AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

IMPROVING HEALTH THROUGH MEDICAL PHYSICS

AAPM NEWSLETTER

November/December 2022 | Volume 47, No. 6

Special Interest Feature:

Women's Professional Subcommittee

IN THIS ISSUE:

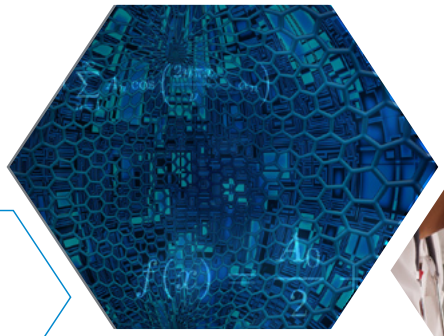
AMERICAN ASSOCIATION OF PHYSICISTS IN MEDICINE

2023 AAPM FUNDING OPPORTUNITIES

AAPM EDUCATION & RESEARCH FUND

Looking for information on AAPM grants, fellowships/mentorships?

Visit gaf.aapm.org for regularly updated information on all AAPM funding opportunities.



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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: January/February 2023
Submission Deadline: December 2, 2022
Posted Online: Week of January 2, 2023

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.

AAPM SPRING CLINICAL MEETING 2023

APRIL 1–4

ORLANDO, FL

Hyatt Regency Grand Cypress

November 1, 2022
Deadline for receipt of proffered abstracts and supporting data

December 7, 2022
Meeting Program available

January 11, 2023
Meeting Registration and Housing available

AAPM.ME/CLINICAL

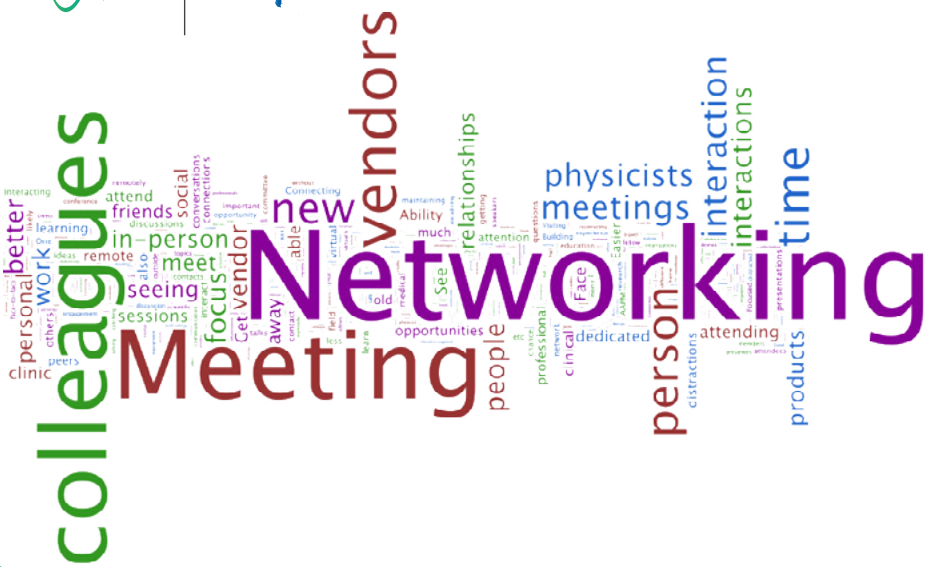
AAPM 2023

JULY 23–27 | HOUSTON, TX

65TH ANNUAL MEETING & EXHIBITION

The ART OF SCIENCE
The SCIENCE OF CARE

SAVE the DATE!



#AAPM2023

A YEAR IN REVIEW AND LOOKING FORWARD TO THE FUTURE

NEWSLETTER EDITOR'S REPORT

Welcome to this year's final edition of the 2022 AAPM Newsletter, the November/December edition. My first year as the editor has gone by in a flash, and I hope you've found the newsletters this year to be interesting and informative. In this issue, **Jim Dobbins** reflects on his year as Chair of the AAPM Board of Directors and the Board's efforts to prepare AAPM for the future. The Education Council and International Council also report on some of their key achievements this year. The rest of this issue is packed with a variety of reports from different groups, including a report from **Cynthia McCollough** on the Radiation Risk Communication Guide developed for use by AAPM members and an update on the recently launched AAPM mentorship program.

The Special Interest Group for this issue of the Newsletter is the Women's Professional Subcommittee, with its second Newsletter of the year. You can hear about the WPSC luncheon held at the AAPM Annual Meeting in July and learn about topics such as the prevailing gender pay gap, how to be an ally from **Angélica Pérez-Andújar** and **Joe Deasy**, and efforts to increase medical physics-related content in undergraduate physics curricula. Anyone can submit educational content through the Living Physics Portal mentioned in that article; please consider submitting any materials you've developed!

We hope every AAPM member finds something of interest 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 accept submissions and suggestions from all 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. Best wishes for happy holidays, and we'll see you next year! ■

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AAPM LAUNCHES NEW MENTORSHIP PROGRAM: VOLUNTEERS NEEDED!

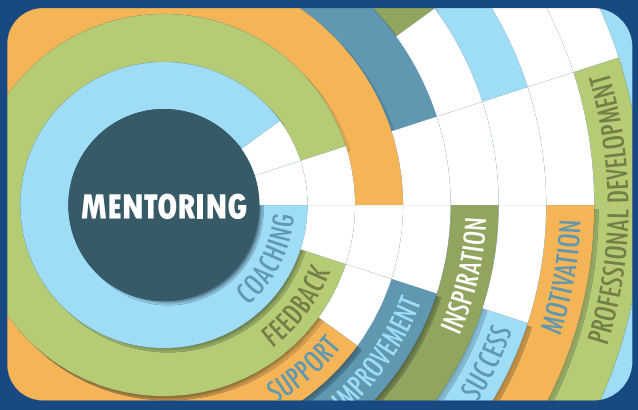
Call for Mentors to participate in the launch of the AAPM Mentorship Program! The AAPM Mentorship Program is actively recruiting volunteers from all disciplines, work environments and education levels to serve as mentors to other AAPM members. Participation is open to any AAPM member. The Program is 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.

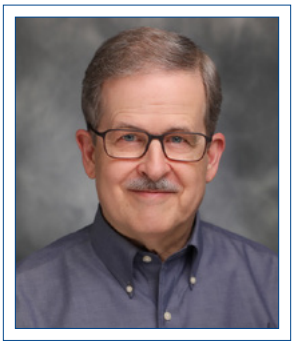
What Mentorship is Not:

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.



REFLECTIONS ON THE WORK OF THE BOARD OF DIRECTORS IN 2022 AS WE LOOK AHEAD TO THE FUTURE

CHAIR OF THE BOARD'S REPORT



Jim Dobbins, PhD
Duke University
Email: james.dobbins@duke.edu

It is always a pleasure to communicate with you — our members — through the Newsletter, in person, or by Zoom. Allow me to reflect on a few of the key activities of our Board over the past year and ways in which we are planning and preparing for the future.

First, I would like to update you on the efforts of a few of our Ad Hoc Advisory Committees, appointed by the AAPM President to work on broad and often complex issues facing our association. These Ad Hoc Advisory Committees may take a year or more to complete their work, and often extend into the year following a president's term. There are several Ad Hoc Advisory Committees that I established during my term as President last year that are still at work. I will highlight the work of a few of them.

First, the Ad Hoc Committee to Explore Future Directions in the Science of Physics in Medicine (AHFDS, chaired by **John Hazle**) is looking carefully at trends in the evolution of medicine and how we as physicists can maintain our collective impact as innovators in high-tech biomedical science. As medicine changes, our roles as medical physicists may change, and we need to identify areas in which AAPM can invest to enhance our societal impact going forward. This committee has worked over the past 1.5 years to explore a variety of areas of future direction in our field.

The Ad Hoc Advisory Committee on Gender-Neutral Language in Governance Documents (AHGNL, chaired by **Julianne Pollard-Larkin**) has completed its work to recommend replacement of gendered language with more inclusive wording in our governance documents. This work has included changes to wording in our By-Laws, Rules, and Policies that have long been needed to bring our documents up to a more inclusive standard.

The Ad Hoc Committee on the Future Format of AAPM Meetings (AHFFM, chaired by **Chris Serago**) was established to look at the challenging questions of how we as an association will adapt to the many changes in our meetings that resulted from the COVID-19 pandemic. The pandemic caused meetings of virtually every scientific society to convert to a completely virtual format for a couple of years, and while it was regrettable that we were not able to meet in person, there was benefit to be obtained from the value of online-accessible content. Many scientific societies, including those under the American Institute of Physics (AIP) federation, are trying to sort out what virtual meeting content to keep and how to adapt our meeting format now that we are again holding meetings in person. There are several challenging issues that

CHAIR OF THE BOARD'S REPORT, Cont.

come with such a process, including uncertain financial return from meetings and how to accommodate speakers who cannot attend in person. This Ad Hoc Advisory Committee includes broad representation from the many volunteer stakeholder groups and is working through a number of these issues. Ad Hoc Advisory Committees do not set policy, but rather make recommendations to the Board (or EXCOM) for consideration. The AHFFM efforts are ongoing.

There are several other Ad Hoc Advisory Committees — including some set up by our current President **Dan Bourland**, such as an Ad Hoc Advisory Committee to work on Board initiatives from this past summer's meeting — and these groups are continuing their work to address broader association goals. I am grateful for our many member volunteers who put in a substantial amount of effort on behalf of the membership on these important Ad Hoc Advisory Committees.

A second point I would like to make is to update you on some of the work of our Board in improving the effectiveness and efficiency of our efforts in strategic planning. Starting several years ago, a new Strategic Plan was developed that identified eight primary areas of organizational activity, termed our "8 Strategic Goals." Six Board "Units" (i.e., committees) were appointed to do a deep dive into these eight areas of key activity and identify areas of opportunity and challenge. These eight goals are important to our association but are not, in my view, what is traditionally thought of as "strategic planning" for Boards, where a few areas of opportunity are identified for key focus for a few years. Following best practice suggestions by McKinley Advisors, we now engage in significant strategic work only once per year — in the spring — with ongoing reporting by the Units throughout the year but in shorter form. In addition to the eight goals, we now engage the Strategic Planning committee in outlining two or three areas of key strategic focus. Recommendations for these areas of key focus are then presented by the Strategic Planning Committee to the Board for a final decision and this year the Board selected three areas of key focus for the next few years:

Longer-term areas of focus (3-5 years)

1. Articulating Our Value: Develop and implement a plan to advocate for our value as medical physicists within the healthcare enterprise "and broader medical communities."
2. Expanding our Scope and Presence in Medicine: Identify future directions in the science and practice of medical physics and consider possible areas in which AAPM could invest to enhance our success in the years ahead. Develop a plan to establish and maintain active relationships with the greater medical community beyond traditional, existing relationships for AAPM.

Shorter-term area of focus (1-2 years)

3. Coordinating Our Initiatives: Carefully evaluate areas for internal improvement and better coordination of operations across councils, groups, and staff. Coordinate, integrate, and communicate AAPM activities and initiatives from development to implementation, including science, education, practice, and administration.

I see the evolution of the Strategic Planning work of the Board over the past few years as making us both more effective and efficient at identifying areas of strategic opportunity on behalf of AAPM and our members. Changes in our strategic planning process have maintained continuity with our past efforts while adding new best practices. I am grateful for the work of our Strategic Planning Committee and the six Board Units.

In closing, I would like to mention that the writing of this Newsletter is bittersweet for me, as it is the last of my Newsletter articles during my term of Office in the rotation of President-Elect, President, and then Chair of the Board. As I conclude my term as Chair of the Board, I want to thank you for the wonderful privilege of serving our Association, our field, and you, our members. It has been an honor. I believe we have done important work – together. And as always, please reach out to me, or our President **Dan Bourland**, President-Elect **Ehsan Samei**, or President-Elect Designate **Todd Pawlicki** with any questions or comments you may have as we move ahead.

Here's to a strong future for AAPM, and all that we will continue to do together to serve faithfully as physicists in medicine for the benefit of our field and society at large. ■

INFORMATION FROM HQ

EXECUTIVE DIRECTOR'S REPORT

RSNA 2022 — *Empowering Patients and Partners in Healthcare*

Register now for the RSNA 108th Scientific Assembly and Annual Meeting, to be held November 27–December 1, 2022. The most up-to-date information on RSNA 2022 health and safety precautions and requirements can be found online.

Items of interest

- **AAPM Committee Meetings at RSNA 2022**
  The Hyatt Regency Chicago, 151 E. Wacker Drive, Chicago, IL
- **AAPM Reception at RSNA 2022 — Tuesday, November 29**
  Crystal Ballroom BC, the Hyatt Regency Chicago
- Visit AAPM at **BOOTH 1108** in McCormick Place — South Hall, Level 3
- **RSNA/AAPM Symposium: Together We Can Make a Difference**
  December 1, 11:00 am–12:00 pm CT

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

AIP Rebranding

The American Institute of Physics (AIP) and its subsidiaries, AIP Publishing and AIP Foundation, launched a new brand identity in October as part of an ongoing process to better engage the physical sciences community. A member of the federation since 1973, AAPM is one of 10 member societies representing more than 110,000 scientists, engineers, students, and educators.

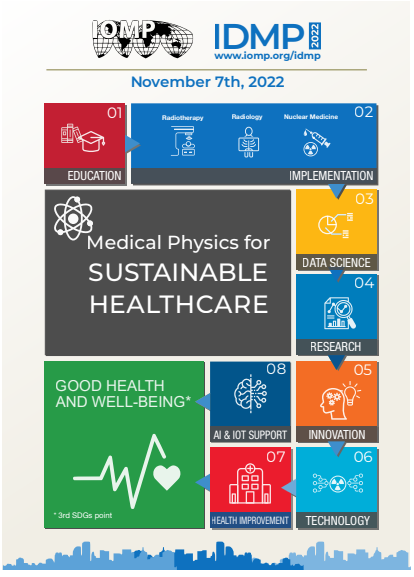
When providing an update to member society representatives, AIP Chief Federation Officer James Taylor, PhD, stated, "You will see that AIP looks and sounds different because we are different. To match our renewed commitment to our work and with a new vibrancy to our approach, we have embraced a visual identity that radiates outward and upward. One that echoes the spectrum that is the physical sciences, evokes ideas around connection, and provides a focal point."

I encourage you to watch this video and take a look at the AIP press release to learn more about AIP's transformation.

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.

Reminder: 10th International Day of Medical Physics on November 7
To raise awareness about the medical physicist's role in patient care, IOMP annually organizes 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 was born in Poland. The theme of IDMP 2022 is **"Medical Physics for Sustainable Healthcare."** Visit the IOMP website for more information and promotional resources.



Did You Know?

You can print receipts and review your subscriptions online under the "My AAPM" tab.

AAPM includes "AAPM Reports Authored" in the AAPM Membership Directory listing of each AAPM Member. Ever want to find an AAPM Report, don't remember all the details, but remember the name of one of the authors? Log in and check it out!

AAPM provides links to **ACR-AAPM Practice Parameters and Technical Standards** from AAPM's Publication page.

A vital service provided by the American Institute of Physics (AIP) is the FYI science policy bulletins focusing on the physical sciences. The sign-up is free and an easy way to stay on top of what is happening within the administration and Congress. To subscribe, go here.

AAPM's history is well documented through the photographic efforts of many members. Take some time to stroll down memory lane! There are 50,000+ pictures on AAPM's Flickr site, where you will find images grouped by event.

You can get your AAPM Swag through a partnership with Knotty Tie Company. Go online to order customized, handmade ties and scarves that incorporate AAPM's signature logo.

Have a Suggestion?

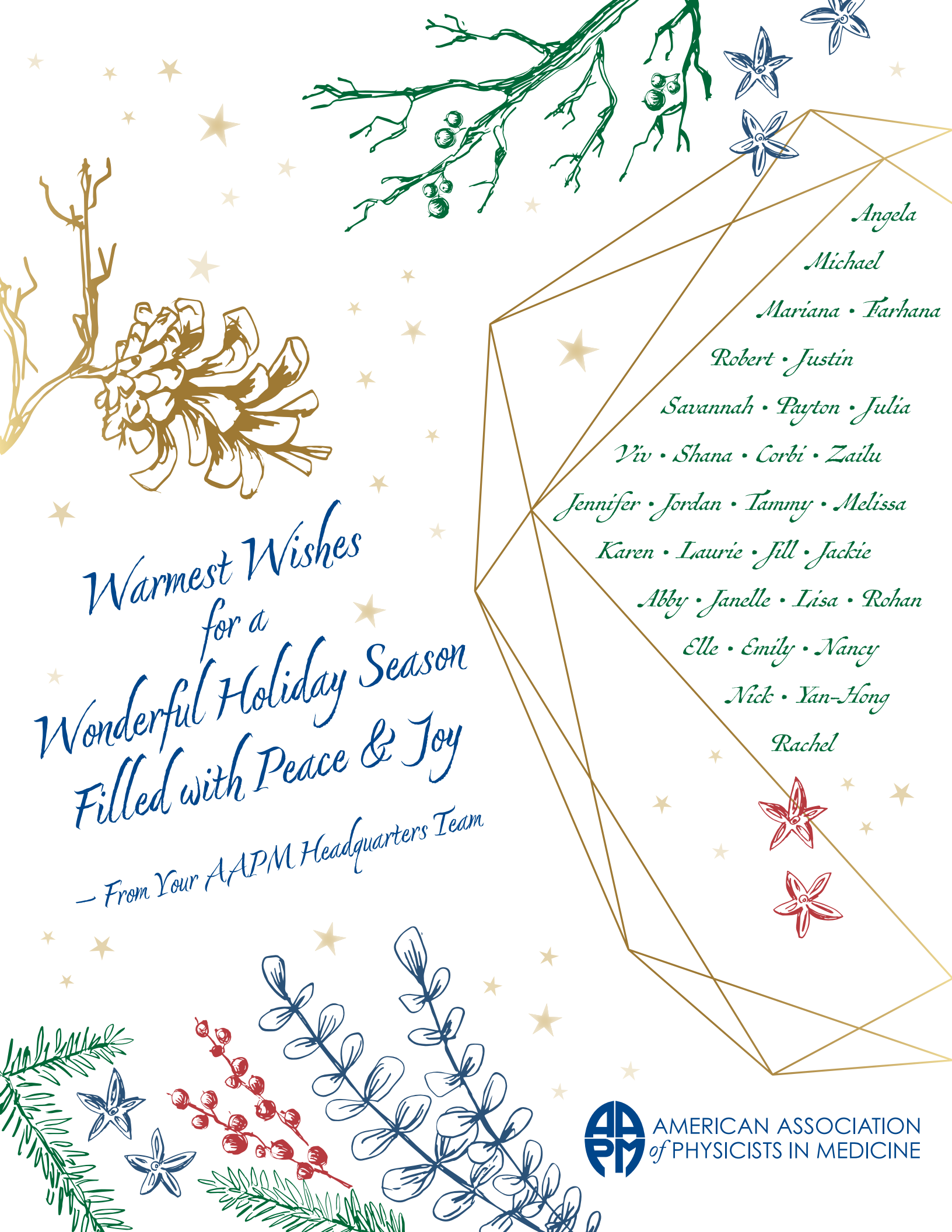
AAPM relies heavily on the hard work of its 1,700+ members serving on the 390+ AAPM groups (councils, committees, subcommittees, working groups, and task groups). I have had the privilege to serve as a member of the AAPM HQ team for 29 years now, with 19 as your Executive Director. While AAPM is an imperfect organization made up of imperfect people, I am confident your leaders, the volunteers, and the HQ team are well-intended and doing their best to serve the membership and profession at large. One way to share your constructive comments with those in decision-making roles is to 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. As the saying goes: be part of the solution, not part of the problem! Be part of the discussion — use your voice to better your organization and your profession!

Staff News

Being a part of the AAPM HQ team is a joy. I consider it an honor to lead and serve alongside a team of association management professionals committed to serving the AAPM membership, as illustrated by the years of service documented below. The following AAPM team members celebrated an AAPM anniversary in the last half of 2022. I want to thank them and acknowledge their efforts publicly.

Michael Woodward	26 years of service
Farhana Khan	24 years of service
Yan-Hong Xing	16 years of service
Tammy Conquest	15 years of service
Corbi Foster	15 years of service
Jackie Ogburn	15 years of service
Abby Pardes	9 years of service
Rohan Tapiyawala	7 years of service
Nick Wingreen	7 years of service
Janelle Priestly	5 years of service
Julia Colque	3 years of service
Jordan Kehrt	3 years of service
Justin Stewart	3 years of service
Shana Donchatz	2 years of service
Elle Thomas	2 years of service
Emily Townley	2 years of service
Payton Brown	1 year of service

The AAPM HQ will be closed Thursday, November 24–Friday, November 25, and Monday, December 26–Friday, December 30. I wish you and yours the happiest holidays and much joy and prosperity in the new year. ■


Angela
Michael
Mariana • Farhana
Robert • Justin
Savannah • Payton • Julia
Viv • Shana • Corbi • Zailu
Jennifer • Jordan • Tammy • Melissa
Karen • Laurie • Jill • Jackie
Abby • Janelle • Lisa • Rohan
Elle • Emily • Nancy
Nick • Yan-Hong
Rachel
Warmest Wishes
for a
Wonderful Holiday Season
Filled with Peace & Joy
– From Your AAPM Headquarters Team
AAPM
AMERICAN ASSOCIATION
of PHYSICISTS IN MEDICINE

OUR CONDOLENCES

Sharon K. Clayton, MEng • Charles A. Kelsey, PhD • Philip J. Manly, MS •
Lawrence S. Oresick, MS • Gary N. Poteat, MS • Arthur C. Lucas, ScD
Charles R. Wilson, PhD • Larry L. Windedahl, BSEP

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.)

AMERICAN ASSOCIATION *of* PHYSICISTS IN MEDICINE

Upcoming AAPM Webinars

- **AAPM Webinar Series on MP3.0 Transformational Medical Physics**
  Episode #16: Metamorphosis: How & When to Transform a Research Project into Commercial Product
  November 8 | 12:00–1:00 pm ET
- **AAPM Webinar Series on Spatially Fractionated Radiation Therapy (SFRT): Clinical Significance, Technical Approaches and Challenges**
  Webinar #2
  November 15 | 12:00–2:00 pm ET
- **AAPM Webinar Series on Advances in Medical Physics**
  Webinar #31: LET-Based Proton Planning - From Development to Clinical Implementation
  December 8 | 12:00–2:00 pm ET
- **Understanding 2023 Medicare Reimbursement**
  December 15 | 12:00–2:00 pm ET

Register for these webinars here under the "Webinar" tab!

