AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

IMPROVING HEALTH
THROUGH MEDICAL PHYSICS

AAPM NEWSLETTER

September/October 2022 | Volume 47, No. 5

IN THIS ISSUE:

AMERICAN ASSOCIATION OF PHYSICISTS IN MEDICINE

2023 AAPM FUNDING OPPORTUNITIES

AAPM EDUCATION & RESEARCH FUND

Scan the QR code and visit: gaf.aapm.org for regularly updated information on all AAPM funding opportunities.

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AAPM is located at 1631 Prince Street, Alexandria, VA 22314

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EDITORIAL BOARD

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SUBMISSION INFORMATION

To keep all reports uniform, we kindly request that submissions be made through a QuestionPro portal.

Questions? Contact Nancy Vazquez

PUBLISHING SCHEDULE

The AAPM Newsletter is produced bi-monthly.
Next issue: November/December 2022
Submission Deadline: October 7, 2022
Posted Online: Week of October 31, 2022

CORPORATE AFFILIATE ADVERTISING

Advertising Rates & Deadlines

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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.

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THANK YOU AAPM FOR A FANTASTIC ANNUAL MEETING!

NEWSLETTER EDITOR'S REPORT

Welcome to the September/October edition of the 2022 AAPM Newsletter, the post-Annual Meeting edition. I hope everyone who attended the Annual Meeting either in-person or virtually enjoyed the many great sessions. This year for the first time, recordings of the live sessions were available for all meeting attendees to watch up until August 25, which was the deadline for CEC evaluation. Much credit and many thanks to the AAPM HQ staff who worked so hard in planning the meeting and keeping things running smoothly in Washington, DC!

The Special Interest Group for this issue of the Newsletter is the Equity, Diversity, and Inclusion Committee. We hear from Chair **Julianne Pollard-Larkin** and Vice Chair **Richard Castillo** on the importance of unity, shared humanity, and engagement. President-Elect **Ehsan Samei** shares some thoughts on AAPM as an organization and how it may advance into the future. There are many other interesting reports ranging from IHE-RO efforts to standardize the exchange of deformable image registrations to quality and safety initiatives being presented at the ASTRO Annual Meeting in October. And if you missed the Awards Ceremony at the AAPM Annual Meeting, we also have the introduction and acceptance speech from the 2022 Coolidge Award Winner, **Jacob Van Dyk**. Congratulations to all the award winners and new AAPM fellows!

As always, we hope every AAPM member finds something of interest to them in this issue of the newsletter. Our goal is to keep the AAPM Newsletter relevant to everyone who wants to learn what's happening in medical physics. We're always in search of submissions and suggestions from AAPM members, which can be submitted directly through the link on the Newsletter page. Please enjoy this issue of the Newsletter and send us your feedback and ideas for the future. And as always, please share the Newsletter articles you enjoy with your social media network. ■

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MENTORSHIP PROGRAM

AAPM LAUNCHES NEW MENTORSHIP PROGRAM: VOLUNTEERS NEEDED!

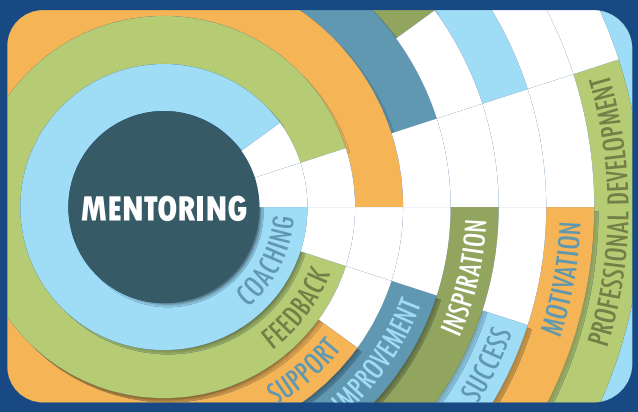
Call for Mentors to participate in the launch of the AAPM Mentorship Program! The AAPM Mentorship Program is actively recruiting volunteers from all disciplines, work environments and education levels to serve as mentors to other AAPM members. Participation is open to any AAPM member. The Program is currently recruiting mentors at this stage of the launch and will open to mentee sign-ups once mentor recruitment goals have been achieved. More details including an FAQ and sign up can be found here.

What is Mentorship?

Mentorship is 1 on 1, virtual or in person. The AAPM Mentorship Program is not just for professional mentorship, it can be used to support any form of personal or career development, including navigating an early career post-residency, being more productive in research and grant writing, how to climb the academic ladder, becoming a better educator, strategizing career changes and moves, management and leadership skills, or even retirement! The individual aims of the mentoring relationship are up to the participants.

What Mentorship is Not:

This is not a clinical training program. Mentorship offers a personalized opportunity to work on your individual career development goals, develop new skills and expertise and access objective evaluation of your performance from an experienced member of AAPM. Mentorship can increase your networking opportunities, help to clarify your career direction, and provide support and motivation in meeting the challenges of work and home life.



WHAT MATTERS SHOULD MATTER?

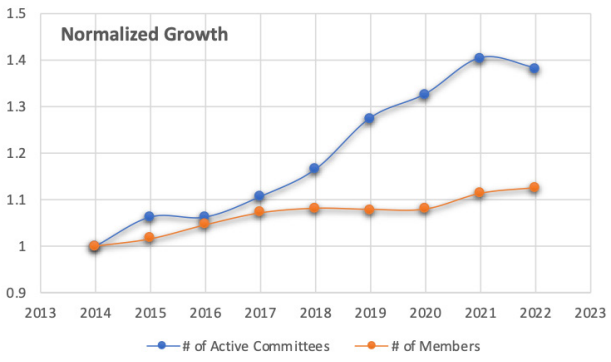
PRESIDENT-ELECT'S REPORT

Ehsan Samei
Duke University
Email: ehsan.samei@duke.edu

Being President-Elect of AAPM involves many hours of work, meetings, and conversations, and through it all a lot of pondering as to who we are as an association and where we are (or should be) heading. I value this opportunity to echo some of those ponderings through this column, and am grateful to you for taking some time to consider along with me three questions of relevance for our association.

Is our administration a bottle-neck?

AAPM is an amazing organization. Just short of 10,000 members formed into nearly 400 committees, AAPM demonstrates a staggering level of committee work well beyond any of our peer organizations. This level of activity is enabled by a remarkable culture of volunteerism. The work is not dictated by a top-down process; rather it is inspired and enabled by thousands of individual volunteers practicing their passion for science and for practice. Individual contributions are then refined and amplified through the very ethos of the association: consensus. And through this process we literally define the field of "medical physics." This diverse, individual-enabled, consensus-driven makeup is the secret sauce that makes AAPM what it is. Yet this reality also has a dark side, just like all such good things in life: a propensity to expansion beyond control, and the residue of prior initiatives that may have lost their potency or champion.



Starting new things is always exciting. Yet, the growth in the number of AAPM committees over the years has outpaced the growth in membership. This is a good thing, as it means we are being innovative, and finding new ways to define our discipline and shape medicine. But if the majority of the work is done by volunteers, how are we finding the time and energy to do what is needed? We aren't. We naturally shift our focus to activities that we find most exciting, and the rest begin to stagnate. Further, not uncommonly, we have more than one committee tackling the same topic from the vantage points of different perspectives, desires, or personalities. We initiate committees, but do not as readily retire or combine them.

"AAPM is an amazing organization. Just short of 10,000 members formed into nearly 400 committees, AAPM demonstrates a staggering level of committee work well beyond any of our peer organizations."

"This is a time for realignment of our administration and our priorities—to make sure physics can make its crucial contribution to human health."

Added to the disproportionate growth in the number of committees is the number of volunteers that serve in them. You do the math: 1500 members serving on 400 committees. That by itself sounds like too many committees for the number of people serving on them, but it is worse: The average number of volunteers on a typical AAPM committee is 14! That means on average a typical volunteer serves on four committees. The distribution is not normal though; the majority serve in only one or two committees but a minority of "super-volunteers" serve on as many as 20 committees. There are certainly many highly-gifted individuals in AAPM, yet one wonders how any of us can be effective on more than a few committees and still maintain a day job! Many committee members end up being unable to give their energy and passion fully to each committee on which they serve. Is there a way we can distribute the work across a larger cohort of AAPM members? Should we consider a mechanism by which a committee can be retired or combined with another one of congruent mission?

And given that committee work is such a central part of AAPM, what resources do we bring to that work? We are fortunate to have an exemplary group of AAPM staff, under the able leadership of our Executive Director **Angela Keyser**, to serve our activities and our members. But how can our limited staff keep up with this expanding growth in activities and the sheer number of committees? We end up loading more work on them. Further, we lack a unified mechanism to manage the multiplicity of projects across AAPM. I still see much of AAPM committee work done through emails. Email communications sometimes devolve into round-robin group emails that can easily get out of hand. I happened to get engaged in such a discussion recently which generated over 200 emails—often with the string of prior emails tagged along. The burden of sorting through them all, while not missing important points or being unable to find them later, is overwhelming.

I earnestly believe we are overdue to revisit our administrative and project management processes at AAPM. I know none of us wish to spend an iota more of our time towards "administration" when there is so much "physics" work to be done. Yet, thinking that way is short-sighted: imagine a person being so busy trying to cut a tree that he does not have time to pause to sharpen his axe! Our axe needs sharpening. We need to consider an organizational chart of the AAPM workspace; we must clearly define the charge and short and long term objectives for each entity, ensure adequate staff support precisely where needed, devise a project management system across the association to ensure steady progress, foster closer harmonization of AAPM-wide activities across the Councils, and develop a clear mechanism by which a committee is gracefully retired or combined with another.

Is our science contributing to medicine?

Speaking of "finding new ways to define our discipline and shape medicine" that I noted above, where are we in that department? Medical physics has certainly been a luminary discipline in medicine, initiating the fields of radiology, radiation oncology, and nuclear medicine. But physics, as a fundamental core science such as chemistry and biology, is present in medicine and in the human body in more than just the use of radiation in medicine. This fact has not been recognized in academia or in our healthcare systems—a simple proof of that is the small number of medical physics-related departments in universities across the nation. Similarly, ask anybody in a medical center outside of radiology or radiation oncology—you will have a hard time finding somebody who actually knows what medical physics is!

This was also the case a few decades ago for biomedical engineering (a related but distinctly different discipline from medical physics), but biomedical engineering managed to capture the imagination of the academy, leading to hundreds of departments across the US today. The case of biomedical engineering was advanced by explicit funding but, most importantly, by the visionary leadership of advocates such as the Whitaker Foundation. Medical physics in contrast has not had such aspirations. Yet, physics remains effectively present in medicine and the body in ways that go beyond radiation medicine, and that physics is not "owned" by any professional body. AAPM is the proper entity to claim and advance the whole of physics in medicine. One could even argue that this is our mandate and our responsibility—there is no other such organization in the US that can take on such a broad charge.

PRESIDENT ELECT'S REPORT, Cont.

Added to our current narrow focus on medical physics is the fact that our discipline is not leading or even present in major areas of focus and need in medicine. How many articles do you recall in either the New England Journal of Medicine or JAMA that are led or co-authored by a medical physicist? The question we should be asking ourselves is this: where is medicine heading and how is our discipline aligned with that direction? This is a crucial question worth our preoccupation. Can we apply our insights and thus make them relevant for understanding the epidemic of obesity, the variability of care across practice, health disparities across communities, effectual aging care, and proper use of AI in medicine? This is just to name a few. We can. Each of these complex questions can be approached and informed by a medical physics perspective. For example, how much variability exists in expected outcomes from state-of-the-art technologies versus those available in resource-limited settings? Do we have any initiative that directly tackles these needs, not just in terms of technology development but in terms of how the use of technology aligns with our current medical and societal priorities?

Our association needs to take charge of understanding medicine trajectories at large and better aligning our efforts (both in science and practice) with those trajectories—and even leading some of them from the vantage point of medical physics. We have a contribution to make not just to medical physics, but to medicine in general. And we can do so within the grassroots ethos of AAPM: While our work is informed by individual initiatives, we can take steps to "seed" that space with priorities that need additional attention. This is a time for realignment of our administration and our priorities—to make sure physics can make its crucial contribution to human health.

How are we doing on Diversity?

If you follow the presupposition of this column, that AAPM is fundamentally a grassroots association enabled and motivated by thousands of diverse volunteers practicing their passion in science, you realize diversity is at the heart of our association. In my column in the March/April issue of the AAPM Newsletter I focused on the topic of diversity, building my argument from the foundation that ours is an association "of physicists," as opposed to "of physics" in medicine. Little did I know that the legislative landscape pertaining to reproductive rights and its effects on AAPM would emerge as a leading front of managing the diversity within our community. There is no surprise that the perspectives on this topic vary widely across the AAPM membership, and we have heard many voices on this topic that are seemingly irreconcilable.

I am not here to speak to or offer a solution. Even so, I strongly believe there is much flourishing yet to happen in AAPM as we learn how best to live with, work with, and even celebrate our diversity. The state of our community was something I highlighted as a top issue in my election material and wish to see as a defining priority of my presidency next year. Facing the changing landscape of laws and culture of our time can certainly unsettle us individually and professionally, as each of us has our unique take on the issues and stake in the game. How can we maneuver through the landscape before us *as a community*? I offer some thoughts in a supplemental op-ed that I hope will be helpful.[1] As we continue to engage on this topic, I encourage us all to hang on to what we hold dear—the community and the discipline that we have built together through consensus. Why? Because we have a calling to contribute our science to human health, and we need each other to do so effectively. ■

1. https://www.aapm.org/pubs/newsletter/references/4705PresidentElectSupplemental.pdf

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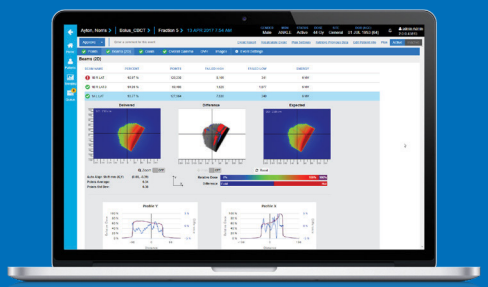

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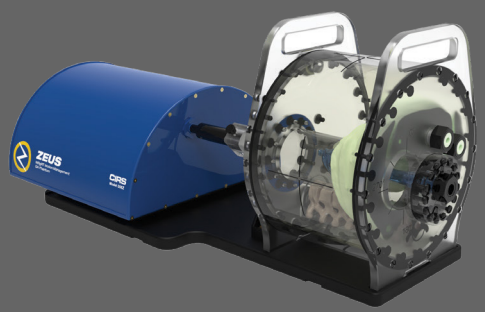

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AAPM 2022 MID-YEAR FINANCIAL REPORT

TREASURER'S REPORT

After two years of virtual annual meetings, it was great to meet once again face-to-face with friends and colleagues in Washington DC. From the perspective of both numbers (registration) and programming, the meeting was very successful, and this success was the result of tremendous effort across a team of volunteers and headquarters staff.

2021 Audited Financial Results

AAPM finished 2021 with a surplus from operations of $714,552 (Figure 1). The 2021 budget (approved by the Board in November of 2020) reflected a deficit of $1,363,061, so overall, 2021 ended with a favorable variance of $2.08M. The most significant single driver of this favorable variance (accounting for approximately $814k) was under-spending by councils and committees, mainly due to unspent travel-related costs from continued pandemic-related restrictions. Additionally, Placement Service revenue exceeded the budget by $345k. The next largest variance resulted from forgiveness of the Paycheck Protection Program (PPP) loan in the amount of $615k. The 2021 AAPM budget anticipated a net 7% reduction in membership dues; however, AAPM experienced moderate growth in membership in 2021, and, consequently, membership dues revenue exceeded the budget by $286k.

AAPM's balance sheet was strong at the end of 2021, with total assets exceeding $31.4M (Figure 2), representing a $2.2M increase over the prior year. This increase was the result of very strong market performance. For the year, total investments were up $1.9M.

2022 April Interim Results

Using a statistical model based on historical budgets and operating results, the 2022 budget was approved with a deficit of $1.5M. This deficit, however, was materially higher than that predicted by the model. After two years of travel restrictions, there was significant demand for face-to-face meetings as these restrictions had impacted some of the work of the Association; rather than cut some of these expenses, restrict this demand, and potentially hinder the Association's ability to achieve its strategic goals, the decision was made to approve a higher-than-normal budgeted deficit.

