11.** Based on the 2019 Summer School on Practical Image Analysis with Deep Learning, and presented by some of the same faculty, this workshop offers an all-day programming bonanza whether you are a beginner or an expert. You can register for the workshop only, or receive a discounted price if you also register for the joint AAPM/COMP meeting.
- **The Therapy Diagnostic, and Nuclear Medicine Review Courses will be offered Saturday and Sunday July 11-12.** Prepare for your boards or brush up on the basics!
- **The Student Lunch on Sunday July 12,** organized by the Students and Trainees Subcommittee. Details are still being finalized, but the lunch promises to be interesting and useful. Come lunch and learn with your colleagues!
- **The Student Night Out on Sunday July 12** is also organized by the Students and Trainees Subcommittee. Take advantage of this fun opportunity to network with your fellow students, residents, and post-docs.

IMPORTANT 2020 JOINT AAPM | COMP MEETING DATES TO REMEMBER

March 4, 2020

Meeting housing and registration available online.

March 5, 2020

8:00 pm Eastern (5:00 pm Pacific)

Deadline for receipt of 300 word abstracts and supporting data

By April 14, 2020

Authors notified of presentation disposition.

May 29, 2020

Deadline to receive discounted registration fees.

June 15, 2020

Housing reservation deadline.

Deadline to cancel housing reservation without a \$25 cancellation fee.

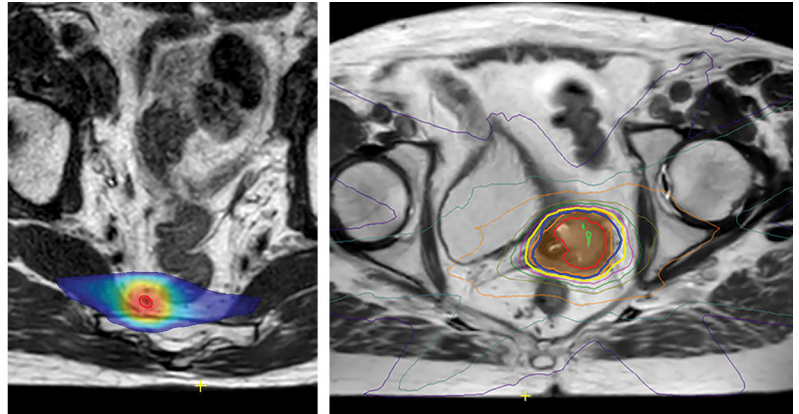
ANNUAL MEETING SUBCOMMITTEE REPORT, Cont.

- **The Women Physicist Luncheon** will be held on Tuesday July 14. The Luncheon, organized by the Women Professionals Subcommittee, provides a unique networking event which allows women physicists an opportunity to interact with each other and women leaders from clinical, academic, and industry settings. Deadline to purchase a ticket is July 1, but don't delay – the luncheon usually sells out quickly.
- **Med Phyz Whiz Kidz** is a great program for 12 to 17-year olds interested in medical physics or maybe just wanting to know more about what Mom or Dad does. Whiz Kidz, organized by the AAPM Women Professionals Subcommittee and the Students and Trainees Subcommittee, provides the opportunity for these potential future scientists to tour the exhibit show floor

on Sunday afternoon with a diverse group of medical physicist mentors. Each Whiz Kid also receives a free gift! Space is limited, so preregistration is required.

Once again, **Camp AAPM** will offer supervised on-site child care for ages 6 months to 12 years in the Convention Center Saturday through Thursday. Don't stay home from the meeting or miss an important session because of child care needs. The program will be managed by the national child care company Accent on Children's Arrangements, Inc., the same company that managed Camp AAPM last year and that manages child care services at RSNA. Camp AAPM registration is separate from the meeting registration. Note that to reserve your child's place, you must pre-register by July 3, 2020. This deadline is necessary to ensure the availability of proper and adequate staffing. ■

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MIDWINTER SYMPOSIUM

SOUTHERN CALIFORNIA CHAPTER OF AAPM (AAPM-SCC) REPORT AAPM-SCC Officers/Midwinter Symposium Organizing Committee

The Southern California Chapter of the AAPM held its flagship Midwinter Symposium at the Sheraton Universal Hotel in Los Angeles, California on January 24, 2020.

The organizing committee led by **Steven Goetsch**, Chapter Education Chair, and **Marianne Plunkett**, Chapter Education Co-Chair put together an excellent program with several prominent speakers drawn from academia, consulting and industry. **Stanley Benedict**, from UC Davis, gave an excellent presentation on the underlying principles of Biologically Guided Radiation Therapy (BGRT). **Caroline Chung**, from MD Anderson Scripps Clinic, spoke about the initial utilization of MRI linac in the clinic. **Peter Maxim**, from Indiana University spoke about the latest developments in the fields of FLASH, Grid and Lattice radiotherapy. This talk was followed by presentations from the first and second place winners of the Chapter MedPhys Slam event held in May 2019. **Ricardo Rademacher**, from Genesis Healthcare (National MedPhys Slam winner at the AAPM 2019 in San Antonio, TX) provided an overview of his research on medical refractive compound lens. **Xenia Ray**, from UCSD, elaborated on her research in knowledge-based radiation treatment planning for prostate cancer.

In the post-lunch session, **Gerald White**, former AAPM president and member of AAPM Ethics Committee provided an update on the recent revisions in the AAPM Code of Ethics. **Vasant Kearney**, discussed the role of computer vision in adaptive radiotherapy. **James Cooley**, from Mevion Medical Systems, gave a talk on the design and architecture of a novel compact beamline for scanning proton therapy. **Grace Gwe-Ya Kim**, from UCSD, wrapped up the proceedings, with a talk on integrated, streamlined quality management programs in radiation therapy.

The meeting was very well attended and attendees included medical physicists, from Southern California and beyond, medical dosimetrists, radiation therapists and state and county workers affiliated with the California Radiological Health Branch. To encourage and facilitate participation, students, residents, postdoctoral students, medical dosimetry and radiation therapy students were provided complimentary registration to the symposium.

The meeting was underwritten by generous grants at the gold and platinum levels from leading radiation therapy, diagnostic radiology and quality assurance equipment manufacturers. Platinum level sponsors were provided an opportunity to showcase their products during the lunch break. Refreshment breaks were scheduled during the day to allow the attendees to interact with vendors and learn more about their latest offerings.