AAPM SUBMITS COMMENTS ON 2023 MEDICARE PROPOSED RULES

HEALTH POLICY AND ECONOMIC ISSUES REPORT

(written on behalf of the Professional Economics Committee)

AAPM recently submitted comments to the Centers for Medicare and Medicaid Services (CMS) regarding the 2023 Medicare proposed rules for payments to hospital outpatient departments, ambulatory surgical centers, freestanding cancer centers and physicians.

Hospital Outpatient Prospective Payment System

AAPM provided written comments to CMS regarding the 2023 Hospital Outpatient Prospective Payment System proposed rule, which provides facility payments to hospital outpatient departments.

CPT 76145:

CMS proposes to maintain assignment of the medical physics code 76145 *Medical physics dose evaluation for radiation exposure that exceeds institutional review threshold, including report to APC 5612 Level 2 Therapeutic Radiation Treatment Preparation* with a 2023 proposed payment of $365.15. APC 5612 has ten, clinically similar, radiation oncology therapeutic radiation treatment codes. CPT 76145 is not a radiation oncology code used in the treatment of cancer patients. CPT 76145 describes a patient-specific peak organ dose calculation that can be utilized across a broad spectrum of interventional radiology or interventional cardiology services. The dose evaluation service is not provided as part of treatment preparation but after an interventional radiology or interventional cardiology service(s).

AAPM presented to the Hospital Outpatient Payment (HOP) Advisory Panel on August 22, 2022. Although the Panel did not accept AAPM's recommendation for reassignment of CPT 76145, the Panel did recognize that this is not a radiation oncology service and remarked on the lack of outpatient claims data for 2021 used for 2023 rate setting.

AAPM agrees with the HOP Advisory Panel that CPT 76145 meets the criteria for assignment to a New Technology APC; however, the recommended payment band may not provide appropriate reimbursement to hospitals. We believe that the current underpayment for the amount of time required for an imaging medical physicist to provide this service may result in hospitals not receiving appropriate payment for the resources used. We agree that assigning this service to a New Technology APC will allow CMS to gather claims data to price the service and assign it to the APC with services that use similar resources and are clinically comparable in future rulemaking.

Wendy Smith Fuss, MPH
Health Policy Solutions
Email: wendy@healthpolicysolutions.net

Professional Economics Committee Chair Appointed to CMS Advisory Committee

Michele S. Ferenci, Ph.D. has been selected to serve on the Medicare Evidence Development and Coverage Advisory Committee (MEDCAC). Her appointment to the Centers for Medicare and Medicaid Services (CMS) advisory committee began June 1, 2022. She will serve at least one two-year term.

The MEDCAC reviews and evaluates medical literature, technology assessments and examines data and information on effectiveness and appropriateness of medical items and services that are covered or eligible for coverage under Medicare. The Committee also advises CMS as part of Medicare's coverage evidence development activities.

Dr. Ferenci's areas of expertise include Biological and Physical Sciences, Health Economics, Clinical Trial Design and Health Care Data Management and Analysis. MEDCAC members are valued for their background, education, and expertise in a wide variety of scientific, clinical, and other related fields. CMS notes that the Agency works hard to identify persons who bring both superior qualifications and diverse points of view to make this a dynamic, cutting-edge advisory group.

AAPM supports the HOP Advisory Panel recommendation that CMS reassign CPT code 76145 *Medical physics dose evaluation for radiation exposure that exceeds institutional review threshold, including report* to New Technology APC beginning January 1, 2023. We recommend that CMS reassign CPT 76145 to APC 1510 New Technology Level 10 ($801-$900), which more closely aligns reimbursement to the current 2022 and proposed 2023 Medicare Physician Fee Schedule payment rate.

Future rate setting will depend on accurate claims data. Consider working with your administration and billing staff to initiate the use of this CPT code at your organization.

Software as a Service:

Algorithm-driven services that assist practitioners in making clinical assessments can include clinical decision support software, clinical risk modeling, and computer aided detection (CAD). CMS refers to these technologies as software as a service (SaaS). CMS is seeking comments on the specific payment approach they might use for these services and how to identify services that should be analyzed as distinct, how to identify the related costs and how the services might be paid for in other settings.

Machine learning applications (e.g., artificial intelligence) in healthcare can add significant value to the healthcare system by providing tools to help physicians provide better care for their patients. The number of artificial intelligence (AI) tools cleared by the FDA is escalating, and the vast majority are related to diagnostic imaging. To prevent an overwhelming number of potential AI codes, a limited number of CPT codes should be created with broad descriptor language that is inclusive of many clinical scenarios. The current method of creating a new code for each instance where a new AI-use case develops is not sustainable, is unnecessary given similarities in underlying technology, and is administratively burdensome.

In 2021, the American Medical Association (AMA) CPT Editorial Panel issued guidance for classifying various artificial intelligence/augmented intelligence applications. The guidance divides the work associated with the use of AI enabled medical services and/or procedures into one of three categories: assistive, augmentative, or autonomous.

AAPM supports the CPT Editorial Panel's current efforts to simplify the AI code set to a handful of broad codes. Having only a few well-crafted codes will allow for a more appropriate determination of costs and better-defined relationships with codes for professional services and imaging acquisition.

AAPM encourages CMS to pursue future software as a service code development and valuation through the AMA CPT/RUC process, which allows for transparency and dialogue with involved stakeholders.

Payment strategies for SaaS procedures across settings of care will need to account for the different costs associated with each setting. CMS should consider solutions that can be applied consistently across all services in a benefit category that would provide appropriate coverage and reimbursement for new technology across all payment systems.

Physician Fee Schedule

AAPM also provided written comments to CMS regarding the 2023 Medicare Physician Fee Schedule (MPFS) proposed rule, which impacts payments to physicians and freestanding cancer centers.

CMS is proposing payment reductions for the majority of radiation oncology services. Due to a significant reduction to the conversion factor and the transitioning clinical labor pricing update, many radiation oncology procedures will experience payment decreases of 4 percent or more in 2023. AAPM cited concerns regarding excessive payment reductions proposed for 2023, especially as many providers continue to experience economic hardships related to the COVID-19 public health emergency.

AAPM urges CMS to protect access to radiation oncology by mitigating payment cuts and ensuring that Medicare payments keep pace with inflation. We believe that underlying issues with MPFS methodology and staggered practice expense changes negatively impact access to high-value radiation oncology services.

Practice Expense:

CMS states its desire to continue to improve accuracy, predictability, and sustainability of updates to the practice expense valuation methodology to reduce the risks of possible misvaluation and other unintended outcomes. CMS is seeking comments to better understand how they might improve the collection of data inputs and refine the

HEALTH POLICY AND ECONOMIC ISSUES REPORT, Cont.

indirect practice expense methodology.

AAPM urges CMS to take caution in undertaking any significant changes to the existing methodology used to determine practice expense relative values to avoid unintended consequences, including sizable shifts in payments within or between specialties that could create access to care issues. Adequate time should be given to considering not only an appropriate replacement for the existing methodology, but also to the ultimate implementation of any changes with input from stakeholders.

It is imperative that CMS consider the unique practice expense requirements associated with the delivery of radiation oncology. The practice of radiation oncology is dependent on specialized capital equipment for radiation treatment. Equipment purchase and maintenance costs vary by practice depending on the age of the equipment, the phase of the equipment's "life cycle," and the number of depreciation years for the equipment. Professionals with specific expertise and experience in the design and construction of radiation oncology clinics must be consulted to ensure that clinics meet National Council of Radiation Protection standards, federal and state regulations, as well as local requirements. The facilities containing linear accelerators and other radiation oncology equipment require specifically designed radiation shielding within the structure of the facility (walls, ceiling, floor), using reinforced concrete, lead and other materials, which requires a significant financial investment.

Establishing payments that better reflect current practice costs would mitigate possible unintended consequences. Medicare's practice expense formula should result in payments that appropriately reimburse physicians and their practices for expenses incurred. We must provide Medicare beneficiaries access to high quality cancer care and financial protections. We also must provide equity among physicians, recognizing the variation in practice expense by specialty.

AAPM recommends that CMS not implement indirect practice expense changes to the MPFS until at least January 1, 2025, while the Agency meaningfully engages stakeholders on potential practice expense data and methodologic changes.

Rebasing and Revising the Medicare Economic Index:

The Medicare Economic Index (MEI) is an index that measures changes in the market price of inputs used to furnish physician services. These inputs are grouped into cost categories and each cost category is assigned a weight and a price proxy that CMS uses to measure changes in the price of the resources over time.

CMS proposes to rebase and revise the MEI based on a methodology that uses publicly available data sources that are more reflective of current market conditions of physician ownership practices and will allow the MEI to be updated on a more regular basis. In the 2023 proposed rule, CMS discusses a proposed policy to rebase and revise the MEI. The Agency is not proposing changes for 2023 related to this policy; however, it is seeking comments because such a proposal would result in significant redistribution of relative value units (RVUs).

AAPM agrees that the data currently used for the MEI is outdated. While we support rebasing and revising the MEI and considering new policies to improve the MPFS, the proposed MEI policy is concerning. The CMS proposed changes include utilizing more recent data from a new source that significantly changes RVU category weights. This proposal will result in significant specialty and geographic redistributions.

AAPM favors an approach that uses survey data collected for the specific purpose of collecting practice expense data by specialty and can be aggregated into physician work, practice expense, and professional liability components for purposes of updating the cost share weights needed for the MEI.

AAPM supports the CMS delay in rebasing and revising the Medicare Economic Index for calendar year 2023 and future years until better practice cost data is available.

CMS will address public comments in the 2023 final rules, which will be published on November 1st.

AAPM's complete comment letters to CMS can be found here. ■

QA FROM START TO FINISH

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ACR ACCREDITATION & MORE: INFO FOR MEDICAL PHYSICISTS

UPDATES FROM ACR HQ

Coming Soon: Updated ACR Manual on MR Safety

As MR safety continues to evolve, the ACR Committee on MR Safety is working to provide an updated ACR Manual on MR Safety with changes to address numerous MR safety-related topics and critical new information such as:

- Complete reorganization of the manual into a chapter-like format with updated references.
- Updated MR safety personnel training levels and responsibility guidance.
- Updated staffing guidance, including remote scanning.
- Reorganization of information involving staff/personnel screening, patient screening, screening with ferromagnetic detectors, risk identification and gowning.
- Expanded guidance on "full stop/final check" processes.
- New final patient/subject preparation section.
- Updated material addressing specific MRI fields and safety concerns.
- Reorganization of information involving devices, objects, equipment and implants, including recommendations of pocketless scrubs for personnel to mitigate projectile risk and tethering of external equipment in Zone III/Zone IV.
- New emergency response section (formerly included in the MR Environment section).
- Reorganization of information involving special patient population considerations, including new guidance for obese patients.
- New guidance on point-of-care MRI systems.
- New MR Risk Assessment Appendix as it pertains to management of patients with implanted devices.
- New Spatial Field Gradient Evaluation Appendix.
- New and additional figures throughout the manual to enhance important topics.
- "Key Points" boxes in each section for a quick visual of the important elements in each section.

The updated ACR Manual on MR Safety is expected to be released in the last part of 2022 and will supersede the 2020 edition of the manual and all earlier versions of the ACR Guidance Document on MR Safe Practices.

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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.

November is Lung Cancer Awareness Month! According to the CDC, lung cancer is the leading cause of cancer death among both men and women in the US. Annual screening of high-risk patients using low dose CT has been proven to save lives, and screening guidelines were recently changed to expand the eligible population. ACR provides many free resources on its Lung Cancer Screening Resources page, where ACR members can also login to access additional resources.

Changes in Supervision Requirements for Contrast Administration

The ACR Computed Tomography and Magnetic Resonance Imaging Accreditation Committees have announced that a radiologist (MD/DO) will now provide direct or general supervision of intravenous contrast material administration and ensure compliance with guidance provided in the ACR Manual on Contrast Media.

Also, in line with the ACR-SPR Practice Parameter for the Use of IV Contrast Media, and recognizing a range of responsible providers trained in and capable of managing an acute hypersensitivity reaction under general supervision of a radiologist, the following providers may provide direct supervision of intravenous contrast administration:

1. Non-radiologist physicians (MD/DO).
2. Advanced practice providers (nurse practitioner, physician assistant).
3. Registered nurses following a symptom- and sign-driven treatment algorithm.

The provider of direct supervision must be immediately available to furnish assistance and direction throughout the performance of the procedure. This does not mean that the supervising provider or radiologist must be present in the room where and when the procedure is performed. However, there should be at least one person who can recognize adverse events related to contrast media administration in attendance (in the room or in an adjacent control room) to observe the patient during and immediately after the injection and summon medical assistance as needed.

All local and state regulations regarding supervision of contrast media administration must be followed.

For more information, consult the ACR Manual on Contrast Media and the ACR-SPR Practice Parameter for the Use of IV Contrast Media. Freely available for download are Contrast Reaction Cards for Adults and Pediatrics.

CMS Further Delays Appropriate Use Criteria Program

The Centers for Medicare and Medicaid Services (CMS) announced July 7 another delay in the implementation of the payment penalty phase of the appropriate use criteria (AUC) consultation mandate for Medicare advanced diagnostic imaging services. The announcement states that CMS is "unable to forecast when the payment penalty phase will begin."

The mandate, which requires providers who order advanced diagnostic imaging services to consult a qualified clinical decision support mechanism containing AUC developed by qualified provider-led entities, passed as part of the Protecting Access to Medicare Act of 2014 (PAMA) as an alternative to prior authorization. In the payment penalty phase, a claim will be denied if the imaging provider fails to include required AUC consultation information provided by the ordering professional on applicable Part B claims.

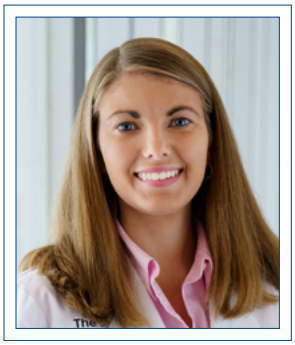
The 2022 Medicare Physician Fee Schedule final rule established a penalty phase start date of January 1, 2023, or the Jan. 1 following the end of the COVID-19 public health emergency. The recent website announcement indicates that the penalty phase will not begin on Jan. 1, 2023, even if the emergency ends in 2022. The PAMA AUC program was not discussed in the 2023 Medicare Physician Fee Schedule Proposed Rule.

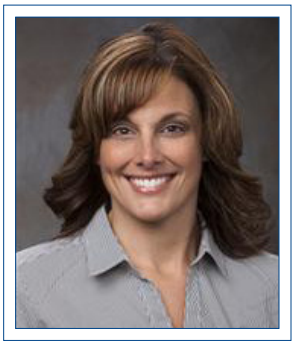
The ACR will continue to work with CMS to solve the logistical issues preventing full implementation of this important quality program that will ensure Medicare patients receive the right imaging at the right time. Questions about the PAMA AUC program may be directed to PAMA-AUC@acr.org. ■

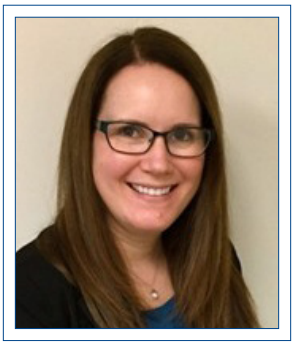
A YEAR IN REVIEW — A SUMMARY OF EDUCATION COUNCIL'S 2022 ACTIVITIES

EDUCATION COUNCIL REPORT #1


J. Prisciandaro


A. Cetnar


H. Lincoln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(written on behalf of Education Council)

It is hard to believe that another year is drawing to an end. In doing so however, each of us has the opportunity to reflect on all that has come to pass in the year. In this edition of the Education Council report, a summary of the efforts and many of the accomplishments of the committees, subcommittees, working groups, and task groups within the council is presented. Through their hard work and dedication, our committee, subcommittee, working group, and task group members continue to make contributions that make a difference for educators, students, trainees, residents, and even the public. I am grateful and feel blessed to work with the many committee and council members within Education Council, and the wonderful members of the AAPM staff. I wish you and your loved ones a happy and healthy holiday season.

***Joann Prisciandaro, PhD**, Professor, University of Michigan/Michigan Medicine, Education Council Chair*

Committee on Medical Physicists as Educators (MPEsC)

The Committee on Medical Physics as Educators is chaired by **Ashley Cetnar**.

The committee has been tasked with three charges. (1) Develop and deposit educational resources and provide support for programs that would assist medical physicists in becoming better teachers of medical physics. (2) Review models and techniques for clinical instruction in medical physics, compile best practices, and provide mechanisms for evaluation and dissemination of instructional techniques. (3) Interface with AAPM, ACGME and other educational organizations to learn from their teaching experience.

On an annual basis, the committee organizes the Innovation in Medical Physics Education symposium at the AAPM Annual Meeting. At this year's symposium, six finalists presented excellent examples of innovations in education. The Arthur Boyer Award for Innovation in Medical Physics Education was presented to **Joseph Schulz** of Stanford University for his presentation entitled: "An Affordable Platform for Virtual Reality-Based Patient Education in Radiation Therapy."

The committee has developed a presentation for a Medical Physics Educators Traveling Roadshow that will be available for chapter meetings in 2023. The hour-long presentation introduces strategies for organizing your teaching, educational technologies, and education efforts within AAPM.

The Working Group on Teaching Educators and Clinicians How, chaired by **Victor Montemayor**, is finalizing their report on Best Practices in the Teaching and Mentoring of Medical Physics.

The Teaching and Mentoring Workshops Subcommittee group led by Ashley Cetnar is currently planning the next Teaching and Mentoring Specialty Meeting in 2023 with details to come.

Continuing Professional Development Committee

The Continuing Professional Development Committee is chaired by **Holly Lincoln**. The committee is charged with ensuring sufficient professional educational activities are available to AAPM members to develop and maintain their competencies through AAPM and other organizations. In 2022, the committee has been engaged in discussions with AAPM regarding the American Board of Radiology's decision to eliminate the self-assessment continuing medical education requirement for diplomates participating in Online Longitudinal Assessment after 2022. The committee has also worked with AAPM to review virtual library presentations that were flagged as containing potential offensive comments and leadership with the committee are working with the newly formed Working Group on Management of Inappropriate Content to mitigate these issues in the future as well as within the virtual library archives. The committee has reviewed applications for AAPM's sponsorship/endorsement and support for vendor supported fellowships concerning new technologies initiating physics support. Year-to-date (as of October 7), there have been 16 meetings endorsed/co-sponsored by AAPM.

The Online Learning Services Subcommittee (RDCE) has also been actively engaged this year. The subcommittee is chaired by **Stephanie Parker**. The primary goal of the subcommittee is to provide Continuing Education (CE) and other online learning opportunities to AAPM membership and non-member subscribers. The subcommittee is responsible for the oversight of the Online Learning Center (OLC), ensuring credits offered for CE activities are approved by accreditation organizations such as CAMPEP and the ABR, managing the AAPM Virtual Library, and coordinating the creation of CE quizzes.

As of mid-September 2022, 618 standard quizzes and 116 SAMs quizzes are available in the Online Learning System. Currently, most of the quizzes in the OLC are based on presentations at various AAPM conferences. To increase the number of quizzes based on journal articles, a collaboration between the RDCE and the AAPM journals has been established. The effort, led by RDCE Therapy Vice-Chair **Eric Lobb**, allows journal readers to view which articles serve as source material for OLC quizzes and allows OLC subscribers to view which quizzes are based on journal articles. Updates to AAPM's Education Portal as well as the Wiley-hosted websites of both AAPM journals have recently been implemented as part of this initiative. The subcommittee is now taking steps to form a focused Working Group under RDCE to continue this work by first developing policies and strategies for effective utilization of volunteer resources, and then actively monitoring AAPM journals for potential new OLC content and facilitating the creation of that content.

EDUCATION COUNCIL REPORT #1, Cont.

RDCE has also received more than 300 instances of individual user feedback from OLC subscribers in calendar year 2022 (as of October 7th). RDCE has utilized this feedback to improve the quality of existing OLC quizzes, when warranted, and as an opportunity to directly communicate with subscribers to ensure they know their feedback is being monitored and addressed.

Finally, RDCE has also maintained active communication with AAPM staff regarding transition strategies and future utilization of AAPM's Learning Management System as it relates to the Virtual Library and Online Learning Center content.

Education and Training of Medical Physicists Committee

The Education and Training of Medical Physicists Committee (ETC) is chaired by **Jacqueline E. Zoberi** and **Hania Al-Hallaq** (Vice Chair) and is charged with advising Education Council and, through it, the Board of Directors, on matters related to the training of medical physicists. Within ETC there are five subcommittees, several working groups, and a task group.

The Working Group on Medical Physics Graduate Education Program Curriculum (WGRR44), chaired by **Jay Burmeister**, submitted AAPM Report 365 (Revision of Report No. 197) entitled "Academic Program Recommendations for Graduate Degrees in Medical Physics" to the *Journal of Applied Clinical Medical Physics (JACMP)*. The report has been accepted for publication and is undergoing online proofing with Wiley publishing prior to its publication.

Task Group 298 – Alternative Pathway Candidate Education and Training, chaired by **Tony Seibert,** also submitted their report to JACMP. The report has been accepted for publication and is undergoing final proofing with Wiley publishing prior to its publication.

The Awards Selection Subcommittee (AS) chaired by **Alonso Gutierrez** has restructured its graduate fellowship award from a single, $36,000 award given over a two-year period to multiple awards. Under the new structure, there are four doctoral awards (PhD or DMP) of $10,000 each given annually. Two of the awards will be given to ongoing doctoral students, and two will be given to new doctoral students. Additionally, there are three, newly added MS awards of $10,000 each. In a commitment to AAPM's strategic goal of championing equity, diversity, and inclusion in the field of medical physics, the top scored doctoral candidate that identified as a minority will be awarded the Diversity award and a minimum of one MS award will be reserved for minority applicants. In 2022, 41 candidates applied for the awards, and of the seven recipients, two were females and one was an under-represented minority. Special thanks to the former Chair of the Awards Selection subcommittee **Osama Mawlawi** and **Kenneth Hogstrom**, the Chair of the Development Committee, for their efforts in supporting the restructuring of the award.

The Undergraduate Summer Fellowship and Outreach Subcommittee (SFP) chaired by **Parminder Basran** provided summer fellowships to 16 students who were mentored by physicists at different host institutions this past summer (including one virtual fellowship). Special thanks to the Arizona Chapter for donating funds for one summer fellowship. The SFP also provided support for 10 students to attend either the Spring Clinical or Annual Meetings. A new effort for 2023 is in collaboration with International Council to pilot a global fellowship program to support two students from low- or middle-income countries with a similar program design to that of the virtual SFP.