As of April, the AAPM's 2022 balance sheet reflects a modest increase (0.1%) over the prior year even though total investments are down $2.1M year-over-year through April as we continue to experience a bear market.

Currently, the Association is working on the 2023 budget. All councils and committees have been invited to prepare their respective budgets, which

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The University of Chicago
Email: s-armato@uchicago.edu

they will submit by the end of August. FINCOM will meet on October 19, 2022, to review and approve the 2023 budget prior to being submitted to the Board.

Included for informational purposes are (1) the five-year trend of operating revenues and expenses (Figure 3) and (2) the five-year trend of income (loss) from operations (Figure 4). These charts show the operating income, investment income, unrealized gains (losses), and the Education and Research Fund's net activity for the past five years. I wish to highlight that in 2021 AAPM had net income from operations in the amount of $714k; however, as mentioned previously, one of the biggest contributors to this surplus was the PPP loan forgiveness ($615k). Figure 4 shows the impact on the operational income of this one-time outlier: over the past five years, the Association has generated an operating deficit of approximately $450k, but without the PPP loan forgiveness, AAPM has generated an operating deficit of $1.06M over the past five years.

I would like to thank **Robert A. McKoy, CPA**—AAPM Finance Director, for his subject matter contribution to this column. ■

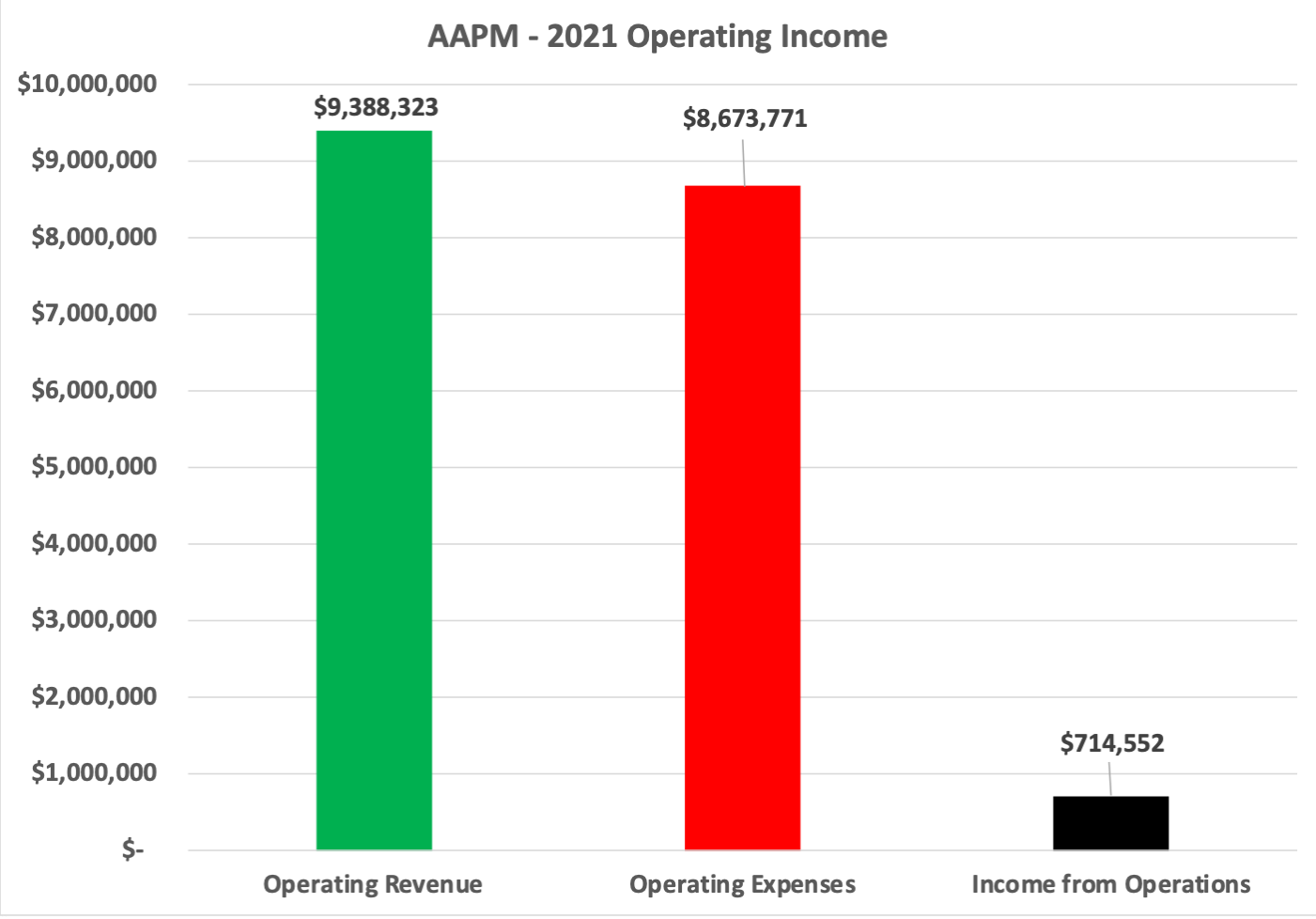


Figure 1: AAPM income and expenses for 2021.

TREASURER'S REPORT, Cont.

	12/31/21	12/31/20	$ Change	% Change
Assets				
Cash	$ 3,077,656	$ 2,651,168	$ 426,488	16.1%
Receivables	231,597	171,175	60,422	35.3%
Prepaid Expenses and Other Assets	708,301	691,116	17,185	2.5%
Total Current Assets	4,017,554	3,513,459	504,095	14.3%
Investments - Reserves	17,727,850	16,082,339	1,645,511	10.2%
Investments - E&R Fund	2,715,808	2,453,215	262,593	10.7%
Building & Other Fixed Assets	6,900,742	7,161,955	(261,213)	-3.6%
Total Long Term Assets	27,344,400	25,697,509	1,646,891	6.4%
Total Assets	**$ 31,361,954**	**$ 29,210,968**	**$ 2,150,986**	**7.4%**
Liabilities and Net Assets				
Liabilities				
Current Liabilities	$ 3,815,029	$ 4,115,229	(300,200)	-7.3%
Bonds Payable	3,262,600	3,433,963	(171,363)	-5.0%
Total Liabilities	7,077,629	7,549,192	(471,563)	-6.2%
Net Assets				
Without donor restrictions	20,984,364	18,622,008	2,362,356	12.7%
With donor restrictions	3,299,961	3,039,768	260,193	8.6%
	24,284,325	21,661,776	2,622,549	12.1%
Total Liabilities and Net Assets	**$ 31,361,954**	**$ 29,210,968**	**$ 2,150,986**	**7.4%**

Figure 2: AAPM balance sheet

TREASURER'S REPORT, Cont.

5 Year Trend Statement of Activities	2017	2018	2019	2020	2021
Operating Revenue	9,686,258	9,800,256	9,797,797	7,686,168	9,388,323
Operating Expenses	9,735,695	9,689,598	10,593,730	8,115,688	8,673,771
Net Income (Loss) from Operations	(49,437)	110,658	(795,933)	(429,520)	714,552
Investment Income	219,347	267,952	301,314	245,200	259,396
Unrealized Gains (Losses)	1,603,959	(1,016,205)	2,258,255	1,866,573	1,386,115
Education and Research Fund, Net	317,107	(79,255)	404,060	376,815	262,484
Net Income (Loss)	2,090,976	(716,850)	2,167,696	2,059,068	2,622,547

Figure 3 Five-year trend operating revenues and expenses

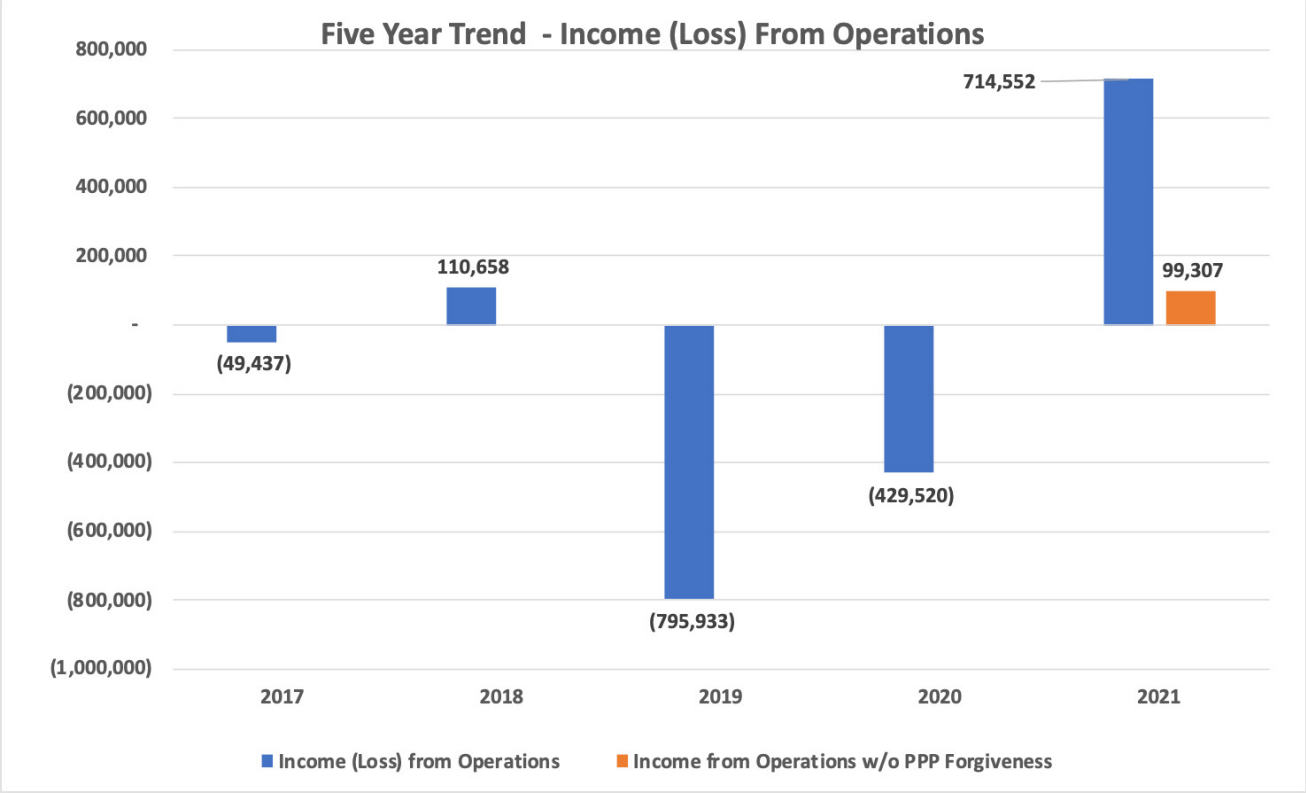


Figure 4 Five-year trend income (loss) from operations

INFORMATION FROM HQ

EXECUTIVE DIRECTOR'S REPORT

Did You Know?

• New Publication: AAPM task group report 303 endorsed by the ABS: MRI implementation in HDR brachytherapy—Considerations from simulation to treatment

• If you would like to make the pronunciation of your name available on your AAPM Member Directory listing, you can create a profile at NameCoach, record your name, then store a link to your NameCoach NameBadge in your Primary Information page so others can hear exactly how to pronounce your name.

- **Have a suggestion?** Use the "Suggestion Box" in the upper right corner of the website to reach the Executive Committee, Chairs of AAPM Councils or the Executive Director.
- **AAPM Reports Authored Included in Membership Directory Listing**
  Ever want to find an AAPM Report, don't remember all the details, but remember the name of one of the authors? AAPM includes "AAPM Reports Authored" in the AAPM Membership Directory listing of each AAPM Member. Log in and check it out!

  AAPM Members are eligible for joint membership in ESTRO for € 55.00, with access to most services ESTRO has on offer. Details available online.
- If you find a page or section of the website that is not working as it should, please send an email to the Help Desk which will put the request into the Information Services Team queue. Someone will then respond to let you know when it has been resolved.

International Day of Medical Physics on November 7

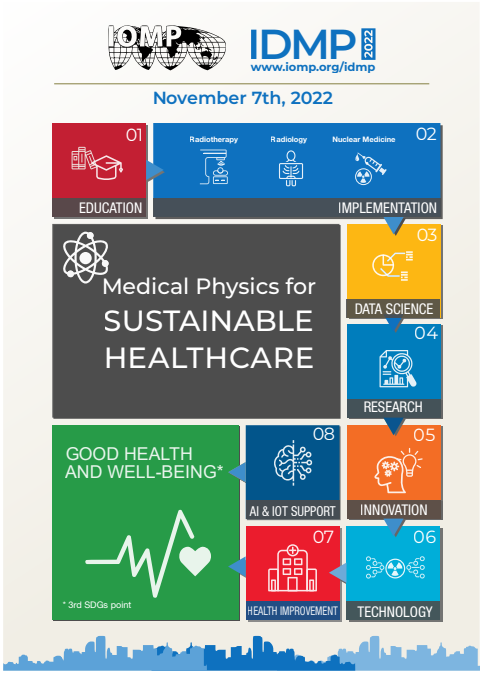
To raise awareness about the role medical physicists play for benefit of patients, IOMP organizes annually the International Day of Medical Physics (IDMP) on November 7, an important date in the history of medical physics. On that day in 1867, Marie Sklodowska-Curie, known for her pioneering research on radioactivity, was born in Poland. We celebrate the 10th IDMP on November 7, 2022. The theme of IDMP 2022 is "**Medical Physics for Sustainable Healthcare**." This is an excellent opportunity to promote the role of medical physicists. Visit the IOMP website for more information and promotional resources.

RSNA 2022 — *Empowering Patients and Partners in Healthcare*

Register now for the RSNA 108th Scientific Assembly and Annual Meeting,

Angela R. Keyser
AAPM
Email: akeyser@aapm.org
Twitter: @AngelaKeyser

AAPM's 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. We are now providing information about the diversity of our team as well.



to be held November 27 – December 1, 2022. AAPM Members must register by October 1 to receive complimentary registration for the physical meeting. There is a charge for virtual access. For the most up-to-date information on RSNA 2022 health and safety precautions and requirements, continue to monitor this page.

RSNA/AAPM Symposium: Together We Can Make a Difference
Plenary session
December 1 | 11:00 am – Noon CT

The RSNA/AAPM Symposium will focus on successful collaboration between radiologists and physicists in technical developments and clinical translations in medical imaging.

AAPM Groups Continuing to Do Good Work Virtually

AAPM groups are meeting remotely, many of them on a regular basis. Historically, finding out when the virtual meetings were scheduled was not easy to do. HQ has created a Upcoming Virtual Meeting Schedule that is posted on the main webpage.

Get Involved

Upcoming Virtual Meeting Schedule for those looking to join a group

Interested in joining an AAPM Group? Review the schedule, find something that you are interested in, and then plan to attend the group's meeting. It's also helpful to send an email to the Chair of the group noting your interest and background. After the meeting, if you would like to know more, ask the Chair if you can be added as a guest. This will allow you to participate in online discussions and remote meetings.

AAPM's HQ Team…At Your Service!

I have some bittersweet news to share. **Richard Martin** will be leaving AAPM as of September 16 to become the new Director of Government Relations with RSNA. Richard joined AAPM in 2015 as the Government Relations Specialist and served for the past five years as Government Relations Program Manager supporting AAPM in interactions with the federal and state agencies and legislatures. Richard has been a very valuable member of the team and well represented AAPM for these eight years. He be greatly missed! We wish Richard all the best in this new adventure and are glad that he will remain a part of the imaging community

HQ support has grown in numerous important ways: each of the five councils has a staff council liaison, AAPM provides program management for Integrating Healthcare Enterprise - Radiation Oncology (IHE-RO) and the Medical Imaging and Data Resource Center (MIDRC) and along with more HQ support for both *Medical Physics* and the *Journal of Applied Clinical Medical Physics* (JACMP).

