

AAPM NEWSLETTER

March/April 2023 | Volume 48, No. 2



Special Interest Feature:

SDAMPP Education Practices Committee

IN THIS ISSUE:

- ▶ President-Elect's Report
- ▶ News From AIP
- ▶ ASTRO Quality Improvement Report
- ▶ Safety White Papers Update
- ▶ Working Group for Non-Clinical Professionals Update
- ▶ ...and more!



Congratulations

to the Recipients of the Following Awards in 2023!

All award recipients will be recognized during the 2023
AAPM Annual Meeting in Houston at the Awards and Honors Ceremony
Monday, July 24 | 6:30 pm (reception immediately following)
Houston Ballroom at the Marriott Marquis Houston Hotel

Please Join Us in Congratulating These Recipients:

**WILLIAM D. COOLIDGE
GOLD MEDAL**

M. Saiful Huq, PhD

**EDITH H. QUIMBY LIFETIME
ACHIEVEMENT AWARD**

M Mahesh, PhD
Lei Xing, PhD

**JOHN S. LAUGHLIN
YOUNG SCIENTIST AWARD**

Hao Gao, PhD

FELLOWS

Norman Lee Brown, DSc
Catherine Coolens, PhD
Michele Ferenci, PhD
Tyler Fisher, MS
Luis Fong de los Santos, PhD
Carnell Hampton, PhD
Beth Harkness, MS
Emily Hirata, PhD
Chia-Ho Hua, PhD
Xun Jia, PhD
Mary Keenan, DMP
Haibo Lin, PhD

Wei Liu, PhD
K. Sunshine Osterman, PhD
Brian Pogue, PhD
Thomas Purdie, PhD
Ingrid Reiser, PhD
George Sgouros, PhD
Emilie Soisson, PhD
Raja C. Subramaniam, PhD
Michelle Svatos, PhD
Yevgeniy Vinogradskiy, PhD
Kevin Wunderle, PhD
Kai Yang, PhD
Wensha Yang, PhD

AAPM 2023
JULY 23-27 | HOUSTON, TX
65TH ANNUAL MEETING & EXHIBITION



The ART OF SCIENCE
The SCIENCE OF CARE



AAPM NEWSLETTER is published by the American Association of Physicists in Medicine on a bi-monthly schedule.
AAPM is located at 1631 Prince Street, Alexandria, VA 22314

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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: May/June 2023

Submission Deadline: March 31, 2023

Posted Online: Week of May 2, 2023

CORPORATE AFFILIATE ADVERTISING

[Advertising Rates & Deadlines](#)

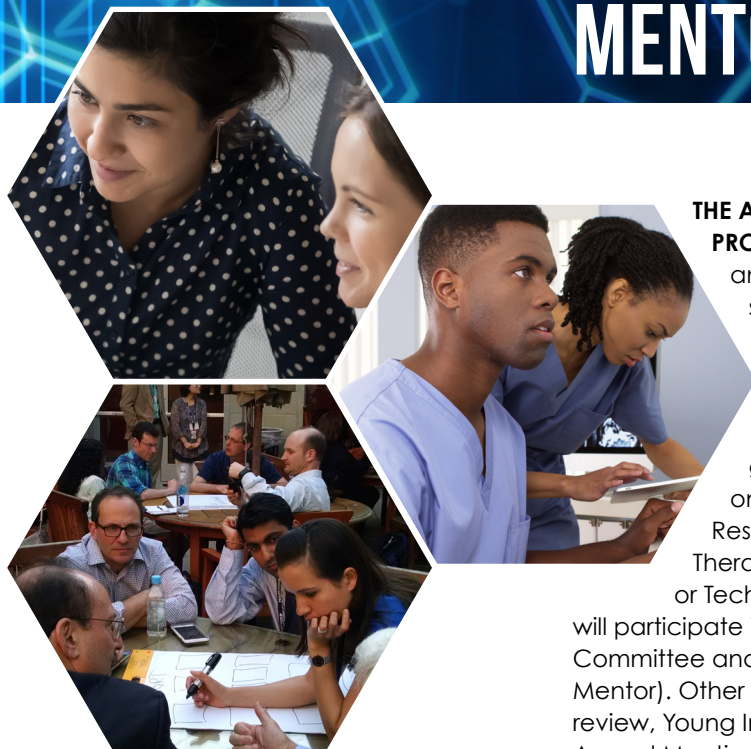
CONNECT WITH US!



EDITOR'S NOTE

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

AAPM SCIENCE COUNCIL ASSOCIATES MENTORSHIP PROGRAM



THE AAPM SCIENCE COUNCIL ASSOCIATES MENTORSHIP PROGRAM (SCAMP) has been established to recognize and cultivate outstanding researchers at an early stage in their careers, with the goal of promoting a long-term commitment to science within AAPM. SCAMP uses the process of shadowing to integrate the Associates into the scientific activities of the organization. Our review working group will select eight Associates then assign each one to a Mentor from the AAPM Science Council, Research Committee, Data Sciences Committee, Therapy Physics Committee, Imaging Physics Committee, or Technology Assessment Committee. The Associate will participate in selected meetings of their assigned Mentor's Committee and join a task group (chosen with input from the Mentor). Other shadowing AAPM-related activities include abstract review, Young Investigator judging, committee activities at the Annual Meeting, etc.

OPEN FOR APPLICATIONS:

January 9, 2023

DEADLINE:

April 12, 2023

ELIGIBILITY CRITERIA:

- Early career Medical Physicists within five years of earning a doctoral degree. Priority will be given to Medical Physicists who have completed their PhD and are either currently in residency or beginning their career.
- Must be a member of AAPM at the time of application (any membership category) and maintain membership for the duration of the award period.

Pending membership status not acceptable

Prior Mentorship Program recipients are ineligible

DIRECT INQUIRIES: scamp@aapm.org

The Science Council (SC) Associates will participate in the program through the end of the following calendar year. Each Associate will be reimbursed up to \$2000 to cover the costs (travel-related expenses including flight, hotel, and meeting registration) to attend the 2023 Annual Meeting in Houston and the 2024 Annual Meeting in Los Angeles.

APPLICATION REQUIREMENTS:

- Cover letter outlining current contributions to Medical Physics research, describing future career plans, and reasons for interest in the SCAMP program.
- The cover letter should specify the committee(s) and/or committee member(s) of interest — e.g., Science Council, Research Committee, Therapy Physics Committee, Imaging Physics Committee, or Technology Assessment Committee, and/or member(s) therein.
- A diversity statement limited to one single-spaced page that describes how you will support and achieve SCAMP and AAPM's goals of equity, diversity and inclusion, especially as it relates to supporting the role of women and underrepresented groups in the field.
- CV (no more than four pages).
- Brief letter of support from institution during the SCAMP tenure. This letter indicates support for the time commitment that SCAMP requires. Not a letter of recommendation.
- Please combine and submit all application documents as one PDF



A Focus on Education and Safety

NEWSLETTER EDITOR'S REPORT

Welcome to the March/April 2023 edition of the AAPM Newsletter. Over the past few months, institutions across the US have been interviewing medical physics residency candidates, and current residents who graduate this summer have been interviewing for jobs. It's the perfect time to showcase some of AAPM's efforts in education, and we're pleased to have two reports from the Education Council along with a Special Interest Group feature from the SDAMPP, the Society of Directors of Academic Medical Physics Programs. The reports from EC highlight recommendations for alternative pathway education in medical physics and the recommendations of AAPM Report 365 on medical physics graduate education. The SDAMPP report gives an overview of four residency programs with different approaches to implementing cross-institutional rotations and the benefits to residents.

Also in this issue, President-Elect **Todd Pawlicki, PhD** focuses his first newsletter report of this year on the initiatives he looks forward to continuing over the next few years. Other features include a report from Science Council on how the AAPM Big Data Subcommittee is leading the charge to create AI-ready data sets, a notice about newly published updates to the ASTRO Safety White Papers, and a summary of the relationship between AAPM and AIP, the American Institute of Physics, and the benefits available to AAPM members. Check out the full Newsletter for these reports and more!

We hope every AAPM member finds something of interest in every issue of the Newsletter. All AAPM members are encouraged to submit content and ideas for the Newsletter either directly to the Editor or through the submission link on the [Newsletter page](#). Please enjoy this issue of the Newsletter and send us your feedback and ideas for future editions. And as always, share the Newsletter articles you enjoy with your social media network; the Newsletter is available for all to read. ■



Jennifer Pursley, PhD
Massachusetts General Hospital

AAPM 2023
JULY 23-27 | HOUSTON, TX
65th ANNUAL MEETING & EXHIBITION

The ART OF SCIENCE
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**MEETING PREVIEW:
AAPM 2023 STUDENT
& TRAINEE EVENTS**

**Be sure to check out these
great student & trainee
events live and in person
this July at AAPM's
65th Annual Meeting &
Exhibition!**

Sunday, July 23

- Annual Student Meeting
- Residency Fair
- Student Night Out
- Student and Trainee Lunch
*presented by the Working
Group on Student and Trainee
Research*

Monday, July 24

- MedPhys Slam

Tuesday, July 25

- Expanding Horizons Poster
*Session presented by the
Working Group on Student and
Trainee Research*

#AAPM2023
For More Information:
aapm.me/annual



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. More details including an FAQ and sign up can be found [here](#).

What is Mentorship?

Mentorship is one-on-one, 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.