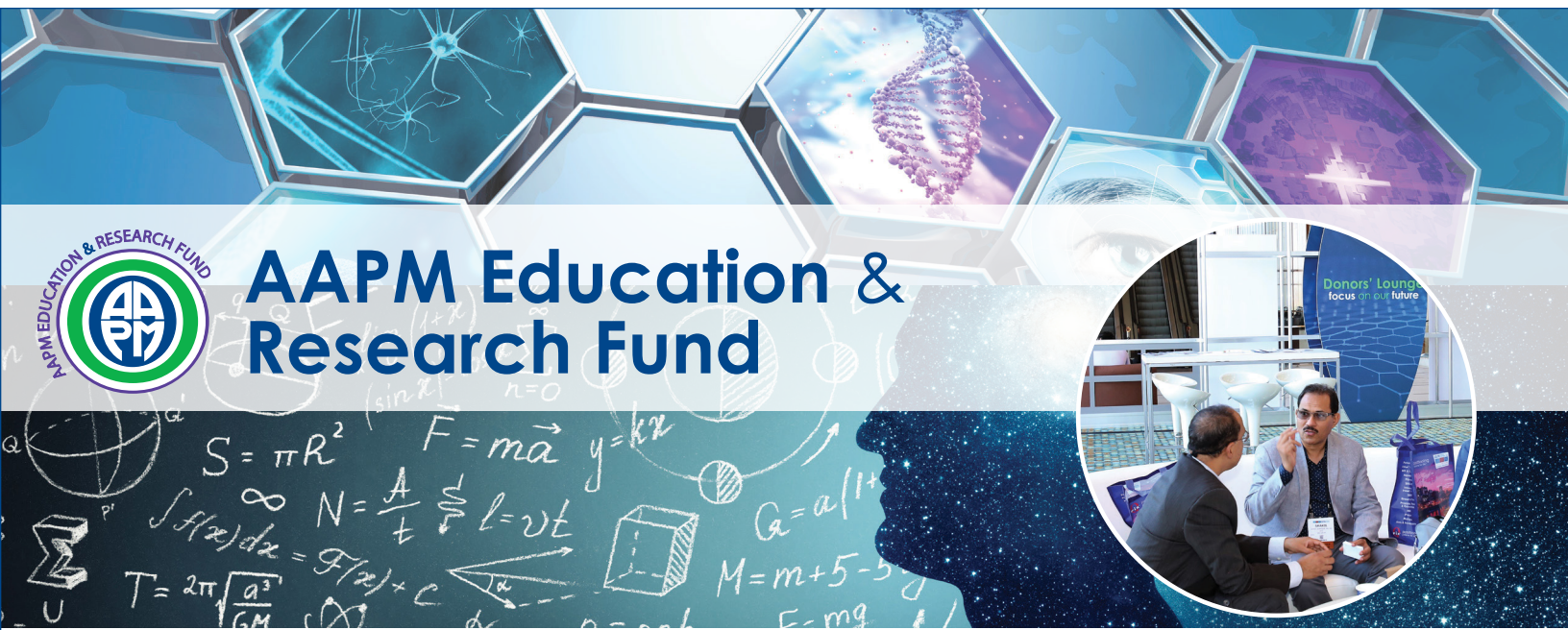


Jerry White, Former AAPM President, and member of the AAPM Ethics Committee, updating AAPM-SCC Midwinter Symposium 2020 attendees on recent revisions to the AAPM Code of Ethics.

AAPM-SCC REPORT, Cont.

In other news, the Chapter recently held elections and **Jessica Clements** from Kaiser Permanente, Southern California and **Margaret Barker** from Sansum Clinic, were elected President-Elect and Chapter Secretary respectively.

The next chapter meeting (Norm Baily Student Awards/ MedPhys Slam/Spring Meeting) is scheduled for May 2020 at the University of California, Los Angeles Campus. The venue and program details will be posted on the Chapter website in the near future. ■



AAPM Education & Research Fund

For over 20 years, the AAPM Education & Research Fund has been a catalyst in raising awareness and obtaining support within our proud profession in the form of funding strategic education and research programs, such as seed grants for early-career researchers, matching support for clinical residency programs, and fellowships for PhD students. The Education & Research Fund is also used to attract undergraduates to the field of medical physics and to promote diversity.

Without the generous contributions from AAPM members, we could not have funded over 100 grants, fellowships, and residencies.

Please join your fellow colleagues by donating now to the Education & Research Fund. Together, we can ensure that this valuable platform of funding remains vibrant and continues to prosper and grow.

To Donate: www.aapm.org/education/edfundintro.asp

focus on our future



2020 RESEARCH SEED FUNDING GRANT

Three \$25,000 grants will be awarded to provide funds to develop exciting investigator-initiated concepts, which will hopefully lead to successful longer term project funding from the NIH or equivalent funding sources. Funding for grant recipients will begin on July 1 of the award year. Research results will be submitted for presentation at future AAPM meetings. The award is not intended to provide salary support for the applicant, however any other research-related expenses, including travel to scientific meetings, will be supported. Travel expense should be included in the submitted budget. At the end of the 12-month period a report must be forwarded to the AAPM, along with itemized expenses. The award will not support indirect costs. Any unspent funds should be returned to the AAPM.

Sponsored by the [AAPM Science Council](#) through the [AAPM Education and Research Fund](#).

A list of Award Recipients can be found [here](#).

Eligibility:

- 5 years or less since awarding of PhD.
- Must be a member of the AAPM at the time of application. (any membership category) Pending membership status not eligible.

- No previous grants >\$50,000 as principle investigator.
- Previously funded projects are ineligible.
- Prior Seed Grant recipients are ineligible.

Application Requirements:

Five-page description of research project (including figures and tables), separated as follows:

- a. specific aims
- b. background and significance
- c. preliminary results
- d. research plan
- e. literature cited
- f. budget
- g. Letter of support from division/ department chair demonstrating support for the project and authorization of time and resources to complete the proposed research.
- h. CV (no more than 4 pages).

Note that sections (e), (f), (g) and (h) do not count towards the five-page limit.

As the competition for the seed grant is high, eligible applicants are encouraged to also submit their applications for other awards, e.g. www.cancer.gov/researchandfunding/training/.