As new programs and program managers were added, I often worked very closely with these new team members to best ensure the needs of the volunteers were met, expectations were clear, and the new program was best situated for success! I continued to provide direct oversight after the program was well-established, which unfortunately led to an unmanageable number of team members reporting directly to me as the Executive Director. As such, I have been working in recent months to adjust

OUR CONDOLENCES

Krishnadas Banerjee, PhD • Michael V. Broadbent, PhD • Swaminathan Jayaraman, PhD
Arthur Pinkerton, BS • Isaac Rosen, PhD

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: 2022.aapm@aapm.org
(Please include supporting information so that we can take appropriate steps.)

EXECUTIVE DIRECTOR'S REPORT, Cont.

the AAPM HQ organizational structure in a more intentional way.

I am pleased (and excited!) to announce the following reorganization plan:

Justin Stewart has been promoted to Director, Programs to lead a newly formed Programs Team consisting of staff council liaisons and other program managers, including the new Communications Manager approved by the Board. Recruiting this FTE will be one of Justin's first big tasks!

Farhana Khan has been promoted to Director, Information Services. This promotion acknowledges Farhana's ever-increasing leadership within the IS Team since **Michael Woodward**'s 2015 promotion to Deputy Executive Director.

Lisa Schober's responsibilities are shifting to allow her to focus on the needs of the newly formed Governance Committee. While she will retain her HQ office management responsibilities, this does require that the support for the International Council transition to another member of the team. As such, Michael Woodward will be the IC staff liaison in the future.

I certainly look forward to working with Farhana and Justin as new members of our HQ Management Team, joining Michael, **Robert McKoy**, and **Mariana Gallo**. There is always more work to be done; next on my list is the consideration of other position titles in the current non-profit environment and making adjustments to our team as appropriate. Stay tuned! ■

SAVE THE DATE!

APRIL 1–4

ORLANDO, FL

Hyatt Regency

Grand Cypress

AAPM SPRING CLINICAL MEETING 2023

SCMPCR

Alo-BT Alo Bhuhon Trust

GLOBAL ACCESS to CANCER CARE FOUNDATION

UNITED INTERNATIONAL UNIVERSITY

South Asia Centre for Medical Physics and Cancer Research (SCMPCR)

E-learning Program (ELP-07)

Computed Tomography and Interventional Radiology

Date: 7th - 28th October 2022

Panel of Speakers

Prof. Seungyong Cho
Dept. of Nuclear and Quantum Engineering, KAIST, Korea

Topic: Image Quality Evaluations in Interventional Radiology: From Physics Principles to Qualitative Image Quality Criteria Test Objects

Dr. Dipl.-Ing. Natasa Milickoic Skalonja
Head of the Department of Medical Physics and Engineering, Sana Klinikum Offenbach GmbH, Germany

Topic: Dosimetry in Computed Tomography

Prof. Dr. Marc Kachelrieß Dipl.-Phys.
Division of X-Ray Imaging and CT, German Cancer Research Center (DKFZ), Heidelberg, Germany

Topic: CT Image Quality and Dose

Dipl. Ing. Kathrin Entz
Medical Physics Expert, University Hospital Frankfurt, Germany

Topic: Practical CT Clinical Dose Reporting

Prof. Dr. Zhi Yang
School of Biomedical Engineering Capital Medical University, Beijing, China

Topic: CT Image Quality and Processing

Prof. Dr. XiaoJuan Guo
Radiology Department, Beijing Chaoyang Hospital, China

Topic: State of the Art and New Trends in Angiographic Clinical Applications Technologies

Dr. Stephan Garbe
Medical Physicist, University Hospital Bonn, Germany

Topic: Equipment and Patient Specific Dosimetry in Interventional Radiology

Prof. Dr. Cynthia H. McCollough
Medical Physics and Biomedical Engineering Director, CT Clinical Innovation Center, USA

Topic: Computed Tomography: A Review of the Emerging Technologies

Send for EBAMP Accreditation

Date
07 - 28 October 2022

Time
9:30 AM – 10:30 AM (GMT)

Online Platform
Zoom

Registration Link
Coming Soon

Contact:

scmpcr17@gmail.com
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PROFESSIONAL LIABILITY INSURANCE ACQUIRED BY AMBA

INSURANCE SUBCOMMITTEE REPORT

Graham M. Fuller
Senior Principal; Client Relationship Management Leader
Association Member Benefits Advisors

We are thrilled to inform you of a recent development that will allow you to access even more products, benefits, and services through your AAPM membership!

As a valued AAPM member, you have come to know the knowledgeable and dedicated team at Mercer. Mercer has served our organization and you by providing and helping you navigate your benefits.

Recently, Mercer's Associations business was acquired by AMBA. As part of the acquisition, your insurance benefits will now be administered through AMBA. The only change you will see is the AMBA name and logo appearing in materials regarding your benefits.

The team you know and trust will continue to serve you and, while working closely with us, they will now be doing so under a new entity, Association Member Benefits Advisors (AMBA). Do NOTworry: your benefits and services will continue without interruption.

Above all, we want to assure you that you will continue to receive the same top-quality products, benefits, and standard of service that you expect. All your current payments and billings will remain unchanged under the new AMBA name.

We proudly align with AMBA's mission to bring people together through association membership by providing you with the highest quality products, benefits, and services. We look forward to a long and positive partnership with AMBA.

If you have any questions about this announcement, you can reach out to the same call center you know and trust. Your benefits representatives are ready and available to answer any additional questions you may have.

Thank you for your AAPM membership, and we look forward to continuing to serve you. ■

■ Who is AMBA?

Association Member Benefits Advisors (AMBA) is based in Austin, Texas, and is a national affinity benefit partner for associations across the US. They serve associations by providing high-quality insurance products, marketing, technology, billing and membership recruitment services to their partners. In business since 1984, AMBA is the largest provider of services to affinity groups representing public employees and retired public employees across the country and enjoys relationships that span months to over 30 years. AMBA is one of the fastest growing benefit organizations in the country through robust organic growth and some key strategic acquisitions over the past few years.

AMBA is a portfolio company of Genstar, whose relationship began in 2016 and was recommitted through a recapitalization in the summer 2021.

■ Are our member benefits changing?

No. There will be no changes to your member benefits or your Associations business services.

■ When did the acquisition take place?

The agreement was announced in January 2022 and was finalized on April 1st 2022.

■ What does this change from Mercer to AMBA mean?

Association Member Benefits Advisors, known as AMBA, has acquired Mercer's Associations business. This includes operational support in the form of delivery, call center, billing and technology teams and platforms that support the delivery of services to clients.

While Mercer's Associations business has been a part of Marsh McLennan's offerings since 1954, we believe that this business will benefit from ownership by a company who specializes in providing a full range of benefit offerings for associations that represent important groups such as retired teachers, educators, credit unions and public employees across the United States. We have chosen AMBA to extend the long history of this business and to continue providing high-quality service for clients and growth opportunities for colleagues.

■ Is there anything I need to do now?

There is nothing you need to do. AMBA has developed a thoughtful and deliberate transition plan that is being implemented. Over the next few months, you will begin to see the AMBA name and logo appear in your regular correspondence with our team.

■ When will the change take place?

Rebranding all of our documents, websites and other print and on-line assets will take several months. You will see these change happen over time. We expect to completely re-branded by the end of 2022.

CMS ISSUES MEDICARE 2023 PROPOSED RULES

HEALTH POLICY AND ECONOMIC ISSUES REPORT

Medicare Physician Fee Schedule

The Centers for Medicare and Medicaid Services (CMS) recently released the 2023 Medicare Physician Fee Schedule (MPFS) proposed rule. The finalized changes will appear in the November 1 final rule and are effective January 1, 2023. The MPFS specifies payment rates to physicians and other providers, including freestanding cancer centers. It does not apply to hospital-based facilities. Payments to hospital outpatient departments are described in a separate section below.

CMS estimates a 4.0 percent cut to radiation oncology services for 2023. The estimated 2023 conversion factor is $33.08, a 4.4 percent decrease of $1.53 to the 2022 conversion factor of $34.61.

Additionally, 2023 marks the second year of the four-year phase-in of the Clinical Labor Price update. While this update increases labor prices for Medical Physicists, Dosimetrists, and Therapists (see table below), budget neutrality requirements lead to reduced payments for equipment-intensive codes, resulting in an overall reduction in radiation oncology reimbursement.

Labor Code	Labor Description	2021 Rate Per Minute	Final Rate Per Minute	Year 2 Phase-In Rate Per Minute	Total Percentage Change
L152A	Medical Physicist	1.52	2.14	1.832	41%
L063A	Medical Dosimetrist	0.63	0.91	0.77	44%
L107A	Medical Dosimetrist/Medical Physicist	1.08	1.52	1.298	41%
L050C	Radiation Therapist	0.50	0.89	0.695	78%

Each year CMS continues to improve accuracy, predictability, and sustainability of updates to the practice expense (PE) valuation methodology. CMS continues to develop policies geared toward providing more consistent updates to the direct PE inputs used in MPFS rate setting, including supply/equipment pricing and clinical labor rates. CMS states that efforts to develop these policies should contribute to improved standardization and transparency for all PE inputs used to update the MPFS.

CMS states that the indirect PE data inputs remain tied to legacy information that is well over a decade old. To build on much needed progress, CMS believes indirect PE would also benefit from a refresh that implements similar standard and routine updates. CMS believes use of data sources that receive routine updates, would reduce the likelihood of unpredictable shifts in payment, especially when such shifts could be driven by the age of data available rather than comprehensive information about changes in actual costs. As CMS continues their work to improve the information they

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use in the PE methodology, they are issuing a general comment solicitation to better understand how CMS might improve the collection of PE data inputs and refine the PE methodology, signaling the Agency's intent on a new approach to valuation of indirect practice expenses in future rulemaking.

CMS proposes to rebase and revise the Medicare Economic Index (MEI) based on a methodology that uses publicly available data sources that are more reflective of current market conditions of physician ownership practices. The MEI is an index that measures changes in the market price of inputs used to furnish physician services. The proposed update changes the MEI cost weights for physician work, practice expense, and malpractice relative value units (RVUs). Preliminary analysis suggests that this proposal would tend to increase payments for radiation oncology services, which include expensive medical equipment categorized as practice expense (see table below). CMS is soliciting comment on the proposed delay and potential use of the updated MEI cost weights in future years to recalibrate the RVU shares and to update the geographic locality (i.e., GPCI) cost share weights.

RVU Component	Current 2006 Weight	Proposed 2017 Weight
Physician Work	50.9%	47.3%
Practice Expense	44.8%	51.3%
Malpractice	4.3%	1.4%

Further, CMS is seeking public comment on several key issues this year:

- Strategies to improve the accuracy of payment for global surgical packages, which includes several brachytherapy procedure codes.
- Updates to premium liability insurance data and methodological improvement refinements used to update the malpractice RVUs for 2023.
- Ways to identify and improve access to high value, potentially underutilized services by Medicare beneficiaries.

The reduction to the 2023 conversion factor, in conjunction with the clinical labor pricing, medical equipment updates and expansion of evaluation and management services (i.e., office visits) will result in payment reductions to most radiation oncology services in 2023, although medical physics codes have proposed increases for 2023:

- 77336 Weekly medical physics consultation 1.1%
- 77370 Special medical physics consultation 2.7%
- 76145 Medical physics dose evaluation radiation exposure 9.0%

AAPM will submit comments to CMS prior to the September 6 deadline.

Hospital Outpatient Payment System

CMS recently released the 2023 Medicare Hospital Outpatient Prospective Payment System (HOPPS) proposed rule, which provides facility payments to hospital outpatient departments. The finalized changes will appear in the November 1, 2022 final rule and are effective January 1, 2023. This rule does not impact payments to physicians or freestanding cancer centers.

CMS is updating the HOPPS payment rates by 2.7 percent overall in 2023. Payment for medical physics consultation codes 77336 and 77370 have a proposed 4.8 percent payment increase in 2023 (see table below). However, CMS notes that, in light of the Supreme Court's recent decision in American Hospital Association v. Becerra, the Agency fully anticipates applying a rate of average sales price + 6 percent to 340B-acquired drugs and biologicals in the final rule and making a corresponding decrease to the final 2023 conversion factor, which will yield a reduction to all 2023 final payment rates.

CMS did not reassign CPT 76145 Medical physics dose evaluation for radiation exposure to a higher paying APC per AAPM's written comments to the Agency. AAPM plans to make this request to the Advisory Panel on Hospital Outpatient Payment at their annual meeting in August.

CMS maintains the Comprehensive APC (C-APC) policy for stereotactic radiosurgery, intraoperative radiation therapy (IORT) and several brachytherapy needle/catheter insertion procedures in 2023. CMS defines a C–APC as a classification for the provision of a primary service and all adjunctive services and supplies provided to support the delivery of the primary service. Under this policy, CMS calculates a single payment for the entire hospital stay, defined by a single claim, regardless of the date of service span.

HEALTH POLICY AND ECONOMIC ISSUES REPORT, Cont.

Summary of Proposed 2023 Radiation Oncology HOPPS Payments

APC	Description	CPT Codes	2022 Payment	2023 Proposed Payment	Payment Change 2022-2023	Percentage Change 2022-2023
5611	Level 1 Therapeutic Radiation Treatment Preparation	77280, 77299, 77300, 77331, 77332, 77333, 77336, 77370, 77399	$129.59	$135.80	$6.21	4.8%
5612	Level 2 Therapeutic Radiation Treatment Preparation	76145, 77285, 77290, 77306, 77307, 77316, 77317, 77318, 77321, 77334, 77338	$345.85	$365.15	$19.30	5.6%
5613	Level 3 Therapeutic Radiation Treatment Preparation	32553, 49411, 55876, 77295, 77301, C9728	$1,289.67	$1,365.61	$75.94	5.9%
5621	Level 1 Radiation Therapy	77401, 77402, 77789, 77799	$122.34	$123.69	$1.35	1.1%
5622	Level 2 Radiation Therapy	77407,77412, 77600, 77750, 77767, 77768, 0394T	$246.87	$267.74	$20.87	8.5%
5623	Level 3 Radiation Therapy	77385, 77386, 77423, 77470, 77520, 77610, 77615, 77620, 77761, 77762	$554.12	$583.24	$29.12	5.3%
5624	Level 4 Radiation Therapy	77605, 77763, 77770, 77771, 77772, 77778, 0395T	$724.50	$731.79	$7.29	1.0%
5625	Level 5 Radiation Therapy	77522, 77523, 77525	$1,321.12	$1,355.67	$34.55	2.6%
5626	Level 6 Radiation Therapy	77373	$1,771.28	$1,801.19	$29.91	1.7%
5627*	Level 7 Radiation Therapy	77371, 77372, 77424, 77425	$7,942.98	$7,881.03	($61.95)	-0.8%

*Comprehensive APC

CMS proposes to designate CPT 55874 Peri-prostatic implantation of biodegradable material as a comprehensive APC beginning January 1, 2023. The hydrogel is billed using HCPCS code C1889 *Implantable/ insertable device, not otherwise classified* and is packaged under HOPPS. There is no separate payment in addition to the procedure CPT 55874.

New clinical software, which includes clinical decision support software, clinical risk modeling, and computer aided detection (CAD), are becoming increasingly available to providers. These technologies often perform data analysis of diagnostic images from patients. These technologies rely on complex algorithms or statistical predictive modeling to aid in the diagnosis or treatment of a patient's condition. CMS is soliciting public comment on a payment approach that would broadly apply to Software as a Service (SaaS).

AAPM will submit comments to CMS prior to the September 13 deadline.

For additional information including Medicare rule summaries, 2023 proposed payments and impacts visit the AAPM website. ■

GAO IDENTIFIES VULNERABILITIES IN NRC'S CONTROL OF PURCHASES OF RADIOACTIVE MATERIAL

LEGISLATIVE AND REGULATORY AFFAIRS REPORT

The Government Accountability Office (GAO) recently released a report entitled, "Preventing a Dirty Bomb: Vulnerabilities Persist in NRC's Controls for Purchases of High-Risk Radioactive Materials," (GAO-22-103441; Published: Jul 14, 2022; Publicly Released: Jul 21, 2022). The report details vulnerabilities in controls that would deter bad actors from obtaining radioactive material to build a dirty bomb.