From the AAPM President-Elect

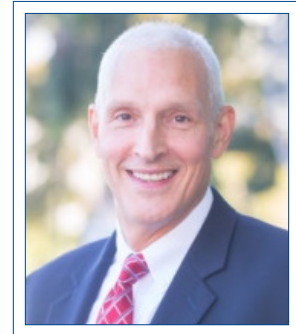
PRESIDENT-ELECT'S REPORT

I hope your 2023 is off to a great start! For me, I'm eager to begin my service on the Presidential chain of AAPM, one of the largest, most vibrant, and most impactful professional societies for medical physicists. AAPM is a diverse organization with over 10,000 members in 12 different membership categories. It includes medical physicists from engineering, health physics, magnetic resonance, nuclear medicine, radiation oncology, radiation safety, radiology, ultrasound, and other specialties. We are fortunate to have so many dedicated member-volunteers and AAPM staff who care deeply about our discipline, its standing, and our collective dedication to improving health. Working within the AAPM Board of Directors, I pledge to do my absolute best to ensure the continued success of AAPM.

When running for President, I was asked what I considered to be the three most important issues facing AAPM. First is that AAPM should continue to support the needs of physicists today while seeking to position our profession for future stability and success. Rather than starting new initiatives, I will look to existing efforts within the Association to achieve this. We must strike the right balance between supporting the needs of today and looking to the future. That balancing act will come with trade-offs that every member may not agree with, but I believe consensus can still be achieved to move the Association forward.

Another important and recurring issue for AAPM is funding. New opportunities to grow revenue need to be identified, allowing AAPM to increase value to its members in all professional categories. We will engage as many stakeholders as possible to get suggestions and understand member concerns related to addressing financial pressures. It just so happens that this effort was already started in 2022 by AAPM Chair of the Board, **Dan Bourland**. It's called the Ad Hoc Advisory Committee on Future Revenue Sources and is led by AAPM Treasurer, **Sam Armato**. This Ad Hoc aims to evaluate current revenue sources (external, investments, and others) to provide recommendations that will expand and diversify revenue streams for the Association. And lastly, recognizing that it is impossible to get unanimous agreement on every decision, the AAPM Board of Directors will be a tremendous asset in getting input from members and helping keep them informed.

In preparing for my role in AAPM leadership, I have also reflected on my service as AAPM Secretary from 2015 to 2018. I learned a lot about how AAPM functions, what the membership values, and the membership's overall appetite for change. I learned the importance of constancy of purpose for the Association and that everything takes longer than you anticipate. During my tenure, I will always look to maintain current initiatives and build on the results of the past. I am not a micro-manager and will avoid being involved in every operational detail. I feel it is important to let people do their work, accept the results, and move on. At the same time, I will provide input when



Todd Pawlicki, PhD
UC San Diego

PRESIDENT-ELECT'S REPORT, Cont.

asked, build bridges where needed, and focus my energy on moving the Association toward achieving its strategic goals. I am a firm believer that perfection is the enemy of progress. We can't look for problems around every possible corner before making a decision. Yes, we need to be thoughtful and thorough, but we also need to be efficient, as delayed decisions hinder the effective operations of the Association. Once a decision is made, we then need to take action with the confidence that we can pivot when results are not turning out as intended. This has happened several times in AAPM's past and is a good approach to making progress.

Our current President, **Ehsan Samei**, has initiated two important ad hoc committees so far this year: the Ad Hoc on Journal Vision, chaired by **Shiva Das**, and the Ad Hoc on Administrative Proficiency, chaired by **Emilie Soisson**. Two other Ad Hoc committees are also expected very soon; one on new science and another on sub-specialization and credentialing. These excellent initiatives will provide essential insights and directions for the Association. I look forward to supporting all of them. I am excited about the Ad Hoc Committee on Administrative Proficiency as it could directly impact the structure and processes of the Association. The objectives of this Ad Hoc are to contemplate and advise concrete actions to the Board of Directors as to how the AAPM structure and Headquarters support can be refined to better serve the AAPM mission and to advise the Board of Directors on how the AAPM administration can be evolved for better success. As Ehsan has pointed out in his [September/October 2022 President-Elect's Report](#), there is significant growth in the number of AAPM committees that has outpaced the growth of the membership. This leads to duplication of efforts, missed opportunities for coordination and harmonization, inefficient communications within and across groups, and inefficient utilization of HQ staff. The

Ad Hoc on Administrative Proficiency is consistent with the AAPM strategic focus for the next 1-2 years of coordinating, integrating, and communicating AAPM activities and initiatives from development to implementation. It is important to remember that the Board of Directors (the governing body of the Association) will study, debate, and vote on any recommendations. Only after a successful vote will a recommendation be implemented. Making changes to the Association and realizing the benefits of those changes will require a focused effort, undoubtedly taking more than one year and requiring our collective constancy of purpose.

The 3–5-year strategic initiatives of AAPM include expanding our scope and presence in medicine by identifying future directions in the science and practice of medical physics. AAPM will consider possible areas in which the Association could invest to enhance our success in the years ahead. To this end, I will re-engage with an effort initiated in 2021 by **Jim Dobbins** (immediate past Chair of the Board), which is the Ad Hoc Committee to develop advocacy materials for administrators on the business case for medical physicists in clinical departments. This effort has been expertly chaired by AAPM Secretary Jennifer Johnson. More on this in future communications.

I understand that a new influx of ideas from past and current initiatives may mean that the Association will undergo changes, that HQ staff may be taking on different work than usual, and that we as members may need to approach our relationship with the Association differently. I look forward to working as a member of the Board of Directors, and with all of you, over the next three years. Together we can ensure the continued success of AAPM, and all that AAPM does to help us improve human health to the maximum extent possible. ■

Information from HQ

EXECUTIVE DIRECTOR'S REPORT

Volunteering with AAPM

AAPM relies heavily on the volunteer efforts of its members to do AAPM's good work! Without individuals willing to devote time and energy to the advancement of medical physics, AAPM would not be able to achieve its goals. Did you know that (almost) all AAPM group meetings are open to the membership? AAPM Rule 3.3.2 states:

"Any AAPM member may attend any meeting of the Board, any working group or any task group except for executive sessions."

What does this mean? If you are interested in getting involved and making an impact on AAPM and your profession, here are a few ways to get there:

1. Review the AAPM [Committee Tree](#) and identify groups of interest to you. Reach out to the group chair, introduce yourself and explain your interest. Ask to be added to the group as a guest so you can engage with the group.
2. Take a look at the "Virtual Meetings" listed [online](#).

VIRTUAL MEETINGS (114)

If you see an upcoming group meeting, make plans to join. You can even download the meeting .ics file and add it to your calendar.

3. Review the AAPM [Committee Classifieds](#), find an opportunity to serve, and apply online.

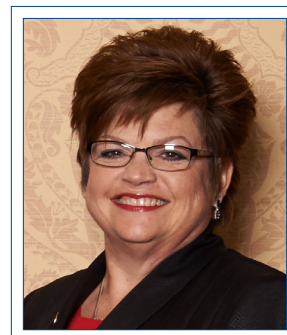
Committee Classifieds

Latest Published Ads [[view all published ads](#) | [go to committee classifieds](#)]

Later in April, the schedule for groups meeting during the 2023 Annual Meeting will be posted online. This is an excellent opportunity to attend group meetings, learn what is going on in your organization, and volunteer!

New AAPM Reports:

- [Report 324](#) - Results from the AAPM Task Group 324 respiratory motion management in radiation oncology survey
- [Report 273](#) - AAPM Task Group Report 273: Recommendations on best practices for AI and machine learning for computer-aided diagnosis in medical imaging
- [Report 377](#) - AAPM BTSC Report 377: Physicist Brachytherapy Training in 2021 — A survey of therapeutic medical physics residency program directors



Angela R. Keyser
AAPM

AAPM Rule 3.3.2 states:

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Who does what on the AAPM HQ Team?

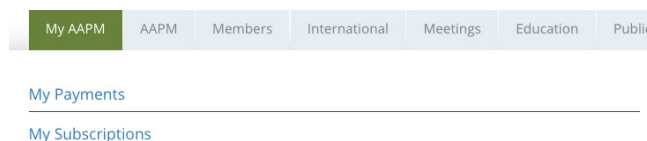
See a list with contact information and brief descriptions of responsibilities [online](#). An [Organization Chart](#) is also provided. We are now providing information about the diversity of our team as well.

EXECUTIVE DIRECTOR'S REPORT, Cont.

- [Report 306](#) - AAPM Task Group Report 306: Quality control and assurance for tomotherapy: An update to Task Group Report 148

Did you know?

- If you find a page or section of the website that is not working as it should, please email the [Help Desk](#), which will put the request into the Information Services Team queue. Someone will then respond to let you know when it has been resolved.
- You can print receipts and review your subscriptions online under the "My AAPM" tab.



AAPM Meeting News

Mark your calendars for upcoming AAPM meetings and webinars:

[AAPM Spring Clinical Meeting](#)

April 1-4

Hyatt Regency Grand Cypress
Orlando, FL

[AAPM Summer School](#)

Radiopharmaceutical Therapy & Dosimetry

June 2-7

University of Minnesota-Twin Cities
Minneapolis, MN

[AAPM 65th Annual Meeting & Exhibition](#)

The ART OF SCIENCE | The SCIENCE OF CARE

July 23-27

Houston, TX

Webinars

- *Basics of CT Pediatric Protocols: How to Optimize the Hardware*
March 9, 12:00–2:00 pm ET
- *Innovations in Medical Physics Education*
March 23, 12:00–2:00 pm ET

- *Synthetic CT: A New Paradigm in Radiotherapy Treatment Planning*
April 13, 12:00–2:00 pm ET
- *AAPM Webinar Series on Non-Clinical Medical Physics Careers, Resources, Opportunities and Networking (2023)*
Webinar #3: MPLA and MedPhys3.0 Applied to Non-Clinical Careers
April 27, 12:00–1:00 pm ET
- *AAPM Webinar Series on Advances in Medical Physics (2023)*
Webinar #33: PULSAR - Optimizing Immuno-Radiotherapy based on Intra-fraction Immune Response
May 11, 12:00–2:00 pm ET
- *AAPM Webinar Series on MP3.0 Transformational Medical Physics (2023)*
Episode #18: Improving Medical Physics Education
May 18, 12:00 PM – 1:00 PM ET

Have you missed any of the previous webinars? The archived webinars can be found [here](#).