Review Criteria

- 50% Scientific merit of proposal (significance, innovation, environment, and soundness of approach)
- 25% Potential for project to develop into a major project fundable by NIH, DOE, DOD, etc.
- 25% Background of investigator

Application Deadline: May 4, 2020

(All supporting documents are due by the application deadline.) **You must log onto the AAPM website to view the apply button.**

Award duration:

July 1, 2020 – August 31, 2021

Recipients notified by:

June 10, 2020



FOR MORE DETAILS, VISIT:

<http://gaf.aapm.org/index.php#SEED>



2020 AAPM GRADUATE FELLOWSHIP

The fellowship is awarded for the first two years of graduate study leading to a doctoral degree in Medical Physics (PhD or DMP). Both BSc and MS holders are eligible to apply. Applicants must be a member of AAPM at the time of application, (any membership category). Pending membership status not eligible. A stipend of \$13,000 per year, plus tuition support not exceeding \$5,000 per year is assigned to the recipient. The amount of tuition support granted will be at the discretion of AAPM. The award will be paid to the recipient's institution and distributed in accordance with the institution's disbursement procedures. It is AAPM's policy that none of the funds may be

diverted to the institution's "facilities," "administrative," or other overhead categories and the full \$13,000 stipend must be provided to the recipient.

Sponsored by the [AAPM Education and Research Fund](#).

A list of Award Recipients can be found [here](#).

Each applicant must be a graduate of an undergraduate program in physics or equivalent majors (e.g., engineering-physics, math-physics, or nuclear engineering or applied physics) from an accredited university or college in North America. The undergraduate grade point average must be greater than 3.5 (based

on a 4.0). Each applicant must have submitted an application for graduate study to one of the accredited programs with subsequent acceptance.

Required Supporting Documentation:

- All post-secondary study transcripts (official transcripts only)
- Copy of Graduate Record Exam results (If applicable)
- Recommendation Form
- TWO reference letters (optional)
- Acceptance letter from intended CAMPEP Accredited Program
- CV including GPAs and publications (use CV Template)



FOR MORE DETAILS, VISIT: <http://gaf.aapm.org/index.php#FELLOW>

Merge all files into one PDF and upload the complete application (PDF).

Send supporting documentation *only* to:
American Association of Physicists in Medicine
1631 Prince Street
Alexandria, VA 22314
ATTN: Jacqueline Ogburn
jackie@aapm.org

Award Duration: September 2, 2020 - September 2, 2022

Application Deadline: May 18, 2020

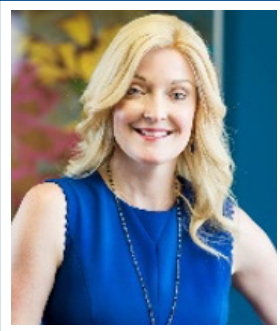
(All supporting documents are due by the application deadline.)

Recipient Notified on: June 15, 2020

VOLUNTARY INDEPENDENT PEER REVIEW

Q&A BY REBECCA HOWELL

Director of the MD Anderson Radiation Dosimetry Service



Why participate in peer review? I think the number one reason is that patient safety is directly linked to accurate beam output. Participating in independent and routine validation of your beams' calibrations provides confidence and the peace of mind that there are no output issues at your center.

There is a lot of confusion within the radiation oncology community about the MD Anderson Radiation Dosimetry Service (RDS) and the Imaging and Radiation Oncology Core (IROC) Houston. Are you the same service?

Well, the answer is both yes and no. Yes, in that we are both part of the same team, the MD Anderson Section of Outreach Physics, which comprises IROC-Houston, the RDS, and the Accredited Dosimetry Calibration Laboratory (ADCL). *Our collective mission in Outreach Physics is to broadly reach out to the radiation oncology community in the United States and worldwide to ensure patient safety through independent quality assurance (QA) services.* Both IROC and the RDS provide independent peer review of beam output calibrations for external beam radiotherapy machines through a mail audit system. Both IROC and the RDS are located at the same physical address (with our labs/offices occupying different portions of the building) and we have a very collaborative relationship.

The key difference between the two groups is to whom we offer services. IROC provides output checks for institutions that participate in clinical trials. The output checks are a requirement of participation. Specifically, IROC monitors all photon beams and three electron beams for each linac at participating institutions. The RDS is a voluntary for-fee service that is available *on-demand*. Many RDS customers participate in clinical trials and have annual beam monitoring through IROC. For those dual-service institutions, the RDS monitors the electron beams not monitored by IROC, with shipment times that may be coordinated and aligned. Some of the IROC centers also use the RDS for more frequent (e.g., mid-year or quarterly) output checks.

Another difference between IROC and RDS is that we use different dosimeters in our mail audit systems. IROC uses optically stimulated luminescent dosimeters (OSLDs) and RDS uses thermoluminescent dosimeters (TLDs). Both dosimeters have similar uncertainties of <1.5% as described in AAPM Task Group Report 191 (Kry *et al* 2019). Also, the doses reported by both IROC and RDS are traceable to a primary standard and based on TLDs/OSLDs irradiated at a Secondary Standards Dosimetry Laboratory, the MD Anderson ADCL.

Can you elaborate on what you mean by on-demand service? What I mean by on-demand is that our customers choose (1) which beams they want to monitor, e.g., all beams, some beams, or a single beam; (2) at what frequency

Twitter: @DrRebeccaHowell

AAPM
SPRING CLINICAL MEETING
APRIL 4–7, 2020

Renaissance Minneapolis Hotel, the Depot
Minneapolis, MN

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This year's Spring Clinical Meeting offers:

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- clinical topics of current interest and additional opportunities to meet continuing education requirements.

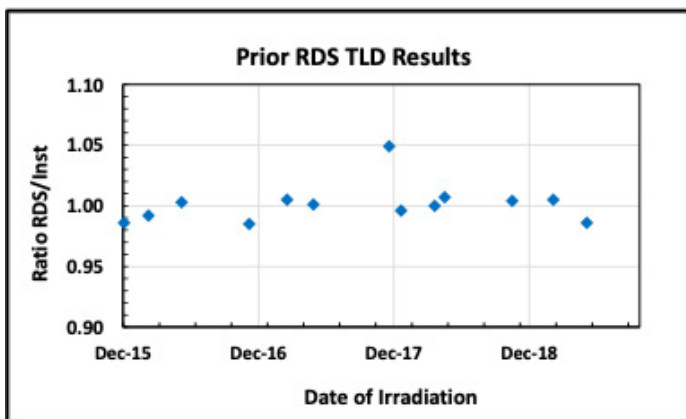


www.aapm.org/clinical

INTERVIEW, Cont.

they want service, annual, semi-annual, quarterly, monthly, or by request, which is common after a new linac is commissioned or after a major repair; and (3) shipment month(s). Our annual customers typically align their output checks with their annual TG-51 calibration.