The Students and Trainees Subcommittee (SPASC) chaired by **Phillip Wall** held their Annual Student Meeting this past summer, along with an in-person Residency Fair, the MedPhys Slam, and Student Night Out (just under 250 attendees). All Annual Meeting events went smoothly after returning to an in-person meeting after two years (the first in-person meeting for several members). Based on surveys organized by the SPASC to gauge the response of residency programs/attendees to the previous virtual fair, it was decided that another virtual residency fair would be held this September. There were over 85 registered programs (totaling over 150 virtual sessions), and over 200 registered attendees. The virtual fair was organized and managed internally by SPASC, led by **Claire Park**.

The Subcommittee on the Oversight of the MedPhys Match (SCOMM) chaired by **Joseph Dise** has completed the collection of National Matching Services (NMS) data from 2019-present and is currently working on evaluating and communicating this data to the field. SCOMM

provided a summary of the MedPhys Match in the Sep/Oct 2022 Newsletter. Also, in September, Joseph Dise spoke at a Society of Directors of Academic Medical Physics Programs (SDAMPP) coffee break, "A Peek into NMS Residency Match Data and Trends," and presented the NMS Match data and trends from 2019–2022, as well as guided a discussion of expectations, goals and initiatives to aid MedPhys Match participants. A new endeavor of SCOMM is to collect more information from NMS regarding possibilities of post-match options for applicants/programs that do not match.

The Medical Physics Residency Training and Promotion Subcommittee (MPRTP) chaired by **Hania Al-Hallaq** is the largest subcommittee in ETC with five working groups. Below is a summary of activities of these groups under MPRTP.

The Working Group on a Professional Doctorate Degree for Medical Physics (WGPDMP) chaired by **Niko Papanikolaou** and Jay Burmeister (vice-chair) have completed AAPM Report No. 373 entitled "The content, structure, and value of the Professional Doctorate in Medical Physics (DMP)". Report No. 373 is currently available online in the *JACMP*.

The Imaging Physics Residency Workgroup (IPRWG) chaired by Jonathon Nye selects annually recipients of the AAPM/RSNA Imaging Physics Residency Grant. The grant provides $70,000 in support over 2 years ($140,000 total) to fund 2 new positions in new or existing imaging residency programs (i.e., Imaging, or combined Imaging and Nuclear Medicine programs). This year's awardees were the University of Kansas and the University of Washington.

The Work Group on Periodic Review of Medical Physics Residency Training (WGMPRT) also chaired by **Jonathon Nye** is busy working on an update to Report No. 249 entitled "Essentials and Guidelines for Hospital-Based Medical Physics Residency Training Programs," which was published in 2014.

Two working groups were formed under MPRTP in 2021. The Work Group on Multi-Institutional Journal Clubs for Residency Programs (WGJCRP) chaired by **Christopher Watchman** has created multiple national journal club groups and has held 3–4 journal clubs from Fall 2021 through Summer 2022. 40% of therapy and 50% of imaging/nuclear medicine CAMPEP accredited programs are participating. Program participation is voluntary, and programs will be polled again in the future for the opportunity to participate. The second working group is the Working Group on Entrustable Professional Activities (EPAs) for Medical Physics Residents (WGEPA) chaired by **Laura Padilla**. WGEPA was formed to investigate how EPAs could be used to improve the assessment of residents; a white paper is in development.

Public Education Committee

The Public Education committee (PE) is chaired by **Daniel Scanderbeg**. The committee is charged with advising Education Council and, through it, the Board of Directors, on ways of promoting public education in matters pertaining to medical physics.

The committee successfully launched its PE website in March of this year with information about medical physics aimed at the general public along with an "Ask the Experts" section. A link to the website can be found under the Education tab on the main AAPM website. Since its launch, the committee has been discussing content and ways to publicize the website to get more traffic. They shot a short video segment at the Annual Meeting with a large and diverse group of AAPM members that goes through the alphabet from A to Z with words that are relevant to medical physics. This video is completed and will be posted on the website along with individual words broken out and linked on some of the pages to enhance content. Our group has also worked with the American Association of Physics Teachers (AAPT) to link our websites; hence, providing access to information about medical physics that teachers can use in the classroom. Another media announcement was also shown on Image Wisely. ■

URGENT NEED FOR CLINICAL PLACEMENT OF MEDICAL DOSIMETRY STUDENTS

EDUCATION COUNCIL REPORT #2

The American Association of Medical Dosimetrists (AAMD) has submitted a letter to the Training and Practice of Medical Dosimetry Subcommittee regarding an urgent need for the clinical placement of medical dosimetry students. While the AAMD believes the lack of clinical training sites for formal Medical Dosimetry may be related to the ongoing Covid-19 pandemic, there has also been a decline in the interest of clinical settings in affiliating with formal programs. This is coming at a time when the profession is facing a shortage of qualified Medical Dosimetrists to fill vacant positions. Data from a recent survey conducted by the AAMD Formal Education Committee indicates that medical dosimetry programs are receiving more applications than available clinical placements, and as a result, qualified applicants are being denied admission.

The AAMD is requesting that clinical medical physicists review the following information on requirements of a clinical training site and key highlights on the affiliation process and consider affiliating with an accredited medical dosimetry education program if they meet the requirements.

Minimum Requirements of a Clinical Training Site

Staffing: Sufficient human resources to support the clinical student by providing educationally valid clinical experiences. The ratio of students to clinical staff should always be no more than 2:1. At a minimum, the following should be available in the clinical setting.

- Dosimetrist - CMD
- Physicist - ABR
- Radiation Oncologist - ABR

Physical Resources/Equipment:

- Modern linear accelerator(s) with photon and electron capabilities
- CT simulator
- Treatment planning system with available license for student to use during standard clinical hours. Capabilities should include 3DCRT, VMAT/IMRT, Electrons & Image Registration.
- Physical space, which can be shared with other trainees (e.g., Medical Physics resident)

Required Techniques: The clinical site must be able to provide a sufficient variety and volume of procedures for competency achievement. At a minimum, the site should be able to train the students using the following techniques.

- 3DCRT with wedges or field-in-field

AAMD Formal Education Committee
Email: shiv.srivastava@commonspirit.org

EDUCATION COUNCIL REPORT #2, Cont.

- VMAT/IMRT
- SBRT
- Simultaneous integrated boost (SIB)

A list of minimum required competencies for specific anatomic sites is provided in Table 1.

Recommended Techniques: Clinical sites that can offer any of the following techniques are highly desirable.

- SRS
- Brachytherapy (HDR/LDR)
- IORT
- TBI/TSET
- Proton therapy

However, if these procedures are not available at a particular site, some programs do rotate students through multiple centers so they can get access to a variety of procedures.

Summary

The AAMD FEC wishes to thank AAPM and clinical medical physicists for their assistance with addressing the critical need for clinical training sites for Medical Dosimetry students. A list of accredited educational programs is available here. We look forward to working with you to support clinical education opportunities for students. ■

MEDICAL DOSIMETRIST CLINICAL COMPETENCIES

To the extent possible, students should complete some practice cases or competencies on actual patients.

MINIMUM REQUIRED COMPETENCIES
Head and Neck
Primary Brain (3D Conformal or IMRT/VMAT)
Primary Head and Neck IMRT/VMAT
Thoracic
Lung (3D Conformal or IMRT/VMAT)
Esophagus (3D Conformal or IMRT/VMAT)
Intact Breast Tangentials
Chest Wall Tangentials w/ Supraclavicular and Axilla Fields
Abdomen
3 or 4 Field Abdomen (e.g. Pancreas, GE Junction) (3D Conformal or IMRT/VMAT)
Para-aortic or Nodal Irradiation (3D Conformal or IMRT/VMAT)
Pelvis
3 Field Pelvis with Wedges
4 Field Pelvis
Prostate (3D Conformal or IMRT/VMAT)
Extremities
Limb Melanoma/Sarcoma (3D Conformal or IMRT/VMAT)
Brachytherapy
Interstitial Implant
Intracavitary HDR
Other
Craniospinal Irradiation
Palliative (Brain, Spine, etc.)
Lymphoma/ Mantle
Electron Beam Planning
Fusion (MRI, PET, etc.)
Re-Irradiation or Composite Planning
Simultaneous Integrated Boost (SIB)
Stereotactic Body Radiation Therapy (SBRT)

ADDITIONAL RECOMMENDED ACTIVITIES
Total Body Irradiation (TBI)
Brachytherapy HDR Procedure
Proton Treatment Planning
Stereotactic Radiosurgery
Anus or Vulva Conventional 3D Technique

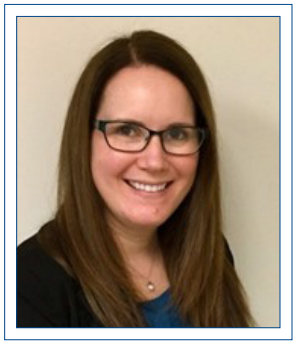
Table 1.

GLOBAL NEEDS ASSESSMENT COMMITTEE UPDATE

INTERNATIONAL COUNCIL REPORT

A. Yorke

S. Huq



S. Parker

W. Ngwa

I. Uwadiae

F. Balogun

(written on behalf of the AAPM IC Global Needs Assessment Committee)

A common African proverb says, "If you want to go fast, go alone. If you want to go far, go together". This proverb forms the framework embodied by the AAPM International Council (IC). If you dig deeper into any of the committees and subcommittees within the International Council, you will find one thing: a group of passionate and committed individuals who have roots in all seven continents and are keen to give back to their communities and international allies through education, training, research collaborations and providing equipment and devices that may be needed in regions that have fewer resources. This melting pot of individuals makes the execution of these tasks run smoothly, although the functions of these committees are constantly evolving. On this note, we put the spotlight on one of the IC committees, the Global Needs Assessment Committee (GNAC).

The GNAC is chaired and vice-chaired by **Wilfred Ngwa** and **Stephanie Parker**, respectively, with a great supporting cast of dedicated committee members. One of the committee's tasks is to advise the IC by assessing the needs of medical physicists and clinicians working outside North America (Mostly US and Canada).

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The needs mentioned by the Nigerian Association of Medical Physicists highlight the results shown in the figures from the AAPM GNAC survey and support the implementation of the International Council micro-grants to support research efforts.

INTERNATIONAL COUNCIL REPORT, Cont.

Since the establishment of the GNAC, two subcommittees have been established to focus on specific tasks. The Global Representative Subcommittee (GRSC), chaired by **Eugene Lief**, and the Equipment Donation Program Subcommittee (EDPSC), led by Stephanie Parker.

The GRSC is charged with establishing a global network of regional representatives. The GRSC has already established a network with leaders from international medical physics organizations. Through this network, members of the subcommittee have connected with leaders and members of these international organizations to determine their needs, establish professional collaboration, and assist in the dissemination of educational materials. Most recently, the subcommittee has brought some international leaders on as consultants to attend sub-committee meetings and give a direct insight into the state of affairs in their regions to foster easy professional collaboration. A recent highlight of the GRSC was the successful invitation of the president of the Federation of African Medical Physicists Organization (FAMPO), Dr. Christopher Trauernicht, who was the special guest of honor for the session held on "Addressing Global Needs in Medical Physics Support" at the 64th AAPM Annual Meeting & Exhibition.

The charge of the EDPSC is to coordinate with the International Organization in Medical Physics (IOMP) on matters associated with donating medical physics equipment to radiotherapy and imaging facilities in low-resource settings. The EDPSC strives to abide by the World Health Organization principles of good donation by providing sustainable equipment and training based on the needs of the recipients. In an effort to "bend silos" that are all too common in international work, the EDPSC endeavors to foster collaboration by partnering with other international organizations such as Rad-Aid and Medical Physics for World Benefit (MPWB) in addition to other committees within the AAPM IC. Additional information about the equipment donation program can be found on the AAPM International Portal.

As a committee, the GNAC immediately hit the ground running by putting together a regional needs assessment survey as part of the AAPM's commitment to addressing global disparities in healthcare and collaboration with international medical physics, radiology, and radiation oncology societies. It is agreed that a lot of work has been accomplished and continues in the space of global medical physics. However, there is still a lot of room for improvement. One way this can be attained efficiently and effectively is to establish baseline needs, avoid effort duplication, and directly provide the needed support through research and professional collaboration with our international partners.

As a committee, we continue our work on the needs assessment of medical physicists in LMICs and as part of our continued quest to understand and better collaborate with international organizations, we were recently approached by the Nigerian Association of Medical Physicists (NAMP). The NAMP was established in 1986 and has about 150 registered members. Although the organization is 36 years old, there has not been any significant growth due to various challenges, which include, but are not limited to, the lack of a regulatory council, lack of recognition by the government as a healthcare profession, and poor remuneration of clinical physicists compared to other healthcare professionals, the latter of which has led to the issues of brain drain and low morale amongst the local physicists. The recurring crisis of the Nigerian educational system has also contributed largely to the reduction in the quality of education of medical physics graduates. The NAMP is boldly bringing these urgent needs and is seeking the AAMP GNAC and IC's support to work with them. Below are three key needs they shared with the GNAC and are summarized below.

1. Upgrade and harmonize medical physics education to meet the demand of an increased interest in the medical physics profession and ensure the curriculum and faculty meet international standards.
2. Work on establishing a robust clinical training program to prepare for the resuscitation of the suspended residency program, which briefly started in 2012 but could not be sustained. The NAMP hopes this can be achieved through onsite and virtual training programs for clinical physicists by volunteers from AAPM.
3. The establishment of a mentorship program to help develop medical physics leaders who will be local and international champions and contribute to fighting cancer globally.

INTERNATIONAL COUNCIL REPORT, Cont.

In their own words, "This is a 'crash' interim interventional request from the NAMP to AAPM, a plan which would serve as a springboard to achieving our long-term goals." The request from our colleagues in Nigeria is echoed in the preliminary results (Figures 1 and 2) from our needs assessment survey, where over ninety percent (90.6%) of participating centers responded to supporting collaboration between their institution and AAPM. In Figure 2, over eighty percent (84.3%) of participating centers showed interest in remote training and support on treatment planning and quality assurance.

In our efforts to support radiotherapy and imaging centers with fewer resources, we implemented the AAPM International Council Collaborative Microgrants for needs assessment. An award of $6,000 was granted to six collaborative teams whose proposed work aims to advance collaboration, facilitate the implementation, and bridge the gap in global radiotherapy and imaging practice.

Since the institution of the International Council, the involvement of AAPM members internationally has grown substantially and brought awareness to the community's numerous collaborative research efforts. With this in mind, it became evident that there was a need to establish a global health track for AAPM abstract submissions. In 2022, with the efforts of the Global Needs Assessment Committee, AAPM added a proffered submission track for low-resource and affordable technologies, creating a space for individuals doing work in global imaging and radiotherapy to share their work with the community.

As a committee, we continue to expand our work by collaborating with ASTRO's Needs Assessment Committee, the RSNA and the IAEA. Because we understand the difficulties low-resource centers face in terms of vendor support and equipment availability, the GNAC will also conduct an industrial needs assessment focusing on infrastructure, education, research, and outreach.

Additionally, to facilitate and support the participation of AAPM members in the international work, this committee hopes to establish a global medical physics career development track at AAPM conferences in addition to the recently implemented proffered submission track.

In summary, the GNAC is a committee of the AAPM International Council. The charge of the GNAC is to assess needs related to the practice of medical physics outside of the United States. Through the work of the committee and sub-committees, the GNAC is conducting global needs assessment surveys, has awarded six International Collaborative Micro-Grants, is establishing connections with global medical physics organizations, is providing medical physics equipment in low resource settings, and is working on expanding global health offerings at AAPM conferences. The members of the GNAC are truly embracing the concept of going far by going together. ■

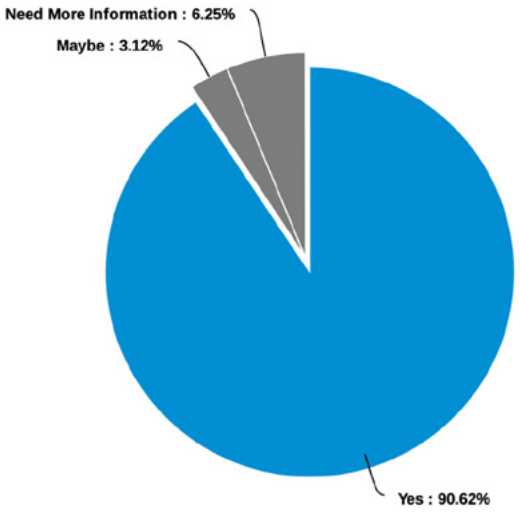

Figure 1. Institutional support for collaboration between medical physics professionals and the AAPM.

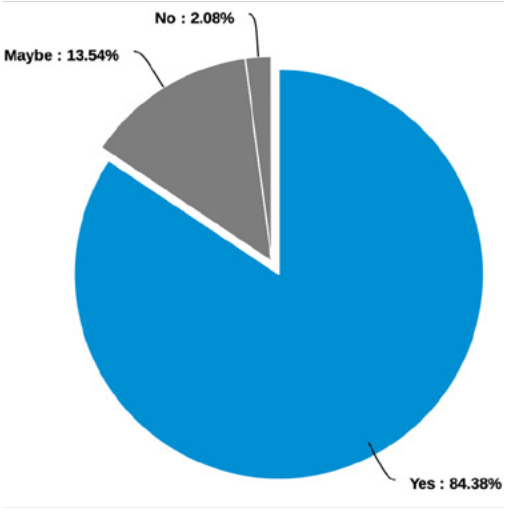

Figure 2. Staff interested in remote training/peer support on treatment planning and quality assurance.

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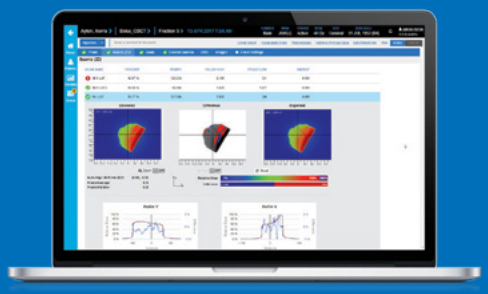

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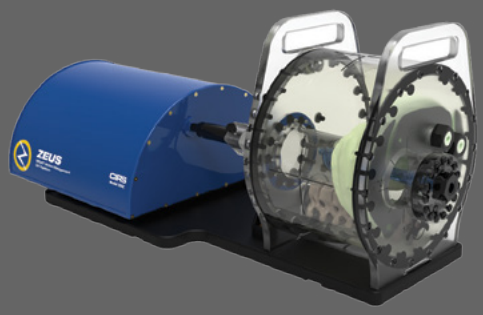

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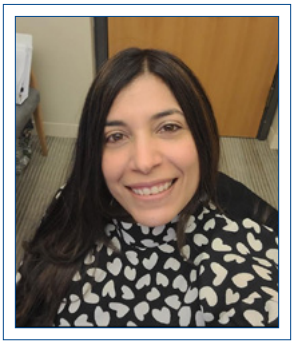
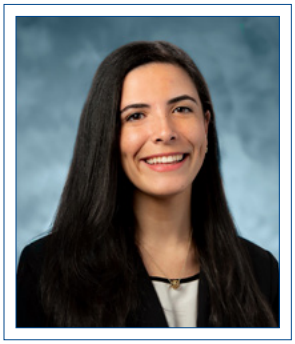
HISPANIC AND LATIN-X IN MEDICAL PHYSICS

EQUITY, DIVERSITY, AND INCLUSION COMMITTEE REPORT

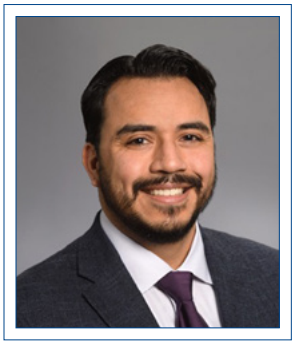


P. Galavis



S. Campelo

D. Anand



R. Castillo

(written on behalf of the Hispanic and Latin-x Medical Physics Subcommittee [HLMPSC])

From September 15–October 15, 2022, we celebrated National Hispanic Heritage Month (NHHM), whose main aim is to promote our culture, traditions, histories, as well as ongoing achievements of the members of our community to this great nation. This tradition started in 1968, (under President Lyndon Johnson), as Hispanic Heritage Week. President Ronald Reagan in 1988 enacted legislation to expand it to a month (September 15 to October 15). During this time, we celebrate the anniversaries of independence days from Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Mexico, and Chile. This year's theme: "Unidos: inclusividad para una nación mas fuerte", which translates to "Unidos: Inclusivity for a Stronger Nation".

Today, the Hispanic population in the US has reached more than 60 million, or approximately 19%, playing a major role in the U.S. population growth over the last decade (1). It is important to highlight that Hispanics represent a wide range of nationalities and backgrounds, which means that in order to appreciate and understand our experience in this country; we need to acknowledge the diversity within our community. For example, according to self-reported demographics (N=9450) of the 2020 AAPM membership, 9.1% of members identify as either Hispanic, Latin-x, or Spanish (2), encompassing many countries/territories including Argentina, Colombia, Chile, Cuba, Guatemala, Mexico, Puerto Rico, and Venezuela.

In 2021, the AAPM Professional Council approved the creation of the Hispanic and Latin-x Medical Physics Subcommittee (HLMPSC), which we represent under the Equity, Diversity, and Inclusion Committee (EDIC). We are glad to see that AAPM appreciates and values our unique identities by fostering a space that promotes sense of belonging, opportunities to share experiences,

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EQUITY, DIVERSITY, AND INCLUSION COMMITTEE REPORT, Cont.

and recognize contributions. In addition, this is not only an opportunity to connect with other Hispanic medical physicists, but to serve and support the professional progress of women, minority trainees, and junior faculty to increase diversity and professional advancement of underrepresented minorities in our field, and ultimately to contribute to the excellence of our AAPM organization.

The HLMPSC consists of 46 members (24 full and 22 guests), including the subcommittee Chair, **Richard Castillo**, Vice Chair, **Paulina Galavis**, and two student leadership representatives, **Sabrina Campelo** and **David Anand**. Our subcommittee goal is "To provide a formal group for the Latin-x and Hispanic community and allies within AAPM for mentorship, networking, outreach and bringing awareness to concerns from the Hispanic Medical Physics Community to the broader AAPM membership." Since we have members at different stages of their medical physics career (e.g., students, non-clinical professionals, and experienced faculty, some of whom hold leadership positions within AAPM or their respective institutions), we have developed an internal survey to document levels of expertise, interests, and needs of our members in terms of professional development, outreach, mentorship and sponsorship, and personal connections.