AAPM's HQ Team...at your service!

Linda Minor began her AAPM adventure in December as a Meetings Manager. In this role, Linda is responsible for the AAPM Annual Meeting, Summer School, and related association meetings.

Aaron Helmbrecht began 2023 as AAPM's Communications Manager. Aaron will work with the Communication Coordination Committee to facilitate internal and external communications for the organization. He also oversees AAPM's social media channels and serves as the primary media contact for the organization. ■

For more information, visit aapm.me/school



Radiopharmaceutical Therapy & Dosimetry
University of Minnesota-Twin Cities

JUNE
2-7

INTERESTED IN LEARNING MORE ABOUT RPT?

Radiopharmaceutical Therapy (RPT) is fast becoming a mainstream modality with the development and approval of new emitters and conjugates.

Led by Co-Program Directors:

Robert Hobbs, PhD, Johns Hopkins University

Joseph O'Donoghue, PhD, Memorial Sloan-Kettering Cancer Center

Jessica Clements, MS, University of Vermont Medical Center

This four and a half day Summer School will cover the gamut of RPT applications.

MARCH 15

Deadline to Submit
for Scholarship

APRIL 25

Deadline to Receive Early Bird
Registration Rate

MAY 3

Deadline to Reserve or Cancel
On-Campus Housing

AAPM 2023

JULY 23-27 | HOUSTON, TX
65TH ANNUAL MEETING & EXHIBITION



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GET READY, GET SET, GET PERMISSION!



Personalize, Print, and Share
Justification Letter >>

IMPORTANT DATES:

- **March 22:** Registration and Housing Open
- **April 12:** Authors Notified of Proffered Abstract Disposition
- **April 25:** Deadline to Pay \$50 ePoster Fee
- **May 11:** Annual Meeting Scientific Program Available Online

AAPM 2023

JULY 23–27 | HOUSTON, TX
65TH ANNUAL MEETING & EXHIBITION



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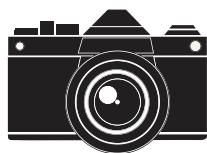
NEW MEMBER SYMPOSIUM

Tuesday, July 25, 2023 | 2:45–3:45 pm ET
Room 371 (Level 3), George R. Brown Convention Center

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

Registered attendees will receive a raffle ticket. Enter to win a complimentary registration for the 2024 Annual Meeting in Los Angeles, CA!

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



Get Your Picture Taken.

A photographer will be available to snap a photo for your profile in the AAPM member directory.



aapm.me/annual

AAPM Member Benefits from AAPM's Association with AIP

NEWS FROM AIP

AAPM is a long-standing member of the [American Institute of Physics \(AIP\)](#), a federation of [10 scientific Member Societies](#) representing a broad spectrum of the physical sciences.

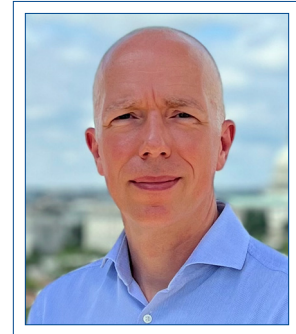
But how do you, as an individual AAPM member, benefit from AAPM's association with AIP?

You receive monthly issues of [Physics Today](#), the most widely read physics magazine in the world. AAPM members are invited to apply for paid [AIP Science Policy Fellowships](#) to work in Congress or the U.S. State Department. Via its [Venture Grants Program](#), AIP supports projects, such as AAPM's "Increasing Access to Medical Physics Education and Research Excellence (AMPERE) for Global Health", an effort to gain insight into the needs of medical physicists in low-and-middle income countries, helping identify resources that could raise the level of healthcare workers worldwide. AIP operates the [AAPM Career Services](#) center to promote employment opportunities in specialized disciplines like radiation oncology, radiological physics, diagnostic imaging, dosimetry, health physics, radiation safety, nuclear medicine, and imaging. And every year, AIP's [Society of Physics Students \(SPS\)](#) introduces hundreds of undergraduates to the AAPM community through membership, fellowship, and travel grants. So, whether you're trying to stay connected to developments throughout the physical sciences, expand the reach and influence of the medical physics community, advance your career, or grow the next generation of medical physicists, AIP's resources can help you.

As an independent institute, where research connects you to the past, present, and future of the physical sciences, AIP runs the [Center for History of Physics](#) and maintains archives on [AAPM's history](#) as part of its [Niels Bohr Library & Archives](#). AIP's federal science policy reporting in [FYI: Science Policy News](#) reveals how federal actions impact the physical sciences enterprise. AIP's [Statistical Research](#) team produces the most complete view of the demographics and career outcomes of the physics and astronomy communities, helping illustrate the opportunities available to physical scientists. For example, by collecting and analyzing the data for AAPM's annual "Professional Survey Report", which has provided insight into medical physicist salaries for decades.

AIP is also partnering with Member Societies on [TEAM-UP Together](#), a collective action initiative of the AIP federation that aims to double the number of African American students earning physics and astronomy bachelor's degrees annually by 2030. This program addresses long-term systemic issues within the physics and astronomy communities that contribute to the underrepresentation of African Americans in these fields.

More generally, AIP provides the means for its Member Societies to pool, coordinate, and leverage their diverse expertise and contributions in the



James Taylor, PhD
AIP Chief Federation Officer

AIP, Member Societies broaden their impact and achieve results beyond their individual missions and mandates.

Together, AIP and its Member Societies convey a unifying message for stakeholders in government, academia, the nonprofit and private sectors, the student and teacher communities, and the general public.

To learn more about how AIP partners with AAPM, [click here](#). Any questions and comments about AIP can be sent to membersocieties@aip.org.

AIP is proud of its decades-long relationship with AAPM in support of the medical physics community AAPM brings together.



NEWS FROM AIP, Cont.

pursuit of the shared goal of advancing the physical sciences in the research enterprise, in the economy, in education, and in society. Through their partnership in AIP, Member Societies broaden their impact and achieve results beyond their individual missions and mandates. Together, AIP and its Member Societies convey a unifying message for stakeholders in government, academia, the nonprofit and private sectors, the student and teacher communities, and the general public.

To learn more about how AIP partners with AAPM, click [here](#). Any questions and comments about AIP can be sent to membersocieties@aip.org.

AIP is proud of its decades-long relationship with AAPM in support of the medical physics community AAPM brings together. ■



The banner features a background of palm fronds and a blue sky. The AAPM logo, consisting of three stylized human figures in green, orange, and blue, is positioned to the left of the text. The text is arranged in a clean, modern font, with the dates and location in a larger, bold font. The venue names are split across two columns. A call to action box with an orange border is located on the right side, and the website URL is at the bottom right.

AAPM
SPRING CLINICAL MEETING | 2023
APRIL 1-4
ORLANDO, FL

Hyatt Regency | Grand Cypress

Reconnect with your medical physics peers for three and a half days of great content and networking opportunities in Orlando!

Registering for in-person or on-demand participation includes on-demand content available 24-hours post-session.

NEW THIS YEAR:

- In the Clinic: Short Orals
- Presidential Symposium Our Place in the Oncoverse – Medical Physics in Oncology

Meeting Program Now Available!

Registration & Housing NOW OPEN!

Deadline for Early Bird Registration: March 1

AAPM.ME/CLINICAL

GRAC Update

LEGISLATIVE AND REGULATORY AFFAIRS REPORT

Sebastien Gros, PhD, was appointed the new Chair of GRAC on January 1, 2023; he is replacing **Rex Ayers, PhD**, now serving as Vice Chair of GRAC. Sebastien is an assistant professor of Radiation Oncology at Loyola University Chicago, Stritch School of Medicine, Department of Radiation Oncology. In his free time, he enjoys spending time with his family, skiing, hiking, attending live music shows, going on motorcycle rides, and practicing martial arts.

Nuclear Medicine Extravasation Opinion Released by NRC

The Nuclear Regulatory Commission's mission is to "protect public health and safety and the environment from the effects of radiation from nuclear reactors, materials, and waste facilities." NRC regulates the nation's civilian use of byproducts, sources, and special nuclear materials to ensure adequate protection of public health and safety, to promote common defense and security, and to protect the environment. The NRC has responsibility for regulating the use of:

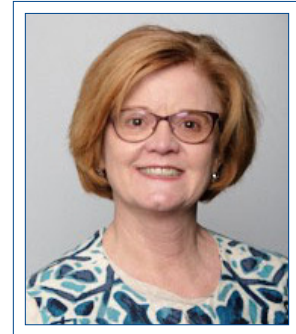
- Source material (uranium and thorium)
- Special nuclear materials (enriched uranium and plutonium)
- Byproduct material (material made radioactive in a reactor that is used in the practice of medicine and industry, and residues from the milling of uranium and thorium).

The "Agreement states" agree to align with the federal public health and safety regulations. This is done through developing regulations that are also adopted by the agreement states. These opinions have an impact on the practice of medicine and patient safety.

US NRC received a petition for rulemaking submitted by Ronald K. Lattanze on behalf of Lucerno Dynamics, LLC, on May 18, 2000. The petition requested that the NRC amend its regulation in part 35 of title 10 of the Code of Federal Regulations (10 CFR), "Medical Use of Byproduct Material to require reporting certain nuclear medicine injection extravasation as medical events.