In a GAO sting operation, a fake company with forged licenses was able to obtain radioactive material. The GAO sting operation purchased more than one shipment of a category 3 quantity of radioactive material to show that a bad actor might be able to obtain a category 2 quantity by purchasing and aggregating more than one category 3 quantity from multiple vendors.

As you are aware, the Nuclear Regulatory Commission (NRC) defines quantities of radioactive materials in 5 categories, with category 1 being the most dangerous. Licenses control the type and quantity of radioactive material allowed to be possessed. While the NRC requires a valid license to possess category 3 quantities of radioactive material, the GAO report suggests the NRC's paper licenses can be altered and used to make illicit purchases of radioactive materials.

The GAO called on the NRC to implement more stringent screening methods including immediately requiring that vendors verify category 3 licenses with the appropriate regulatory authority and adding security features to its licensing process such as using multifactor authentication or exclusively electronic-based licensing. See GAO report here.

The NRC stated to media outlets that it is taking immediate action, including communicating with the manufacturers of the radioactive substances and expediting a planned rule change to better verify purchasing licenses. In addition, the NRC told representatives of the Source Security Working Group, a coalition to which AAPM (GRAC) belongs, that category 3 license verification is likely to advance. ■

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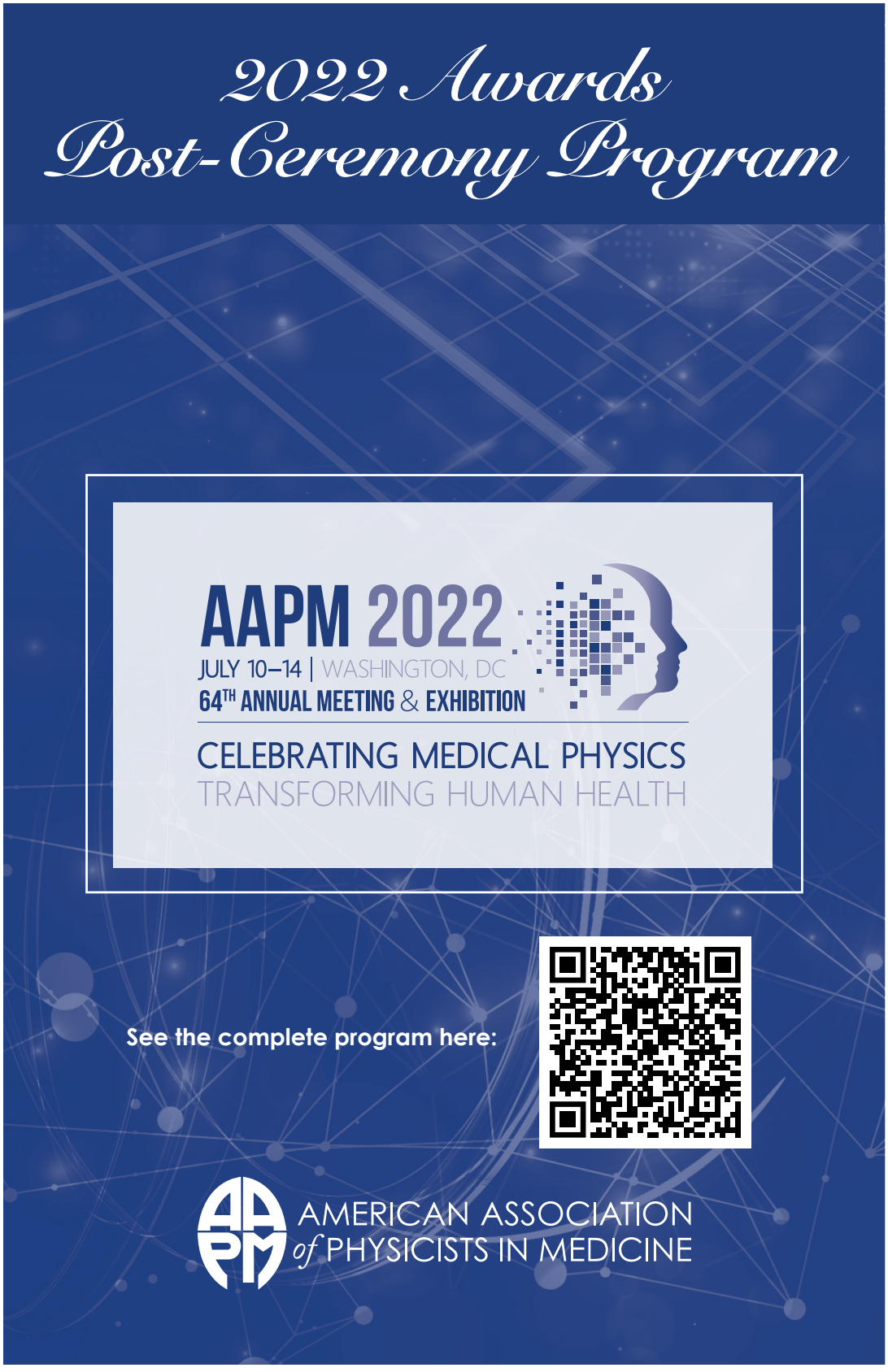
We will continue to monitor this issue and report developments to you. If you have any questions or require additional information, contact Richard J. Martin, JD, AAPM's Government Relations Program Manager, at richard@aapm.org.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ACR ACCREDITATION & MORE: INFO FOR MEDICAL PHYSICISTS

UPDATES FROM ACR HQ

Helical CTDI study continues! Participate!

The study group submitted an abstract to RSNA, which was accepted as an oral presentation on Monday 11/28. We will continue collecting data into fall for a manuscript. The current Excel template for recording measurements is here, and you can upload your data through the study landing page. Background and additional details are as follows:

Leon et al published in 2020 a paper demonstrating the feasibility of using a helical acquisition technique for estimating CTDI during medical physics annual surveys. Their results indicate that the helical measurement method can work, and we are now investigating whether the helical method can reliably work for everyone. Anecdotally, colleagues who have tested this helical method all report that it is much quicker than the standard axial measurements that require translation of helical clinical protocols to axial techniques for CTDI measurements.

Please consider adding a handful of extra measurements to your CT testing routine and contributing data to the study—anecdotal reports are that the helical method takes about 15 minutes. The more data we can collect for analysis, the more we will all learn from the results! You can download the Excel template with instructions here, and you can drag & drop your completed Excel templates at the study landing page. You can also find a shortened link to the study landing page in my Twitter profile.

When you submit data, you'll need to attest that your dosimetry equipment has been calibrated within 24 months of your measurements, and that you are not submitting PHI, facility information, or CT device identifiers.

Registry updates

ACR's National Radiology Data Registry, home to the Dose Index Registry (DIR), has added a new user profile: Clinical Lead. The new NRDR clinical lead user profile is designed to encourage radiologists, radiology administrators and other radiology program leaders to use the NRDR reports to monitor practice performance and initiate quality improvement projects. This new profile can be assigned to one or more NRDR users for multiple facilities and registries within a corporate account.

The clinical lead user profile enables the clinical team to communicate significant registry enhancements — especially clinically relevant updates — to individuals who champion and oversee registry participation. We can also direct administrative communications (such as invoices, data submission and account management) to corporate account and facility staff who have other user profiles.

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In each issue of this newsletter, I will present information of particular importance or relevance for medical physicists. You may also check out the ACR's accreditation web site portal for more accreditation information and QC forms. A big THANK YOU to all the other staff that keep ACR programs running and assist with creating the content in this column.

As I have had the privilege of doing since 2019, I moderated a session at AAPM focusing on ACR activities. Izabella Barreto, PhD provided an update on the helical CTDI investigation; Penny Butler, MS, FACR, FAAPM presented on pediatric DRLs in CT; Osama Mawlawi, PhD, FACR, FAAPM presented on the development of new ACR NM and PET QC manuals; Bill Geiser, MS, FAAPM presented on the development of an updated ACR QC manual for stereotactic- and tomosynthesis-guided breast biopsy; and M. Mahesh, PhD, MS, FAAPM, FIOMP, FACR, FSCCT, FACMP presented on a current project investigating subspecialty radiologist preferences regarding specific image quality features in CT. Thank you to all of the presenters and those who showed up bright and early Wednesday morning to attend the session!

UPDATES FROM ACR HQ, Cont.

Please encourage your clinics to assign at least one clinical lead user for each facility as soon as possible to allow the clinical team to better target our communications based upon user profiles. For more information about NRDR user profiles, review NRDR Accounts and Profiles and Manage User Profiles in the NRDR support portal.

By the time this column is published, the first phase of DIR CT reporting (analytics) changes will have rolled out, and the second phase will be imminent (Sep. 15). The updates are intended to provide new reporting features, make accessing the reports more intuitive, streamline the number of available reports, and create consistency in reports across DIR modalities, now that we have DIR Fluoro operational, and the DIR DR pilot is well underway.

In the *CT Facility Summary Report* the following features have been added:

- Option to select how to aggregate the Exam Counts table, i.e., by Facility or by Corporate Account
- New chart indicating exam counts by number of localizer images received, 0, 1, 2, or 3 or more (DIR accepts localizer images and uses them to estimate patient dimensions, which are then used in SSDE calculations)
- View CT units or facilities that have not sent any data to DIR in the past ten days
- Differentiate weekends and weekdays via color coding in the Exam Counts histogram

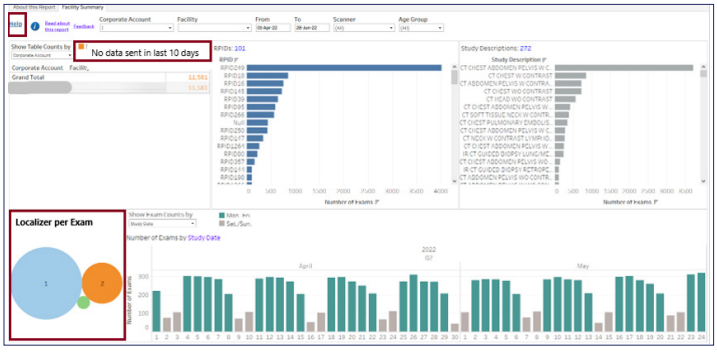
The screenshot to the right demonstrates these new features in the DIR CT reporting — check out the CT Facility Summary Knowledge Base article for more report details. Note: On September 15, the CT Facility Summary Report name will change to CT Summary of Data Submitted for naming consistency across all DIR modalities.

In the *Standardized Dose Index Report* (see the Knowledge Base article here) the following features have been added:

- View data by Study Description by default, as currently done in the CT Dose Information by Exam report
- Select any individual exam to view a table of the exam's Irradiation Events (acquisitions or series)
- A variety of new visualizations that provide information about CT units sending RDSRs vs. secondary capture — **this is important because DIR will stop processing secondary captures ("dose pages") at the end of 2022!**
    - Visualizations for RDSR vs. secondary captures include color coding in the Exam Table, Study Description stacked histogram, and a Pie Chart with a hover feature to view the exams sent via secondary capture in the past year and the distribution by scanner of records sent via RDSR or secondary capture.

For nearly all analytics displays, users can now click "Help" in the upper left corner to activate an overlay of helpful descriptions of report features being shown on the screen. Lastly, on September 15, the analytics report naming will be streamlined to make accessing reports more convenient and intuitive. For example, the CT Facility Summary report will be renamed CT Summary of Data Submitted, and a few reports will be removed from the NRDR Portal's menu section—they will be accessible through the DIR CT platform.

Special thanks to Nancy Fredericks and Tom Fruscello from ACR's NRDR team, and **A. Kyle Jones, PhD, FAAPM**, Chair of ACR's DIR Committee, for their contributions to this section of the column. ■



INTERNATIONAL COUNCIL TOWN HALL/ORIENTATION ON MEDICAL PHYSICS AWARENESS IN THE GLOBAL CONTEXT

INTERNATIONAL COUNCIL REPORT

The AAPM International Council (chaired by **Dr. Jatinder Palta** and **Dr. Ana Maria Marques da Silva**) was formed in 2021 and currently consists of over 125 volunteers with varying amounts of international experience from living and working outside the US to having no experience working internationally at all. On Friday, May 13, 2022, the International Council arranged an in-council orientation/town hall for all international council members and its committees. **Dr. Jake Van Dyk**, founder and former president of Medical Physics for World Benefit (MPWB) proposed this special International Council meeting with the goal of introducing International Council committee members to various global challenges and opportunities in medical physics as well as generating an awareness of some of the ethical and logistical issues that can be encountered when working internationally. It was the hope that this orientation would provide members with a foundation in global heath that would allow them to work successfully with international colleagues and allow AAPM to make meaningful contributions toward addressing global disparities in healthcare.

The meeting opened with Dr. Van Dyk providing a description of medical physics around the globe. He started with a reminder that nearly 30% of all physicists working globally are members of AAPM. He then provided a review of global variations in medical physics practice related to training, equipment, organization, diseases and resources and suggested possible solutions for addressing these variations. Regarding equipment alone, the number of radiation therapy machines per capita varies widely as does their quality and reliability. He compared two countries with similar population size, Ukraine (classified as an upper middle-income country) and Canada (classified as a high-income country). Canada has three times the number of radiation therapy machines and, in Canada, these machines are mainly high energy LINACs whereas Ukraine has mainly cobalt-60 machines. In sharper contrast, there are 27 countries in Africa with no radiation therapy at all while the US is rapidly implementing more expensive technologies like proton therapy and MR-LINACs. In terms of solutions, emphasis was placed on the fact that there is no one size fits all solution and the situation in each country is different. We should avoid the temptation to think that "our way" is the only way of doing things. A better approach is to understand the situation in each individual country and partner with local medical physics leaders to implement sustainable change.

The next session on challenges and realities of medical physicists around the globe featured two invited speakers, Dr. Francis Hasford of the Ghana Atomic

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Thanks to **Dr. Robert Jeraj** and **Dr. Ana Maria Marques da Silva** for their help in organizing this meeting.

For those that are interested, the presentations are posted here.

Energy Commission and University of Ghana and **Dr. Arun Chougule** from SMS Medical College and Hospitals in Jaipur, India. These two presentations served to describe the radiation oncology landscape in Ghana and India as examples of how the practice of radiation oncology as well as the opportunities and limitations can differ between countries. Both speakers provided direct comparison to North America to show differences in access and resources. For example, while there are more than 5000 radiation therapy machines in the USA and Canada, there are closer to 500 machines in all of Africa, 50% of which are concentrated in Egypt and South Africa. Africa needs a 150% increase in radiation therapy machines to reach the goal of one machine per one million people. Dr. Chougule took a deep dive into clinical training and personnel with a particular emphasis on variations within the AFOMP (Asia-Oceana Federation of Organizations for Medical Physics) region. While the US and Canada have 24.5 medical physicists per one million people, the AFOMP region has 2.67 medical physicists per million.

The second half of the meeting then focused on various ethical considerations and potential pitfalls when volunteering abroad. Three global health experts were invited to cover this topic. Dr. Ashti Doobay-Persaud from the Institute of Global Health – Center for Global Health Education at Northwestern University spoke on the topic of "Skills and Scope: Ethical Practice and Predicaments of Clinical Medicine in Resource Constrained Settings". Dr. Judith Lasker, author of "Hoping to Help: The Promises and Pitfalls of Global Health Volunteering" and professor emeritus from Lehigh University spoke on the topic of "Building ethical and effective partnerships in global health". Finally, Dr. Surbhi Grover gave a more clinical perspective of her involvement with the global partnership between University of Pennsylvania and Princess Marina Hospital in Botswana. These international experts in global health partnerships were able to clearly show the ethical challenges that can and do come up when working abroad. For example, these challenges included being asked to practice outside of scope, introducing unsustainable clinical practices or equipment, dealing with local resource limitations, identifying problematic attitudes and behaviors (i.e., "voluntourism", "white savior" complex, and "healthcare colonization"), among other challenges that can cause international efforts to fail.