Our initial membership survey showed that of the 32 responses, 53% indicated that they were in clinical positions, with many reporting that they served in both clinical and academic capacities. The future is bright for Latinos in medical physics as well; 36% of members responding were at some stage of their academic training, including graduate education (MS and Ph.D.) and residency. Questions were also asked regarding full

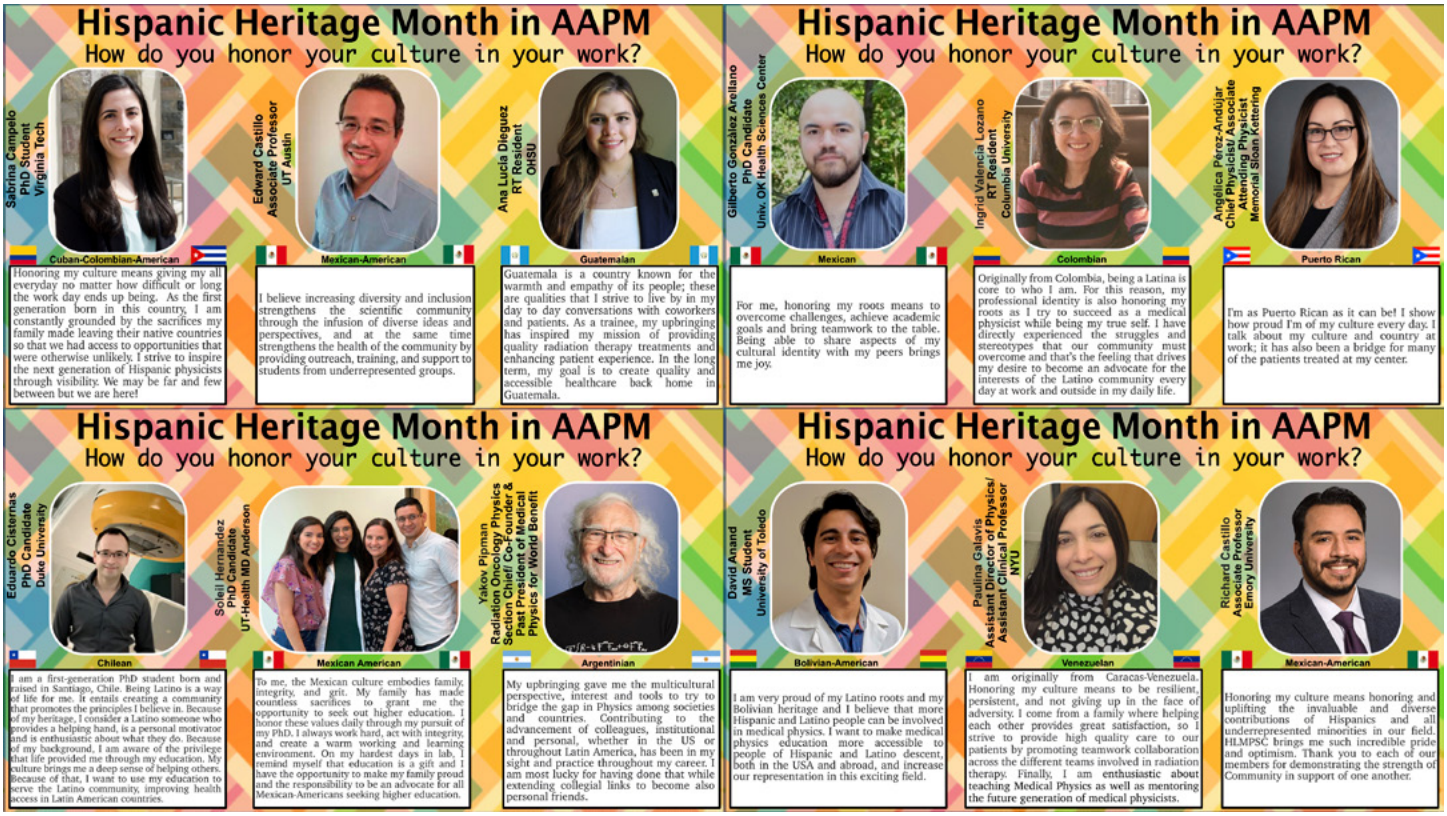

Figure 1. The celebration of the National Hispanic Heritage Month. Student leaders Sabrina Campelo and David Anand have led a social media campaign by designing a series of graphic panels to highlight the members of the HLMPSC.

EQUITY, DIVERSITY, AND INCLUSION COMMITTEE REPORT, Cont.

members' willingness to serve as mentors to students and trainees at various points throughout their career.

Based on the survey results, we are currently working to create "teams" to fulfill our mission and needs. For example, we recently formed a HLMPSC ABR Part 3 Study Prep team, which will provide structured and guided preparation for our members sitting for the ABR oral in 2023. Additionally, a mentorship team to help facilitate the transition from residency to faculty position and an education team that will provide lectures in Spanish to increase equity of education in developing countries as well as informative talks for outreach to underserved populations in the US.

The celebration of the National Hispanic Heritage Month has brought awareness and rich engagement to HLMPSC. Student leaders, Sabrina Campelo and David Anand have led a social media campaign by designing a series of graphic panels to highlight the members of the HLMPSC. These have been released on a rolling basis throughout National Hispanic Heritage Month on our official Twitter account (@AAPM_HLMPSC) as seen in figure 1. There is more to be done and we cannot wait to share with all of you our stories and successes porque Unidos somos una nación mas fuerte (because Unidos: Inclusivity for a Stronger Nation).

If you are reading this article and are wondering how to join the HLMPSC, visit AAPM links below:

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Guest Member ■

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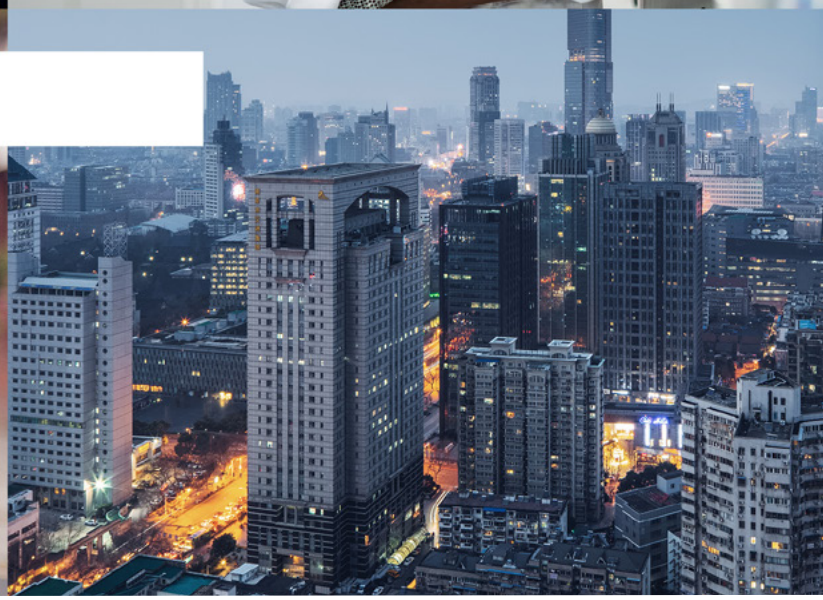

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SPECIAL INTEREST FEATURE: Women's Professional Subcommittee

2022 AAPM WPSC LUNCHEON

Samantha Hedrick, PhD | Thompson Cancer Survival Center and Covenant Health
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The AAPM Women's Professional Subcommittee (WPSC) hosted its annual Women Physicist's Luncheon at the 2022 Annual Meeting in Washington, DC. The event marked the first time in three years that women in medical physics could meet face-to-face and share thoughts and a delicious meal. The luncheon was sold out, bringing together over 200 women and allies. Thanks to generous vendor sponsorship and supplemental donations from several luncheon attendees, the WPSC was able to refund the ticket price for every student and trainee, allowing them to attend the luncheon at no cost. The goal of this year's luncheon was to promote discussions and allow networking within the community of women physicists.

The luncheon kicked off with a message from AAPM President **Dan Bourland**, welcoming everyone to the luncheon and back to in-person meetings. He acknowledged each of the women in leadership roles within AAPM and acknowledged the women awarded as fellows during the previous evening's award ceremony. Next, **Kristi Hendrickson**, chair of the WPSC, introduced the format of the luncheon. Each table had a moderator and a list of questions for the attendees at their table to discuss. The four questions were:

1. Introduce yourself and tell us about a professional accomplishment you're proud of from the past year and a goal for the next year.
2. What pandemic changes have become more permanent for you in regard to work, and how has it impacted your work/life balance (remote work, increased flexibility, or increased burden, etc.)
3. Do you feel supported and accepted at work, and that your contributions are seen and valued? If so, what creates that environment for you? If not, what would need to change to make the environment more welcoming?
4. Building Up the Women Around You/Lifting up the Next Generation of Women – what can we do now to both attract more women into the field and make the field more welcoming to women?

Kristi started everyone off with the first question and conversations ensued. After about 15 minutes, Kristi prompted the group to move on the next question, and then on to the third. Conversations were going so well at each table, most found it difficult to move on. So much so, that the fourth question was abandoned in favor of sharing each table's experiences with the group. Several table leaders shared not only their discussions, but also the diversity of attendees at their table. It seems that nearly every table included students, residents, vendors, and experienced physicists both in imaging and therapy. This was an unintentional arrangement but one that reflected well on the women in our community.

Thanks to generous vendor sponsorship and supplemental donations from several luncheon attendees, the WPSC was able to refund the ticket price for every student and trainee, allowing them to attend the luncheon at no cost. The goal of this year's luncheon was to promote discussions and allow networking within the community of women physicists.

The opening question was an opportunity to get to know each person at the table, beyond their name and affiliation. At my table, specifically, the accomplishments ran the gamut from passing the ABR part 3 exam and becoming certified to publishing a paper to commissioning a new modality. The goals all seemed to be centered around "getting back to normal" after the pandemic. One woman wanted to get back to traveling and seeing others in the community, another wanted to get back to life after the

2022 AAPM WPSC LUNCHEON, Cont.

boards, and another wanted to focus on standardizing her clinic after the pandemic upset normal workflows.

For the second question, a common theme that most groups shared was the challenge of remote work and always having to be "on", never getting to unplug from work. While the pandemic allowed more flexibility with remote work, with that came the expectation that you're always available to work. In response to the third question, the feelings were highly variable; some felt that they were welcomed, accepted, and heard, while others continue to face challenges based on their gender. One point that many tables expressed was the difference between feeling supported and accepted by your boss versus by your peers, and how managing those relationships can be very different.

Other points that came out of the table discussions included mentoring opportunities and a request for a formal process to foster these mentor/mentee relationships. It was immediately brought up that AAPM has developed this program and would be rolling it out very soon, allowing physicists to sign up as mentors, develop a list of expectations, then allow mentees to choose their mentor. Another announcement was regarding the Medical Physics Leadership Academy (MPLA) and the resources available on the website. A physicist handed out fliers, inviting attendees to sign up for the MPLA journal club and cohort program, which was currently recruiting for the next year.

Jen Pursley, vice-chair of the WPSC, closed the session, thanking the vendors and the rest of the WPSC.

The networking was clearly a success, as each table lingered to chat further and even take photos together, sharing cards and contact information.

The successful luncheon was organized by **Lauren Long**, with contributions from other members of the Luncheon Working Group and WPSC, as well as AAPM staff. The WPSC would like to thank the vendors for their generous support, including Platinum Sponsors: Canon, Imalogix, and Varian, Silver Sponsors: Elekta, PhantomLab, RaySearch Laboratories, Radcal, and Northwest Medical Physics Center, and Bronze Sponsors: Accuray and Sun Nuclear.

Please join us next year for the Women Physicist's Luncheon at the 2023 AAPM Annual Meeting. Remember to register early; the event always sells out quickly. ■

SPECIAL INTEREST FEATURE: Women's Professional Subcommittee

EDI AT EVERY LEVEL WITHIN AAPM

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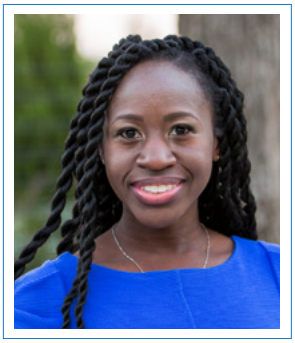
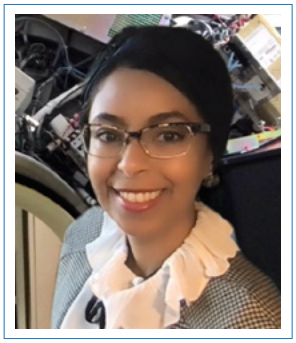


J. Pollard-Larkin



G. Aldosary

(written on behalf of EDI Committee)

Equity, diversity, and inclusion (EDI) has been at the forefront of discussions in our community for many years. Recently, our society successfully voted by a margin of 72.9% to 27.1% in favor of replacing the original gender-specific language in AAPM's governance documents to gender neutral language. During the last three years, our society has undergone a complete overhaul of its EDI goals and initiatives. Most importantly, we have elevated the work of EDI from subcommittee status to a full EDI committee (EDIC) under the Professional Council. One main goal of the EDIC is to educate our entire organization on EDI. To this end, we have hosted twenty AAPM Annual Meeting oral presentations discussing various topics in EDI and health equity over the last two years alone. Our medical physics community is becoming increasingly aware of the importance of EDI and our recent vote on gender neutral language is one piece of evidence of how far our community is evolving and embracing EDI concepts and putting them into practice. In fact, many of our AAPM members realize that fostering EDI among our teams is not a luxury, but necessary to improve productivity, innovation, workplace resilience, collaboration, belonging, and in preventing burnout. Particularly, as we move forward with the lessons exchanged during several formal and informal member-led discussions during the pandemic.

Many of us are inspired to adopt EDI principles and programs at our home institutions; however, it may seem unclear, and perhaps even overwhelming, to get started. With this in mind, the EDIC hosted a two-part session on "Advancing EDI at Every Level" at the 2022 Annual Meeting. The session covered several topics: "Overview of Diversity and Inclusion Subcommittee (DISC) Activities" led by **Richard Castillo**, "The Evolution of AAPM Membership Since the Mid-20th Century: A Gender Focused Examination" led by **Kelly Paradis**, "So You Want to Make Your Environment More LGBTQIA+ Inclusive" led by **Victoria Ainsworth**, "Medical Physicist Role in Increasing Inclusion and Belonging at the Workplace" led by **Andrea Molineu**, "Your Role in Advancing Women in Leadership" led by **Lizette Warner**, PhD, and "How to Set up a Sustainable and Impactful EDI Program with Your Team" led by **Ghada Aldosary**.

We must not rely on underrepresented groups or racialized minorities to do the actual work (i.e., alleviating the minority tax), and we must all practice collective learning, humility, exchanging resources, and collaborate in advancing EDI in our profession.

Dr. Castillo covered all of the new roles and activities being organized by DISC (formerly the Women and Minority Subcommittee, WMRSC), including the Diversity through Recruitment Education and Mentoring (DREAM) summer research program that has been instrumental in providing underrepresented undergraduates with their first taste of Medical Physics research since 2006.

Dr. Paradis detailed the changing representation of women amongst our membership over the last several decades. Her work highlighted a need to understand why the high proportion of women trainee members

EDI AT EVERY LEVEL WITHIN AAPM, Cont.

has yet to substantially influence the proportion of women members at the full membership status.

Graduate student researcher Victoria Ainsworth explained how individuals and organizations could make their workplaces more inclusive for LGBTQIA+ colleagues.

Dr. Andrea Molineu helped define what our individual roles as medical physicists is within inclusion and belonging. She reminded us that even if we are not the leaders of our centers, we can still be the leaders in our workplace at making everyone feel valued, seen and heard. Dr. Lizette Warner provided advice on how to encourage the success of women medical physicist leaders within our workplaces.

Lastly, Dr. Aldosary provided a framework for how to make a program's EDI initiatives successful and impactful. In this talk, which was presented in her stead by Dr. Molineu, Dr. Aldosary summarized some of the primary challenges faced by institutions looking to adopt an EDI program, and provided strategies for how to overcome these challenges. She began by showing how cultural humility can be a powerful tool in EDI discussions, specifically as we learn about and deconstruct our own biases. She shared how cultural humility also means that no one gets it right all the time, and, how by accepting this fact, we leave space for continuous learning and growth.

Dr. Aldosary then provided three models for setting up an EDI program and highlighted examples of how they have been adopted at different institutional levels (executive level, departmental level, and teams level). For teams who may not have the resources to set up a full program, she provided examples of feasible and practical EDI initiatives that can be implemented by any medical physics department or institution. To conclude, she underlined the importance of how we must not rely on underrepresented groups or racialized minorities to do the actual work (i.e., alleviating the minority tax), and how we must all practice collective learning, humility, exchanging resources, and collaborate in advancing EDI in our profession.

"Advancing EDI at Every Level" reinforced the importance of EDI and provided a means to connect and unite all our members and advance our specialty as we promote talent indiscriminately from all aspects of our membership. The ultimate goal of our EDI efforts is to ensure that each and every member of AAPM feels valued, respected, seen, and heard. Following the annual meeting, we have recently unveiled the "EDI Comments, Questions or Concerns" box on the aapm.org site where AAPM members can provide anonymous feedback on EDIC's EDI efforts. AAPM members can access the comment link by looking for the announcement under "What's New" on the aapm.org homepage and clicking "EDI Comments, Questions or Concerns?". Members are invited to let us know what we are doing well and provide constructive advice to help us improve with each year.

We look forward to hearing from you as we strive to improve EDI for all our members. ■

SPECIAL INTEREST FEATURE: Women's Professional Subcommittee

ALLYSHIP: A CONVERSATION WITH DR. JOSEPH DEASY

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Physics has never been a field where you usually see many women and minorities, and the scenario is similar in our field of Medical Physics. Many of us have been lucky to encounter allies throughout our careers and lives. **Joseph Deasy** is known for being an ally and advocate of minorities and women in the field. I still remember the first time I saw a picture of Dr. Deasy's group; it was such a diverse group! As a new member of the Medical Physics Group at Memorial Sloan Kettering, MSK, I have seen and experienced Dr. Deasy's commitment to equity, diversity, and inclusion (EDI) and the advancement of women and minorities in the field.

Since 2010, Dr. Joseph O. Deasy has been the Enid A. Haupt Chair in Medical Physics and the Chair of the Department of Medical Physics at MSK. The MSK Department of Medical Physics, one of the world's oldest and largest medical physics groups, conducts research and provides clinical support for radiological and molecular imaging, radiotherapy, all aspects of radiation safety, and biomedical engineering. Dr. Deasy also leads the Predictive Informatics Service within the Department of Medical Physics, which focuses on using advanced mathematical, statistical, and artificial intelligence methods to support cancer research and treatment. He has been the Principal Investigator of several NIH research projects, is the co-author of about 280 peer-reviewed publications and co-leads the Mathematical Oncology Initiative funded by the Breast Cancer Research Foundation and the Simons Foundation. Dr. Deasy came to MSK from Washington University in Saint Louis, where he was a tenured Professor and the Director of the Division of Bioinformatics and Outcomes Research (Department of Radiation Oncology). He received a PhD in Physics and Astronomy from the University of Kentucky in 1992 under the mentorship of Marcus McEllistrem. He was a National Cancer Institute-supported Postdoctoral Fellow in Medical Physics at the University of Wisconsin-Madison, under the mentorship of **Rock Mackie**, and is a Fellow of the American Association of Physicists in Medicine.

I recently had a conversation on allyship with Dr. Deasy, where we discussed several important aspects involving women in leadership. He started the conversation by discussing the lack of women in leadership that he has witnessed during his career of 35 years. He mentions that many of the changes happening in MSK leadership are a consequence of the work of Dr. Lisa M. DeAngelis, MSK's Physician-in-Chief and Chief Medical Officer. According to Dr. Deasy, the lack of women in leadership results from the highest leadership level still being male dominated.

I recognize the quality of the contribution of many women that were probably not given the stage time that other men were getting. The perceptiveness of their thinking and their comments and contributions were often just better. Over time I learned that there is a differential grade of how women are graded vs. how men are graded. I've become more enlightened over the years.

"Many of the skills needed to be a good medical physicist, including social awareness, empathy, and the willingness to deal with the emotions we all have in our challenging work lives, are traditionally thought of as female virtues. I don't think that some of the men in the field understand how valuable these skills are." We discussed how empathy in many instances is used against women, especially in leadership positions. He adds that this "is ironic because empathy is super powerful. If you are talking to someone that has gone through a traumatic experience or a difficult time, you can

ALLYSHIP: A CONVERSATION WITH DR. JOSEPH DEASY, Cont.

let them open up about how life is for them, and they can tell that you get it. It's really a tremendous advantage. It's absolutely crucial; it is super valuable. People are starting to realize the value of these characteristics and how crucial they are, but not fast enough."

Dr. Deasy points out that something that is changing in the field is the awareness of EDI. He mentioned that "EDI is not something that is nice to have, it is really front and center in any good Medical Center." He thinks that people are becoming more aware of the importance of EDI in the field. They are seeing where EDI initiatives are leading us. On the other hand, he also points out that there might be some resentment from people resistant to change who might not understand the need for these changes. Nonetheless, he is hopeful that this is a small portion of the field. He asked me what I thought about this, if this was how I perceived it, and if these initiatives are making a difference. I shared with Dr. Deasy that people can tell that MSK is committed to EDI. I have been approached by people telling me they are interested in joining MSK because they've seen that we have women and minorities in leadership, and this is a powerful message. To my comment, Dr. Deasy adds, "it is actually a competitive advantage that MSK has, that we recognize the value of everybody."

After discussing a few more examples of women in leadership, I asked Dr. Deasy how he became an ally. "I recognize the quality of the contribution of many women that were probably not given the stage time that other men were getting. The perceptiveness of their thinking and their comments and contributions were often just better. Over time I learned that there is a differential grade of how women are graded vs. how men are graded. I've become more enlightened over the years. I don't think I really perceived how male biased the field was when I first started in my career. When I got to lead my own group, it started to emerge as a realization. I'm interested in having the best group possible. At MSK, that led me to really value female leadership. Social intelligence coupled with physics intelligence is really what you want in leadership."