The five US NRC Commissioners provide guidance to staff on the activities they conduct and on a path forward. On December 30, 2022, the Commissioners provided guidance to the NRC staff on how to handle the petition for rulemaking submitted by Ronald K. Lattanze on behalf of Lucerno Dynamics, LLC. The petitioner had requested that the NRC amend its regulations and require reporting of certain nuclear medicine injection extravasations as medical events. Current regulations defining medical events do not address the issue of extravasations. NRC requested comments from stakeholders who were asked to respond to the petition addressing eight questions concerning the current practices in medical facilities.

A request for public comment began on September 15, 2020, until the end of November 2020; during this time, NRC received 488 comments, including comments from AAPM. (<https://www.regulations.gov/comment/NRC-2020-0141-0443>). In addition to public comment, the issues were addressed by the US NRC Advisory Committee on Medical Uses of Isotopes (ACMUI). Two AAPM members, **Melissa Martin** and **Zoubir Ouhib** are currently sitting on ACMUI. Their report can be found [here](#) and summary can be found [here](#).



Debbie B. Gilley, MPA
Government Relations Specialist, AAPM

LEGISLATIVE AND REGULATORY AFFAIRS REPORT, Cont.

The outcome of the NRC evaluation can be summarized in the following statements:

- NRC will reconsider the decision to exclude extravasations from being a medical event.
- NRC agreed with the petitioner that medical event reporting of extravasations may focus some medical licensees is reducing their extravasation rate through the implementation of quality improvements programs.
- NRC agreed that certain extravasation (therapeutic) could result in radiation safety significant doses to the tissue around the administration site, which could result in adverse tissue effects.
- NRC agrees that reporting radiation safety significant extravasations would increase transparency between patients, physicians, and the NRC.


AAPM actions

- Rulemaking is a long process and will allow for several AAPM opportunities for providing input into the

proposed rule. It is possible that this could be added to current rulemaking, or it may be a "stand alone" rulemaking activity.

- When opportunities arise in the process, AAPM will provide testimony at stakeholder meetings and respond to formal written information and the potential for more engagement through an advocacy effort.
- AAPM coordinates our response with our sister organizations, ACR, SNMMI, and ASTRO, as necessary for a stronger compelling opinion.
- AAPM will continue to support AAPM members with ACMUI nominations.
- AAPM will work with representatives on ACMUI (Melissa Martin and Zoubir Ouhib) to share AAPM concerns.

GRAC and your Government Relations Specialist are following the process to ensure AAPM is well-informed and has an opportunity to respond to any activity that might impact medical physics. ■



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ACR Accreditation & More: Info for Medical Physicists

UPDATES FROM ACR HQ

DIR Fluoroscopy Data Published for 100 IR Procedure Types

A [recent study](#) published in the *Journal of Vascular and Interventional Radiology* investigated radiation dose index distributions for fluoroscopically-guided interventions (FGI) collected during the 2018–2019 pilot of the [ACR® Dose Index Registry](#) (DIR) Fluoroscopy (Fluoro) module.

The study reports primary radiation dose index distributions for over 50,000 individual FGI procedures from 61 fluoroscopes across 10 pilot sites. The procedures were mapped to 1 of 100 procedure types using the [ACR Common](#) ontology. The study compares dose indices from DIR-Fluoro to DRL values and two large single site studies published in the past two decades, noting an overall trend of lower patient dose indices over the years.

According to **A. Kyle Jones, PhD**, primary author of the paper, “The DIR-Fluoro pilot is one of the largest multi-site studies of fluoroscopy dose indices ever published, and it represents a living normative dataset for FGI and soon diagnostic fluoroscopy.” Jones continues, “When comparing the data from DIR-Fluoro to other recent studies, we noted substantial variability in dose indices for similar procedure types by geographic region, which highlights the importance of increasing the rate of participation in DIR-Fluoro. Having nationally representative participation in the registry will allow us to continue publishing high-quality benchmark data and to use these data to establish national DRL values.”

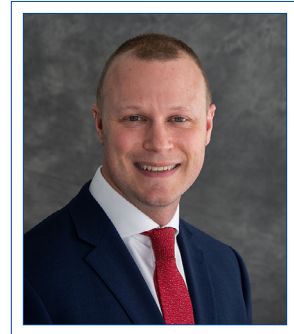
Participating in the DIR Fluoroscopy Module

This study is an example of the importance of the ACR DIR in helping to set the standard for quality imaging and patient safety. The DIR-Fluoro module, which is now open for broad participation, enables facilities to submit fluoroscopy dose indices data and compare their data to national benchmarks. DIR-Fluoro is free to all existing DIR participants and all [GRID](#) participants.

The increasing scope and number of FGI performed over the past decade makes participation in DIR-Fluoro an important step for practices to enhance the safety and quality of patient care. Learn more about the [features and capabilities](#) of the DIR-Fluoro module.

Getting Started

The [DIR Startup Guide](#) describes a step-by-step process for DIR participation — from assembling your team to reviewing your reports. If your facility already participates in the ACR National Radiology Data Registry (NRDR®), it's easy to [add the DIR to your facility registration](#). Only one registration is required to participate in all of the DIR modules.



Dustin A. Gress, MS
Senior Advisor for Medical Physics
ACR Quality and Safety

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 support page](#) for more accreditation information and QC forms. **Thank You** to all the other staff that keep ACR programs running and assist with creating the content in this column.

After 12 years of raising awareness, bringing attention and providing education about the use of ionizing radiation in medical imaging, in 2023, [Image Wisely](#) will expand its scope to include two other topics central to patient safety in medical imaging: MRI safety and contrast agent safety. With the widespread use of both MRI and intravenous contrast agents, the four [Image Wisely](#) sponsoring organizations (ACR, RSNA, AAPM, ASRT) recognized the need for more attention and education on these topics. “[Image Wisely](#) was originally created in 2010 to focus exclusively on radiation safety during medical imaging in the aftermath of several high-profile accidents in medical radiological practice. As the practice of radiology and medical physics evolved, we've fortunately decreased adverse events and worked proactively to systemically improve safety and promote cultures of safety across radiology and the healthcare continuum,” said **Eric Gingold, PhD**, ACR Co-Chair of [Image Wisely](#).

UPDATES FROM ACR HQ, Cont.



ACR
AMERICAN COLLEGE OF
RADIOLOGY

2023 Medical Physics
Graduate Student
**SCHOLARSHIP
AWARDEE**

Julia Gevaert
University of Western Ontario

The graphic features a portrait of Julia Gevaert on the left. To the right, the text '2023 Medical Physics Graduate Student SCHOLARSHIP AWARDEE' is displayed in a mix of green and black. Below the text is an illustration of several people in a modern office setting, some sitting at desks and others standing, all appearing to be engaged in work.

ACR Awards 2023 Medical Physics Graduate Student Scholarship

Congratulations to **Julia Gevaert** of [Robarts Research Institute](#) at Western University in London, Ontario on being awarded the 2023 [ACR Medical Physics Graduate Student Scholarship](#)! Ms. Gevaert's research focuses on developing novel magnetic particle imaging (MPI) techniques for predicting response and evaluating efficacy of immunotherapy. More specifically, her research involves tracking and quantification of dendritic cells using superparamagnetic iron oxide nanoparticles in cellular MRI and MPI. The scholarship is a joint program between ACR's Commission on Membership and Communications and its Commission on Medical Physics, and fully supports a medical physics graduate student to attend the [2023 ACR Annual Meeting](#). ■



The image shows a man in a light blue shirt and dark tie, smiling broadly with his right fist raised in a celebratory gesture. He is sitting at a desk with a laptop and a large monitor. The monitor displays a complex software interface with various data visualizations, including bar charts and line graphs, representing QA software. The background is a blurred office environment.



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Where the Rubber Hits the Road: What APEx Has Learned About the Implementation of AAPM's Recommendations

ASTRO QUALITY IMPROVEMENT REPORT

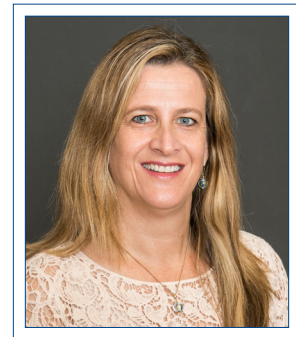
The American Society for Radiation Oncology's (ASTRO) Accreditation Program for Excellence (APEx) is a transparent and collaborative quality improvement initiative aimed at elevating high-quality care in radiation oncology practices. When ASTRO developed APEx, the emphasis was on evaluating processes that contributed to the safe delivery of radiation to patients. The field of radiation oncology often requires advanced technologies to treat cancer and other diseases, and it is imperative that hardware and software function correctly to deliver safe and high-quality care. Quality assurance (QA) is a crucial process that contributes to safety and patient care.

Part of APEx's transparency centers on the initial Self-Assessment process and provision of the Self-Assessment Guide that walks facilities through the evaluation criteria and is aimed at preparing facilities for a positive accreditation experience. APEx's Self-Assessment Guide states, "While the [APEx] Standards provide the elements of practices that demonstrate high quality and safety, they are not intended to prescribe processes for individual facilities. When implementing the APEx Standards, each facility will develop a program customized to that facility's patients and processes. The expectation is that the standards will provide the structure for quality improvement, allowing facilities their own flexibility and innovation in determining how they demonstrate compliance." This statement is sometimes incorrectly interpreted as "We don't care what you do, as long as you're doing something." This isn't true. If this ideology were applied to a taxi ride, it would mean not caring about the journey as long as you reach the destination. However, if the driver were driving on the wrong side of the road, the rider would probably care. The quality and safety aspects of the journey could be compromised, and so it is with APEx and performing QA.