Why would a center choose to monitor their beams more frequently than annually? In general, I think it is extra peace of mind in knowing that if an output issue were to arise, there would be a shorter time interval between checks, decreasing the length of time between when the issue(s) first arose and when it was detected. Also, data from the Global Harmonization Group (GHG; Kry *et al.* 2018), which comprises multiple international independent peer review groups, demonstrate the substantial value of routine and/or periodic auditing of all radiotherapy beams. In a recent survey of 210,167 worldwide audit results, the GHG reported that (1) machine calibrations are challenging owing to the number of processes involved that can go awry; (2) calibration errors originate from a wide range of sources; (3) calibration errors can impact a single beam, multiple beams, or all beams at a facility; and (4) calibration errors can be introduced into beams with historically accurate output.



What types of centers monitor their output more than annually? Really there is no specific *type of center*. I would, however, note that there is a trend that solo-practice physicists and consulting physicists tend to monitor more frequently. The figure to above is an example of TLD results from a quarterly customer; a similar plot is included in all RDS reports. I can recall early in my career being one of

many physicists at my large center but being the sole physicist at one of our satellite centers. At that time, my center received TLDs from the RDS twice per year and I found it very reassuring to have an independent check of my calibrations.

You must use a lot of TLDs. Just out of curiosity, where do they come from? We order from an Ohio-based company, Quantaflux LLC (Dayton, OH). When our TLD capsules are running low, we contact Quantaflux and they begin the process of growing a “giant” lithium fluoride crystal for us. Depending on the size of our order, it takes several months for a crystal to be sufficiently large. Once harvested, the crystal is ground down to a fine powder, which is thoroughly mixed, annealed, and finally loaded into small capsules. We typically order between 100,000 and 200,000 TLD capsules, which last between 2 and 3 years. Each new batch undergoes a complete batch commissioning (as described in TG-191), which includes characterizing energy correction, linearity, and fading factors. Once our internal QA process is complete and we've established reproducibility, we begin disbursement. The RDS names our TLD batches for the year in which they were annealed; we are currently on Batch-19.

In addition to initial batch commissioning, what sort of routine QA do you do? We irradiate standards and controls every week at the ADCL. These are read at the beginning, middle, and end of each TLD reading session. We periodically evaluate the batch for consistency and reproducibility. We also do periodic intercomparisons with IROC. Additionally, we participate in an annual International Atomic Energy Association (IAEA) “blind check” and reference irradiations. We just completed the 2019 IAEA audit and our results were within 1% agreement with the stated IAEA doses.

Why does the RDS still use TLDs as opposed to OSLDs? Our first priority is to use a passive detector that is easily mailable and that has low uncertainty. Because both TLDs and OSLDs meet these criteria and have very similar uncertainty, our decision to continue to use TLDs was based on cost and experience. First, from a cost perspective, the initial ramp-up to switch from TLDs to OSLDs would be very expensive because it would require replacing our TLD readers (we have six) and re-training our staff to use a new type of reader. These changeover costs

INTERVIEW, Cont.

would ultimately have to be passed on to our customers. Because it is important to us to maintain a low-cost service so that it is affordable for any institution, this is not ideal. Also, the RDS has a more than 30-year history using TLDs. The system works, it's cost effective, and the uncertainty is both low and well characterized. TLDs work for our audit system and it works well, so we are staying the course with TLDs for now and in the foreseeable future.

You mentioned cost in your last answer. How is the RDS funded? We are part of MD Anderson, but we are a non-profit self-funded service, meaning our fees go directly to running our service, including staff salaries, TLD capsules, TLD readers and their maintenance, other equipment such as ion chambers and electrometers, office supplies, etc. We also share in some of the operational costs for the units owned by the ADCL where we irradiate our TLD standards and controls.

Participation in voluntary independent peer review isn't free. How can a physicist articulate the value of this service to their administrator? First, I'd mention that the AAPM Task Group 103 recommends independent output checks for all beams on a routine basis. Similarly, the American College of Radiology (ACR) requires monitoring all beams on an annual basis to receive and maintain ACR Radiation Oncology Accreditation. However, beyond the recommendations and requirements, it just makes sense from a patient safety perspective. Although calibration errors are rare (identified in approximately 1% of beams monitored), they can lead to very detrimental harm for patients. Furthermore, such errors can be financially devastating to the institutions in which they occur, especially in the context of the cost of peer review. It costs <\$1000 for output checks for all beams for a typical linac (two photons and five electrons), which translates to about \$4 to \$5 per new start on a typical volume linac (with 200–250 new starts). So, to an administrator, I'd say "independent review makes sense first and foremost for patient safety, aligns our center with national and international recommendations, demonstrates that our center is serious about QA, and provides a low-cost safety net."

Can you give an example of a serious calibration issue that was identified by RDS output checks? Most of our output checks show good agreement between doses measured by RDS and doses reported by the institution (RDS/institution

ratio); 98.7% of all beams agree within 5% and 91.2% agree within 3%. But, that also means that just over 1% of the beams that we monitor are outside of the 5% agreement criterion. One example of a calibration issue that always comes to mind was a check for a newly commissioned linac that was ready to "go live." The physicist sent us a rush order for TLDs for all beams. When we analyzed the results, we reported dose differences between 6% and 7% from those stated by the institution. We reached out to the physicist, who repeated the calibration but found nothing different from initial calibration. To be safe, he again repeated the measurements with a different ion chamber and electrometer. Again, he observed nothing out of order. Then, while he was taking down the equipment, the electrometer cable fell apart. He repeated measurements one more time using a new cable. This time, he observed the doses to be 6% to 7% lower than during his previous measurements. He adjusted the beam output and ordered additional TLDs from us. This time the institution's stated doses and the RDS measured doses were in agreement for all beams. Of particular importance in this story is that the calibration error was caught before a single patient was ever treated. Imagine what could have happened if they had not had independent peer review.

Wait, you said 5% criterion. Why does the RDS use a 5% agreement criterion rather than a more stringent 2% or 3%? This really boils down to uncertainty. For our well-established TLD dosimetry protocol (three TLDs loaded into each phantom), the standard error is 1.3% (Kirby *et al* 1992). Thus, a TLD check is considered acceptable if dose agreement is within 5% of the stated dose, corresponding to a 93% confidence limit. So, when a beam is outside of 5% agreement, we are confident that there is a real issue. Each year, the RDS provides reports for more than 12,000 beams, of which more than 150 do not meet the 5% agreement criterion.