We went into discussing a little more about male privilege and focused our conversation on speaking up. "No doubt your readers will agree that men are often oblivious to the privileges we use to get ahead. For me personally, this included, and probably still includes a confidence that I'm not putting anything at risk when I speak up. Even at the highest levels, successful women feel they cannot 'wade into' a conversation the way many men can and do. During conferences, a small number of women walk to the microphone and ask questions. The men usually are the ones who do that. I always felt like I had the right to step to the microphone with whatever questions I had. Some women have a super high bar in their minds. Many men feel like they own the microphone, and it's a matter of privilege. I think more women should feel empowered to be heard whenever they feel like they have something to say or ask. Resist the urge to be quiet and to avoid scrutiny." We went on to discuss how many women like myself, a Latina woman, have been taught since childhood that men make decisions and that we speak after them. I shared with him that in my case, my mom was an educated woman with a bachelor's degree and my dad's highest education was high school, but at our house, the decisions were made by my dad. Early on, many of us are taught to be in the back seat as spectators, which can affect how we feel or not feel empowered to participate in conversations and the decision-making process.

Dr. Deasy reflected on these points and recognized that these are things that men don't necessarily go through, but he adds that he can't tell people how to overcome that, but that he can tell us that if we can overcome it, there is a reward behind it. It enhances our professional careers, and people can see our intelligence and insightfulness. It shows our commitment to the medical physics field and our desire for the field to move forward. He goes on in saying, "In general it can be hard for women to work against ties, to be heard, and we need to create spaces for women to be heard."

We finalized our conversation by discussing how people can become allies. Dr. Deasy continues to bring the importance of creating safe spaces and welcoming environments. "Allowing people or giving them space to bring their concerns means you are hearing people, giving them respect, and listening to what they want or need. We are really trying to make MSK a place good for people with family obligations, to give them time when they need to care for a sick kid or when they need to take

ALLYSHIP: A CONVERSATION WITH DR. JOSEPH DEASY, Cont.

care of elderly parents, for maternity or paternity leave. This needs to be respected. We are not perfect, but we try to be respectful and give people space. People do remember that — people remember that you gave them that space."

I think creating an environment where people feel welcomed, heard, respected, valued, and that they belong is extremely important. I am fortunate to work in an institution with leadership that fosters those values. At the end of our conversation, I felt like I had one of the most pleasant and uplifting conversations on allyship. I want to thank Dr. Deasy for such a memorable conversation and a career of allyship to women and minorities in medical physics. ■

Make Your Plan to MAKE A DIFFERENCE

Access the
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https://aapm.myplannedgift.org/

focus on our future

For over 20 years, the AAPM Education & Research Fund has been a vital catalyst within medical physics in funding strategic programs such as seed grants for early-career researchers; matching support for clinical residency programs; and fellowships for PhD students. In addition, the Fund attracts undergraduates to the field and promotes diversity, and to-date has funded well over 100 grants, fellowships, and residencies.

Please join your fellow members in contributing to the Education & Research Fund. Together, we can ensure this valuable platform — and our field — remain vibrant and continue to prosper and grow.

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SPECIAL INTEREST FEATURE: Women's Professional Subcommittee

THE GENDER PAY GAP IN MEDICAL PHYSICS

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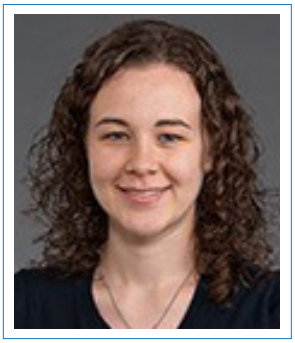

There is a well-documented gender pay gap in the United States, with women earning less than their male counterparts. On average across the US, men earn $10,381 more than women in 2022; and all states have at least 10% lower median pay for women compared to men [1]. This is true across the economy, including fields which require advanced degrees such as research and medicine.

A 2017 survey noted in *Nature* reports on a survey of 50,000 research-related science PhDs in the US. It reports that the overall gender salary gap within this group can be partially explained by the larger proportion of men in the higher paying fields (math and computer science), and the larger proportion of women in the lower paying fields (psychology and social sciences) where pay is more equitable, though a gender pay gap still exists [2]. A 2021 study reported that of more than 32,000 science and engineering PhDs, the gender pay gap was wider in academia (where women earn 5.3% less than men) than in industry (where women earn 3.5% less than men) [3]. Field of study and work is not the only suggested reason for the gender pay gap. Women's hesitancy to negotiate [4], home life obligations [5], and lower rate of promotion [6] have also been suggested reasons to explain the gap.

While the gender pay gap has been studied in many specialties of medicine and within the STEM fields, it has not been thoroughly examined within medical physics. In addition, because the field of medical physics includes professionals in industry, consulting, academic positions (both research focused and clinical), and government work, it is difficult to generalize the gender pay research of medical and STEM fields to medical physics. Fortunately, we do have a rich source of salary data in our field from AAPM that extends back to 1979 — the annual Professional Survey, known informally as the annual salary survey. The results of the AAPM salary survey reveal that, among those who respond to the survey and report their gender, women make less than men. The salary by gender data is not further filtered by the other characteristics and demographic collected in the survey (such as years of experience, certification, academic rank, sector of employment, and hours worked). It may be that the overall difference in men's and women's salaries as reported on the AAPM survey is due to differences in these other factors. This question is what a small group made up of members of the Women's Professional Subcommittee are currently exploring with experts from the American Institute of Physics (AIP) Statistical Research Center (SRC), the same statisticians who produce the annual salary survey. Stay tuned for results of this detailed analysis of the gender pay gap in medical physics! ■

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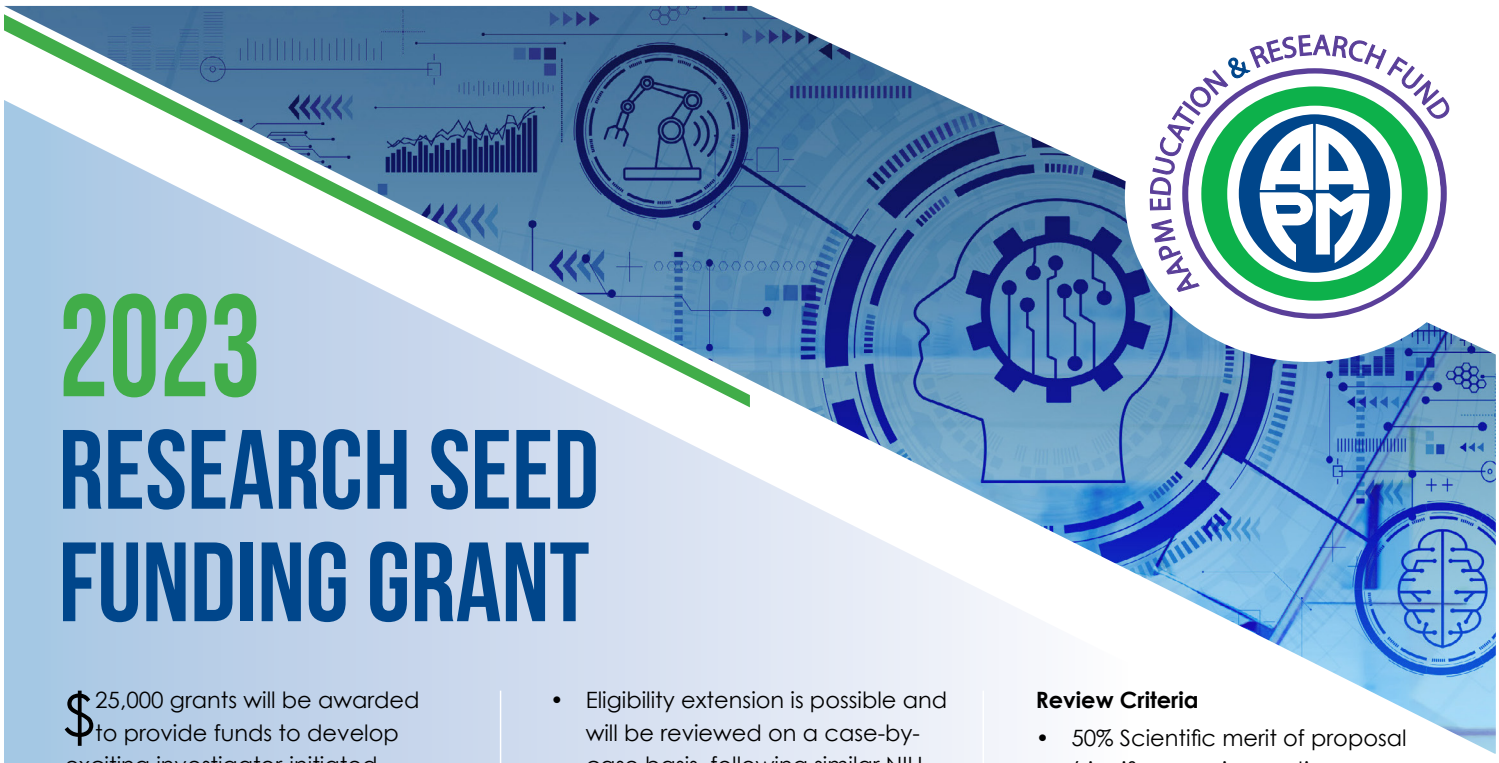

2023 RESEARCH SEED FUNDING GRANT

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

Sponsored by the AAPM Science Council through the AAPM Education and Research Fund.

A list of Award Recipients can be found here.

Eligibility:

- 10 years or less since receipt of a terminal research degree or medical physics residency, whichever is later. (Excludes those who have reached Associate Professor level.)
- Eligibility extension is possible and will be reviewed on a case-by-case basis, following similar NIH guidelines.
- Must be a member of the AAPM at the time of application (any membership category). Pending membership status not eligible.
- No previous grants >$50,000 as principle investigator (including institutional startup funding, industrial awards, other external grants).
- Previously funded projects are ineligible.
- Prior Seed Grant recipients are ineligible.

Application Requirements:

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

a. Specific aims
b. Background and significance
c. Preliminary results
d. Research plan
e. Literature cited
f. Budget
g. Letter of support from division/ department chair demonstrating support for the project and authorization of time and resources to complete the proposed research
h. CV (no more than 4 pages)

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

Review Criteria

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

Application Deadline: April 12, 2023

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

March 1: Deadline to provide three key words indicating the intent of your proposed topic (see application).

You must log onto the AAPM website to view the apply button.

Award duration:

August 31, 2023 – August 31, 2024

Recipients notified by:

May 30, 2023

FOR MORE DETAILS, VISIT:

https://gaf.aapm.org/index.php/#SEED

SPECIAL INTEREST FEATURE: Women's Professional Subcommittee

GROWING MEDICAL PHYSICS IN UNDERGRADUATE PHYSICS CURRICULUM

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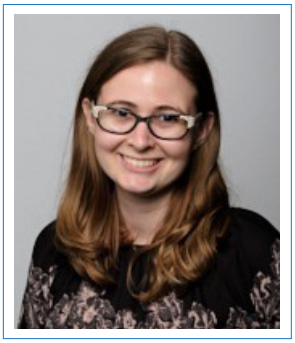

Think back to your first college physics class. Now about every other physics class that you took. Did any of them have units in or examples from physics in medicine or biology? Mine didn't. The American Association of Physics Teachers (AAPT, and former neighbors of AAPM HQ) is looking to change that with a new education resource website.

The initial purpose of the Living Physics Portal is to collect free curricular resources for teaching introductory physics for life sciences courses (IPLS). IPLS are the physics courses traditionally taken by biology, pre-med, and other life science majors. Traditionally they have very similar content to the first-year physics courses taken by physics and engineering majors, but without calculus.

Rather than teaching biologists about inclined planes, new IPLS courses focus more on the physics of biological systems (e.g., classical mechanics applied to biomechanics or electricity and magnetism of the heart) or applications to medicine (hello, medical physics). By refocusing these courses on topics directly applicable to students' career goals and interests, more confidence, engagement, and learning can take place.

Future directions of the Living Physics Portal include broader applications of physics to biology and medicine with an aim to integrate the subfields of biophysics and medical physics into undergraduate and graduate curricula as other physics subfields have been. I know I would have been more excited about optics if we had talked about human vision or applications of lasers to imaging. While these curricular changes began with IPLS courses, there are endless possibilities for updating undergraduate and graduate physics curricula to engage students, prepare them for medical physics and biophysics graduate work, and learn physics through these newer subfields.

If you are interested in adding curricular resources (in-class activities, lectures, labs, homework, whole units of material, etc.) or instructor resources (teach instructors about new topics) to the Portal, you can join for free.

Check out the teaching and education resources available here.

Materials uploaded onto the website can be adapted for new purposes and reuploaded to encourage active engagement with and refinement of the materials shared.

Materials uploaded can be added to one of three libraries: the community library, the vetted library, or the peer-reviewed library. The community library is the easiest to contribute to as there is no peer-review process. This is perfect if you feel that you haven't fully perfected your materials but want to share your ideas. The vetted library materials are expected to be more refined and may contain supplemental information. Materials submitted to the vetted library undergo editorial review. The peer-reviewed library is a work-in-progress which will feature a journal article-like submission and peer review process for materials.

Even if you don't have materials to share, it is worth taking a look at all of the neat physics that we weren't taught. ■

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

Cordially Invites You to Attend the

AAPM Tuesday Evening Reception at RSNA during the 2022 AAPM | RSNA Meeting

Tuesday, November 29, 2022 | 6:00 – 8:00 pm

Crystal Ballroom BC, Hyatt Regency Chicago

151 E. Wacker Drive, Chicago, IL

Light hors d'oeuvres

AAPM gratefully acknowledges our sponsor for their contribution to this reception

VIEWRAY
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SPECIAL INTEREST FEATURE: Women's Professional Subcommittee

FEATURED PHYSICIST: JESSICA CLEMENTS, MS, FAAPM

Kristi Hendrickson, PhD | University of Washington
Email: krgh@uw.edu | Twitter: @KristiRGHendri1

Brief Bio

Jessica Clements, MS, FAAPM is certified by the American Board of Radiology in diagnostic radiologic and nuclear medical physics. Ms. Clements has a long volunteer service with AAPM, she is the current chair of the Radiological Protection Subcommittee and TG 313 - Nuclear Medicine Shielding Requirements and is one of the program directors for the 2023 summer school on Radiopharmaceutical Therapy and Dosimetry. She was a founding member of the New Professionals Subcommittee, Women's Professional Subcommittee, and Medical Physics Leadership Academy. In addition to AAPM, she is active with the American Board of Radiology, serving as the chair of the diagnostic oral exam committee, the American College of Radiology as an accreditation reviewer and diagnostic imaging center of excellence site reviewer, the Conference of Radiation Control Program Directors as a liaison from AAPM, and recently has been involved with the medical section of the Health Physics Society. She recently joined the medical physics section at the University of Vermont Medical Center, where she is an imaging physicist and radiation safety officer and has plans to build a network radiation safety program and nuclear medicine residency. Prior to her relocation, she served as the Chief Physicist, Regional Radiation Safety Officer, and residency program director for the entire Southern California region of Kaiser Permanente.

What led you to medical physics as a career and how did you choose your specialty?

About halfway through my undergraduate degree in physics, I started talking to my advisor about graduate school options. I shared with him that I was interested in medicine. He mentioned to me that a lot of physicists were working at a cancer center where one of the other physics faculty was receiving treatments and suggested that I check out the field of medical physics. After a little research, I reached out to the local medical physicist in my hometown and ended up shadowing him for a few years. He provided both therapy and diagnostic services at the community hospital and I found the work in imaging to be a good match for me.

What is your favorite part of your job and/or what professional activity do you enjoy most?

I am greatly satisfied by improving patient care — whether consulting an individual patient on at-home instructions following a radionuclide therapy or suggesting a protocol optimization that will improve imaging for hundreds of patients imaged each week. My greatest achievement so far was leading the effort to establish an imaging residency program with my former employer. I can't wait to establish a new program in Vermont – residents enrich the clinical program so much!

I encourage all physicists, especially those early in their careers, not to be afraid of getting involved with new projects at their facility. For example, if there's a new modality, exam, or treatment, it's likely that no one has a great amount of experience with it because it's new. This is a perfect opportunity for you to jump in and learn it and become the local expert!

You have been very involved with AAPM during your career. What led you to this and what about it do you find rewarding?

When I completed my first certification in diagnostic medical physics, I felt that it was time to start giving back to the profession and sought out volunteer opportunities. There are many rewarding aspects of volunteering, some unexpected. For example, involvement helped me to develop a diverse network of mentors and colleagues, a few of whom I now consider like family. When I first became involved as a volunteer,

FEATURED PHYSICIST, Cont.

there weren't many opportunities for leadership development with my employer. Committee work really helped me to develop my leadership style and I experienced tremendous professional growth.

What advice do you have for young physicists, especially women?

I encourage all physicists, especially those early in their careers, not to be afraid of getting involved with new projects at their facility. For example, if there's a new modality, exam, or treatment, it's likely that no one has a great amount of experience with it because it's new. This is a perfect opportunity for you to jump in and learn it and become the local expert! I would also encourage women physicists to consider serving as their facility's radiation safety officer. A lot of physicists avoid this role. Sure, there's some extra paperwork involved and you might get called into urgent situations. Despite this, some of my most interesting experiences have come about through my role as RSO. The RSO plays a very important role in the organization, so it could also be a great way to become a formal leader.

What are your interests or hobbies outside of work?

My husband and I grew up in a small town, we even attended pre-school together! Our careers have generally led us to employment in large cities. Our recent relocation has given us the opportunity to work at a world-class medical center while living in a charming, and small community, a very special combination. I have a lot of hobbies, but especially enjoy gardening and being outdoors. We enjoy time with our kids (they are attending UVM), traveling, cooking, and movies. Just before the pandemic started, I applied to be on the Great American Baking Show. I passed a baking pop quiz over the phone with someone from the show and was working to schedule a taste test in the studio when we were all sent home for a two-week quarantine in March of 2020. During the pandemic when most people were experimenting with sourdough bread, I started making pasta, inspired by the show Pasta Grannies. I also enjoy making glass mosaics, painting, sewing, and doing other DIY home improvement projects. I completed the Los Angeles County Master Gardener program right before our relocation and just joined the Vermont Master Naturalist program. I was using every square inch of my backyard in Southern California for gardening and am looking forward to building a bigger garden at my new home and enjoying everything in Vermont. ■

Apple tart made by Jessica in recognition of Nuclear Medicine and Molecular Imaging Week (Oct. 2-8, 2022).

SPECIAL INTEREST FEATURE: Women's Professional Subcommittee

MENTORSHIP IN MEDICAL PHYSICS CLINICAL TRAINING

Parisa Sadeghi, PhD | Princess Margaret Cancer Centre
Email: parisa.sadeghi@rmp.uhn.ca | Twitter: @parisa_sadeghi2

Mentorship is a valuable tool in career development at any stage, and medical physics residency is no exception. In fact, it could be argued that having guidance and professional mentorship at this early stage in one's career could be crucial.

Many institutions have established a mentorship program for their trainees. This article explores the mentorship structure at the Odette Cancer Centre, Sunnybrook Health Sciences Centre (Toronto, Canada) as part of the University of Toronto Department of Radiation Oncology (UTDRO) resident mentorship program by interviewing a mentor and mentee pair: **Alyaa Elzibak** and **Priscilla Dreyer**.

1 - **Intro**: Please tell us a bit about yourself.

Dr. Alyaa Elzibak (Mentor): I am a medical physicist and have been practicing for about four years. I work at the Odette Cancer Centre, Sunnybrook Health Sciences Centre. I also have an academic appointment as an assistant professor with the Department of Radiation Oncology at the University of Toronto. I am certified in therapeutic medical physics.

Dr. Priscilla Dreyer (Mentee): I was a therapy resident at Odette Cancer Centre, Sunnybrook Health Sciences Centre and am now a physicist at Juravinski Cancer Centre in Hamilton, Ontario.

2 - **Structure**: Please describe the overall mentorship structure at your institution

Dr. Alyaa Elzibak (Mentor): At the Odette Cancer Centre, there are typically four mentors at a given time, to match the number of residents going through the training program. Mentees choose mentors after having met with potential faculty interested in mentoring and the mentorship lasts for the duration of the residency (two years of training).

The mentor and mentee have a regular meeting at least once every month, but at times these may become more frequent. During meetings, the mentor and mentee discuss progress through rotations, address questions that the mentee may have and develop goals and action items relevant to the stage in the residency training.

3 - **Scope**: What are some of the main areas that the mentors provide active advice?

Dr. Alyaa Elzibak (Mentor): Academic guidance: We give some general academic guidance. Mentees have an independent research project supervisor that they work with. The mentor may provide suggestions during project identification or give feedback on academic presentations.

Mentoring taps into many skills and this gives the mentor an opportunity to strengthen their skills and also reflect on them.

Clinical teaching: For the clinical mentoring component the mentor ensures that the mentee is progressing well through rotations. The mentor addresses clinical questions brought up by the mentee or suggests that the mentee meet with a specialist on the team to further delve into a topic. Mentees may shadow the mentor during certain procedures, they may also complete a task under the mentor's guidance and receive feedback from the mentor. Mentors may run mock sessions with the mentee in preparation for upcoming assessments.

Career advice: Career guidance and the development of goals relevant to each stage of the training is another area of mentor involvement. Throughout the residency, in addition to clinical guidance, discussions around professional goal setting, work-life balance, job search strategies and interview preparations may take place.

MENTORSHIP IN MEDICAL PHYSICS CLINICAL TRAINING, Cont.

4 - **Benefits for mentees**: Please comment on how having a mentor helped with learning, research, adapting to residency and clinical work.

Dr. Priscilla Dreyer (Mentee): I was lucky to have a very great mentor who went beyond the typical responsibilities of a mentor. I had chosen her because I was about to go on maternity leave, and I knew she had a similar experience – so I wanted someone with whom I could connect beyond just academic guidance. Alyaa was not only a strong female model for me, but also an incredible help as I prepared to go on leave. We came up with strategies that would help me transition back quickly to residency after my leave. What I really appreciated is that she understood what I had to go through, having done it herself. There is no extra time that the program provides that allows you to readjust after returning from leave, you are expected to complete the program in the same allotted time as everyone else — but now with a baby, and all the things that come along with it. I came back after five months and I was nervous about not being able to keep up with the demands of residency, but Alyaa was working as hard as I was to keep me on track, and she helped put my apprehensions at ease. She was always supportive, and encouraging and honest with her feedback because she wanted me to succeed.

This is not to say that she was not also an amazing help when it came to academic guidance, clinical teaching, and career advice. In preparation for exams and tutorial sessions, we would have weekly practice sessions where she would ask me questions, provide feedback on my answers, and identify weaknesses in my knowledge. It was a tremendous amount of effort on her part and resulted in countless hours of questions and answers. And as I was nearing the end of residency, she would have sessions to prepare me for interviews, provide comments on my application packages and connect me with people she knew from various centers. I cannot say enough about what Alyaa has done for me, and how valuable it is to have a mentor. Not every mentor will go to these extremes, but it has changed the way that I now interact with residents at my center because what I wish is that everyone can have the support I had during residency.