Dr. Judith Lasker pointed out that there is no shortage of volunteers. Many organizations (faith-based organizations, NGOs, school groups, hospitals, etc.) are involved in global health and many of these organizations have a "tsunami" of volunteers. However, many medical missions are short lived with ill-prepared volunteers that have not done a needs assessment or made an effort to involve the host country in planning. As a result, many are unsuccessful in establishing true partnership and implementing sustainable change. International volunteers bring enthusiasm and skill but can also bring commonly held stereotypes about low and middle-income countries (LMICs) and their lack of cultural awareness can derail any efforts to do good. To be effective, the stays should be longer, needs should be properly assessed, and volunteers should be adequately prepared. Among other things, she suggested that AAPM endorse the Brocher declaration which is a statement of ethical principles for guiding policy on short-term global health engagements that advocates essentially for mutual partnerships with bidirectional input and learning.

Dr. Surbhi Grover discussed her specific clinical experience with treating cervical cancer in Botswana as an example of how to build an effective partnership. She pointed out that 90% of cervical cancers occur in LMICs and that 80% of these cancers are stage II and above. Botswana is a country of 2.5 million people and there are two radiation therapy machines. In addition, twenty percent of the adult population is living with HIV. Improving access to care requires a long-term multi-faceted approach harmonizing the activities of NGOs, professional organizations, international organizations, local governments and industry to get not only equipment but also trained personnel and service to build overall capacity.

Clearly, there is much work to be done to address the disparities in medical physics around the globe. The hope is that this orientation gets AAPM's own "tsunami" of volunteers ready to participate in successful initiatives that will have a lasting impact. AAPM volunteers should enter these opportunities mindful of the global landscape and potential pitfalls so that they are able to capitalize on opportunities for successful global collaboration. They should understand that communication and open dialogue will foster successful international partnerships. ■

SUMMARY OF THE 2022 MEDPHYS MATCH

EDUCATION COUNCIL REPORT

J. Dise

The eighth season of the MedPhys Match (MPM) concluded in March of 2022. This article details participation rates and ranking trends seen in the 2021-2022 MPM season.

Summary Statistics for 2021–2022 MPM Season (8th Season)

In the 2021–2022 MPM season, 264 applicants registered, which reflects steady state values since 2017–2018. Of the 264 applicants that registered, 214 participating applicants submitted a rank list. Previously defined as a viable applicant, 180 of the 214 participating applicants were ranked by at least 1 program, which is consistent with previous seasons of the MPM.

In the 2021–2022 MPM, 108 programs offered 143 positions, both of which are steady state values since the 2017-2018 MPM. This is likely due to program growth and new program accreditation offsetting known and temporary voluntary program withdrawal from the MPM due to residency program restructuring or residency position funding changes. (Table 1)

In the Medical Physics Residency Application Program (MP-RAP), applicants may input their National Matching Service (NMS) identification number in addition to stratifying criteria such as reported gender, highest earned degree, and ABR Part I Board Certification Status. Tangential to the current exploration of diversity, equity and inclusion (DEI) within the AAPM, 250 of the 264 applicants in the 2021-2022 MPM season were analyzed with linked MPM and MP-RAP data.

Stratified Match Statistics

Of the 250 applicants evaluated, 172 (68.8%) were male, and 78 (31.2%) were female. The proportions of the male and female cohorts that were viable and ultimately matched were similar despite the disproportionate MPM participation between the genders. Resulting from the MPM, 88 of the 172 (51.2%) male applicants and 39 of the 78 (50.0%) female applicants were matched. (Table 2)

The ratio of male-to-female registered applicants is 2:1, however, there is not a significant difference between the number of institutional ranks received, the number of viable applicants, the number of submitted ranks by applicants and the overall match rate. A measurable difference, albeit only approaching statistical significance, is that on average, female applicants are preferred more on institutional rank lists by an entire rank position.

Of the 250 applicants evaluated, 248 reported their highest degree as MS, PhD, or Certificate. Of the 248 applicants who reported their degrees, 121

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(49%), 83 (34%) and 44 (18%) had an MS, PhD or Certificate respectively. The proportion of viable candidates in the MS cohort was approximately 10% less than that of the PhD and Certificate cohort. Resulting from the MPM, 54 of 121 MS applicants (44.6%), 51 of 83 PhD applicants (61.4%) and 23 of 44 Certificate applicants (52.3%) were matched. When only viable applicants are considered, the match rates for MS, PhD, and Certificate applicants increase to 70%, 84% and 66%, respectively. (Table 3)

The ratio of MS to PhD to Certificate applicants was approximately 3:2:1. On average, the PhD cohort was ranked by two more institutions than the MS cohort, and the Certificate was ranked by one more institution than the MS cohort. Once comparing viable applicants, PhD applicants were the most desired (highest average position on rank lists), with MS applicants appearing more desirable than Certificate applicants. If most applicant interviews result in institutional ranks, this analysis may imply that the lower match rate for MS applicants reflects a lower likelihood of receiving interview invitations but are well received when interviewed.

The MP-RAP system allowed applicants to report their ABR Part I Certification status as Passed, Registered and Not Applied. 76 (30.8%), 83 (33.2%) and 91 (36.4%) applicants have passed, registered, or not applied for ABR Part I Certification, respectively. 57 of 76 (75.0%), 36 of 83 (43.4%) and 35 of 91 (38.5%) applicants matched for those who passed, registered, or have not applied, respectively. Contrary to the match rate trend, the average rank positions for passed, registered, and not registered were 5.6, 4.2 and 4.0 respectively. (Table 4)

There was a similar number of applicants in each of the three ABR Part I Certification cohorts. However, the match rate varied greatly for those who had passed ABR Part I vs those who had only registered or who had not applied. The contradiction between match rate and average rank position could be explained by the disproportionately high number of MS applicants who were only able to register for the exam. Since MS applicants generally take ABR Part I at the end of their first year or upon degree completion, it is not surprising to see that 42 of 76 (55.3%) of applicants that had passed ABR Part I had done so in either 2021 or 2022. This trend will certainly change in successive MPM seasons due to updated ABR Part I registration requirements.

Ranking Trends

Since the 2018-2019 MPM season, the National Matching Service (NMS) has collected and reported data related to average rank for applicants and institutions. Quantitative rank data is of paramount importance given that the stabilized MPM is characterized by a high applicant-to-offered position ratio accompanied by a non-intuitive, yet consistent number of unfilled positions.

Evaluation of institutional quantitative rank data from 2019-2022 showed an increase in the total number of ranks submitted by the institution cohort by roughly 8% per year to a total of 1,306 ranks in 2022. Provided that the number of CAMPEP accredited offered positions has not increased at the same rate, the increase in total ranks submitted by institutions is likely in response to the persistence of the small number of unfilled positions. While this trend is expected to continue increasing, 50% of all ranks submitted by the institutional cohort are stably attributed to roughly 42 applicants (20% of the total cohort). (Table 5)

Amid the increase in total ranks, 91% of registered programs and 93% of offered positions were filled in the MPM. In 2022, the average position that institutions appeared on applicant rank lists was 7th with, on average, only one applicant ranking any institution as their first choice. Anecdotally, most institution program directors with whom I have discussed the MPM have been pleased with the applicants matched to their programs regardless of the applicants' positions on the institutional rank list. This further emphasizes a previously stated point that institutional rank lists ought to be constructed with preference strictly in mind and not rank any individual they would be uncomfortable educating.

Evaluation of applicant quantitative rank data from 2019–2022 shows no change in the number of ranks submitted by the applicant cohort with a consistent value of roughly 2,000. This could indicate that despite the increase in institutional ranks, the number of unique applicants being ranked is not changing and it could indicate that applicants are conscientious in the ranks they submit. Contrasting institutional ranks, 50% of all ranks submitted by the applicant cohort are stably attributed to roughly 32 institutions (40% of the total cohort). This indicates that ranks submitted by applicants are better dispersed among the institutional cohort than the ranks submitted by the

EDUCATION COUNCIL REPORT, Cont.

institutions to the applicant cohort. The higher dispersion in ranks submitted by the applicant cohort is also likely driven by the high applicant-to-offered position ratio. (Table 6)

The average position that applicants appeared on institutional rank lists was roughly 5th, while on average, applicants received less than one 1st rank on institutional rank lists. Applicants can take solace in that most matched applicants are matching positions without having received a single 1st rank from any institution. This further indicates that applicants carefully review their rank lists and ensure that it reflects their true order of preference. To reiterate a point previously stated, applicants will not fall down their rank list unless either a program did not rank them, or other applicants ranked the institution and appeared higher on the institution rank list. Applicants stand to lose nothing by ranking their "reach" institutions at the top of their rank lists.

It should be noted above all else that participants of the MPM, both applicants and institutions, have conveyed a strong desire to see continued improvement and participation in the MPM. The Subcommittee on the Oversight of the MedPhys Match (SCOMM) is procedurally addressing MPM issues related to data transparency, institutional and applicant feedback from the NMS, and incorporation of better representative DEI factors in the MP-RAP. The goal for institutional and applicant feedback is to provide actionable data for institutions and applicants to improve and do so while maintaining privacy of all parties involved. The DEI initiative within MP-RAP is designed to provide accurate participant demographics and allow applicants to represent themselves accurately and safely on their application. As a group always looking to improve, SCOMM is greatly appreciative of feedback from all participants of both the MPM and MP-RAP. If you have improvements, suggestions or concerns related to the MPM or MP-RAP, please send them to SCOMM (2022.SCOMM@aapm.org) and they will be procedurally addressed. SCOMM appreciates the continued participation and support of all participants in the MPM and looks forward to the beginning of the 2022–2023 MPM season beginning Fall 2022.

Year	2019	2020	2021	2022
Registered Applicants	273 (100%)	268 (100%)	279 (100%)	264 (100%)
Viable Applicants	174 (64%)	187 (70%)	182 (65%)	180 (68%)
Matched Applicants	131 (48%)	132 (49%)	130 (47%)	133 (50%)
Registered Programs	101 (100%)	108 (100%)	105 (100%)	108 (100%)
Matched Programs	94 (93%)	98 (91%)	94 (90%)	98 (91%)
Unmatched Programs	7 (7%)	10 (9%)	11 (10%)	10 (9%)
Offered Positions	138 (100%)	143 (100%)	142 (100%)	143 (100%)
Match Positions	131 (95%)	132 (92%)	130 (92%)	133 (93%)
Unmatched Positions	7 (5%)	11 (8%)	12 (8%)	10 (7%)

Table 1
Analysis of applicants, programs and positions available within the MedPhys Match from 2019 to 2022. Roughly two-thirds of applicants were found to be *viable* (applicant ranked by at least 1 program). Roughly half of the registered applicants were matched.

	Male	Female
Applicants	172 (100%)	78 (100%)
Viable Applicants	122 (71%)	51 (65%)
Matched Applicants	88 (51%)	39 (50%)
MS	84	37
PhD	52	30
Certificate	34	10
ABR Part I - Passed	56	20
ABR Part I - Registered	57	26
ABR Part I - Not Applied	58	32
Ranks received	882	392
Ranks received per Applicant	5.1	5.0
Ranks submitted per Applicant	5.1	5.1
Average Position on Rank List	4.8	3.8
Average Rank Male vs Female	p = 0.080	
Match Rate Male vs Female	p = 0.255	

Table 2
Analysis of applicants that reported gender (n = 250) in MP-RAP in the 2021-2022 MPM season. There was a 2:1 ratio of male-to-female applicants. Female applicants were ranked higher on institutional rank lists albeit only approaching significance. There was not statistical difference in match rate between the male and female cohorts.

EDUCATION COUNCIL REPORT, Cont.

	MS	PhD	Certificate
Applicants	121 (100%)	83 (100%)	44 (100%)
Viable Applicants	77 (64%)	61 (74%)	35 (80%)
Matched Applicants	54 (45%)	51 (61%)	23 (52%)
Male	84	52	34
Female	37	30	10
ABR Part I - Passed	32	35	9
ABR Part I - Registered	62	11	9
ABR Part I - Not Applied	27	37	26
Ranks received	496	542	235
Ranks received per Applicant	4.1	6.5	5.3
Ranks submitted per Applicant	4.1	6.6	5.3
Average Position on Rank List	4.6	3.8	5.5
Average Rank MS vs PhD vs Certificate	p = 0.083		
Match Rate MS vs PhD vs Certificate	p = 0.062		

Table 3
Analysis of applicants that reported highest earned degree (n = 248) in MP-RAP in the 2021-2022 MPM season. There was a 3:2:1 ratio of MS-to-PhD-to-Certificate applicants. While PhD applicants had a better average rank on institutional lists and a higher match rate, the statistics only trended towards significance.

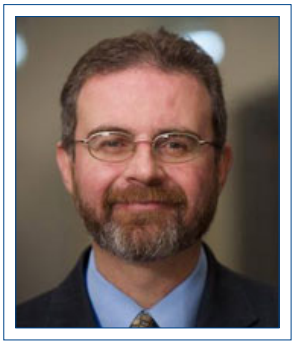
	ABR Part I Passed	ABR Part I Registered	ABR Part I Not Applied
Applicants	76 (100%)	83 (100%)	91 (100%)
Viable Applicants	67 (88%)	51 (61%)	56 (62%)
Matched Applicants	57 (75%)	36 (43%)	35 (38%)
Male	56	57	58
Female	20	26	32
MS	32	62	27
PhD	35	11	37
Certificate	9	9	26
Ranks received	607	382	286
Ranks received per Applicant	8.0	4.6	3.1
Ranks submitted per Applicant	9.9	7.5	5.5
Average Position on Rank List	5.6	4.2	4.0
Average Rank Passed vs Registered vs Not Applied	p = 0.031		
Average Rank Registered vs Not Applied	p = 0.783		
Average Rank Passed vs Registered	p = 0.010		
Average Rank Passed vs Not Applied	p = 0.029		
Match Rate Passed vs Registered vs Not Applied	p = < 0.00001		
Match Rate Registered vs Not Applied	p = 0.020		
Match Rate Passed vs Registered	p = 0.002		
Match Rate Passed vs Not Applied	p = < 0.00001		

Table 4
Analysis of applicants that reported ABR Part I Certification Status (n = 250) in MP-RAP in the 2021-2022 MPM season. While there was no statistically significant difference between average rank among those who applied and who did not apply for ABR Part I Certification, those that had passed the exam had a statistically better average rank position. When evaluating correlation between Match Rate and ABR Part I Certification, there was a correlation between all three cohorts showing statistically significant Match Rates. ■

HOW DO MEDICAL PHYSICISTS MEET THE ABMS AND ACGME CORE COMPETENCIES FOR INITIAL CERTIFICATION?

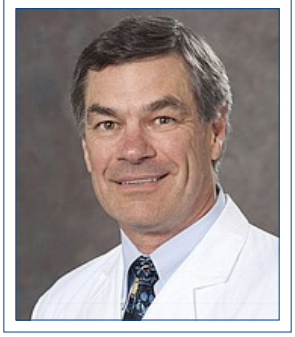
ABR UPDATE

K. Kanal, ABR Trustee



M. Podgorsak, ABR Trustee

R. Pooley, ABR Trustee



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For certification by the ABR, medical physicists are expected to meet the six core competencies published by the ABMS and ACGME. Compliance with the core competencies should continue during Continuous Certification (formerly MOC). How can medical physicists demonstrate they meet the core competencies?

In 1999, the American Board of Medical Specialties (ABMS) and the Accreditation Council for Graduate Medical Education (ACGME) adopted six core competencies for Initial Certification with the understanding that each ABMS Member Board would incorporate these core competencies into their standards for Initial Certification. The ABMS/ACGME competencies are recognized as integral to quality patient care and are common across the ABMS Member Boards while accommodating differences among the specialties. Medical physicists may be unaware of these six competencies and how they can be met.

The six core competencies are listed below. For each competency, we have quoted the ABMS text and followed that with examples of how the competency applies to medical physicists (in italics).

1. **Practice-based Learning & Improvement** refers to the candidate's ability to investigate and evaluate patient care practices, appraise and assimilate scientific evidence, and improve the candidate's own practice of medicine, the collaborative practice of medicine, or both.
   - *Testing CT equipment and determining the reason for failed or*

unexpected performance results, conducting a literature search to look for scientific evidence for a particular practice or radiation dose trend to improve patient outcome and safety, conducting literature review and developing procedures for implementing a new treatment technique such as stereotactic body radiation therapy (SBRT) or Lutetium-177 PSMA therapy.