In an earlier answer, you mentioned a more than 30-year history, can you tell us more about the history of the RDS? Our history actually dates back more than a half-century. In 1968, the Texas Regional Medical Physicists (TRMP) program began under the leadership of **Dr. Robert Shalek** to help its member physicists by providing services such as mailed TLD output checks, dosimetry review visits, computer-based dose calculations, equipment loans,

INTERVIEW, Cont.

etc. Then in 1974, the National Cancer Institute (NCI) funded the six Centers for Radiological Physics, and the TRMP was among the six. Ultimately those centers evolved to become the NCI-funded Radiological Physics Center (RPC {now IROC-Houston}), with service dedicated to radiotherapy facilities participating in NCI-funded trials. In 1985, Dr. Shalek decided to offer services for a fee to radiotherapy facilities not monitored by the RPC. This new for-fee service was named the MD Anderson RDS. Dr. Marilyn Stovall led the RDS from 1986 until she retired in 2015 (after 65 years of service at MD Anderson). I became the associate director in 2015 and have been the director since 2017. Our team includes 17 faculty and staff members, including medical physicists, medical dosimetrists, computational scientists, research technicians, and radiological technicians, as well as accounting and administrative staff. Many of our staff have been with the RDS for more than 20 years.

What's on the horizon for the RDS? We are working to add online ordering and payments through our [website](#). Additionally, we are creating a customer-specific portal, myRDS, for online review of beam output checks. The ability to view any or all reports from a centralized portal will be particularly advantageous for our multi-center institutions, which have multiple machines at multiple institutions. We are also looking forward to further expanding this professional service to additional centers all over the world, to enhance safety and confidence at all radiotherapy departments, no matter where they are or what kind of technical support and staffing they may have. ■

References

Kirby TH, Hanson WF, Johnston DA. Uncertainty analysis of absorbed dose calculations from thermoluminescence dosimeters. *Med Phys* 19(6): 1427-1433, 1992.

Kry SF, Alvarez P, Cygler JE, DeWerd LA, Howell RM, Meeks S, O'Daniel J, Reft JC, Sawakuchi G, Yukihiro EG, Mihailidis D. AAPM TG 191: clinical use of luminescent dosimeters: TLDs and OSLDs. *Med Phys*, 2019.

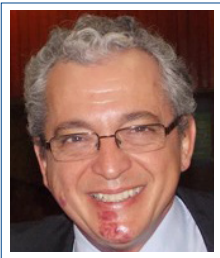
Kry SF, Peterson CB, Howell RM, Izewska J, Lye J, Clark CH, Nakamura M, Hurkmans C, Alvarez P, Alves A, Bokulic T, Followill D, Kazantsev P, Lowenstein J, Molineu A, Palmer J, Smith SA, Taylor P, Wesolowska P, Williams I. Remote beam output audits: a global assessment of results out of tolerance. *phiRO*, 7:39-44, 2018.

50TH ANNIVERSARY OF BRAZILIAN ASSOCIATION OF MEDICAL PHYSICS (ABFM)

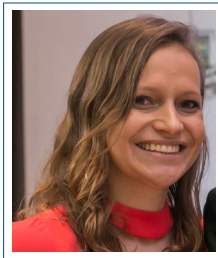
THE 2019 BRAZILIAN CONGRESS OF MEDICAL PHYSICS (CBFM2019) REPORT

Paulo Roberto Costa, PhD | Sao Paulo, Brazil

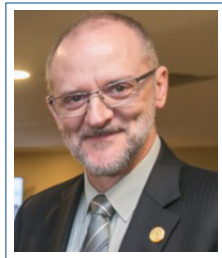
Alessandra Tomal, PhD | Campinas, Brazil ■ Homero Lavieri Martins | Sao Paulo, Brazil



P. Costa



A. Tomal



H. Martins

The XXIV Brazilian Congress of Medical Physics and other satellite events took place between August 18 and 24, 2019. The week began with the official launch of the *Marília Teixeira da Cruz* Courses, which took place at Quintal da Bela, which was the residence of **Professor Marília**. The name of the course was chosen to honor this extraordinary teacher and mentor, who influenced several generations of medical physicists in Brazil.

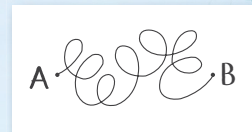
The 1st *Marília Teixeira da Cruz* Course took place on August 19th and 20th at the Radiology Institute of the Clinical Hospital of the University of Sao Paulo School of Medicine, with courses in the areas of radiotherapy physics, computed tomography and breast imaging. In addition to several national teachers, the course had special participation from AAPM speakers, including **Cynthia McCollough**, PhD and **Luis Fong de los Santos**, PhD, from Mayo Clinic in the United States and **Ioannis Sechopoulos**, PhD, from Radboud University, in the Netherlands. More than 120 medical physics professionals, residents and graduate students attended the courses.

August 21 was dedicated to an important Workshop on Teaching in Medical Physics, held at the University of Sao Paulo Polytechnic School in Santos, which brought together educators and students to discuss strategies for improving the training of medical physics professionals in Brazil.

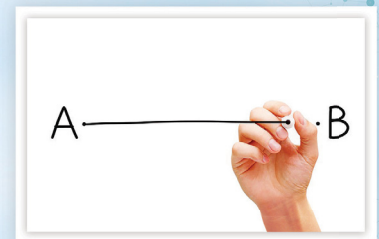


Photo: Ligia Nersissian

The opening ceremony of CBFM2019 took place on the evening of August 21, where we looked at issues related to the experiences of women in medical physics and science, and the challenges of caring for a family while remaining



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CBFM 2019 REPORT, Cont.

competitive in the academic environment. For this event, Professor Cynthia McCollough, president of the American Association of Physicists in Medicine (AAPM), and **Professor Fernanda Staniscuaski**, from "Parents in Science", shared their personal stories and perspectives, which were warmly received by our attendees. The opening program also included welcoming remarks by representatives of several medical physics organizations and music from the "Guri Project" guitar chamber group.



Photos: Carla Formanek

The main sessions of the Congress took place August 22 – 24, with the participation of more than 600 attendees, and 15 international and 15 national speakers. Several AAPM members were invited as key speakers, including **Cynthia McCollough**, **Luis Fong de los Santos**, **Ioannis Sechopoulos**, **Issam El Naqa**, **Timothy Zhu**, **Cari Borrás**, **Mahadevappa Mahesh**, **Yakov Pipman**, and **Gabriel Sawakuchi**. Some of them were partially sponsored by AAPM, which was very important to the success of the Congress.

At the entrance of Mendes Convention Center, the attendees found a huge "timeline," with photos that helped tell the history of Brazilian Medical Physics since the founding of ABFM. On this large poster, congress participants could write their own stories and record the historical moment of ABFM's 50th anniversary celebration.