5 - **Benefits for mentors:** Please comment on how being a mentor can benefit the mentors themselves.

Dr. Alyaa Elzibak (Mentor): Mentoring taps into many skills and this gives the mentor an opportunity to strengthen their skills and reflect on them. At times, you are a teacher, an advisor, or a coach. While in other situations, you may be a learner, a friend, or a colleague. Discussions and questions that come up allow you to think deeply about concepts and keep you up to date with some material that you may not be using on a regular basis. It is also very rewarding to share milestones with mentees during the training and as they transition into their own careers.

6 - **Advice**: Any advice for mentors/mentees on building a strong and beneficial relationship and making the most of the mentorship experience?

Dr. Alyaa Elzibak (Mentor): An alignment between the mentor and mentee helps the mentoring relationship progress naturally. Clear, open communication and an agreement on the expectations of each of the members is key. Regular meetings are important for checking in, evaluating progress together, and strategically planning for upcoming goals. There are some general resources available in the literature or through organizational development programs that provide valuable information for mentoring. Our department has recently established a mentorship journal club for faculty to allow for mentoring discussions that are specific to medical physics training.

Dr. Priscilla Dreyer (Mentee): My advice is, even if your program does not have a formal mentorship program, to find yourself a mentor. Someone that you align well with, and who you can trust will be honest with you to provide you the best feedback possible. I chose my mentor because I liked her as a person, and because I knew she would help me survive the grueling, yet wonderful, experience that is residency. However, there are many other great reasons for choosing someone as a mentor. I also believe that what you put into the relationship is what you will get out of it. It is a lot of extra work to be someone's mentor, so appreciate it and make sure they know! ■

THE AAPM MENTORSHIP PROGRAM HAS LAUNCHED!

PROFESSIONAL SERVICES REPORT

Jeremy Hoisak, PhD
UC San Diego
Email: jhoisak@health.ucsd.edu
Twitter: @JerinSD

(written on behalf of Professional Mentorship Working Group, New Professionals Sub-Committee and Professional Services Committee)

The AAPM Mentorship Program is a new service for members in 2022 and offers a personalized opportunity for participants to work on their individual career development goals, develop new skills and expertise and access objective evaluation of performance from an experienced member of AAPM. Participation in the program is free for AAPM members, voluntary and mentoring relationships are non-binding. Mentorship in the Program is 1 on 1, and can be conducted in-person, remotely or hybrid. Matching of mentees is limited only by the number of available mentors. The AAPM Mentorship Program is not just for professional mentorship, but 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, management and leadership skills, or even retirement! The individual aims of the mentoring relationship are up to the participants.

Who Can Participate?

The Mentorship Program is open to any member of AAPM. Participation is not limited to residents of the United States; international participation is welcome and encouraged.

Any qualified member of AAPM can serve as a mentor. Qualified means possessing appropriate abilities and experience for the level of mentoring being offered. The match process is mentee-driven, and relies on their judgment as to the appropriateness of a mentor for their own development objectives. The Program relies on AAPM Directory information to populate user profiles but will review other information for accuracy so that mentors can make a fair determination. Any AAPM member can participate as a mentee, including students, residents, post-docs, early career or new professionals, or more established and senior members: mentorship is a life-long endeavor. Participants can also simultaneously be a mentee while serving as a mentor to others.

Rules and Expectations

The Program encourages mentoring relationships to last at least one year, but this is non-binding and mentoring relationships can last as long as mutually agreed upon between mentor and mentee. The AAPM Mentorship Program recognizes that mentoring relationships may not always work as intended, and although participants are encouraged to communicate and resolve issues

Since recruitment launched in April, the AAPM Mentorship Program has recruited 88 mentors and 84 mentees have signed up. Since matching began, 58 prospective mentees have submitted mentor requests and as of October 2022, 47 have successfully matched with a mentor!

constructively, either party to a mentoring relationship is free to leave for any reason, without penalty. Participants are then able to re-join the match process, temporarily pause participation, or leave the Program completely. The Program currently limits mentors to one mentee at a time, but this is subject to change pending evaluation of the initial mentoring outcomes.

The AAPM Mentorship Program is ***not*** a clinical training program. Participants are required to sign a participation agreement that respects the confidentiality of both parties, limits liability of either participant and AAPM, and agrees to not use the mentoring relationship to directly engage in or support any clinical work such as quality assurance, treatment planning or delivery.

A Brief History and Current Status

Recognizing that there was a critical need for mentorship options within AAPM, the Professional Services Committee and New Professionals Subcommittee created the Professional Mentorship Working Group in 2012. This working group was charged with developing a "New Professionals Mentorship Program" that would facilitate the pairing of early career members of AAPM with more experienced members. This program would be modeled after several successful healthcare-related mentorship programs including those of the American College of Healthcare Executives and the faculty mentoring programs of many academic institutions. In 2019, the program was formally approved by the Professional Council, and renamed the "AAPM Mentorship Program", reflecting the broad utility of mentorship across all aspects of personal and career development. A web portal was developed and tested throughout 2021 and in 2022, the program was launched to the membership, starting with mentor recruitment, mentee sign-ups, and finally matching. The inaugural match process went live in July 2022. Since recruitment launched in April, the AAPM Mentorship Program has recruited 88 mentors and 84 mentees have signed up. Since matching began, 58 prospective mentees have submitted mentor requests and as of October 2022, 47 have successfully matched with a mentor!

Demographic data of the participating mentors was collected to ensure that mentees could find an appropriate mentor for their personal goals, and allow for targeted recruitment efforts. The current roster of available mentors shows a mix of diagnostic and therapy physicists, academic, private and industry work settings, mix of highest degree attained, and a nearly balanced ratio of gender between male and female mentors.

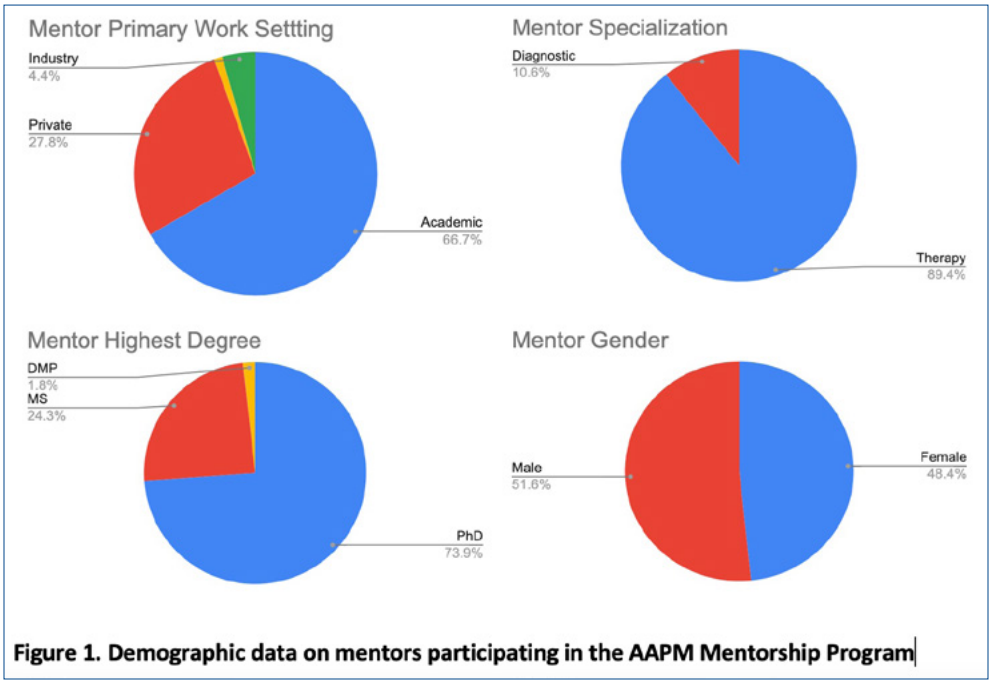


Figure 1. Demographic data on mentors participating in the AAPM Mentorship Program

Figure 1. Demographic data on mentors participating in the AAPM Mentorship Program

How to Participate

If you are interested in participating as a mentor or a mentee, sign-up is on-going, and matching is an on-demand service limited only by mentor availability. Instructions for sign-up are below.

As a Mentor:

1. Go here and click "Mentor Login"
2. Complete the mentor self-assessment (required)
3. Create your mentor profile
4. Write a brief statement outlining what you have to offer as a mentor
5. Upload a CV (optional)
6. Complete the Program Participation Agreement (required)
7. **Click "Activate Application".** Your profile is now visible in the Mentor List!
8. Once the program goes live for mentees, participants will be able to review your profile and request a match.
9. If requested as a mentor, you will receive a notification of a match by e-mail. You must return to the site via the "Matching Requests" tab to review the prospective mentee's profile and accept or decline the match. After seven days, the request will expire.
10. Mentors can receive up to 10 mentee requests before their profile will become temporarily unavailable. Mentors must acknowledge pending requests (accept or decline) to make more requests possible.
11. Mentees can make up to three simultaneous mentor requests and will have to confirm your acceptance.
12. Once a match is confirmed, the mentee will be provided the mentor's contact information. The program strongly encourages mentees to initiate contact and schedule the first meeting!
13. The Mentoring Toolkit is available on the program website and contains practical advice on how to conduct a successful first meeting, set expectations and develop mentoring goals as well as tips on how to manage the ongoing relationship. The mentor should take an active role in helping the mentee to formulate these goals. A formal mentoring contract between the mentor and mentee is not required but is highly encouraged to foster accountability. An example is provided in the Toolkit.
14. Upon termination of the mentoring relationship (or at one year), you will be asked to complete a post-participation survey.
15. After termination, your name will become available again on the Mentor List. To pause participation, return to your profile and click "Deactivate Application". To leave the program, click "Delete Application".

As a Mentee:

1. Go here and click "Mentee Login"
2. Complete the mentee self-assessment (required)
3. Create your mentee profile
4. Write a brief statement of interest outlining your mentorship goals (required)
5. Upload a CV (required)
6. Complete the Program Participation Agreement (required)
7. **Click "Activate Application".** You can now access the Mentor List!
8. In the "Matching" tab, review the mentor list, filter and search, identify a potential mentor and request a match! You can select up to three mentors at a time. These are not ranked and all requested mentors will be notified at the same time.
9. Mentors can accept or decline the match request. After seven days, any pending requests will expire and a new request can be made. If a mentor accepts another mentee, your request will indicate that the mentor is no longer available.
10. If a match is accepted by a mentor, the mentee will have to return to the website to confirm the match. This is because more than one mentor may accept your request.
11. Once a match is confirmed, you will be provided the contact information of your new mentor.
12. The Program strongly encourages the mentee to initiate contact with their new mentor and set up the first meeting.
13. The Mentoring Toolkit has practical advice on how to conduct a successful first meeting, set expectations

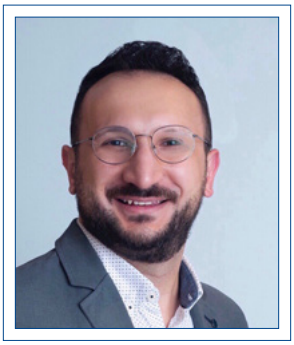
and develop mentoring goals, as well as tips on how to manage the ongoing relationship. You should set your own development goals, but your mentor will help you to identify and formulate them. A formal mentoring contract between mentee and mentor is not required but is recommended to maintain accountability. An example is provided in the Toolkit. Good luck!

14. Upon termination of the mentoring relationship (or at one year), you will be asked to complete a post-participation survey. You will also be asked to evaluate your mentor. You will have the option of sharing this evaluation with your mentor, otherwise the data will be used internally by the Program for the development of mentor training materials.
15. Once a mentoring relationship is complete or ended, you are free to search for and initiate a new mentoring relationship. To pause participation, return to your profile and click "Deactivate Application". To leave the program, click "Delete Application".

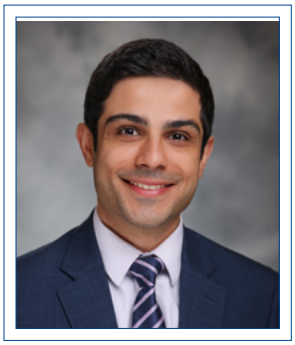
For more information about the AAPM Mentorship Program, please visit us here and follow us on Twitter @PMWG_AAPM for program updates. You can also email comments or questions to Mentorship.Program@aapm.org. ■

INAUGURAL SYMPOSIUM OF EMERGING LEADERS OF ACADEMIC MEDICAL PHYSICS (ELAMP)

SPECIALTY MEETINGS IN MEDICAL PHYSICS



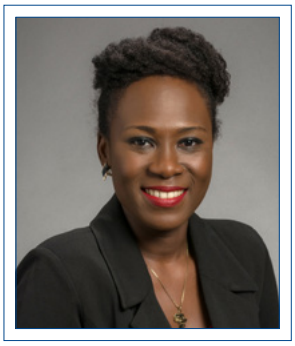
I. Chamseddine



E. Abadi

E. Cloutier

C. Park



A. Yorke

This year, the inaugural Emerging Leaders of Academic Medical Physics (ELAMP) Symposium was initiated at the Department of Medical Physics University of Wisconsin School of Medicine and Public Health. This initiative reflects the collective vision of the Department of Medical Physics and its Chair, **Dr. Brian Pogue**, to empower next-generation leaders in medical physics through effective mentorship and strategic networking. This symposium was aimed at early-career researchers, including graduate students, postdoctoral fellows, research scientists, faculty, and medical physicists, nationally and internationally across diverse fields of medical physics, who demonstrate the potential to impact and advance their field in the future. These Emerging Leaders (ELs) of Academic Medical Physics were given the opportunity to spend two days with academic and industrial leaders of medical physics in a small-scale meeting, with the primary goal of helping each other think about success as emerging scientists in a clinically-dominated field.

EL candidates were competitively selected and invited to participate based on an open application process. This application process was intensive and involved describing their research-based contributions to the field of medical physics, their bold and inclusive vision for the future of the field,

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Twitter: @CancerOptim

Ehsan Abadi, PhD
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Claire Park, BMSc
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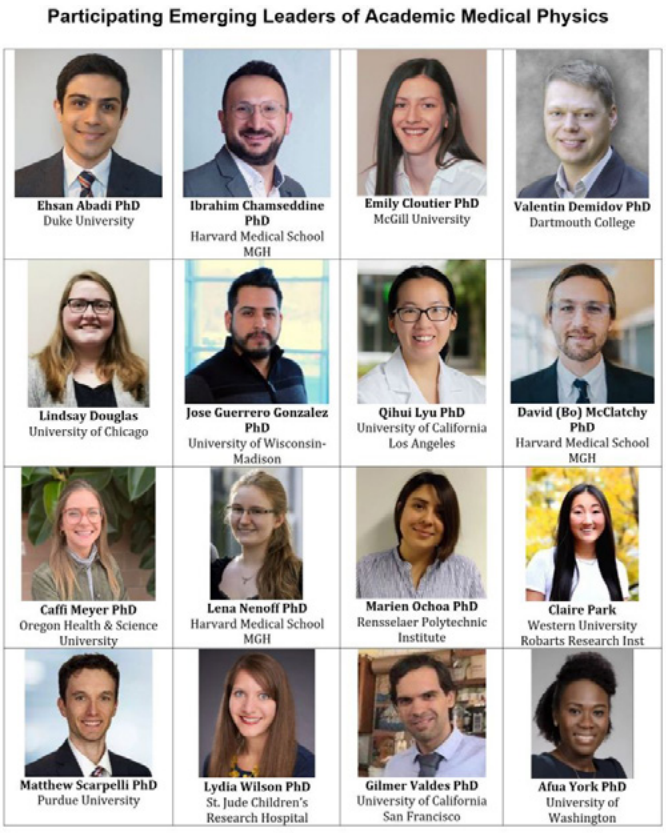
Twitter: @ClaireKSPark

Afua Yorke, PhD
University of Washington
Email: ayorke2@uw.edu
Twitter: @WomanPhysicist

After the symposium, the Emerging Leaders (ELs) felt better informed to take their next career step and empowered to create the professional environment they wished for.

their commitment to diversity, equity, and inclusion, and their curriculum vitae. The program received over 45 applications across North America, and out of these applicants, 16 ELs were competitively selected and sponsored to attend the symposium in the beautiful city of Madison, Wisconsin, where ELAMP took place from August 31–September 1, 2022.



The 16 invited Emerging Leaders

These 16 early-career investigators had the opportunity to engage with the following visionary leaders: **Magdalena Bazalova-Carter** (UVic), Zaver Bhujwalla (Johns Hopkins), Marvin Dohley (URochester), **Maryellen Giger** (UChicago), Tayyaba Hasan (Harvard-MIT), **David Jaffray** (MD Anderson), **Rock Mackie** (UW-Madison), Beth Meyerand (UW-Madison), **Sasa Mutic** (Varian), and **Bruce Tromberg** (NIH).

In addition, ELAMP invited the Board of Visitors from the Department of Medical Physics who acted as additional mentors, panelists, and poster reviewers: **Ryan Flynn** (U Iowa), **Tom Foo** (GE Global), **Steven Goetsch** (UC San Diego), Michael Harsch, **Jeff Kapatoes** (Sun Nuclear), Dee Khuntia (Varian), Andy Kirkpatrick (Accuray), Rock Mackie(Leo Cancer Care), Greg Piefer (Shine Medical), Kevin Royalty (J&J), **Michael Schell** (U Rochester), **Michelle Svatos** (Palette Life Sci), and Oliver Wieben (U Wisconsin).

Day 1: Keynotes, Invited Participant Presentations, and Poster Competition

The first day started with an introduction from the symposium Chair, Dr. Brian Pogue, followed by alternating sessions between keynote speakers and invited participants. The keynote speakers invited were accomplished distinguished scientific leaders in various subfields ranging from molecular imaging to information technology to academic and industry leadership. As leaders in their fields, these speakers have mentored countless individuals throughout their tenure in academia, industry, and beyond the clinic. The invited speakers and information about their presentations can be found in the online program. Additionally, Bruce Tromberg, Director of the National Institutes of Biomedical Imaging & Bioengineering, delivered a keynote presentation on "NIBIB and the Pandemic Response: New Opportunities for Accelerating Innovation from In-vitro Diagnostic to Medical Imaging." The keynote speakers inspired the ELs to find their purpose and role in the field of Medical Physics and explore that to their fullest potential. While failure is a part of the journey to succeeding as an emerging leader, we should keep our vision focused on our ultimate goals.

The ELs also participated in the symposium by giving a presentation on their research. These presentations covered topics including patient-specific dosimetry, virtual imaging trials for disease quantification, medical physics for personalized oncology, machine learning for DCE-MRI, point-of-care 3D ultrasound, augmented machine learning, big data for childhood cancers, proton plan adaption, pair production tomography imaging, evolutionary modeling optimization, image-guided radiotherapy and immunotherapy, Cherenkov-based dose measurements, microvascular responses in FLASH radiotherapy, deep learning fluorescence imaging, to quality assurance and management practices in low-middle income countries. The clear diversity in research shows the current and emerging topics, and the wide

variety of research in the field, which is a true depiction of the direction in which medical physics is heading.

Later in the day, the ELs and University of Wisconsin-Madison graduate students had the opportunity to showcase their research work through an interactive poster presentation and engage in discussion with the UW-Madison Medical Physics community. Award recipients, Jose Guerrero Gonzalez, **Afua Yorke**, **Claire Park**, and Marien Ochoa, were announced. This session was followed by a night out on the historic University of Wisconsin Terrace at Memorial Union–famously known as one of the most beautiful views on campus, with iconic sunburst chairs, overlooking the beautiful lake Mendota adorned with gorgeous sunsets at night with live music from local bands.

Day 2: Career Advice Panels, Keynotes, and Small Group Mentorship Meetings

The second day of the symposium focused on career advice and professional growth. It consisted of multiple panel discussions, where the established leaders shared their experiences with the ELs. Topics included: strategies to create impactful research, enhance diversity in academia, and create synergy between academia and industry. The second day also included keynote presentations by two distinguished speakers from UW-Madison. The first was from Dr. Beth Meyerand, Vice Provost, about leadership in Medical Physics, and the second was by Dr. Rock Mackie, Emeritus Professor of Medical Physics, about successful industry translation of research. In the afternoon, the ELs participated in small-group mentorship sessions where they had the opportunity to discuss their own interests and aspirations with established leaders and receive mentorship. The day ended with a sunset reception and networking event at the Pyle Center Rooftop, overlooking Lake Mendota.

The impact of this symposium on early-career and MP society: A successful team, and society at large, requires individual engagement, team spirit, broadened skills, and fresh innovative ideas. This would not be effectively achieved without a diverse group of individuals in a team. Diversity is particularly essential in academic and clinical medical physics where multidisciplinary physicists, engineers, and other healthcare professionals must join forces to enable holistic excellence in patient care. This culture requires practice and mentorship within the community. ELAMP is a great example of how early-career scientists with diverse scientific backgrounds can be connected with their peers and seasoned leaders in the field to be inspired and empowered toward making meaningful impacts in medical physics and excellence in patient care.

We surveyed the 16 participating emerging leaders for their feedback on the symposium's highlights and take-home messages and created this word cloud from the responses. **Networking** stood out as a strength of the symposium. This symposium intersected experienced and emerging leaders and provided them with an intimate platform to network, share ideas, and collaborate with space to grow. Notably, the small-group mentorship sessions, as well as the social events, emerged as the most valued opportunities. The **instructive** aspect of the conference was also well-appreciated. The ELs felt better informed to take their next career step and empowered to create the professional environment they wished for, and career advice panels were also among the activities that were most appreciated. Finally, the **multidisciplinary** aspect of the symposium and the personal advice received from the mentors contributed to the success of a fun event that exceeded expectations. ■

Left: Emerging Leaders in Academic Medical Physics (ELAMP) and Visionary Invited Speakers with the Department of Medical Physics at the University of Wisconsin School of Medicine and Public Health.

Right: Word cloud that illustrates the words that describe ELAMP according to the ELs.

Industry Scientists or Regulatory Physicists:

WE WANT YOU!

As an Industry Scientist or Regulatory Physicist, **YOU CAN JOIN AAPM.**

Individuals eligible to be an AAPM Full member possess an earned graduate degree in the Physical or Biological Sciences, Computer Sciences, Mathematical Sciences, or Engineering from a college, university or program accredited by one of the organizations recognized by the Council on Higher Education Accreditation (or its successors), or an equivalent foreign degree Applicants should also be engaged in clinical care, professional, research, or academic activity related to applications of physics in medicine and biology as well.