AAPM Guidance in QA Processes and Accreditation

AAPM's Task Group (TG) reports and Medical Physics Practice Guidelines (MPPG), specifically related to radiation therapy equipment QA processes, offer an array of recommendations to support clinical practice. Existing AAPM guidance describes specific actions, tests, frequencies, and other critical components for performing and evaluating linear accelerator (linac) QA processes. The TG-142 report expanded on QA specifications from TG-40, and TG-198 describes the techniques for implementing the recommendations in TG-142.²⁻⁴ AAPM's MPPGs complement the TG reports and describe the recommended minimum level of medical physics support required for specific clinical services. However, even with these recommendations, APEx surveyor reviews and accreditation results reveal variations in how linac QA is performed and documented.

Some of this variation reflects the different ways recommended tests can be performed. Additionally, as the complexity of treatment delivery and patient setup verification increased, so has the number of tests. Conventional



Samantha L. Dawes
CMD, Director of Quality Improvement
ASTRO

- [ASTRO is exhibiting at the AAPM Spring Clinical Meeting! Visit us in the Exhibit Hall Saturday, April 1 to Monday, April 3, at Booth 303. We look forward to talking with you!](#)
- [Learn more about how APEx can help physicists enhance their current systems and processes.](#)

ASTRO QUALITY IMPROVEMENT REPORT, Cont.

approaches to QA mandate checks, with associated tolerance levels and frequencies, for all equipment, and there are tools to determine what is right for your facility. TG-198 recommends that QA processes are performed at the provided frequency but acknowledges that this may change as the practice learns from their risk assessment described in TG-100.^{4,5} APEX Surveyors scrutinize the quality management program to make sure alternatives are appropriately established and documented as a reliable surrogate for more conventional measurement techniques. While facilities should take into consideration their own needs, available testing equipment, time, and other factors, this critical work must meet the baseline standards set by AAPM to meet the requirements for APEX accreditation.

ASTRO requires that facilities participating in APEX adhere to current AAPM guidance by performing, documenting, and reviewing daily, monthly, and annual QA processes and comparing them against set benchmarks. There must be processes established for when results deviate from expected results, and periodic reviews by a qualified medical physicist should occur when the tasks are performed by other members of the radiation oncology team. APEX facilities that do not follow this guidance should have a formal risk analysis documented to support the lack of adherence to these recommendations, as per TG-100.

Quality Management and Documentation

The quality mantra "if it's not documented, it wasn't done" reflects that one should not make assumptions when ensuring quality and safety. Documenting what is performed and the results obtained during QA verifies that it was checked and within tolerance thresholds. When something isn't documented, how does the rest of the team or someone asked to step in and cover know the difference between "I checked it, and it is fine" and "I forgot to/didn't check it"?

Currently, 76% of facilities that have completed APEX received full accreditation, 23% were given a provisional determination, and 1% have been denied accreditation. ASTRO credits the Self-Assessment with these successes, and this accredited number would be much higher if the physics service followed the tenets of AAPM guidance. It is notable that all facilities that received provisional accreditation and subsequently required a corrective action plan (CAP) had deficiencies related to linac QA processes. The main areas of APEX non-compliance with

AAPM guidance included processes associated with:

- Daily linac QA
- Monthly linac QA
- Annual linac QA
- Motion management QA on linacs

These tasks alone make up 54% of all required corrective actions. When all the physics-related low-performing evidence indicators (i.e., brachytherapy QA, weekly chart checks, peer review for medical physicists, and supervision requirements) are included, they constitute 73% of non-compliances identified during the facility visit (see Figure 1).

Performance during the APEX Self-Assessment and results from Facility Visits indicates that some facilities are not sufficiently performing all the recommended tests from the TG and MPPG publications. Often, there is no evidence that a qualified medical physicist reviewed the QA data or some of the QA documentation is missing. More recently, APEX Surveyors observed deviations from established QA practices, such as not performing comprehensive annual QA but rather repeating monthly QA activities in its place. Additionally, there are a number of facilities that perform motion management techniques on patients but do not have a QA program for testing the validity of motion management equipment (e.g., no phantom or equipment to adequately assure operation).

While APEX-accredited facilities perform a wide array of QA testing, only 90% perform recommended end-to-end testing of the entire simulation, treatment planning, and delivery process. Such end-to-end tests are a valuable QA tool to help assure that all individual components are working together to deliver the planned dose. When there is a lack of compliance with this testing, the response to APEX Surveyors is commonly, "we do patient-specific QA, so we are looking at these processes all the time." While individual links of the radiation therapy treatment process chain are tested on a routine basis in conventional physics and pretreatment QA, testing the entire process from start to finish is still important.

A commonality between the four facilities denied accreditation was deficient linac QA and an inability to evidence validation of beam models in the treatment planning system. Additionally, most were unable to demonstrate that they consistently performed and documented all aspects of daily and monthly QA, were unable to evidence annual end-to-end testing, and their physicists did not routinely participate in peer review

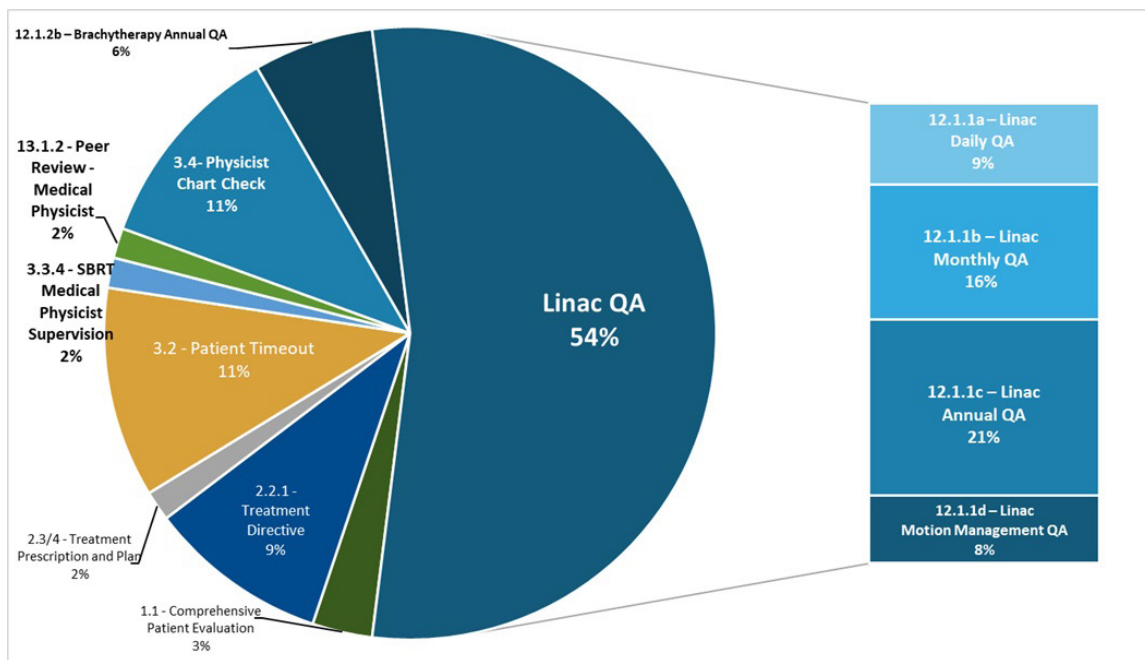
ASTRO QUALITY IMPROVEMENT REPORT, Cont.

processes. Finally, two of the facilities did not routinely perform chart checks and/or patient-specific QA procedures prior to the initiation of treatment.

To maintain safety in radiation therapy, every machine performance and patient delivery measurement must be as accurate as possible. However, there is a need for balance. Each facility is unique in terms of its equipment, the devices used for assuring that equipment, staffing, and other contributing factors. TGs and MPPGs provide a standardized method of performing QA that enables physicists to validate the integrity of radiation delivery.

Consistency and standardization of practice, along with documentation of tasks, are core principles of quality management that align with APEX. AAPM guidance documents are needed for both clinical practices and to guide accreditation agencies such as APEX. We can all be reminded that AAPM publications provide consensus-based guidance on best practices for performing QA. Attention to these details by individual facilities will contribute to success with the APEX journey and, more importantly, the ability to provide the safest care for patients. ■

Figure 1. APEX Evidence Indicators requiring a corrective action plan.



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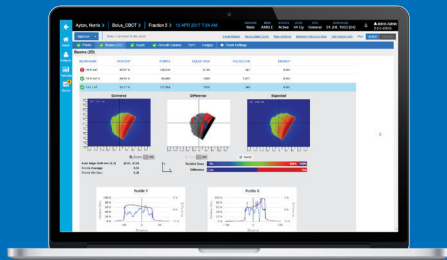


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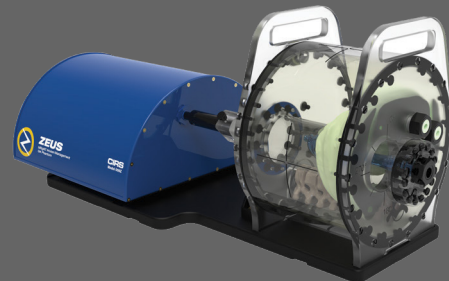
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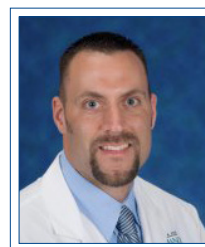
Renewing our Focus on Quality and Safety: Updating the ASTRO Safety White Papers

SAFETY WHITE PAPERS UPDATE

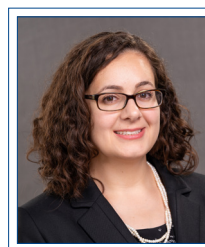
New technologies and techniques are transforming our ability to deliver effective radiation therapy. However, the continual development and improvement of radiation therapy techniques result in increased complexity, and our profession must ensure that our quality and safety processes keep pace. In response to increased awareness of medical errors in the field, the American Society for Radiation Oncology (ASTRO) developed a series of safety white papers (SWPs) within the ASTRO Multidisciplinary QA Subcommittee (MDQA). These interdisciplinary SWPs were written by radiation oncologists, medical physicists, dosimetrists, and radiation therapists and provided guidance and best practices for the safe delivery of specific, complex techniques. An SWP was developed for Intensity Modulated Radiation Therapy (IMRT)¹ in 2011, Stereotactic Radiosurgery (SRS) and Stereotactic Body Radiotherapy (SBRT)² in 2012, Image-Guided Radiation Therapy (IGRT)³ in 2013, Peer Review⁴ in 2013, and HDR Brachytherapy⁵ in 2014. These SWPs have served an important role in the delivery of safe and effective radiation therapy and have been a valuable component of multiple initiatives to refine and standardize processes and quality management efforts to reduce the risk of safety events. For example, they serve as an important resource for ASTRO's Accreditation Program for Excellence (APEX).