Photo: Carla Formanek

Mornings were dedicated to short courses in the areas of Radiotherapy, Radiology, and Nuclear Medicine. During this time, 23 lectures, eight round table discussions, and six events sponsored by our exhibitors were presented. Scientific presentation sessions included 42 oral presentations and 146 posters. In addition, a technical

exhibit was held and included participation of 13 companies that provide equipment and services related to Medical Physics.

The evenings of the 22 and 23 were crowned with special sessions commemorating the 50th anniversary of the Brazilian Association of Medical Physics. In these sessions, tribute was paid to the founders of ABFM and movies were shown that presented the trajectory of ABFM since its founding, in 1969, to the present day. They were moments of great emotion and, at the same time fun, with stories shared by important contributors to development of medical physics as a profession in Brazil.

An important moment related to AAPM members was the nomination of **Robert Jennings, PhD**, as Honorary Member of the Brazilian Association of Medical Physics. His name was proposed and approved by the ABFM community for his huge contribution to the development of Brazilian medical physics. Another AAPM member who was honored during the 50th Anniversary of the ABFM was **Cari Borrás, PhD**, who gave an important testimony of her experiences in Brazil. Dr. Borrás had several contributions to the improvement of the medical physics in Brazil and other Latin American countries.



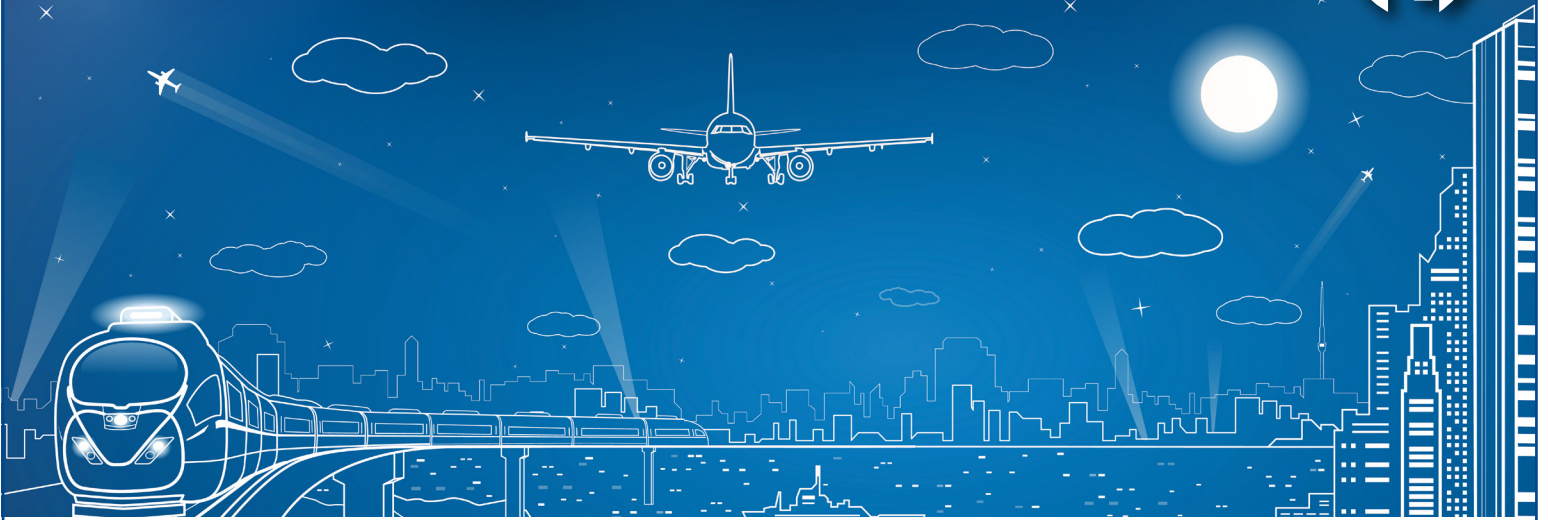
Photos: Carla Formanek

Several other activities rocked the CBFM2019, such as a beach volleyball tournament, the "Laura Furnari" Prize for photography, a board game room, and various activities organized by exhibitors. For dads and moms, a baby care service was offered. Finally, a lively dance party was held Friday evening to celebrate ABFM's 50th Anniversary. The evening featured requested songs from the last five decades and was both festive and relaxing.

The event program is still available at www.cbfm.net.br and photos illustrating the atmosphere of the event can be found on Facebook.

We look forward to welcoming you to our 2020 congress, which will be held in August 6th– 8th in João Pessoa, PB. For more information, please visit www.cbfm.net.br. ■

2020 AAPM BEST AWARD



Best Medical International, with their Team Best Companies and the American Association of Physicists in Medicine (AAPM), are pleased to announce the availability of a Travel Fellowship for Student, Resident or Junior Members of AAPM to attend the 2020 Joint AAPM/COMP Meeting in Vancouver, BC. Recipients will be exposed to and have access to the scientific and technical information and presentations on current and emerging topics in medical physics and related areas.

Sponsored by BEST Medical International and the [AAPM Education Council](#) through the [AAPM Education & Research Fund](#).

Eligibility

Each applicant must be:

- a Student, Resident or Junior Member of the American Association of Physicists in Medicine (AAPM); and,
- first author on an accepted abstract for the 2020 Joint AAPM/COMP Meeting.

Required Supporting Documentation

- Attach all abstracts submitted to the 2020 Joint AAPM/COMP Meeting.
- Download and complete the AAPM Best Award application. Merge all files into one PDF and upload the completed application.