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AMERICAN ASSOCIATION *of* PHYSICISTS IN MEDICINE

membership@aapm.org

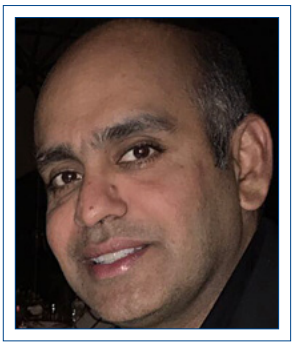
AAPM SOUTHERN CALIFORNIA CHAPTER 2022 FALL MEETING

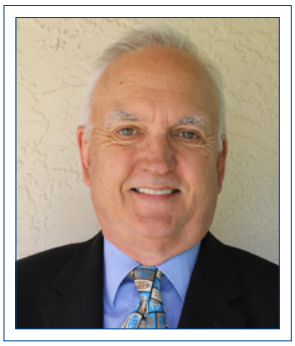
SOUTHERN CALIFORNIA AAPM CHAPTER REPORT


M. Barker


J. Clements


Z. Shen


V. Sehgal


S. Goetsch

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Zhilei Shen, PhD
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Varun Sehgal, PhD
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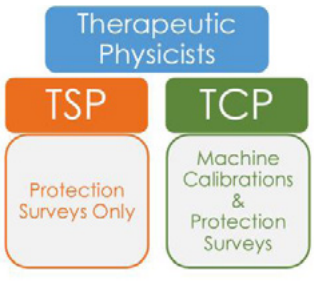
Steven Goetsch PhD
San Diego Medical Physics
Email: steven@sdradiotherapy.com

The AAPM Southern California Chapter hosted its annual Fall Meeting on October 11, 2022. This meeting is an opportunity for chapter members to receive updates from representatives from the California Department of Public Health Radiologic Health Branch (CDPH-RHB). As the meeting was held virtually, we hosted members from the Northern California Chapter of the AAPM as well.

Manasa Pinisetty, Senior Health Physicist, joined virtually from Sacramento to provide updates on the restructuring of the RHB, machine registrations, and regulations regarding authorization as a Therapeutic Survey Physicist (TSP) or Therapeutic Calibration Physicist (TCP) within the state of California. For more information, including important deadlines, please refer to the CDHP-RHB website .

In addition, the results of the recently held officer elections were announced, and the AAPM-SCC Board would like to extend congratulations and welcome **Chengyu Shi**, PhD and **David Hoffman**, PhD in their new roles as Chapter President-Elect and Secretary, respectively. Thank you to all who volunteer and serve our chapter!

Previously, the state of California had separate authorizations for radiation protection surveys of therapeutic facilities and machine calibrations. The new process for authorizations is for either TSP, or TCP, which includes both calibrations and protection surveys.



SOUTHERN CALIFORNIA AAPM CHAPTER REPORT, Cont.

Lastly, please be sure to save the date for the annual AAPM-SCC Mid-Winter Meeting, to be held on Friday, February 3, 2023. This event is live and in-person; we are thrilled to see our members again. This year the education committee has once again secured a great location and an outstanding set of speakers! There's a topic for every interest. For more information and to register, please visit our chapter website. ■

Margaret Barker, MS
AAPM-SCC Secretary
[2020-2022]

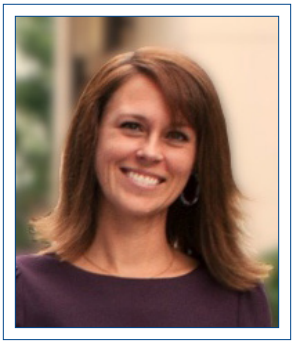
Jessica Clements, MS
AAPM-SCC Past-President

Chengyu Shi, PhD, FAAPM
AAPM-SCC President-Elect

David Hoffman, PhD
AAPM-SCC Secretary
[2023-2025]

UPCOMING NON-CLINICAL EVENTS AND NEWS

WORKING GROUP FOR NON-CLINICAL PROFESSIONALS UPDATE



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

The Working Group for Non-Clinical Professionals is set to ramp up our happenings and events in 2023. Here's a sneak peek!

MORE Webinars in 2023! The WGNC is hosting TWO more sessions in our webinar series! Riding the coattails of the huge success of our first webinar "Non-Clinical Medical Physics Careers and Opportunities" with speakers **Anuj Kapadia**, **Brandon Nelson**, and **Jennifer Clark** (check it out!), our second session entitled "Navigating Non-Clinical Careers, Returning to the Clinic, and MOC" is on February 16, 2023 at 12:00 p.m. Eastern. The third session will be April 27, 2023 at 12:00 p.m. Eastern and will discuss "MPLA and MedPhys3.0 Applied to Non-Clinical Careers." Check out the AAPM Webinar page for the webinar information. We hope you will join us for the remaining webinars!

2023 Spring Clinical Meeting Session! The WGNC is hosting a Professional session at the SCM in Orlando, FL on April 4th from 10:30a-12:30p to discuss "The Role of the Non-Clinical Physicist in a Clinical Realm." Join your colleagues to hear their experience, understand the facets of our field, and feel the impact we ALL have on cancer care around the world.

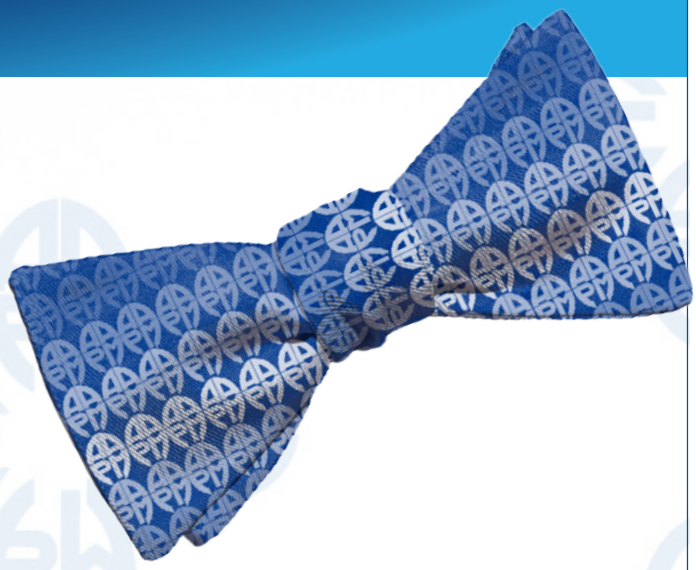
New Webpage! The WGNC is excited to be creating a "Non-Clinical Professionals" webpage on the AAPM website. Look for "Spotlight" interviews with non-clinical physicists, general information about non-clinical careers, upcoming events listings, and more! The site is currently a work in progress…we will keep updates coming!

AND MORE! We hope to have even more events and updates as 2023 progresses so stay tuned! ■

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

AAPM MERCHANDISE

DO YOU HAVE YOURS?



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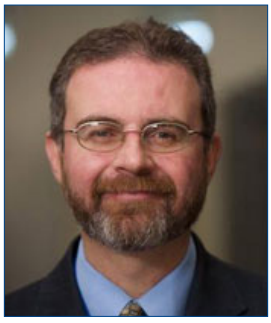
INTRODUCING THE NMP CERTIFYING EXAM COMMITTEE

ABR UPDATE


R. Pooley


K. Kanal


M. Podgorsak


G. Ibbott

ABR Volunteers

The ABR depends on hundreds of volunteers to fulfill its mission. One key function of ABR medical physicist volunteers is to write physics-related questions for ABR exams. This includes not only the medical physics qualifying, certifying, and OLA questions, but also physics questions for diagnostic radiology and radiation oncology qualifying exams. For question writing purposes, volunteers are organized into committees according to their expertise (see the table below). In this article, we will focus on the Nuclear Medical Physics (NMP) Certifying Exam Committee.

Medical Physics Question Writing Committees

Part 1: Qualifying Exam – General
Part 1: Qualifying Exam – Clinical
Part 2: Qualifying Exam – Diagnostic (DMP)
Part 2: Qualifying Exam – Nuclear (NMP)
Part 2: Qualifying Exam – Therapeutic (TMP)
Part 3: Certifying Exam – DMP
Part 3: Certifying Exam – NMP
Part 3: Certifying Exam – TMP
Continuing Certification (OLA) – DMP
Continuing Certification (OLA) – NMP
Continuing Certification (OLA) – TMP

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Geoffrey Ibbott, PhD
American Board of Radiology
Email: gibbott@theabr.org
Twitter: @IbbottIbbott

The ABR now allows candidates for the Part 1 exam to take the general and clinical parts together or separately. Rebecca Howell, PhD, Director of the MD Anderson graduate program says, "This change could be beneficial for students who want to focus their study efforts on one section at a time."

Pictured from left to right: Dagoberto Esquer, ABR Exam Developer; Pat Zanzonico, PhD; Julie Howell, ABR Exam Developer; Patrick Byrne, PhD, Committee Chair; Michael Yester, PhD; Vanessa Gates, MS; Rachel Barbee, PhD; Joshua Scheuermann, MS; Robert Pooley, PhD, ABR Trustee. Not pictured: Sadek Nehmeh, PhD

Committee Membership

The NMP Certifying Exam Committee has seven members: **Patrick Byrne (Chair), PhD; Rachel Barbee, PhD; Vanessa Gates, MS; Sadek Nehmeh, PhD; Joshua Scheuermann, MS; Michael Yester, PhD;** and **Pat Zanzonico, PhD**. As the trustee with the NMP portfolio, **Robert Pooley, PhD**, supervises this committee and participates with committee members in review calls and the annual meeting. Julie Howell and Dagoberto Esquer are the ABR staff members ("Exam Developers") currently assigned to support the NMP Certifying Exam Committee.

Committee Responsibilities

The responsibilities of the NMP Certifying Exam Committee include:

- Writing and reviewing new questions.
- Reviewing existing questions in the pool for quality and relevance.
- Reviewing and updating the exam blueprint.*
- Selecting questions for each certifying exam.
- Reviewing the performance of certifying exam questions.

The committee writing cycle runs from April through mid-September. During each cycle, all committee members are assigned categories in which to write exam questions (also known as "cases"). Candidates are presented a total of 25 cases during the certifying exam. This includes five cases per category, where each case comes from a different subcategory, for five categories*. It can take several hours to write a high-quality exam case, which includes appropriate images, expected responses from the candidate, potential follow-up questions for the candidate, and references.

Cases are reviewed by ABR editing staff prior to being presented to the entire committee during a remote review meeting. During committee review, cases may be accepted as is, edited during the meeting and then accepted, returned to the committee member with suggestions to make more significant edits, or rejected. Once accepted by the committee, a case becomes available to add to a future certifying exam.

The most recent NMP Certifying Exam Committee in-person annual meeting occurred in Illinois on August 26–27, 2022. ABR meetings may take place at ABR Headquarters in Tucson, or now at RSNA Headquarters in the Chicago suburb of Oak Brook. This was the first time the NMP Certifying Exam Committee met at the RSNA Headquarters facility. The annual meeting was very productive. Committee members reviewed new cases, assembled two NMP certifying exams comprising 25 cases each, and conducted an additional careful review of each case to be administered during the spring and fall 2023 certifying exams.

Exam Case Management Software

The ABR recently developed a new software tool, the "Radiology Assessment Development System" (RADS), to handle all aspects of exam development and administration for qualifying and certifying exams as well as OLA questions. This tool was implemented in 2021 for computer-based exams and was rolled out this year for oral certifying exams. NMP was the first certifying exam committee to submit cases via this new software system. In RADS, question writers can enter cases directly into the database, edit questions, add and annotate images, add expected responses from candidates, and search for questions to assemble exams. RADS also allows efficient review and modification of cases during review calls and the annual meeting. ABR staff have spent many hours not only developing this software but also converting cases from the previous system (a Word document casebook).

Exam Developer Responsibilities

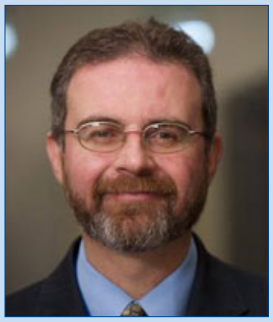
The important work of the exam writing committees would not be possible without dedicated ABR exam developers. Working closely with exam committee members and the trustee, exam developers provide the following support:

- Maintain a dashboard of all information related to this committee:
  - Committee roster with member contact information and term dates
  - Committee photos
  - Committee schedule
  - Production cycle notes
  - Data on writing assignments and case submissions
  - Attendance of members at review calls and the annual meeting
  - Annual meeting planning and preparation
  - Annual meeting summary and productivity reports
- Manage communications with committee members
- Schedule review calls and the annual meeting
- Facilitate review calls and the annual meeting
- Convert cases from former casebook to RADS (this year only)

The NMP Certifying Exam Committee would like to thank Julie, Dagoberto, and all ABR exam developers for their outstanding organizational skills, careful attention to detail, and impressive knowledge of the process related to exam development. In addition, the ABR would like to thank the volunteers who serve on the NMP Certifying Exam Committee for making it possible to deliver high-quality exams every year.

* The current exam blueprints (content guides) for all MP subspecialties are described on the ABR website. ■

Matthew B. Podgorsak, PhD, Named Chair of the ABR Board of Trustees



We're pleased to announce Dr. Podgorsak's election to chair the Board of Trustees (BOT). The BOT focuses on the very important tasks of assuring the quality, relevance, and effectiveness of ABR exams. The BOT comprises diplomates from diagnostic radiology, interventional radiology, medical physics, and radiation oncology.

As chair, Dr. Podgorsak also has a seat on the ABR's Board of Governors. The primary focus of the BOG is strategic, policy, and financial matters.

Dr. Podgorsak has been an ABR volunteer for 18 years, serving on item-writing committees and as an oral examiner, and has been a member of the BOT since February 1, 2017. Dr. Podgorsak is chief medical physicist at the Roswell Park Comprehensive Cancer Center's Department of Radiation Medicine in Buffalo. He is also an associate professor in the Department of Radiation Oncology at the Jacobs School of Medicine and Biomedical Sciences.

Dr. Podgorsak earned his undergraduate degree at McGill University in Montreal, Canada, and his PhD in the Department of Medical Physics at the University of Wisconsin in Madison.

DIVERSITY RECRUITMENT through EDUCATION AND MENTORING

DREAM

THE DREAM PROGRAM is a 10-week summer program designed to increase the number of women and racially underrepresented groups in medical physics by offering research opportunities, outreach and strategic mentorship geared towards recruiting a more robust and diverse group of skilled undergraduate students in the field of medical physics. DREAM students will be placed into summer research and mentorship groups that are consistent with their research and career interests. DREAM fellows are selected on a competitive basis. Up to six $6,000 stipends will be awarded to selected DREAM fellows. The stipend is based upon an expectation of a 40-hour per week effort for 10 weeks.

ELIGIBILITY

- Undergraduate sophomores, juniors, and seniors majoring in physics, engineering, or other science
- US Citizens, Canadian Citizens, or Permanent Citizens of the US

HOW TO APPLY

- Go to http://gaf.aapm.org/index.php#DREAM
- Send official transcripts to karen@aapm.org
- Two letters of recommendation to karen@aapm.org
- Be sure to address diversity and/or the impact this fellowship would have on you in your self-statement.

APPLICATION DEADLINE:

February 3, 2023

FOR MORE DETAILS, VISIT: http://gaf.aapm.org/index.php#DREAM

PROGRAM CONTACT: Karen MacFarland, karen@aapm.org or (571) 298-1282

Sponsored by the AAPM Education Council through the AAPM Education and Research Fund.
Additional funding provided by the Southeast Chapter of AAPM.

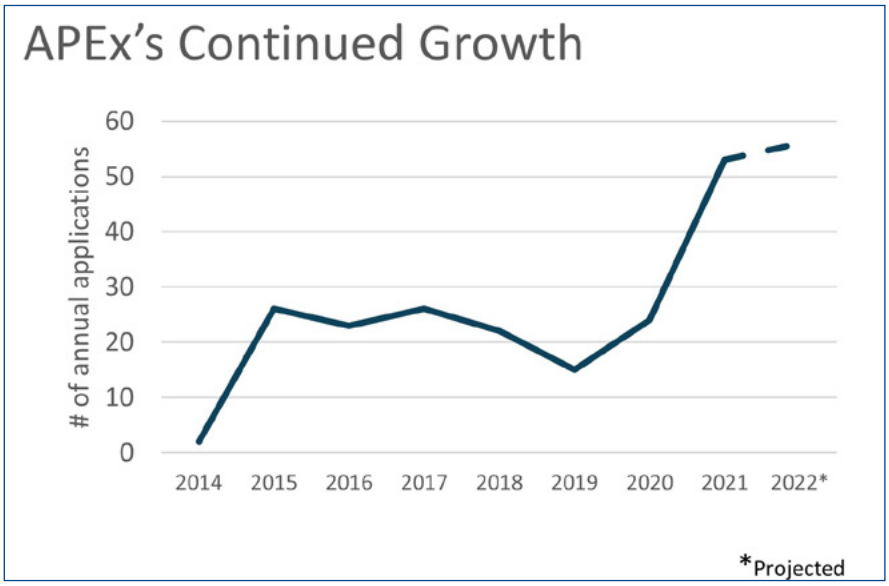
QUALITY AND SAFETY: A MULTIDISCIPLINARY PANEL DISCUSSES ASTRO'S APEX ACCREDITATION PROGRAM

ASTRO QUALITY IMPROVEMENT

ASTRO's APEx – Accreditation Program for Excellence continues to see record growth. Quality and safety are core to radiation oncology and seeing an increase in practices committing to quality programs underscores that tradition.

Recently, ASTRO's Assistant Director of Quality Improvement, Randi Kudner, discussed APEx with a multidisciplinary panel from different institutions.

- Jeff Michalski, MD, MBA, FASTRO, ASTRO President, Siteman Cancer Center
- Charles Conduah, MS, Medical Physicist, University of Minnesota
- Summer Del Mundo, RTT - Manager of Operations - Scripps MD Anderson Cancer Center
- Sarah Seiler, RTT - Manager of Radiation Oncology - Aurora West Allis Medical Center



Randi Kudner: What was your practice's original decision around accreditation?

Jeff Michalski: We've always felt that accreditation was an important measure of quality for our practice. Having an external review and endorsement of our approach was very helpful and our departmental and hospital leadership agreed.

Randi Kudner
Assistant Director of Quality Improvement
ASTRO
Email: randi.kudner@astro.org

Partners in Quality and Safety

ASTRO is proud to partner with the entire radiation oncology team to improve quality and safety for patients and staff. We know that, while every member contributes to high-quality outcomes, physicists play a pivotal role in radiation oncology practices. Along with other members of the patient care team, physicists assure the accurate delivery of all aspects of the treatment plan; oversee radiation safety; and implement, maintain and monitor advanced radiation treatment technologies. Given the breadth and level of work they do, it's easy to see why physicists often lead or play key roles in practice accreditation.

Sarah Seiler: I've been with Aurora West Allis for 14 years and we were the first site in Wisconsin to get APEx accredited. Having a documented process to understand the things you do clinically and tie it all together is a wonderful opportunity for the team.

Kudner: Why did you choose to pursue APEx, specifically?

Charles Conduah: So, I wasn't there for the initial decision to choose the accreditation. I was consulted, probably in the very early stages and partly because I was one of the first people to become an APEx Surveyor. The institution knew that I was already a surveyor, so I was brought on board early when the decision was made to go with ASTRO's APEx Accreditation.

Sieler: What we really loved about APEx is it's specific to what we do and it's by our peers. We loved that concept and really embraced it as something that was holistically about every part of what we do instead of taking something else and modifying it for our specialty. APEx holds us to the highest **of standards.**

Michalski: I felt then, and still do, that it was important to have a radiation oncology society provide accreditation for radiation oncology practices. ASTRO is wholly focused on radiation oncology, and we felt that it would be a stronger relationship, both for us doing a review, but also a feeling that ASTRO might be open to learning from practices' experience. APEx is less prescriptive of exactly how to do things and is willing to accommodate various approaches, because not every practice is the same. There was never any doubt in our minds that we would go for reaccreditation with ASTRO.

Kudner: How did your team approach the work involved with the APEx Self-Assessment and preparing for the facility visit?

Conduah: I remember they had different stakeholders at all the meetings to make sure we were covering all the EIs [Evidence Indicators]. We also had a team member who was basically in charge of making sure that we met the EIs and collated all the records and the requirements. It was great because I had noticed, as an APEx Surveyor, that practices that had a dedicated person responsible for making sure the EIs were met always seem to do better. So, in physics, for example, we had a team that was responsible for ensuring that we were meeting those EIs with regard to quality assurance and quality control and then we provided the information to the lead.

Seiler: We approached it like a team, and we realized, we're like stacked Dominos, how one area of the practice does touch another even if you don't think about it daily. Everyone needs a broad understanding of the process and then each discipline has a more in depth understanding of their part of that puzzle. When we wrote our Standard Operating Procedures we said, 'Ok, let's make something that really makes sense for us and for our workflow.' It was about evaluating the things we were doing and how we could be more efficient.

Del Mundo: [APEx] is not a one person show. I used the word 'we' all the time because I wanted the team to understand that this is work for all of us. No one is going to put in more work than the other. It required us to work with our faculty and our staff to meet those expectations. APEx made us open our eyes on things that we weren't doing, or the things that needed more effort.

Kudner: What impact has APEx accreditation had on your staff?

Del Mundo: I think we are more proactive when it comes to reviewing our policies and procedures. From an internal standpoint, it's much better when we initiate a new process. I would say documenting from all aspects is huge, and a big improvement as a group.

Seiler: Radiation oncology is not stagnant, and we are always changing and evolving. APEx allows us to understand how our evolution impacts other areas and ensures we're doing it safely. It really helps teams grow and bond together. APEx allowed us to see the benefits of doing something in a structured manner, understanding the whys and tying that back in to why certain things are done a certain way. APEx showed us where the breakdown was in a process and what the opportunities were to fix it. When you're always looking through one lens, you don't really notice the barriers, and APEx showed us that you have to use a wider view than just your own.

Conduah: Overall, I think APEx standardizes and streamlines the processes that we have. We can ensure that each patient checks all the boxes during the treatment cycle.

Examples that easily come to mind are pacemakers and pregnancy status. Historically, we had some issues with that, and we were able to add standard items that are checked and that has helped a lot.

Kudner: What impact does APEx have on the patients?

Michalski: I think it's reassuring to them that they're being managed and treated in an environment that has passed a peer review. Patients are starting to recognize that accreditation is an endorsement and indicates a high level of quality and safety.