Significant progress has been made in improving the landscape of quality and safety in radiation therapy since the publication of these SWPs, including the formal integration of prospective risk assessment methods in AAPM TG-100, the launch of RO-ILS: Radiation Oncology Incident Learning System[®] and APEX, and an update to the ASTRO "Safety is No Accident" document.⁶ The clinical practice areas of the original SWPs have continued to evolve, hardware and software systems and delivery techniques have become more complex, and best practices have continued to advance in a number of important ways. We thus find ourselves in a period of implementation of new planning and delivery techniques and technologies, including new and expanded imaging techniques, artificial intelligence, and adaptive radiation therapy. Not unlike the period of rapid development in the complexity of radiation therapy delivery that preceded the initial series of SWPs, we are again at a time at which we must ensure that our quality and safety processes and best practices keep pace with rapidly evolving clinical processes.

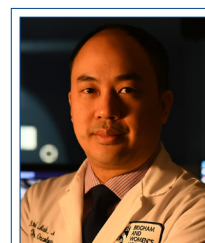
Following a review of changes in this landscape, the ASTRO MDQA decided to update the IMRT⁷, SRS/SBRT⁸, and IGRT⁹ SWPs, which have now been published in Practical Radiation Oncology. These updates were again authored and reviewed by interdisciplinary teams of radiation oncologists, medical physicists, dosimetrists, and radiation therapists and attempt to reflect contemporary guidance and best practices. The ASTRO MDQA continues to monitor the safety landscape and identify areas of need and intends



Jay Burmeister, PhD
Karmanos Cancer
Center/Wayne State
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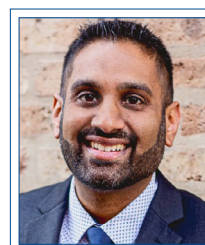
Ksenija Kujundzic
American Society for
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Raymond Mak, MD
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Cancer Center



Abhishek Solanki, MD
Loyola University Chicago
Stritch School of Medicine

SAFETY WHITE PAPERS UPDATE, Cont.

to produce additional SWPs addressing other areas of clinical practice in the near future. We encourage medical physicists practicing in radiation therapy to review these updated SWPs to ensure that their processes and procedures keep pace with advances in quality and

safety practices and to potentially acquire new and useful best practices. We hope these updated SWPs contribute substantially to the future of safety in radiation therapy and help promote high-quality and effective radiation therapy for our patients. ■

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Brief History and Current Recommendations on Alternative Pathway Education and Training

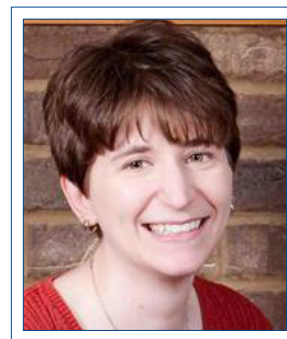
EDUCATION COUNCIL REPORT 1

Although the most common entry into the field of medical physics is through the completion of a Commission on Accreditation of Medical Physics Education Programs (CAMPEP)-accredited graduate program, alternative pathways have long existed as a mechanism to allow candidates from other disciplines to enter and provide valuable contributions to our field. However, entry through this pathway has undergone significant changes over the years. In 2004, the Ad Hoc Committee on Alternative Paths to Medical Physics Residency Training was formed in response to an American Board of Radiology (ABR) update published in the 2003 *AAPM Newsletter*.¹ The update suggested that "beginning in 2012, [ABR would be] considering successful completion of CAMPEP-accredited residency as an eligibility criterion." In an attempt to balance concerns related to the supply of individuals graduating from CAMPEP-accredited residency programs (e.g., seven residency programs were CAMPEP-accredited in 2003² with reported low ABR pass rates for candidates that did not complete CAMPEP-accredited training programs³, the Ad Hoc committee was charged with exploring alternative routes for training, while ensuring the entrants received the appropriate breadth and depth of training. In their report to the AAPM Board of Directors^{4,5} the committee recommended that the appropriate path for didactic and clinical training in medical physics included:

1. "An advanced degree in Medical Physics, Physics, or Physical Science;
2. Extensive clinical medical physics training as outlined in AAPM Report 36 [now Report 249⁶] and delivered in a CAMPEP-accredited clinical training program; and
3. Satisfactory completion of required core didactic medical physics coursework as outlined in AAPM Report 79 [now Report 365⁷] and which can be accomplished in either the first or second component of the training process."

Further, given the limited number of CAMPEP-accredited residency programs at the time of their report, the committee recommended that "AAPM encourage the establishment of additional accredited training programs and [urged] CAMPEP to develop guidelines and standards which enable the expansion of these CAMPEP-accredited programs.^{4,5"}

In October 2007, ABR announced the 2012/2014 Initiative. According to this initiative, beginning in 2012, medical physics ABR Part I candidates were required to be enrolled in, or have graduated from, a CAMPEP-accredited educational program (i.e., MS, PhD, or residency). Beginning in 2014, these candidates were required to be enrolled in a CAMPEP-accredited residency. The initiative originated from a mandate from the American Board of Medical Specialties "to require applicants of all of its exams to have completed an



Joann I. Prisciandaro, PhD
University of Michigan

EDUCATION COUNCIL REPORT 1, Cont.

accredited residency program."⁸ This initiative was strongly supported by AAPM, as demonstrated by the passage of Professional Policy 19A in March 2007, which stated that "graduation from an accredited clinical residency program should be a requirement for qualifying for board certification, with an implementation date to be negotiated with the certification boards."⁹

In 2008, Task Group 133 on Alternative Clinical Training Pathways for Medical Physicists published their recommendations. The Task Group was formed as a follow-up to the 2004 Ad Hoc. The Task Group charges included, but were not limited to: 1) considering models for clinical medical physics training; 2) ensuring the completion of the required core medical physics didactics; and 3) providing detail on how the education and training requirements required for accreditation would be achieved for each training model. The Task Group proposed three training models beyond the conventional CAMPEP-accredited medical physics residency: a hub and spoke residency (i.e., small/medium-sized clinical site "spoke" that enters into a professional affiliation with a larger CAMPEP-accredited residency "hub" to supplement training and/or provide management and oversight of the affiliated site); a professional doctorate program, typically leading to a Doctorate in Medical Physics (DMP), which provides didactic and clinical training in a single 4-5 year program; and an enhanced program, which evolved into the certificate program, which provides the core didactics in medical physics to students that have completed a PhD in physics or related field.

In 2011, the AAPM Working Group on the Revision of Reports 44 and 79 published AAPM Report 197S, "Essential Medical Physics Didactic Elements for Physicists Entering the Profession through an Alternative Pathway".¹⁰ The Working Group recommended the completion of six core topics: 1) Radiological Physics and Dosimetry; 2) Radiation Protection and Radiation Safety; 3) Fundamentals of Imaging in Medicine; 4) Radiobiology; 5) Anatomy and Physiology; and 6) Radiation Therapy Physics. The first certificate program was accredited by CAMPEP in 2011, and as of February 2023, 29 accredited programs are in existence, five of which reside in a CAMPEP-accredited residency program affiliated with a higher education institution.² However, concerns were reported regarding the relative medical physics-specific didactic, research,

and clinical preparedness of those individuals entering the field through certificate programs compared to those that completed a masters and/or doctoral degrees from CAMPEP-accredited graduate programs.

In 2016, Task Group 298 - Alternative Pathway Candidate Education and Training was formed. The Task Group was charged with reviewing previous recommendations for alternative pathway candidates and developing recommendations on the appropriate education and training of these candidates in the interest of our profession and future entrants to the field. Specifically, the Task Group members addressed several controversial issues that have come to light since the publication of AAPM Report 197S.¹⁰ In August 2022, Task Group 298 published their recommendations for certificate program/alternative pathway education and training.¹¹ In the report, the Task Group proposes six recommendations related to the following questions.

1. Are the educational requirements stated in AAPM Report 197S sufficient?

The Task Group recommends that certificate programs shall include professionalism, leadership, and ethics as a component within their core curriculum. To ensure the didactic curriculum for certificate programs are routinely reviewed and updated, it was determined that the Working Group on Medical Physics Educational Program Curriculum would provide curricular recommendations for all graduate education programs in medical physics, including certificate programs. An update to the curricular recommendations for medical physics graduate programs, including certificate programs, can be found in the recently published AAPM Report 365.⁷

2. In what academic environment should certificate programs be delivered?

The Task Group recommends that certificate programs reside within a CAMPEP-accredited graduate program. Programs may also reside in a CAMPEP-accredited residency program as long as there is a strong affiliation and support from an accredited college or university, and the program instructors have faculty appointments within that institution.

3. Can students gain adequate clinical exposure and professional understanding through training in a certificate program?

EDUCATION COUNCIL REPORT 1, Cont.

The Task Group recommends certificate programs include exposure to clinical applications of didactic material presented within the core curriculum.

4. Is online delivery of certificate program content acceptable?

The Task Group recommends that online delivery of core curriculum content follow the guidelines of the accredited college or university.