Award Duration:
July 12, 2020 – July 16, 2020

Application Deadline:
May 11, 2020

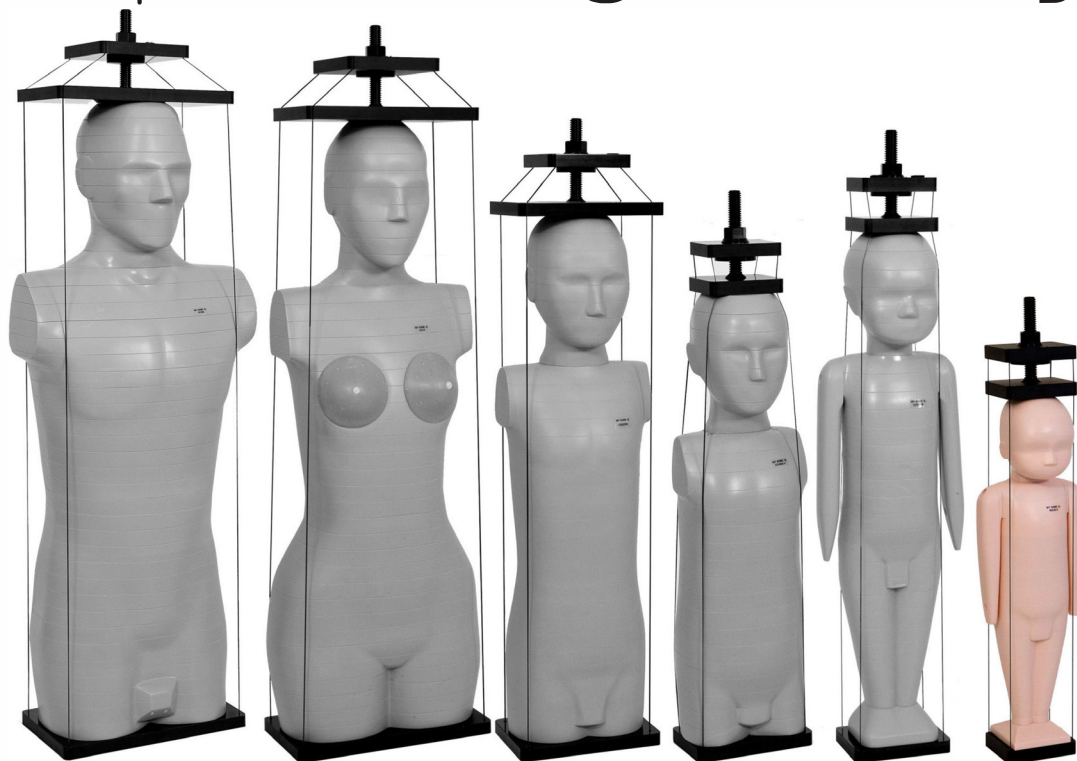
(All supporting documents are due by the application deadline.)

Recipients notified on:
June 05, 2020



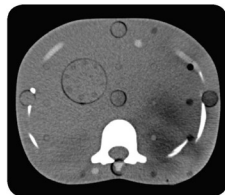
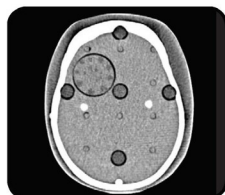
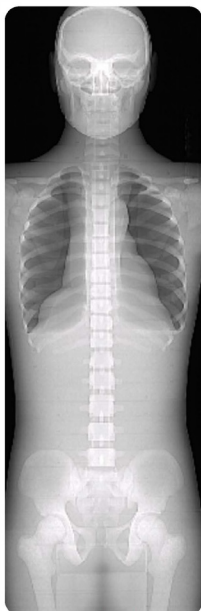
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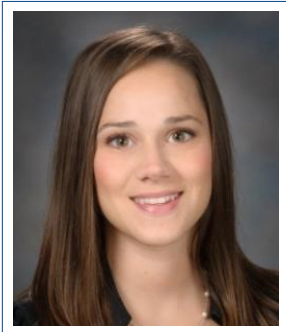
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NCI & IROC PARTNER TO IMPROVE PROTON CLINICAL TRIALS

IROC HOUSTON QA CENTER REPORT Paige A. Taylor, MS | Houston, TX



Twitter: @mpPaigeTaylor

Proton therapy centers make up just one percent of the radiotherapy facilities in the United States today, but they are playing an increasing role in the National Cancer Institute's clinical trials. Currently, there are 25 protocols through the National Clinical Trial Network (NCTN) that either allow proton therapy or randomize between protons and photons. These trials cover a variety of disease sites, including brain, head and

neck, thorax, esophagus, and liver.

In 2007, the NCI convened a panel of proton experts to make recommendations on best proton therapy practices for clinical trials. These guidelines were updated in 2010 and 2012, but proton therapy technology has made leaps and bounds in the past decade, and there was a need to address the latest trends in proton treatment planning and delivery. This past year, IROC enlisted [Chris Beltran, PhD](#), [Lei Dong, PhD](#), [Mark Pankuch, PhD](#), and the NCI's own [Jeffrey Buchsbaum, MD, PhD](#), to review and update these guidelines. The guidelines can be found on IROC Houston's [website](#), but a summary of the highlights is included here.

Proton centers must go through a baseline approval process (output check, phantom irradiations, and an on-site visit) in order to participate in clinical trials. The previous minimum wait time for the on-site visit was six months; that time has now been shortened to four months. This change accommodates new proton centers who employ teams with extensive proton therapy experience.

As proton treatment planning evolves, more proton centers are using robust analysis to assess treatment plan quality. Robustness was not addressed uniformly in previous NCTN protocols, but an NRG Oncology working group recently published considerations for robust analysis in the context of clinical trials¹. The updated guidelines require protocols to specify dose coverage criteria, robust analysis uncertainties to be used in patient position and beam range (e.g. 3%/3mm or 5%/5mm), and the evaluation criteria specific to the disease site (e.g. the worst case V95, the nominal (baseline plan prior to robustness analysis) and the worst case minimum dose to 0.04 cc, nominal hot spots to critical structures).

Following IROC Houston's examination of the underperformance of pencil beam algorithms in low density heterogeneities², the NCI now requires Monte Carlo algorithms for protocols in disease sites with a large amount of heterogeneities, particularly the lung. This change will affect all new protocols



AAPM PROFESSIONAL SURVEY

Did You Know?

- Almost 9.4% of full-time employed AAPM members changed jobs in 2018 with a median salary increase of over 11%.
- Did you know that 40% of those took a newly created position, when 46% filled a position an incumbent physicist vacated?

Well you can know things like this thanks to the most recent AAPM Professional Survey.

Your Help is Needed!

The next round of this annual survey will commence in mid-March.

Please watch your inbox and complete the questionnaire to help our community compile this useful information.

The results will be available on AAPM's website by mid-May.

If you haven't seen the data from earlier years, you can find it at www.aapm.org/pubs/surveys.asp



IROC HOUSTON REPORT, Cont.

developed after September 4, 2019.