2. **Patient Care & Procedural Skills** refers to the candidate's use of clinical skills and ability to provide care and promote health in an appropriate manner that incorporates evidence-based medical practice, demonstrates good clinical judgment, and fosters patient-centered decision-making.
   - *Estimating patient skin dose and assessing risk, troubleshooting image quality issues, optimizing treatment planning for patients undergoing radiation therapy and providing physicians with dose estimates for patient or fetus for various procedures.*
3. **Systems-based Practice** refers to the candidate's awareness of, and responsibility to, population health and systems of health care.
   - *Being engaged in the clinical practice and implementing policies and procedures that impact patient care at local and potentially national levels, understanding the capital purchase process and being involved in major purchase decisions across the enterprise.*
4. **Medical Knowledge** refers to the candidate's demonstration of knowledge about established and evolving biomedical, clinical, and cognate sciences, as well as the application of these sciences in patient care.
   - *Applying medical physics knowledge to equipment acceptance testing, radiation oncology equipment commissioning, safe handling of radionuclides, image quality evaluation, radiation dosimetry concepts, cancer risk assessments, and problem-solving issues that arise in the clinic.*
5. **Interpersonal & Communication Skills** refers to the candidate's demonstration of skills that result in effective information exchange (team member/leader, verbal, and non-verbal communication, being mindful of health literacy and listening).
   - *Effective oral and written communication with our physician colleagues, technologists/therapists, dosimetrists, and other stakeholders both internal and external to the institution; drafting clear reports; teaching medical physics concepts effectively to radiology, radiation oncology, and medical physics residents and graduate students.*
6. **Professionalism** refers to the candidate's demonstration of a commitment to fulfilling professional responsibilities; adhering to ethical principles; applying the skills and values to deliver compassionate, patient-centered care; demonstrating humanism; being sensitive to diverse patient populations and workforce; and practicing wellness and self-care.
   - *Exhibiting professional behavior and a commitment toward work responsibilities; being ethical; being sensitive to different patient populations and needs; being responsive on patient-related tasks; complying with the Health Insurance Portability and Accountability Act (HIPAA).*

Diplomates participating in Continuing Certification (formerly Maintenance of Certification) must attest annually that they are meeting the following standards: Professionalism and Professional Standing; Lifelong Learning and Self-Assessment; Assessment of Knowledge, Judgement and Skill; and Improvement in Medical Practice.

ABMS has introduced Continuing Certification standards that will be effective in 2024 and will incorporate the following: General Standards, Professional Standing and Conduct, Lifelong Learning, and Improvement in Health and Health Care. These standards represent an evolution of previous Continuing Certification standards and retain the central elements of the ABMS/ACGME core competencies. ■

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SPECIAL INTEREST FEATURE: Equity, Diversity, and Inclusion

A CALL TO UNITY AND ENGAGEMENT

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(written on behalf of EDIC)

This past June, I made the smartest accidental decision of my life by simply choosing to skip our first in-person Annual Meeting and instead going on a long overdue family vacation to see relatives I have not seen in 2.5 years due to the pandemic. I had no idea how critical this decision would be to preserving my sense of calm and peace. As you all are aware of, during that same time period, the Supreme Court's *Dobbs v. Jackson* ruling, turned our otherwise laidback and taciturn society into something I did not recognize, a group with curt email exchanges, tense online conversations and other behavior not becoming of our well-credentialed group of qualified medical physicists. We are better than this.

Although my Equity, Diversity and Inclusion committee (EDIC) and even myself were called out, we released no formal statement or comment to the membership. All AAPM members who cared to took their own time to comment as they saw fit, whether it be through our BBS thread, emails cc'd to leadership and the Board, Twitter, the Town Hall and every other method they could find. Honestly, I was and still am encouraged by the lack of fear our membership displayed in making their feelings known. Our social climate allowed for members with all kinds of viewpoints to use agency and rush boldly to leadership to ensure their voices were heard and hopefully accounted for in any formal statement on the matter. This is an example of American democracy at work and even EDI. As Americans, we are afforded the right to speak out based upon our beliefs and true inclusion, a central theme of EDI, is to ensure that all voices are heard. I am proud of our collective display of engagement as shown over the last month. It's good to speak up for oneself, but we all have to ensure that we are following the rules set up by our Ethics committee to maintain a sense of decorum and professionalism too. In the heat of the discussions, some of us crossed some boundaries and that must be kept in check. But the passion that a number of us have displayed in multiple ways, that must be channeled for the advancement of our organization.

In effect, don't just get mad, get involved! Use your energy and commitment to speak up on behalf of your community or our patients and help advance other objectives within AAPM. Go on our website and sign up for committees on the "Committee Classified" page. Reach out to me directly if there is an affinity group you feel we need to represent your viewpoint or community. Also, we are creating a Communications Coordination Committee (CCC) that will help improve transparency, communication and engagement across our organization and if you would like to help, get ready to sign up for that committee classified ad too. Far too many of us are not personally invested in the inner workings of AAPM and this leads to feelings of "leadership" not representing "us". I have heard estimates that < 30% of all members volunteer in any capacity beyond paying their dues; this must change. Everyone in leadership who is not staff is an ordinary medical physicist volunteering their time, energy, and passion above and beyond their time-consuming day jobs. All of us are AAPM. When the AAPM statement on *Dobbs v. Jackson* came out, it was not a statement formed by an inner circle or a clique alone. No, these statements were crafted with input from several sources including the elected representative Board members that each of us voted for.

Let's move beyond our disagreements and hold on much more to our dedication to our field and our patients. Trust there will be more socially-charged rulings and laws on the way, but it is up to each of us individually and collectively to decide how we move forward as AAPM. Given my nearly 20 years as a member, I know our baseline, our typical *modus operandi* so I know we will survive this, but if we want to mature and grow from here, we must be intentional. Remember that there is more that unites us than divides us. Therefore, I encourage each of us to volunteer like never before and choose to be the change that helps make our AAPM stronger and more representative of all of us. ■

SPECIAL INTEREST FEATURE: Equity, Diversity and Inclusion

HUMANITY AS CONTEXT

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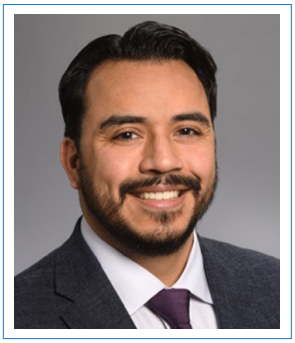


Rethinking our DEI Discourse

I believe strongly in the power of engagement; that of mutual respect for colleagues and individuals with whom our politics and opinions may be inevitably at odds. I remain convinced that honest discourse in good faith serves only to strengthen friendships and bonds that are defined by more in their substance than political ideology. Coming off AAPM's recent 2022 Annual Meeting, I am left with a sense of confidence and pride in our professional society. Gathering in person, or in '3D' as many attendees proudly proclaimed, facilitated new and refreshing engagement that I suspect most of us have been desperately seeking for the better part of the last 2.5 years. The experience reminded and provided much needed assurance of our mutual and tireless commitment both as individuals and as a collective of clinician-scientists from all walks of life toward our common mission to "Advance medicine through excellence in the science, education, and professional practice of medical physics."

Nevertheless, amidst a charged national sociopolitical climate, and times that might be generally regarded as tumultuous at best, I am also reminded that we are, as a professional society, still trying to adapt to the rapidly evolving landscape. Consequently, many are left actively seeking direction, or perhaps a guiding presence to affirm that we will not lose sight, amongst the toxicity of at times disparaging discourse, of those things that transcend debate. Perhaps most important is the common humanity that we share; the recognition and embrace of which is fundamentally at the heart of advocacy efforts towards a more diverse, equitable, and inclusive professional discipline.

Towards this end, I applaud the recent "AAPM Statement on SCOTUS Ruling on Dobbs v. Jackson Women's Health Organization" and "AAPM Statement on Future Meetings." Not for an implied political stance or ideology, but rather for the singular concentration conveyed that we should be driven by the practical human impact of any such external factors that materially reach our patients and members alike. This is invaluable, guiding affirmation that we are each entitled to protections and governance by our professional organization that seek to principally ensure the safety and wellbeing of every individual member.

Let that shared humanity be the context moving forward.

And be reminded that the scope of such protections is necessarily complex, including for example consideration for equitable access to healthcare, as well as the ongoing shared responsibility for rational and conscientious discourse. Language that purposefully seeks to vilify or direct contempt toward individuals is dangerous. It is how people get hurt, and at every turn should be unequivocally condemned at every level of AAPM governance and membership.

Affinity groups are not about exclusion of those who are not members. They are safe spaces of community and support for populations that historically and practically lack those things. They exist in part to ensure that we are equally able to thrive in this chosen profession, respective of every individual's strengths, weaknesses, barriers, and all facets of their own unique identity.

Gender neutral language and personal pronouns are not about restricting speech or marginalizing those who have never considered the significance of such things. Rather, they are simple practices of tremendous significance in acknowledgement of the respect and dignity of being that we all deserve.

Our humanity is the most fundamental tie that binds. And it is the context by which we should engage as we navigate our own unique path towards a more diverse, equitable, and inclusive profession. For everyone. ■

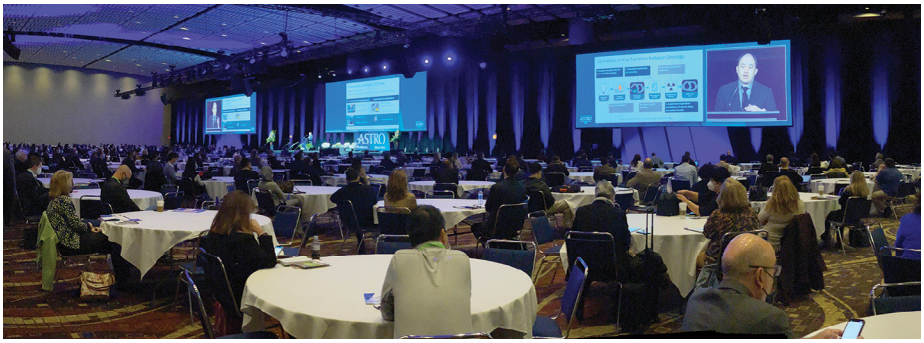
QUALITY AND SAFETY AT THE ASTRO ANNUAL MEETING: HIGHLIGHTS IN 2022

ASTRO QUALITY IMPROVEMENT

The 2022 Annual Meeting of the American Society for Radiation Oncology (ASTRO) will take place October 23-26, 2022. This is an important venue for medical physicists to connect with each other and with peers in the clinical and basic-science realm. Each year numerous quality and safety-focused sessions are presented at ASTRO, and, as the incoming Chair of ASTRO's Clinical Affairs and Quality Council, I wanted to take this opportunity to share a few things about the meeting and the offerings from the 2022 slate that are related to safety and quality.

Annual Meeting Format

The theme of this year's ASTRO annual meeting is "AI & EI: Caring for the Patient in a Wireless World." It will be a live event at the Henry B. Gonzalez Convention Center in San Antonio, with a virtual option for attendees who are not attending in person. The virtual option includes a livestream of all meeting sessions (except ticketed events), including education and scientific sessions, opportunities for MOC with live SA-CME courses and networking events. New this year, ASTRO has added expanded Cancer Breakthrough sessions, Storytelling sessions and Master Classes. While almost all the sessions are open to full meeting registrants, some ticketed events require a separate registration and may have an additional fee. Examples include the extended Master Classes which delve into important topics such as radiopharmaceutical therapy, equity, clinical trial design and professional development. In addition, the Practical Radiation Oncology (PRO) Program has returned for a fifth time. This two-day weekend program is specifically designed for physicians and physicists in community practice. This is an event that can be registered for separately, and (new this year) it is included in the full registration package allowing access for all attendees.



2021 ASTRO Annual Meeting — Chicago, IL

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Registration is now open for ASTRO 2022: AI & EI: Caring for the Patient in a Wireless World. Learn more about available registration packages for the in-person meeting and the virtual meeting here.

ASTRO staff dedicated to the APEx and RO-ILS programs are available for one-on-one meetings to discuss enrollment, participation, and any questions you may have about these quality and safety initiatives. These meetings may happen in person at the Annual Meeting or virtually at any time throughout the year. To access hands-on support, contact apexsupport@astro.org or roils@astro.org.

Safety and Quality Sessions

Sunday, October 23

Rojano Kashani, PhD, FAAPM, University Hospitals Seidman Cancer Center, moderates State of the ART: Clinical, Technical and Practical Considerations in Adaptive Radiation Therapy. The session will discuss the use of artificial intelligence for segmentation, treatment planning and patient QA, all of which are important to assuring safety, quality and efficiency in the context of adaptive radiation therapy.

Monday, October 24

Indrin Chetty, PhD, FAAPM, FASTRO, Henry Ford Hospital, and Dylan O'Connell, PhD, University of California, Los Angeles, co-moderate the Adaptive Therapy and Treatment Planning Support quick pitch session covering QA and correction pipeline for MR-guided adaptive therapy, dosimetric analysis of online adaptive radiation therapy and more.

Tuesday, October 25

Elizabeth Covington, PhD, University of Michigan Medicine, shares real world examples in a storytelling session titled "Why EQ is More Important Than IQ in Establishing a Culture of Safety." Leveraging case studies from the ASTRO and AAPM-sponsored RO-ILS: Radiation Oncology Incident Learning System®, an interdisciplinary group of presenters will highlight the importance of safety culture and techniques to apply emotional intelligence principles to error investigation, showcased through role playing.

Thomas P. Boike, MD, MMM, Genesis Care, presents "Improving Patient Outcomes Through Employee Engagement." This multi-disciplinary panel seeks to highlight the correlation between team involvement and patient outcomes and provide radiation oncology practice employees, at all levels, with a solution. The panelists will discuss these parallel relationships, emphasizing how the structure of ASTRO's APEx – Accreditation Program for Excellence® provides a framework to assess and improve aspects of the radiation oncology practice.

Wednesday, October 26

Mary Feng, MD, University of California, San Francisco, leads the session "Improving Interoperability to Mitigate Errors: Experiences from RO-ILS and IHE-RO." This session will highlight how these two programs are working hand-in-hand to identify and solve safety-related issues utilizing the highest mitigation strategies on the hierarchy of effectiveness. If you have ever wanted safety best practices translated into vendor solutions this is a must-see session.

Jean Moran, PhD FAAPM, Memorial Sloan-Kettering, and Matthew Spraker, MD, PhD, Centura Health co-moderate the session "Innovations in Patient Safety and Quality of Care." This session of proffered scientific abstracts includes innovative research on topics such as peer review, incident learning, management of cardiac devices with MR-guided radiation therapy and more.

Other Related Sessions

Sunday, October 23

Sanjay Aneja, MD, Yale School of Medicine, moderates the "Presidential Symposium: Session I – AI Opportunities in Today's Patient's Journey - Cutting Edge AI in Radiation Oncology." Topics will include the transformative role for dosimetry and physics, the use of AI-driven computational pathology and more with a moderated panel discussion from **Todd Pawlicki, PhD, FAAPM, FASTRO**, and Catherine C. Park, MD, FASTRO.

Julian C. Hong, MD, MS, University of California, San Francisco, leads the discussion in the Presidential Symposium: Session III – The "Meta" Vision – How can AI Help Solve Issues of Equity/Access/Value in Radiation Oncology." The panel will discuss how social determinants of health can inform treatment access, the incorporation of different populations in clinical trials, and the role of ethics in AI.

Monday, October 24

Julianne Pollard-Larkin, PhD FAAPM, MD Anderson Cancer Center, and **David Carlson, PhD FAAPM**, Yale University School of Medicine, co-moderate the session "Recent Advances in the Physics of FLASH Radiotherapy" discussing the aspects of FLASH dosimetry and treatment planning approaches that may achieve the maximum FLASH effect.

Tuesday, October 25

Lei Ren, PhD FAAPM, University of Maryland Cancer Center, moderates the session "Clinical Implementation and

Translation of AI in Radiation Oncology: Challenges, Pitfalls, and Promises" focused on the practical implementation and translation of AI to bridge the gap between technical innovation and clinical utility.