Conduah: APEx standardizes and helps with the care that each patient receives. We go through the process for each patient, knowing that no one is going to drop the ball.

Kudner: How has APEx impacted physics at your practice?

Conduah: Physicists like quantitative processes and, I think, part of the reason APEx has received such good feedback is that it is quantitative. From a physics standpoint, we like to be able to have reproducibility. Being accredited helps physics standardize and be able to replicate the same tests, or QA, that we do every week, month and day.

Kudner: What would you say to practices considering APEx Accreditation?

Seiler: There's benefit in every part of it. You go through the motions in other programs and don't realize the change, but with APEx you see the change in real time. I always recommend it to people. It makes us better teams, better providers to patients and all of that is reflected tangibly in our outcomes. Other accreditations feel like there's a trick, right? But with ASTRO, they're not trying to catch you. It is truly your own self-reflection and journey.

Conduah: I have seen both sides of the program, as a surveyor and as part of an accredited practice. It's time intensive, but once you get the process set up and get all of that streamlined, it really helps with the workflow, and it helps keep the standard at a high bar. Physicists like quantitative things, which is part of the reason APEx has received such good feedback. APEx is quantitative.

Del Mundo: We've had other practices reach out for feedback about our process and whether it's something that they should consider. We told them absolutely because APEx is a radiation-specific program that makes your practice better. From a practice standpoint, there is no doubt that there's a lot of things that we took from the process that made us realize we needed to go back to our teams and say, 'we need to tighten this up' or 'we should document that in our policy.' It strengthened our processes and made us feel safer.

Michalski: I'm proud to be an ASTRO APEx-accredited center. I am proud of our faculty and staff who've come together and helped us become accredited. It's a source of pride to have successfully met our accreditation.

Schedule a one-on-one session to learn how APEx will benefit your practice by contacting APEx@ASTRO.org. ■

AMERICAN ASSOCIATION *of* PHYSICISTS IN MEDICINE

INTERESTED IN APPLYING YOUR PHYSICS OR ENGINEERING KNOWLEDGE IN MEDICINE? WANT TO MAKE A CLINICAL IMPACT THIS SUMMER?

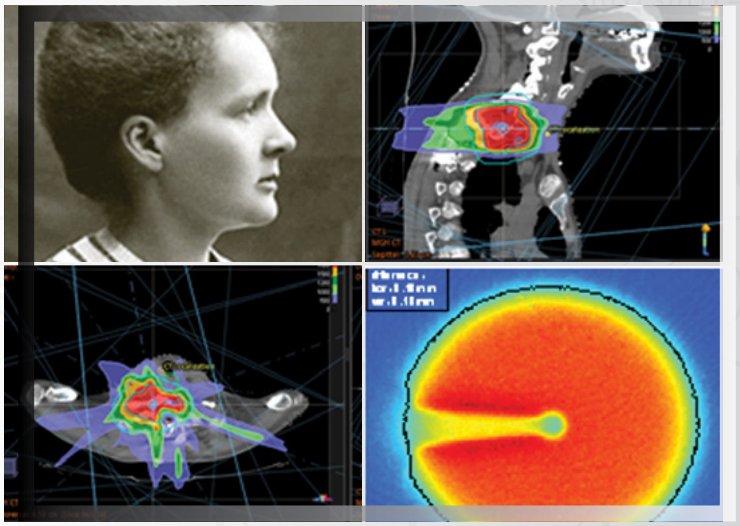
THEN THE SUMMER UNDERGRADUATE FELLOWSHIP PROGRAM IS FOR YOU!

We provide opportunities for excellent undergraduates to gain experience in medical physics at leading clinical and research institutions. A large menu of mentor-defined projects is available and Fellows select their mentor according to their mutual interests.

$6,000 stipends will be awarded to selected students on a competitive basis. The stipend is based upon an expectation of 40-hours per week for 10 weeks during the summer (May through September).

Application Deadline:
February 2, 2023

For more details, visit:
http://gaf.aapm.org/index.php#SUFP



Sponsored by the AAPM Educational Council through the AAPM Education and Research Fund

PROGRAM CONTACT: Karen MacFarland, karen@aapm.org or 571-298-1282

RADIATION AND MEDICAL IMAGING: COMMUNICATING CLEAR ANSWERS TO TOP QUESTIONS

RADIATION AND MEDICAL IMAGING COMMUNICATION GUIDE

(written on behalf of the Ad Hoc Committee for External Communications and Social Media)

How many of us have received questions from patients, family, or friends related to the potential risk from the radiation used in medical imaging? I would guess all of us. How many of us have clear, concise, non-technical answers at the tip of our tongue? The answer now is all of us!

The Ad Hoc Committee for External Communications and Social Media pursued a number of communication initiatives during its tenure, one of which was to better understand the value of retaining external expertise in risk communication. Unit 58 (Response Team) interviewed and subsequently contracted with a risk communication expert, Dr. Randy Hyer, to develop a guide for use by AAPM members and stakeholders. The guide was approved earlier this year and can be found on the AAPM publications webpage.

Radiation and Medical Imaging: Communicating Clear Answers to Top Questions was written to help health professionals explain the benefits and risk of medical imaging to policy makers, care providers, patients, family members, and the public. The copyright for Clear Answers to Top Questions on Medical Imaging is held by the American Association of Physicists in Medicine (AAPM) and the material included in the guide may be used freely with attribution and citation.

The Communication Guide uses a scientifically validated method called Message Maps to provide clear and concise answers to common questions about the use of radiation in medical imaging. Message Maps are risk communication tools used to help organize complex information and make it easier to express current knowledge to the public. Messages are presented initially in no more than 3–5 short sentences that convey 3–5 key messages, ideally in the least number of words possible. For ease of use, each complete message map is on a single page.

In addition to the content specific to radiation from medical imaging, the guide provides an overview of best practices in risk communication, highlighting why the communication style used by scientists is not effective when communicating with patients, families, care providers, or the public about topics that are fundamentally frightening, such as is the topic of radiation.

Two of the Message Maps are included here to demonstrate the principle, but I hope that you will check out — and make use of — the full guide.

Cynthia McCollough, PhD
Mayo Clinic
Email: mccollough.cynthia@mayo.edu
Twitter: @chmccollough

Message Maps are risk communication tools used to help organize complex information and make it easier to express current knowledge to the public

Edition: March 2022

101. Why is medical imaging important?

Key Messages/Shorter Answer (Soundbite):

1. *Medical imaging has led to improvements in the diagnosis and treatment of disease and injury.*
2. *Medical imaging, such as CT scanning, is fast, reliable, and can provide life-saving information.*
3. *Medical imaging can reveal conditions that other diagnostic methods cannot.*

Longer Answer:

1. ***Medical imaging has led to improvements in the diagnosis and treatment of disease and injury.***[4, 5, 6, 7]
   - Medical imaging exams can include x-rays (radiographs), fluoroscopy (x-ray movies), computerized tomography (CT scanning), magnetic resonance imaging (MRI), ultrasound, and nuclear medicine and molecular imaging, such as positron emission tomography (PET scanning).
   - Medical imaging can help determine the best treatment options for a patient.
   - Medical imaging is needed to perform many advanced therapies, including opening blocked coronary arteries without open heart surgery and treating cancer with radiation therapy.
   - Medical imaging is used to guide procedures that place catheters and stents into blood vessels, or to locate, biopsy, remove, or kill tumors.
2. ***Medical imaging, such as CT scanning, is fast, reliable, and can provide life-saving information.***
   - Medical imaging technology is used to:
     - Noninvasively and painlessly diagnose disease and monitor therapy.
     - Provide essential information for planning medical and surgical treatments.
     - Guide medical personnel when placing catheters, stents, or other devices to treat tumors, or remove blood clots or other blockages.
3. ***Medical imaging can reveal conditions that other diagnostic methods cannot.*** [8, 9]
   - Medical imaging can identify internal injuries, fractures, tumors, cancers, hemorrhage, blood clots, and changes in physiology and function.
   - Medical imaging provides non-invasive evidence-based information that can assist your doctor in providing the best possible medical care.

4 https://www.fda.gov/radiation-emitting-products/medical-imaging/medical-x-ray-imaging#description

5 https://www.health.harvard.edu/cancer/radiation-risk-from-medical-imaging

6 https://www.fda.gov/radiation-emitting-products/medical-imaging/medical-x-ray-imaging#description

7 https://thorax.bmj.com/content/69/8/782.short

8 https://doi.org/10.1016/j.mayocp.2015.07.011

9 https://www.wsj.com/articles/in-image-guided-operating-suites-surgeons-see-real-time-mri-ct-scans-14241 22291

Edition: March 2022

203. Can I get cancer from medical imaging?

Key Messages/Shorter Answer (Soundbite):

1. *Theoretically, yes, but medical imaging exams use lower amounts of radiation than the amounts proven to increase cancer risk.*
2. *The risk to a patient depends on the type of exam, the amount of radiation used, and certain patient characteristics.*
3. *If medical imaging is needed as part of your medical care, then the benefits are much larger than the potential risk from the radiation.*

Longer Answer:

1. ***Theoretically, yes, but medical imaging exams use lower amounts of radiation than the amounts proven to increase cancer risk.*** [30, 31, 32]
   - Ionizing radiation can damage cells.
   - Cells with damaged DNA can either die, repair themselves, have no effect, or go on to cause a health effect such as cancer.
   - Cancer risk is related to the amount (dose) of radiation received.
     - Strong evidence exists that high doses of radiation can increase cancer risk
     - Medical imaging uses low doses of radiation.
   - Some epidemiological studies have associated increased cancer risk with low doses of radiation; however, such studies are associated with a great deal of uncertainty due to the difficulty of quantifying such a small risk.
2. ***The risk to a patient depends on the type of exam, the amount of radiation used, and certain patient characteristics.*** [33, 34, 35]
   - Medical imaging exams such as chest x-rays and radiographs of the arms and legs deliver effective doses of <0.1 mSv and pose at most negligible risk.
   - Most radiographic, fluoroscopic, nuclear medicine, and CT exams deliver effective doses of a few mSv to 20 mSv and pose at most very low risk.
3. ***If medical imaging is needed as part of your medical care, then the benefits are much larger than the potential risk from the radiation.***[36]
   - The benefits from medical imaging include earlier detection of disease, including cancer, which makes it easier for physicians to provide a cure.
   - Medical imaging enables rapid diagnosis of life-threatening injuries.
   - Medical imaging reduces unnecessary procedures and surgeries.

30 https://www.cancer.org/treatment/understanding-your-diagnosis/tests/understanding-radiation-risk-from-imaging-tests.html

31 https://www.cdc.gov/nceh/radiation/healthcare.html

32 https://doi.org/10.1016/j.mayocp.2015.07.011

33 https://www.cdc.gov/nceh/radiation/health.html

34 https://www.jacr.org/article/S1546-1440(12)00002-6/fulltext

35 https://pubs.rsna.org/doi/full/10.1148/radiol.2020192256

36 https://www.cdc.gov/nceh/features/medical-imaging-procedures/index.html#:~:text=%20Medical%20imaging%20tests%20are%20non-invasive%20procedures%20that,ionizing%20radiation%2C%20which%20can%20present%20risks%20to%20patients

2023 AAPM/RSNA DOCTORAL AND MASTERS GRADUATE FELLOWSHIPS

Four Doctoral awards (PhD or DMP) and three MS awards each of $10,000. Additionally, one of the MS and Doctoral awards will be reserved for under-represented applicants (see details below).

Doctoral Graduate Fellowships:
Four Doctoral awards of $10,000 each
Two awards will be for first year Doctoral Students.

Two awards will be for second year or higher Doctoral Students.

- Paid to institution which in turn transfers it to student. Money can be used for tuition, professional and research development.

MS Graduate Fellowships:
Three MS awards of $10,000 each
All first and second year MS students are eligible to apply.

- Paid to institution which in turn transfers it to student. Money can be used for tuition, professional and research development.

Sponsored by the AAPM Education and Research Fund.

A list of Award Recipients can be found here.

Each applicant must be a graduate of an undergraduate program in physics or equivalent majors (e.g., engineering-physics, math-physics, or nuclear engineering or applied physics) from an accredited university or college in North America. The undergraduate grade point average must be greater than 3.5 (based on a 4.0). Each applicant must have submitted an application for graduate study to one of the accredited programs with subsequent acceptance. Applicants must be a member of AAPM at the time of application (any membership category). Pending membership status not eligible.

Required Supporting Documentation:

- All post-secondary study transcripts (official transcripts only)
- Copy of Graduate Record Exam results (If applicable)
- TWO Recommendation Forms and TWO Reference letters
- A (<300 word) statement of how funds are to be used, and how the funds will benefit your graduate study or career should you receive the award
- Acceptance letter from intended CAMPEP Accredited Program
- CV including GPAs and publications (use CV Template)

The application includes a check box for under-represented applicants. *EDIC defines "underrepresented and/or marginalized" as those who self-identify as a member of a racial, ethnic, sexual or gender minority group, the disabled population, the neurodivergent population or any other underrepresented group.*

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

Send supporting documentation to:

ATTN: Karen MacFarland
karen@aapm.org

Application Deadline: April 27, 2023

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

Recipient Notified on: May 31, 2023

FOR MORE DETAILS, VISIT: gaf.aapm.org/#FELLOW

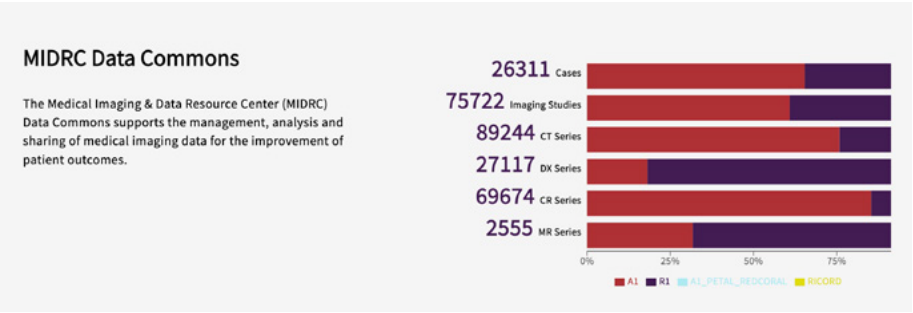
REPORT FROM THE MEDICAL IMAGING AND DATA RESOURCE CENTER (MIDRC)

MIDRC SUBCOMMITTEE UPDATE

M. Giger

P. Kinahan

The Medical Imaging and Data Resource Center (MIDRC), an AAPM, ACR and RSNA collaboratively-built COVID medical images and metadata commons established in August 2020 and hosted at the University of Chicago on the Gen3 data ecosystem platform, is very pleased to be at the outset of its third year of funded work, supported by the National Institute of Biomedical Imaging and Bioengineering (NIBIB). MIDRC is a national resource, aimed at enabling and conducting medical artificial intelligence research. MIDRC's focus during its upcoming year will be threefold – (1) to support research of long COVID, consisting of the collection beyond thoracic radiographs and lung CTs to include cardiac and brain images, along with additional imaging modalities such as MRI and ultrasound; (2) to employ the MIDRC Sequestered Data Commons (20% of all incoming data is housed privately in this closed collection) to test algorithms and allow for fast-tracking regulatory approval and translation to real-word use in clinical care; and (3) to explore and strengthen MIDRC's interoperability with other databases, such as NCATS' National COVID Cohort Collaborative (N3C) database and NHLBI's BioData Catalyst.



MIDRC publication as of early Oct. 2022

As MIDRC looks forward, we also celebrate the many meaningful milestones of our first two years. Over 100 investigators from 24 different academic institutions, community practices and government agencies around the country have worked tirelessly to create and curate the MIDRC open

Maryellen Giger, PhD
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Email: m-giger@uchicago.edu

Paul Kinahan, PhD
University of Washington
Email: kinahan@u.washington.edu

Earn MIPS Improvement Activity Credits By Contributing COVID images and data through two data intake portals: ACR's COVID-19 Imaging Research Registry (CIRR) and RSNA's International COVID-19 Open Radiology database (RICORD).

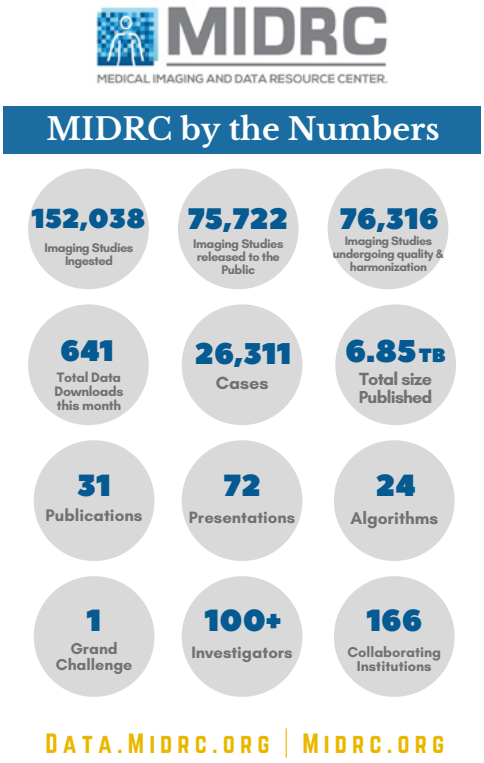
Medical imaging practices and radiologists now can claim Merit-based Incentive Payment (MIPS) "Improvement Activity" credits for contributing COVID-related data and images to MIDRC's two data intake portals: ACR's COVID-19 Imaging Research Registry (CIRR) and RSNA's the RSNA International COVID-19 Open Radiology Database (RICCORD).

Practices and clinicians can earn Centers for Medicare and Medicaid Services (CMS) points by completing MIPS requirements.

Please direct inquiries to:
Maryellen Giger, PhD, **FAAPM,**
Paul Kinahan, PhD, **FAAPM, or**
AAPM MIDRC Program Manager,
Emily Townley

MIDRC
MEDICAL IMAGING AND DATA RESOURCE CENTER

MIDRC SUBCOMMITTEE UPDATE, Cont.



discovery data commons, which has now ingested over 150,000 imaging studies, with over 75,000 imaging studies currently available on the MIDRC user portal.

Important contributions made by AAPM investigators include

- Opening MIDRC's COVIDx Grand Challenge, a COVID classification Challenge using MIDRC data, to the data science community at-large,
- Beginning a collaboration with Argonne National Laboratory on the development and training of privacy-preserving federated learning models using MIDRC data,
- Authoring articles on artificial intelligence and the imaging of COVID-19, published in *Medical Physics* and the Journal of Medical Imaging,
- Facilitating cohort selection for MIDRC data users by implementing methodology to match highly varied incoming DICOM Study Descriptions to Logical Observation Identifiers, Names and Codes (LOINC) values within the data portal,
- Investigating and informing MIDRC CT image quality by performing a multi-institutional imaging phantom study employing the Corgi phantom (developed by **Jeff Siewerdsen, M Mahesh** and **John Boone**),
- Building the MIDRC Metrics and Resources Portal, assisting MIDRC data users with analysis techniques, references, software options and potential metrics for use in the evaluation of algorithm performance,
- Analyzing potential biases and mitigation strategies for forms of data that can arise along the pipeline of machine learning model development, from data collection all the way to clinical deployment,
- Developing sequestering and task-based sampling algorithms to create the MIDRC Sequestered Commons and enable independent testing of AI algorithms, and
- Working with non-imaging data to demonstrate the interoperability of MIDRC with other data commons, enabling multi-omics AI research.

MIDRC is committed to maintaining a continuous open dialogue with the medical community by hosting monthly Seminars, quarterly Town Hall meetings, and giving presentations at many imaging society, institutional, and government meetings. Over the past year, MIDRC presentations were given at Annual Meetings for the American College of Cardiology, the Society of Imaging Informatics (SIIM), SPIE, and AAPM's Practical Big Data Workshop, among others.

October's well-attended monthly Seminar featured MIDRC investigators Drs. Despina Kontos and Chunrui Zou (both University of Pennsylvania) and Drs. Joel Saltz and Prateek Prasanna (both Stony Brook University) discussing the prediction of COVID-19 outcomes using radiomics and deep learning. The next free and open Seminar will be Tuesday, November 15 at 2:00 pm CT and will feature AAPM Treasurer and MIDRC Investigator **Sam Armato** speaking on the challenges of a Grand Challenge and MIDRC's COVIDx Challenge. Register here.

MIDRC will be giving a live demo workshop at 2023's upcoming SPIE Annual Meeting, with various interactive stations at which attendees can explore the attributes of MIDRC. MIDRC will again have a strong presence this year at RSNA's 2022 Annual Meeting (November 27–December 1 in Chicago, IL). If you're attending RSNA, please come

visit the MIDRC booth and educational exhibit in the Lakeside Learning Center! MIDRC will be part of many other sessions at RSNA and will also be presenting in the AI Innovation Theatre.

How You Can Participate

We invite the AAPM community to support MIDRC by contributing medical imaging and metadata, aiding in the advancement of radiologic machine learning research through the use of MIDRC's data and resources, helping to fight COVID-19 and future pandemics, and impacting public health worldwide. MIDRC is especially seeking data contributions from smaller, rural or potentially under-represented health systems. Please consider supporting this curated and diverse data commons with a contribution — you can contact any member of the MIDRC subcommittee for assistance, review this Data Contribution 101 Guide, or complete this preliminary MIDRC data contribution inquiry (there is some limited financial and administrative support available to contributors). Make a difference, your contribution matters — we thank you in advance for your support of MIDRC! ■

MIDRC at the 2022 AAPM Annual Meeting & Exposition

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MADAN REHANI ELECTED PRESIDENT OF IUPESM

PERSON IN THE NEWS

Madan M. Rehani, PhD, was elected President of the IUPESM (International Union for Physical and Engineering Sciences in Medicine) for the term 2022–2025. The IUPESM represents more than 150,000 medical physicists and biomedical engineers working in the science of medicine, with the principal objective being to contribute to the advancement of physical and engineering sciences in medicine for the benefit and well-being of humanity. This is accomplished in part by organizing the triennial "World Congress for Medical Physics and Biomedical Engineering," establishing committees and working groups, publishing scientific journals, and promoting standards of practice in relevant fields. The President and the rest of the IUPESM Administrative Council manage these activities. Dr. Rehani is also the Director of Global Outreach for Radiation Protection at the Massachusetts General Hospital and Harvard Medical School in Boston, MA, USA, and worked previously for over 11 years at the IAEA (International Atomic Energy Agency). ■

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1631 Prince Street, Alexandria, VA 22314 | p. 571-298-1300 • f. 571-298-1301 | **aapm.org**