5. Should certificate program trainees be permitted to concurrently complete a non-CAMPEP-accredited PhD?

The Task Group recommends that students enrolled in a certificate program should have a terminal PhD degree in physics or related discipline. Additionally, it is not acceptable for a student to be concurrently enrolled in a non-medical physics PhD program and a certificate program.

6. What metrics can we use to evaluate the potential success of the certificate program?

The Task Group recommends investigations and surveys

to evaluate the success of the certificate program initiative. Metrics should include, but not be limited to, the success rate in placing graduates, an assessment of the program's success in meeting their stated goals, an evaluation of the performance of their graduates compared to other programs (e.g., ABR board exam pass rates, etc.).

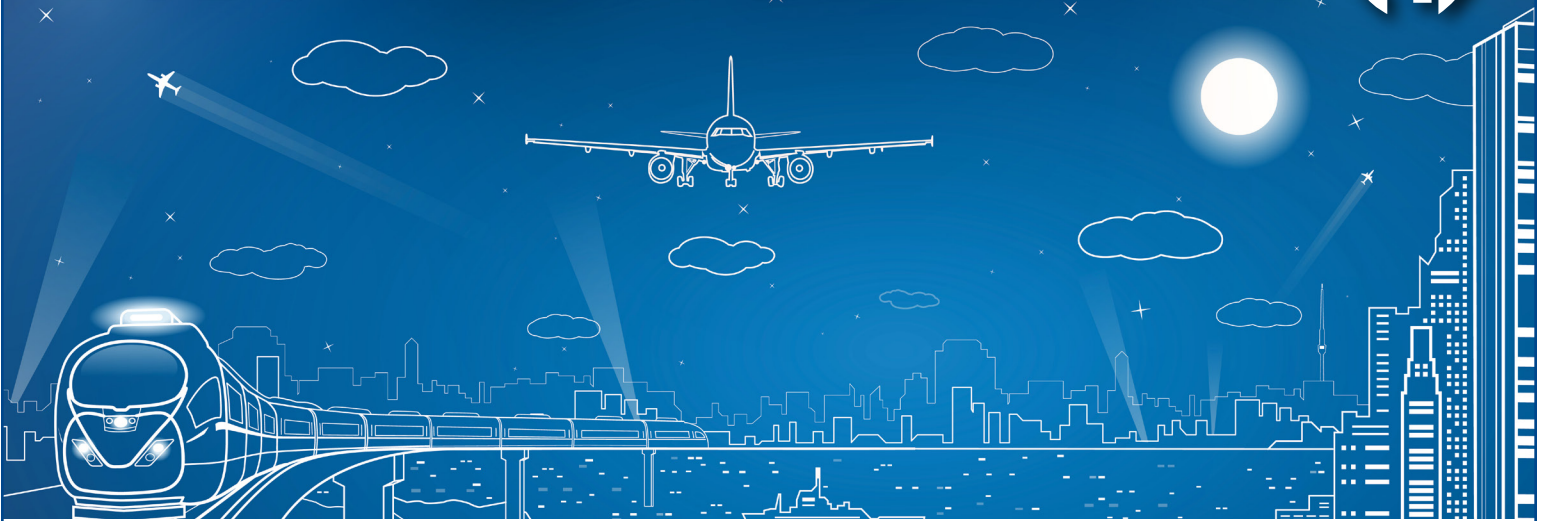
Readers are encouraged to review the Task Group 298¹¹ report to gain a full appreciation of the discussion points and recommendations made by the Task Group members.

*Acknowledgment: The author would like to acknowledge the tremendous commitment and valuable contributions of her fellow members of AAPM Task Group 298 to the publication of the Task Group report and the recommendations summarized above. These members include the task group Chair **J. Anthony Seibert, PhD, and Jay Burmeister, PhD, Paul DeLuca, Jr, PhD, Bruce Gerbi, PhD, Maryellen Giger, PhD, and James Robar, PhD.** ■*

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Preparing Trainees for the Future of Medical Physics — AAPM Report 365

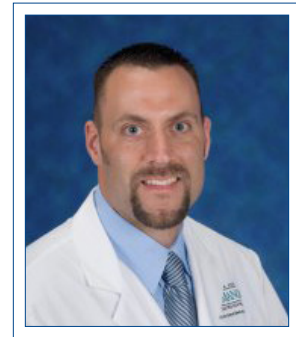
EDUCATION COUNCIL REPORT 2

The Working Group on Medical Physics Educational Program Curriculum (WGMPEPC) recently published the latest update to the AAPM recommendations for medical physics graduate education. [AAPM Report 365](#) supersedes AAPM Reports 197¹ and 197S², published in 2009 and 2011 respectively, and is designed to prepare the trainees that will guide the future of our profession.

The preliminary discussion of Report 365 provides an outline of the structure of the report along with information about the intent for its use in guiding medical physics graduate education. These new recommendations provide guidance to graduate programs regarding topics that should be covered, provide guidance to instructors on the recommended breadth of coverage of these topics, and provide a basis for the development of standards for graduate education. A topical discussion providing an overview and rationale for inclusion is provided for each topic, followed by detailed curricular recommendations within each topic. All medical physics graduate education programs share a common core of similar coursework; however, each program should also have the latitude to adapt its curriculum to leverage best the strengths and resources of its faculty and host institution. Furthermore, it is not reasonable to expect that a program would (or could) cover every item explicitly mentioned. As such, the recommendations identify topics as either "core" or "optional." Finally, the report provides curricular guidance for five specific areas of specialization — diagnostic imaging, nuclear medicine, radiation therapy, medical health physics, and industry.

The requirement of an accredited residency training program for trainees wishing to become board certified was implemented after the publication of AAPM Report 197. As such, Report 365 discusses the provision of practical clinical training within graduate education programs along with a consideration of potential changes resulting from the implementation of the residency requirement. Trainees have a limited amount of time in graduate study, and a deliberate decision must therefore be made by each program to determine the balance between practical clinical training and additional didactic coursework.

The period since the publication of Report 197 has also seen the development of the Graduate Certificate and the Professional Doctorate in Medical Physics (DMP). This report provides updated guidance on curricula for certificate programs, superseding Report 197S. While updates have been made to existing topical areas, the only major curricular change is the addition of professionalism (leadership, ethics, and communication) to the curriculum. The AAPM Task Group on Alternative Pathway Candidate Education and Training (TG-298) recently published updated recommendations for the alternative pathway.³ Although Report 365 provides overarching



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EDUCATION COUNCIL REPORT 2, Cont.

curricular recommendations for all graduate education programs in medical physics, TG-298 provides specific recommendations on the education and training of alternative pathway entrants into the medical physics profession. The recommendations of both reports agree with and support one another, and a summary of the recommendations in TG-298 is presented in the separate contribution to the Education Council report in this issue.

The DMP includes the same core curricular elements as the MS and PhD in medical physics but provides additional opportunities for the inclusion of elective coursework that may be valuable for clinical practice. In addition, the DMP curriculum must include clinical training of sufficient depth and breadth to prepare the student to become a qualified medical physicist, as currently described by AAPM Report 249. Additional details regarding the content and value of

the DMP are the purview of the recently published AAPM Report 373.⁴ Additional elective coursework may also be valuable for students intending to pursue non-clinical careers. The addition of curricula specific to specialization in medical health physics or industry is a new feature of Report 365.

Another specific focus of Report 365 is to prepare students and programs to adapt to future changes in the scope and nature of medical physics applications. While this report represents a snapshot of current education and training requirements, we must also equip students with the education and skills necessary to contribute to, and be leaders of, future advances in medicine. Future contributions of physicists to medicine are often driven by understanding and training outside traditional core topics. As such, training in nontraditional areas facilitates potential

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EDUCATION COUNCIL REPORT 2, Cont.

future contributions to science and medicine in general, and this emphasis has been explicitly incorporated into this curriculum. Training in research is an important element in preparing for the future of our profession. Indeed, the AAPM description of the role of the medical physicist states that “medical physicists play a vital and often leading role on the medical research team.” This includes both basic and clinical research along with instilling the problem-solving skills of the medical physicist. We should aspire to train our students to be multidisciplinary experts who are leaders in the science of medicine, ensure the highest quality care and safety, and initiate and create changes that enhance patient care. Incorporating these aspects and others that will arise in the future requires an increase in the breadth of education and training in medical physics. Programs should minimally strive to provide familiarity in these nontraditional areas, as it would be impossible to provide mastery in them all. Finally, instilling critical thinking and lifelong learning skills will allow medical physicists to continue to enhance their ability to contribute to the science of medicine.