Wednesday, October 26

Brian HeeEun Lee, PhD, Loyola University Medical Center, moderates the session "Treatment Techniques and Quality Assurance." This session covers spatially fractionated radiation therapy, diffusing alpha-emitter radiation therapy, micro-dosimetry and more.

Ticketed Sessions

Saturday, October 22

The Radiopharmaceutical Therapy Master Class is a concentrated opportunity to discuss clinical indications and medical physics considerations specifically for Radium-223, Lutetium-177 dotatate and Lutetium-177 PSMA-617. The session will include a didactic presentation from medical physicist and radiation oncologist experts. This is a ticketed event that requires separate registration and an additional fee.

Monday, October 24

RO-ILS participants are invited to attend a closed RO-ILS User Meeting from 3:30 – 5:00 p.m. Bhisham Chera, MD, FASTRO, Medical University of South Carolina, and Jeff Olsen, MD, University of Colorado, will present de-identified RO-ILS events on assorted topics and facilitate small group discussions to identify the associated contributing factors, possible mitigation strategies and related experiences. The large group forum will continue these conversations and share lessons learned. All members of the radiation oncology team from RO-ILS facilities are welcome to attend. Applications have been submitted to offer Medical Physics Continuing Education Credits for medical physicists, continuing medicine education credits for physicians and Medical Dosimetrist Certification Board credits for dosimetrists. ■

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DEFORMABLE REGISTRATION IN RADIATION ONCOLOGY (DRRO) – INTEROPERABLE EXCHANGE OF DEFORMABLE REGISTRATIONS

INTEGRATING THE HEALTHCARE ENTERPRISE – RADIATION ONCOLOGY (IHE-RO) REPORT

S. Svensson

W.R. Bosch

Written on behalf of Unit No. 45 - IHE-RO Deformable Image Registration (DIR) (UN45)

Integrating the Healthcare Enterprise – Radiation Oncology (IHE-RO) is an effort, currently sponsored by AAPM, to improve the interoperability of systems involved in radiation oncology. Created in 2004, IHE-RO is composed of members of the radiation oncology clinical team, administrators, and industry representatives who work together to ensure a safe and efficient radiation oncology clinic. The overall aim of IHE-RO is to identify how existing industry standards, such as DICOM, HL7 and FHIR, should be effectively utilized to solve clinical issues involving connectivity and interoperability among multiple vendor systems. IHE-RO does not directly create these data communication standards, but rather assists vendors in finding a common way of using them based on specific clinical use cases.

Deformable image registration (DIR) is the process of defining a mapping between the positions in one scan and their corresponding positions in another scan. It permits point-wise merging of information in scans acquired of the same subject at different time points or of different subjects. DIR allows for alignment that accounts for changes such as organ deformation, patient weight loss, or tumor shrinkage.

DIR plays an increasingly important role in radiotherapy as we move toward the use of more than one image for treatment planning, treatment response, and treatment outcome analysis. Traditionally, the treatment plan was created based on the information in a single CT image. Nowadays, for most indications, it is standard to include information from 4DCT, MR simulations or PET acquisitions. During the treatment, cone-beam CTs or MRs are used not only for positioning but also for monitoring, and if needed, as a basis for adjusting the treatment. Functional images are used throughout (and after) the treatment to evaluate treatment response and outcome. All this has led to the need for treatment planning system vendors to include DIR algorithms and has created demand for systems dedicated to the creation, usage, and quality assurance of deformable registrations.

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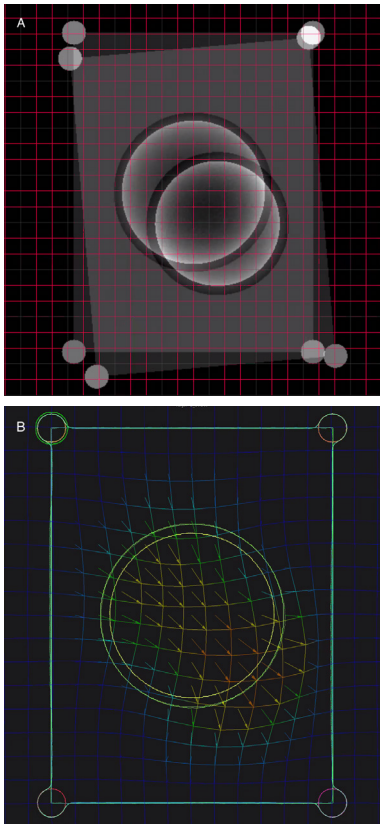

Figure 1 DRRO Test Phantom. *A: Synthetic CT Phantom consisting of a rectangular "tank" structure with an internal sphere that has been displaced in one of two CT image series. B: Display of a deformation map computed to register these images.*

In the Summer of 2018, an IHE-RO working group on deformable registration was formed with the aim of creating an IHE-RO Profile for Deformable Registration in Radiation Oncology (DRRO) that would describe how to efficiently use the DICOM standard for Deformable Spatial Registration Object (DSRO) as well as how to transfer objects (images, structure sets, dose) which have been transformed using a DIR. At that point, systems with support for DICOM import and export of DSROs could do round trips, importing their own data. However, there was only one system which could import DSROs from other systems (using a vendor-dependent import implementation). Great interest was shown both by vendors and expert users as it was evident that connectivity is important and could only be achieved by working together. As a result of the efforts of the DRRO working group, an IHE-RO DRRO profile has been created and is now in trial implementation (state 4). During a recent informal test event, several vendors demonstrated implementations for DSRO import and export which are consistent with the Profile.

The initial work of the group was to identify what DIR use cases were supported among the vendors and which optional features of the DICOM standard were supported. The group decided that the Profile should describe and support the use cases listed in Table 1.

Table 1 DRRO Use Cases

Use case name	Description	Stored
Deformable Registration Creation	A deformable registration is created based on two images in the system	Deformable Registration
Multimodality Contouring I	The images are visualized in a fusion view (based on the deformable image registration) and used to identify structures (regions and points of interest) in the system	Structure Set
Multimodality Contouring II	The deformable image registration is used to propagate structures between images in the system	Structure Set
Dose Deformation	The deformable image registration is used to map the dose from one image to another in the system	Deformed Dose
Image Deformation	The deformable image registration is used to deform an image in the system	Deformed Image
Image Distortion Correction	The deformable image registration is used to deform an image in the system. Applicable, e.g., for phantom based geometrical correction of MRI images where a displacement field which may not be patient-specific is used	Deformed Image

Based on these use cases, a set of so-called Actors that the Profile should describe was identified, see Table 2. An Actor represents the role played by a clinical system in the exchange of information. For each Actor, the Profile specifies the required DICOM attributes to be supported in imported and exported data, including DICOM derivation codes and object references.

Table 2 DRRO Actors

Actor Name	Description
Deformable Registrator	A deformable registration is created based on two images in the system
Deformable Displayer	The images are visualized in a fusion view (based on the deformable image registration) and used to identify structures (regions and points of interest) in the system
Contour Deformer	The deformable image registration is used to propagate structures between images in the system
Dose Deformer	The deformable image registration is used to map the dose from one image to another in the system
Image Deformer	The deformable image registration is used to deform an image in the system

In parallel with profile development, the group worked to create a test procedure. Since a majority of the group has been, and still are, involved in DIR algorithm development and/or DIR algorithm validation, this required a change of mind set. The purpose of IHE-RO testing was not to compare deformable registrations produced by various systems or to verify that the deformable registrations and deformed images, structure sets, and dose objects are anatomically correct. Rather, the IHE-RO test procedure is intended to verify that deformable registrations and the deformed images, structure sets, and dose objects produced in one system can be transferred to another system without loss of information. Hence, test data sets are needed for which an error in orientation and magnitude of the deformation vector field are visually easy to detect. It should also be easy to detect if the underlying rigid transform has been correctly applied. A synthetic CT phantom consisting of two CT image Series was created for this purpose. A rectangular "tank" object bordered by cylinder and spheres of varying density was present in both Series. A sphere near the center of the tank was displaced in one of the image Series. Displays of the DRRO phantom images and a deformation map computed to register them are shown in Figure 1.

In April 2022, the DRRO group held a workshop to perform informal testing with participants from Elekta, MIM, RaySearch, Varian, and BrainLab (observer). This was an important step towards a formal IHE-RO connectathon participation. During the workshop, two clinical experts, **Dan Polan, PhD**, University of Michigan, and Ben Archibald-Heeren, Icon Cancer Center, supervised the testing. The DRRO phantom and a multimodality phantom from OLS were used to test the exchange of deformable registrations and images between the Deformable Registrator and Deformable Displayer Actors. Both single-vendor (round trip) and cross vendor testing (side-by-side comparison) were performed to demonstrate that the products examined have consistent implementations of the DICOM standard for these two Actors.

We have made considerable progress, but work remains to be done. Currently, the vendors are working to add support for deformed images and dose objects in their products and incorporating derivation codes and references to the DICOM objects used to create them. Discussions are on-going on how to improve test procedures. In addition, DRRO Content Validator software is in development to assess the adherence of data produced by DRRO Actors to Profile requirements. We are planning to do another round of informal testing in late 2022 and, anticipate formal testing of DRRO in the IHE-RO 2023 Connectathon. Our hope is that this work helps to make deformable registration a standard clinical tool as, among other things, independent quantitative validation as well as multi-institutional studies are facilitated when software packages speak the same language. ■

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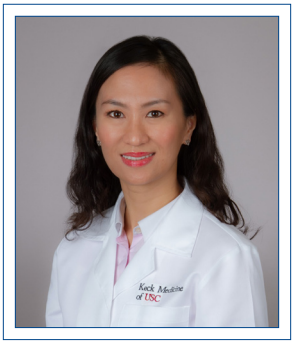
AAPM SOUTHERN CALIFORNIA CHAPTER 2022 NORM BAILY AWARDS AND MEDPHYS SLAM

SOUTHERN CALIFORNIA AAPM CHAPTER REPORT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(written on behalf of the Southern California AAPM Chapter)

The AAPM Southern California Chapter hosted its annual Norm Baily Awards and MedPhys Slam on May 24, 2022. The event was held live at the Aresty Conference Center at the University of Southern California (USC) with the option to join virtually. This was their first time holding a hybrid conference. First, the chapter officers had a board meeting to discuss the chapter business and future events, which was open to interested chapter members. Then, the conference attendees enjoyed social hour followed by a dinner in the beautiful courtyard outside the Norris Cancer Center. Finally, the students and trainees gave presentations which were live-streamed and recorded.

The Norm Baily Awards competition was open to graduate students, postdoctoral researchers, and medical physics residents from various schools around Southern California. Eleven entries were received, with five in the Graduate Student category and six in the Postdoc/Resident category. Cash prizes were distributed to the winners. In the Graduate Student category, the first-place winner was **Pavitra Ramesh** of University of California, Los Angeles (UCLA) with a presentation entitled "Dose and dose rate optimization for FLASH proton therapy with automated Bragg peak and shoot-through beam selection". Second-place was a tie: **Rachel Petragallo** of UCLA for her work "A multi-institutional, convolutional neural network-based approach to the detection of vertebral body mis-alignments in planar x-ray setup image" as well as **Michael Lauria**, also of UCLA, for his project "Automatic detection of gross setup misalignments in Cone-Beam CT guided radiotherapy using a deep-learning based error detection algorithm". In the Postdoc/Resident Category, the first-place winner was **Qihui Lyu** of UCLA for her study "Pair production tomography imaging". The second-place winner was **Changzhe Jiao** of USC for his research "Contrast-enhanced Liver MR Synthesis using gradient regularized multi-modal sparse attention fusion network".

SOUTHERN CALIFORNIA AAPM CHAPTER REPORT, Cont.

MedPhys Slam is a competition that encourages students, postdocs, and residents to build their science communication skills and explain their research to non-specialists in three minutes. Besides Ramesh and Jiao, two more contestants participated in this challenging competition. Graduate student **Junzhou Chen** of USC presented his research "Integrated multi-task MR for abdominal radiation therapy: towards adaptive planning and treatment monitoring". Resident **Talon Thompson** of Kaiser Permanente shared his work "Gastrointestinal radiation education and evaluation". After the judges scored the presentations, Pavitra Ramesh of UCLA won the Southern California Chapter MedPhys Slam.

We want to acknowledge the department of Radiation Oncology at USC Norris Cancer Hospital for kindly sponsoring the conference venue for this event. In addition, we want to thank two individual sponsors: **Dr. Shirish Jani** and **Dr. Steven Goetsch**, each generously donated $500. This student competition has a long history in Southern California. This year around 30 people attended this conference in person and more than 10 people joined virtually. This conference cannot be a success without the excellent research presentations by the students and trainees. The recording of this conference can be viewed here. ■

Photo 1: *Chapter officers joining the boarding meeting in person and virtually*

Photo 2: *Group picture of chapter members attending the AAPM-SCC 2022 Norm Baily Awards and MedPhys Slam*

Photo 3: *Chapter officers and student/trainee presenters. From left to right: Treasurer Zhilei (Julie) Shen, Awards & Nomination Committee Co-Chair Melissa Martin, Pavitra Ramesh, Qihui Lyu, Talon Thompson, Changzhe Jiao, President Jessica Clements, Education Committee Member Xiaoyu (Sherry) Liu*

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AAPM ANNUAL MEETING SUCCESS FOR WGNC

WORKING GROUP FOR NON-CLINICAL PROFESSIONALS REPORT

J. Dise

(written on behalf of the Working Group for Non-Clinical Professionals)

The Working Group for Non-Clinical Professionals (WGNC) hosted their first ever Professional Session at the 2022 AAPM Annual Meeting entitled "Excelling as a Medical Physicist Outside the Clinic." The session was a huge success in large part to the perspectives and field expertise of the panelists. **Sasa Mutic, PhD, DABR, FAAPM, Heather Whiney, PhD**, and **Young Lee, PhD** provided insights into clinical pasts, research opportunities, undergraduate and graduate faculty information, industry careers, transitions back to the clinic, and personal stories that helped highlight professional opportunities to medical physicists beyond (and even back in to!) the clinic. The session Q&A was full of great questions and discussions (and networking connections!) which continued well beyond the session itself.

Additionally, the WGNC hosted an After Hours event at a local beer garden in DC and many were in attendance to network and just chat about anything!

The WGNC plans to continue these events at the Annual Meeting and is looking to expand beyond! If you are interested in participating or assisting in any future WGNC events — including career expos, hosted webinars, virtual Happy Hours/networking, and more! — please reach out to a member of the group. ■

Christine Gnaster, MS
Radformation
Email: cgnaster@yahoo.com

INTRODUCTION SPEECH *(from 2022 AAPM Annual Meeting Awards & Honors Ceremony)*

WILLIAM D. COOLIDGE GOLD MEDAL

Jacob Van Dyk, DSc
2022 Coolidge Gold Medal Awardee

I am delighted and privileged to introduce my colleague and friend who will soon be honored as recipient of this year's William D. Coolidge award. I regret that I was unable to attend this event in person but hope that you will find my recorded presentation informative and entertaining.

I have known "Jake" for almost 50 years, dating back to the completion of his Master's degree in Physics at Western University in 1971 under the supervision of Dr. J.C.F. MacDonald — a pioneer in clinical applications of early Cobalt-60 therapy. I had just started my graduate studies in that year and read Jake's thesis on charge deposition by megavoltage photon beams. The charge detectors allowed *direct* observation of electron equilibrium in Cobalt and higher energy x-ray beams produced in an Asklepitron 35 (MeV) medical betatron. I was so impressed by the published experimental results that it set a high standard for publication of my future research.

During my subsequent PhD studies at the University of Toronto and Princess Margaret Hospital (1973-77), Jake was a role model as a dedicated highly productive clinical physicist. He was a key member of the "Johns & Cunningham" team. He exhibited a strong interest in radiation dosimetry, quality assurance of radiotherapy procedures, CT-based radiotherapy planning, and radiobiology of lung response to radiation (*circa* 1980).

Figure 1 Jake at Princess Margaret Hospital and Ontario Cancer Institute at mid-career.

Figure 2 Graduate Students and Medical Physics Residents at the London Regional Cancer Centre.