With an eye toward the future, the guidelines recommend that institutions repeat the proton H&N phantom irradiation if they modify an approved delivery method and commission a new delivery technique (e.g. spot scanning

to continuous scanning, or fixed beam to arc proton therapy). If/when proton therapy evolves to regularly include concepts such as variable RBE modeling, FLASH proton therapy, proton radiography, or synthetic MR, the guidelines will be updated accordingly. ■

¹Yock AD, Mohan R, et al. Robustness analysis for external beam radiation therapy treatment plans: Describing uncertainty scenarios and reporting their dosimetric consequences. *Pract Radiat Oncol.* 9(4):200-207; 2018

²Taylor PA, Kry SF, Followill DS. Pencil beam algorithms are unsuitable for proton dose calculations in lung. *Int J Radiat Oncol Biol Phys.* 99(3):750-756; 2017



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AAPM-ISEP MEDICAL IMAGING PHYSICS & IMAGE GUIDANCE IN RADIOTHERAPY EDUCATIONAL COURSE, NEW DELHI, INDIA

AAPM-ISEP REPORT Ajai Srivastava¹, PhD | New Delhi, India

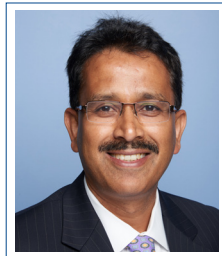
Indra J. Das, PhD | Ambler, PA ■ Mahadevappa Mahesh, PhD, MS | Baltimore, MD



A. Srivastava



I. Das



M. Mahesh

After 13 years of hiatus, AAPM-ISEP **Medical Imaging Physics & Image Guidance in Radiotherapy Educational Course** was conducted at Maulana Azad Medical Center (MAMC) in New Delhi India from December 16 – 19, 2019. The theme of the course was "Improving Image Quality and Reducing Patient Dose." The preparation for this course started over two years ago under the guidance of **Dr. Mahadevappa Mahesh** (course director), **Dr. Ajai Srivastava** (local host program director) and **Dr. Yakov Pipman** (chair of ISEP program). **Dr. Indra Das** became involved a year later to assist Dr. Mahesh and integrate imaging aspects of radiation therapy. Initial groundwork was done by Dr. Ajai Srivastava from Delhi University (University College of Medical Sciences) who is a diagnostic physicist and was eager to bring international support of this imaging course to India. Recently, the Indian government has passed a bill giving importance to quality assurance (QA) in diagnostic radiology. Under this rule, every imaging device must undergo quality assurance by a certified physicist. This gave urgency for this course to provide the latest concepts in image science and its role in clinical practice.

Organizing an international meeting requires a lot of effort and financial resources. Having a diagnostic course was particularly challenging as there are limited number of imaging vendors, and this made local support more difficult to ascertain. However, Dr. Srivastava was determined to take care of this monumental task. Over a period of two years he was able to overcome most of the obstacles of the organizations. With the support from AAPM, Association of Medical Physicist of India (AMPI), IOMP and various local institutions and organizations related to the imaging field, the course was indeed a great success. This was due in part to the great international faculty who donated their efforts, including **Dr. John Boone**, **Dr. Tony Seibert**, **Dr. Osama Mawlawi**, and **Dr. Kalpana Kanal**. Dr. Indra Das was included as a Co-director and therapy representative of the program. Unfortunately, Dr. M. Mahesh was unable to participate in the meeting and Dr. Kalpana Kanal stepped in to round out the educational program.



Opening ceremony of the ISEP program in New Delhi 2019



Opening day faculty picture in front of auditorium (L-R: Mawlawi, Srivastava, Das, Kanal, Boone and Seibert).

AAPM-ISEP REPORT, Cont.

This program was supported by many institutions and hence a long list of local sponsors and supporters can be seen in the [official program](#). Support from AMPI in organization and soliciting students and staff to attend was very helpful in bringing nearly 200 participants. Nearly 130 were students, which underscored the importance of this teaching course.

The program started with comments made by local dignitaries including **Dr. Sushil Kumar**, Dean of MAMC, **Dr. Kishore Singh**, Medical Director MAMC, **Dr. A. K. Rathi**, Chair Department of Radiation Oncology, MAMC, **Dr. Suchi Bhatt**, Chair, UCMS, **Dr. Arun Chougule**, President of AOCMP, **Dr. Sunil D Sharma**, President of AMPI, and **Dr. Indra J Das**, Co-director of this ISEP/AAPM course.

The program started with a traditional lamp-lighting ceremony and a dance. The support from Dr. Kumar and Singh for arranging this program at this beautiful MAMC auditorium was greatly appreciated. As a tradition in India, the guests at the podium received plant-bouquet and a

special program souvenir. Dr. Das presented a plaque to Dr. Srivastava on behalf of AAPM, for his incredible effort in hosting this ISEP program.

The master of ceremony was **Miss Subhas Singh** who was extremely gracious and introduced most speakers. The behind-the-scenes organizer was **Ms. Sikkha Singh**, who was very helpful to most speakers for site seeing and shopping events as well as organization of Indian tea, lunch and dinner. We had a fabulous dinner at the hotel for the speakers and attendees, which provided a perfect venue for interaction. Weather in Delhi was relatively damp and cold, but hospitality was warm and delightful.

The program was concluded on December 19 with a full success at closing ceremony. Dr. Srivastava thanked everyone including speakers, vendors and participants. Overall this ISEP meeting was a memorable one, and some fun pictures accompany this article. ■



Lamp lighting ceremony



Transport from Hotel to Auditorium in the morning



Ms Sikkha Sirohi, Silpa Singh and Indra Das at closing ceremony



Sight-seeing at Red Fort, Delhi

JACMP@20

February 2020 | Volume 21, Issue 2

JOURNAL OF APPLIED CLINICAL MEDICAL PHYSICS

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AAPM / RSNA IMAGING PHYSICS RESIDENCY GRANT

The AAPM Board of Directors has approved \$420,000 in support over 6-years (\$70,000/year starting in 2019) to fund six spots in existing or new imaging residency programs. The RSNA Board of Directors approved \$210,000 in funding for 3 additional slots in existing or new imaging residency programs.

Sponsored by the [AAPM Education and Research Fund](#).

A list of Award Recipients can be found [here](#).

Applicant Eligibility:

The purpose of the AAPM funding is to provide 50% support of a resident's salary for two imaging physics residents. The awardee institution(s) will provide the other 50% support. After the period of the award is over, the intent is that the awardee institution(s) will continue to fully support this new imaging physics residency position. Demonstration of this intent should be included in the application materials.

- CAMPEP accreditation is expected within the first year of the funding period, if a program is not currently accredited.
- Open to existing or new imaging residency programs.
- 1st priority – New programs (hence new slots), no previous funding from any AAPM program. A new program is defined as one that has applied for CAMPEP accreditation after January 1, 2019, or has not yet applied for CAMPEP accreditation.



- 2nd priority – Existing program but with new slots, no previous funding from any AAPM program. A new slot is defined as one that has been created or filled after January 1, 2019.
- 3rd priority - Existing program but with new slots, has had previous funding from any AAPM program. A new slot is defined as one that has been created or filled after January 1, 2019.

Award Duration: July 1, 2021 – July 1, 2023

Application Deadline: May 4, 2020

Recipients Notified by: June 4, 2020



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