Jerry J. Battista, PhD
Emeritus Professor, Departments of Medical Biophysics and of Oncology
Western University, London CANADA
Email: j2b@uwo.ca

WILLIAM D. COOLIDGE GOLD MEDAL: INTRODUCTION SPEECH , Cont.

We were later (1995-2010) reunited as co-workers at the London (Canada) Regional Cancer Centre when I again experienced his intense drive to improve radiation therapy with higher precision. Upon Jake's arrival, our group was re-energized to develop adaptive IMRT strategies, including collaborative work with "Rock" Mackie on an early model of a tomotherapy machine.

Jake has published over 160 peer-reviewed articles attracting 12,000 citations and scoring an envious H-index of 56, matching or exceeding the productivity of full-time researchers working in academic and research institutions. He holds several patents and is the inventor of phantoms named QUASAR (an acronym that he invented meaning Quality Assurance System for Advanced Radiotherapy) marketed by Modus Medical Devices of London, Ontario. These devices are used internationally to test the accuracy of 3D imaging and radiotherapy delivery procedures.

We collaborated on the implementation of a CAMPEP-accredited residency and graduate program, hosted in Canada's first biophysics university department (Western University). We capitalized on London's exceptional cancer imaging talent at the Robarts and Lawson Research Institutes. Many of our graduates are presently influencing the field of modern radiotherapy across North America.

Figure 3 Books edited by Jake

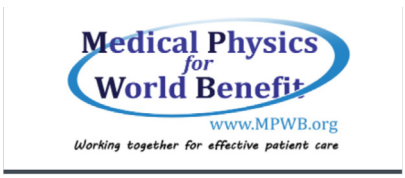

Figure 4 The web page hosting MPWB activities.

Jake's insatiable writing 'habit' has continued well into retirement years as Emeritus Professor holding an honorary doctoral degree from Western. He has edited four voluminous books on the *Modern Technology of Radiation Oncology*, exhibiting exceptional and efficient authoring skills. In addition, he has contributed to 25 other book chapters. *True Tales of Medical Physics* has just been published and it is primarily aimed at public education.

Internationally, Jake has lectured at conferences and courses in over 40 countries. The AAPM website hosts 10 virtual seminars authored by Jake. He is often invited to the IAEA and WHO, as a consultant and knowledgeable experienced advisor. His humanitarian desire to improve education programs and global access to radiotherapy has resulted in the establishment of *Medical Physics for World Benefit* (www.mpwb.org). This organization has grown tremendously in its scope of activity under his leadership. Jake has played a wide range of other leadership roles with the AAPM, COMP, CCPM, IAEA, Cancer Care Ontario (now Ontario Health), research funding agencies, and as a conference organizer.

With his long list of accomplishments, Jake has earned the title of Fellow from the AAPM, COMP, CCPM, and Institute of Physics (IOP), while being acknowledged by the IOMP as one of the 'top 50' medical physicists. He received COMP's Gold Medal for lifetime achievements across a wide continuum of consistent activity.

Allow me to divert some well-deserved attention to Jake's family. Chris has been a strongly supportive spouse throughout Jake's career with steady backing of his ongoing scientific, educational, consulting, and book-writing activities from the home. Chris often accompanies Jake to international conferences and courses, yielding an array of fond memories of travel adventures.

Figure 5 Jake and Chris in front of the Taj Mahal.

Figure 6 Chris and Jake at a 1960s hippie party and a more formal Great Gatsby dinner.

Jake and Chris also enjoyed hosting numerous musical Christmas parties with staff and students of the London cancer center and their families. In turn, they also attended social events with flare and gusto as is evident in the amusing photos above. ■

ACCEPTANCE SPEECH *(from 2022 AAPM Annual Meeting Awards & Honors Ceremony)*

WILLIAM D. COOLIDGE GOLD MEDAL

Jacob Van Dyk, DSc
Emeritus Professor, Departments of Medical Biophysics and of Oncology
Western University, London CANADA
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I would like to begin by thanking **Jerry Battista** for that wonderful introduction! Furthermore, I would like to thank him for submitting the nomination. Thank you also to the Awards and Honors Committee for selecting me for this great honor! Considering the number of high-level Medical Physicists within AAPM, receiving this award came as a real surprise to me. Of course, having received notification of this award, has caused me to pause and reflect. How could this actually happen? What has allowed me to get to this point?

As a starting point, I am a **child of privilege**. What does that mean? Through no doing of my own, I was born into a family as one of seven siblings (Figure 1). I was number five. My parents strongly encouraged us in our education. My oldest brother obtained a master's degree in Atomic Physics and got a job working with Atomic Energy of Canada Ltd (AECL), very much involved with Radiation Physics. My next sibling was my sister who obtained a PhD in Epidemiology. Next was a brother who obtained a PhD in Applied Math and Theoretical Physics along with a Post-Doctoral Fellowship at Oxford. The next brother became a veterinarian. Of course, by the time I came along, I felt that there was an unstated expectation of graduate studies … and I complied accordingly. My two younger brothers also went on to degrees in computer science and biology. This family influence was the beginning of my being a child of privilege in Medical Physics.

Figure 1. The Van Dyk siblings from oldest (left) to youngest (right) with me as fifth from left.

The next level of **privilege** came through my **immediate family** encouragement through **my wife, Christine**, who provided unwavering support throughout my career (*Figure 2*). She has been totally supportive of all my activities in Medical Physics and the various "crazy" ventures that I undertook despite the amount of family time that they absorbed. And, of course, my children, who unwittingly sacrificed family time for my professional activities (*Figure 3*). In the meantime, our family has grown (*Figure 4*).

I am also a **colleague of privilege**. When I finished my graduate studies in Medical Physics, I looked for positions all over the world including as far away as Brisbane, Australia. I was offered a position at the Princess Margaret Hospital (PMH) in Toronto, 200 km down the road. The letter of offer came from

WILLIAM D. COOLIDGE GOLD MEDAL, ACCEPTANCE SPEECH , Cont.

Figure 2. My wife Christine who provided unwavering support.

Figure 3. Our four children, Tonia, Jon, Ben, and Amy who unwittingly sacrificed family time for my professional activities.

Figure 4. The Van Dyk family in 2018. Since then, another great-grandchild has been added.

Harold Johns (the 1976 Coolidge Award winner) (*Figure 5*), which of course, I accepted readily. My immediate boss was Jack Cunningham (the 1988 Coolidge Award winner … in fact, I had the privilege of introducing Jack for that award in a joint meeting of IOMP and AAPM in San Antonio, TX) (*Figure 5*). Johns and Cunningham were world renowned not only for their developments in cobalt-60 radiation therapy but especially for their textbook entitled

WILLIAM D. COOLIDGE GOLD MEDAL, ACCEPTANCE SPEECH , Cont.

The Physics of Radiology, the textbook that we all grew up with in those days. Harold Johns and Jack Cunningham attracted many high-level physicists to the PMH. It is in this context that I was interacting with colleagues and technologies that impacted my career in a way that would never have happened elsewhere. My original intent was to get my experience in the big city of Toronto, in a big cancer therapy institution, for three years, and then to move to a city like London, Ontario. After three years at the PMH, I took a one-year leave of absence to work in Geneva, Switzerland. One of the lessons from this experience was that I learned how good I had it at the

Figure 5. Colleagues of privilege. On left, Harold Johns; center, Jack Cunningham with me at the celebration of his induction into the Order of Canada; and Jerry Battista on the right.

PMH. The net effect was that it took me 24 years to move to London, Ontario. This was largely due to the enticement of Jerry Battista (*Figure 5*). By the time I moved, both Johns and Cunningham had retired from PMH.

However, London provided new opportunities and new colleagues to work with. While I thought that my move to a smaller clinic would decrease my public profile, the exact opposite happened. Again, this emphasizes that I am a **colleague of privilege**. Furthermore, each of the locations I studied and worked at were a privilege in themselves, i.e., London, Ontario for graduate studies (1969-1971); Toronto as a career Medical Physicist (1971-1995), Geneva, Switzerland for a one-year leave of absence (1974-1975); London, Ontario as the Head of Clinical Physics (1995-2010); and Vienna, Austria, as a consultant for the International Atomic Energy Agency (2009-2011).

In summary, I had the good fortune of being in the right place, at the right time, with the right people.

How does one evaluate the influences on one's career? I am sure everyone here is aware of the H-index as a measure of the "quality" or "impact" of one's peer-reviewed publications. Jerry already introduced this in his introduction. I have developed a J-index (i.e., Jake-index) as a measure of a person's influence on my academic career. The J-index is the number of times a specific name appears on my CV. Jerry Battista's name comes out on top with 191 listings, thus, a J-index of 191. These relate to successful publications, chapters, research grants, student co-supervisions, etc. Next on the list is Glenn Bauman at 87. Glenn is a radiation oncologist and has been the Chair of Western University's Department of Oncology for 10 years. Next is Slav Yartsev who started as a research associate, became a resident and then a staff physicist. *Figure 6* summarizes the top nine on the J-index list including Vitali Moiseenko who became an AAPM Fellow at today's award ceremony. Note that many other names appear in my CV, indicating the multiple colleagues with whom I have collaborated. Furthermore, these colleagues represent a variety of professional specialties who contributed to these various research projects (*Figure 7*). **It is the interactions and contributions of these multiple individuals from multiple disciplines that has made Medical Physics so much fun!**

Collaborator	J-Index
Battista (MP)	191
Bauman (RO)	87
Yartsev (RA, Res, MP)	72
Wong, E. (PDF, Res, MP)	59
Hill (RB)	47
Craig (4th yr, MSc, PhD)	35
Keane (RO)	27
Mah (MSc, MP)	26
Moiseenko (RA, Res, MP)	23
>150 names	

Figure 6. Top nine on the J-index list. Note that more than 150 other names appear in my CV, a manifestation of the multiple colleagues with whom I have collaborated.

However, the measure of influence on my career is not only through the J-index. For example, my wife's name does not appear in my CV, yet she is my greatest supporter.

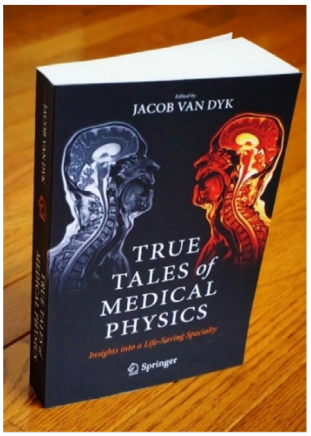


Figure 8. Recently published "True Tales of Medical Physics."

Jerry Battista mentioned my latest "crazy" venture that I undertook … the *True Tales of Medical Physics* book (*Figure 8*). This is an edited book. Eleven of the twenty-two chapters were written by Coolidge Gold Medal award winners and three by Edith Quimby Memorial awardees including this evening's winner **Martin Yaffe**, in addition to other national and international

- Medical Physicists
- Radiation Oncologists
- Research Associates/PDFs
- Radiobiologists/basic scientists
- Graduate students
- Dosimetrists/MRTs
- Hematologists
- Scientific programmers
- Biostatisticians
- RO/MP Residents
- Electronics techn/Machinists
- Co-op students

Figure 7. The various professional specialties of the colleagues involved in my career. (PDFs=post-doctoral fellows, RO=Radiation Oncology, MP=Medical Physics).

awardees. When I read about the experiences of these individuals, I am even more humbled that I should be standing on this podium this evening. Again, it demonstrates that I am a person of privilege. When I look at the common characteristics of these various individuals, I can summarize it by looking at the four Cs of the Coolidge Award in analogy with the four Rs of Radiobiology: "Repair, Reassortment, Repopulation, and Reoxygenation." The four Cs: "Communication, Collaboration, Commitment, Caring." In radiobiology they later added a fifth R, "Radiosensitivity." The fifth C I would add for the Coolidge Award is "Celebration." This is also in line with the byline for this year's AAPM meeting "Celebrating Medical Physics, Transforming Human Health."

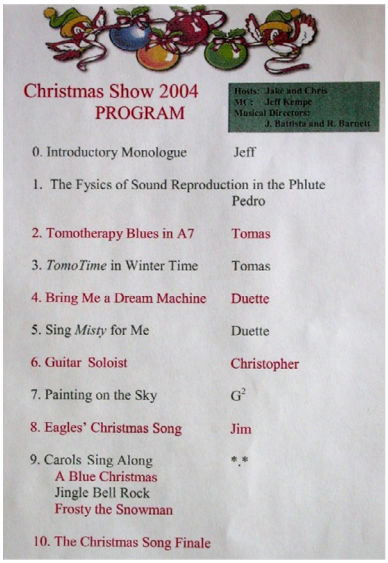
Over the years, Christine and I have hosted multiple parties at our home as the end of the year seasonal celebrations or farewell parties after students or staff were moving on to their next destination (*Figures 9-11*). The seasonal celebrations were enhanced by musical contributions organized by Jerry Battista and Rob Barnett who recruited any musicians within our department (staff or students) to contribute their talents. For many, these end of the year events were an annual highlight and provided great

WILLIAM D. COOLIDGE GOLD MEDAL, ACCEPTANCE SPEECH , Cont.

memories. As we do in Canada for our hockey stars where banners are posted in arenas for the great ones, the farewell parties often included the awarding of banners to the graduands, a copy of which is also posted in the physics lab as a long-term remembrance of their success (Figure 12).

Figure 9. Christmas party held at the Van Dyks' home in 2008 with Steve Babic, PhD student, playing the accordion along with four guitarists. Jerry Battista with his guitar is shown in the lower left.

Figure 10. Christmas party held at the Van Dyks' home in 2007 with Steve Babic, PhD student, singing a solo. This was the one and only time we had a bass violin in our house.



Christmas Show 2004
PROGRAM

Hosts: Jake and Chris
MCs: Jeff Kempe
Musical Directors:
J. Battista and R. Barnett

0. Introductory Monologue	Jeff
1. The Fysics of Sound Reproduction in the Phlute	Pedro
2. Tomotherapy Blues in A7	Tomas
3. *TomoTime* in Winter Time	Tomas
4. Bring Me a Dream Machine	Duette
5. Sing *Misty* for Me	Duette
6. Guitar Soloist	Christopher
7. Painting on the Sky	G^2
8. Eagles' Christmas Song	Jim
9. Carols Sing Along A Blue Christmas Jingle Bell Rock Frosty the Snowman	*.*
10. The Christmas Song Finale	

Figure 11. The 2004 Christmas Show program as organized by Jerry Battista and Rob Barnett and hosted by the Van Dyks.

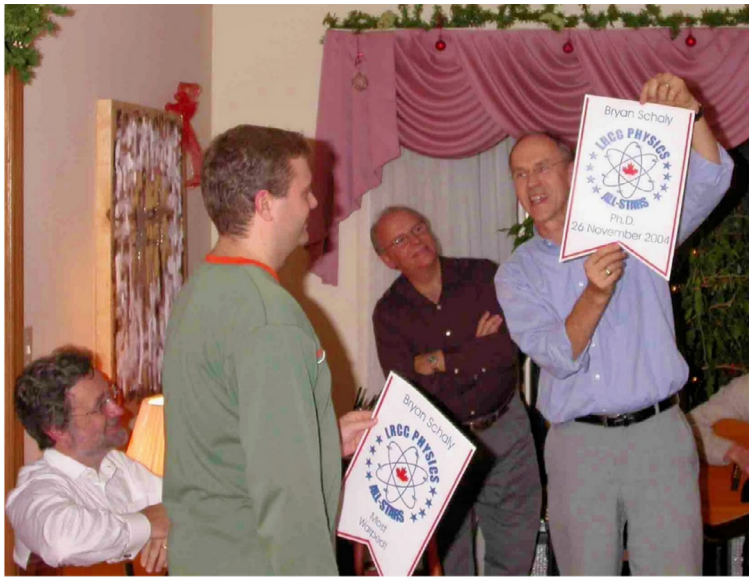


Figure 12. The presentation of the LRCC Physics All Star Banner to Bryan Schaly upon his successful completion of his PhD oral in 2004. (LRCC=London Regional Cancer Centre)

I have been a **person of real privilege** to be part of this community; to have been in the right place at the right time, with the right people; and to be categorized along with other Coolidge Gold Medal award winners. I would like to extend a hearty thank you to all who have been part of my life's journey. **It's been a real privilege!** ■

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