While this report provides recommendations on what to teach, it does not provide recommendations on how to teach. This report is the purview of the Working Group

on Teaching Educators and Clinicians How (WGTEACH). Stay tuned for AAPM Report 366, which will provide recommendations from this task group. We hope that Report 365 represents a valuable tool to guide the future development of our education and training infrastructure. We recommend that new graduate programs use the information provided in Report 365 to develop their program curricula. We further recommend that existing programs review their curricula to identify any areas in which they are not providing educational content consistent with these recommendations and to re-evaluate their curricula with the goal of maximizing the value of their trainees both now and in the future. Finally, I’d like to acknowledge the enormous effort contributed by my fellow members of the working group: **Nathan Busse, Ashley Cetnar, Mary Gronberg, Rebecca Howell, Ed Jackson, Robert Jeraj, Michael Joiner, Kyle Jones, Leonard Kim, Steven King, Brian Loughery, Kip Matthews, Vic Montemayor, Paul Naine, Wayne Newhauser, Anna Rodrigues, Ehsan Samei, Tim Turkington, and Alison Roth.** We, unfortunately, lost a generational leader in medical physics education during the writing of this report, and AAPM graciously allowed us to dedicate this report to our friend and colleague, **Ed Jackson.** ■

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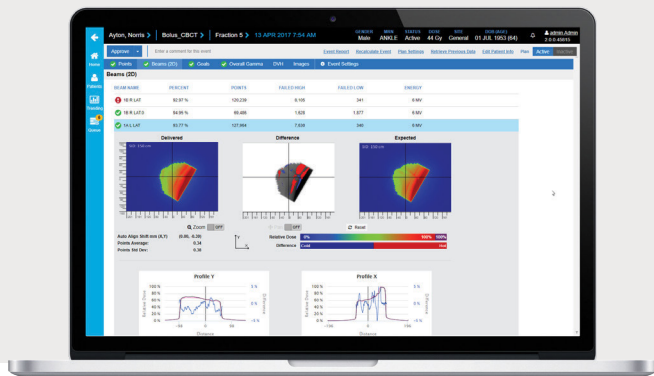
- **Basics of CT Pediatric Protocols: How to Optimize the Hardware**
March 9 | 12:00 pm–2:00 pm ET
- **Innovations in Medical Physics Education**
March 23 | 12:00–2:00 pm ET
- **Synthetic CT: A New Paradigm in Radiotherapy Treatment Planning**
April 13 | 12:00–2:00 pm ET
- **AAPM Webinar Series on Non-Clinical Medical Physics Careers, Resources, Opportunities and Networking**
Webinar #3: MPLA and MedPhys3.0 Applied to Non-Clinical Careers
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Special Interest Feature: SDAMPP Education Practices Committee

HIGHLIGHTS OF THE SDAMPP COFFEE BREAK DISCUSSION ON “CROSS-INSTITUTIONAL RESIDENCY TRAINING”

Abby Besemer, PhD | University of Wisconsin



Cross-institutional residency training has become increasingly more common in recent years. These

activities span from multi-institutional journal clubs/webinars, shadowing at other institutions, resident exchanges, and even international rotations. These programs are a great way for residents to connect with others in the field and learn about different technologies, workflows, and cultures outside of their own institution. However, these programs are relatively new, and the scope of training opportunities can vary widely. Thus, residency programs interested in participating or establishing their own programs may not know where to start. In November 2022, the Society of Directors of Academic Medical Physics Programs (SDAMPP) Education Practices Committee hosted a coffee break discussion where four panelists were invited to share their experience implementing and participating in cross-institutional residency training.

Cross-Institutional Residency Training Programs

A brief overview of the four cross-institutional programs follows.

International Rotation



Derek Brown,
PhD
University of
California San
Diego

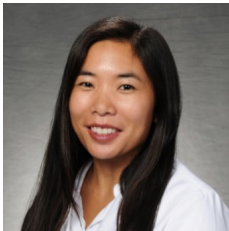
Residents at UC San Diego are encouraged to spend a one-month, fully funded rotation in a clinic outside of the American healthcare system. These experiences can provide exceptionally unique learning experiences, broaden learner's appreciation for how radiation can be delivered in low-resource settings, and provide opportunities for both professional and personal growth. We have had residents spend time in clinics in countries across the world, including Kenya, Australia, Argentina, Malaysia, Singapore, Italy, and Vietnam. Residents work collaboratively with lead physicists at host clinics to develop a detailed learning plan prior to arrival. These learning plans outline learning, and in some cases research objectives for each week of the four-week rotation. Residents are also encouraged to visit multiple clinics during their rotation.

Written on behalf of the SDAMPP Education Practices Committee:

Anna Rodrigues, PhD (Chair)
Leah Schubert, PhD (Vice Chair)
John Antolak, PhD
Manuel Arreola, PhD
Abby Besemer, PhD
Steven Biegalski
Courtney Buckley, PhD
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Ashley Cetnar, PhD
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Victoria Bry, PhD
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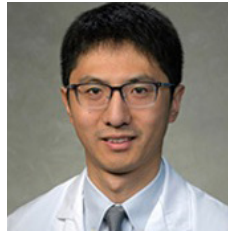
SPECIAL INTEREST FEATURE: SDAMPP EDUCATION PRACTICES COMMITTEE, Cont.

Multi-Institutional Career Development Program



Angelia Landers,
PhD
University of
Washington

A total of 12 residents from four institutions were invited to regular discussion-based workshops on career development. The goal of the program is to teach residents about job opportunities, the job search process, and planning their careers, exposing them to perspective and advice beyond what is available at any single institution. The size of the program was chosen to facilitate discussion while keeping the group small for more personal connections. All workshops were held as one-hour Zoom meetings with guest speakers giving short presentations followed by informal discussions. Residents were polled for their interest in various career development topics. Workshop topics included job search advice, finding a good fit position, CV preparation, navigating job offers, interviewing, and clinical careers with academic appointments. Collaboration between institutions allowed a range of speakers that provided a breadth of advice for residents.



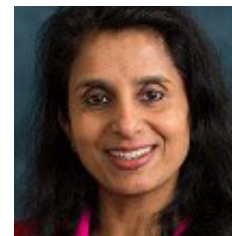
Resident Exchange and Observership Program

Taoran Li, PhD
University of
Pennsylvania

The University of Pennsylvania residency program recognizes the important value of cross-institutional training and has established ongoing exchange programs with several other institutions. In these programs, we provide onsite proton experiences for external residents, and the other institution offers exposure to inactive procedures or with low volume within our own network. The exchange programs include nearby institutions, such as Thomas Jefferson University, as well as distant programs (e.g., Stanford, Duke, and UCLA). Resident exchanges are self-funded by their home programs for travel, meals, and lodging. Onsite activities are organized through our department's established educational observership program, where we provide faculty/staff resources, IT support, and other necessary infrastructure for visitors to fully experience our workflow. The training content depends highly on the format (in-person vs. remote) and length. A couple of examples include 2-5 days of onsite observation of proton planning and QA procedures hosted by our residents and faculty, two-day remote participation in a structured online proton course followed by two live sessions of planning and QA demonstration

by our faculty and residents, and interactive lectures on other procedures of interest. The program has been highly valued and well-received by both home and visiting institutions.

Great Lakes AAPM Chapter Resident Exchange Program



Vrinda Narayana,
PhD
University of
Michigan

The Great Lakes Chapter of AAPM hosts an inter-institutional therapy residency learning opportunity within a 50 mile radius. Expertise available at each radiation oncology center is offered to six residency programs in the area through the chapter. The program provides six high-priority topics scheduled over a two year period at different institutions and six low-priority topics scheduled based upon request. Each rotation typically starts with a didactic portion scheduled by the chapter. Over the next three months, the lead resident coordinator schedules site visits for the residents to facilitate clinical observations. To reduce the burden on the hosting sites, observation is typically limited to two residents at a time. The first rotation began in October 2022, and about 15 residents participated in the initiative.

SPECIAL INTEREST FEATURE: SDAMPP EDUCATION PRACTICES COMMITTEE, Cont.

Q&A Discussion

During the coffee break discussion, panelists were asked about the practical details and barriers involved in participating in cross-institutional residency training.

1. How do you go about setting up these programs and coordinating with other institutions?

Largely ad-hoc through PD-to-PD communication and then coordinated through the institutional steering committee and existing visitor programs. —Dr. Li

This is a chapter initiative that brought all program directors to the table. Coordination is done by the chapter. —Dr. Narayana

2. What challenges and barriers did you face setting up and implementing these training programs?

All meetings were over Zoom, so the only challenge was finding a meeting time that worked for everyone. —Dr. Landers

Different institutions require different formats/lengths/scopes due to their own funding situations and interest. Tailoring towards each program's needs and hosting 3-4 programs spread out through the year can be challenging on resident and staff/faculty time. —Dr. Li

We did not have many challenges, and all parties are very supportive. Implementing resident visits and associated paperwork can be onerous. —Dr. Narayana

3. What costs are associated with implementing your program? How were you able to secure funding

or staff time to dedicate to this program?

Costs are mainly to provide travel/lodging/meals for our residents to visit exchange programs. Our residents have a set limit of professional development funds that they can use towards conferences and other educational opportunities, including optional observership/exchange opportunities. —Dr. Li

Our program is volunteer driven, so no funding or dedicated FTE is used. —Dr. Narayana

The international rotation is fully funded by department funds, and our chair is very supportive of these types of initiatives. The cost is not very large in the grand scheme of things — surprisingly, not much more than sending a resident to a conference. —Dr. Brown

4. How do you establish agreements related to liability, confidentiality, HIPAA, etc.?

The home institutions' visitor policy dictates these details. —Dr. Li

Each institution has their requirements for visiting residents who are primarily observing. The paperwork requested is mostly immunization records and HIPAA agreements. —Dr. Narayana

5. How do these programs fit within the residency curriculum and CAMPEP requirements?

This program helps to satisfy certain Ethics and Professional CAMPEP requirements, including elements of professionalism, qualities of leaders, negotiation skills, etc. —Dr. Landers

Our program fulfills CAMPEP requirements on curriculum without relying on exchange programs like this. These exchange opportunities are optional and designed to enhance (not replace) our residents' training. —Dr. Li

The residents are evaluated the same way as other rotations, and learning objectives need to be developed in advance in coordination with the needs of the specific host institution. —Dr. Brown

6. Is there a role for SDAMPP or other national organizations to better facilitate cross-institutional training?

I believe there is a lot of potential in cross-institutional training for resident education. Resources from SDAMPP to help navigate the logistical challenges of cross-institutional training would help to enhance the available opportunities for residents. — Dr. Landers

A central coordination (or "match") of sister programs based on their needs, resources, and geographical proximity would help eliminate a lot of operational overhead. Grant and funding to supplement faculty and staff time for institutions providing service are essential for a sustainable model. Existing examples include paid ABR mock exams that several institutions/chapters offer, and AAPM educational grants for undergraduate fellows. —Dr. Li

What's next?

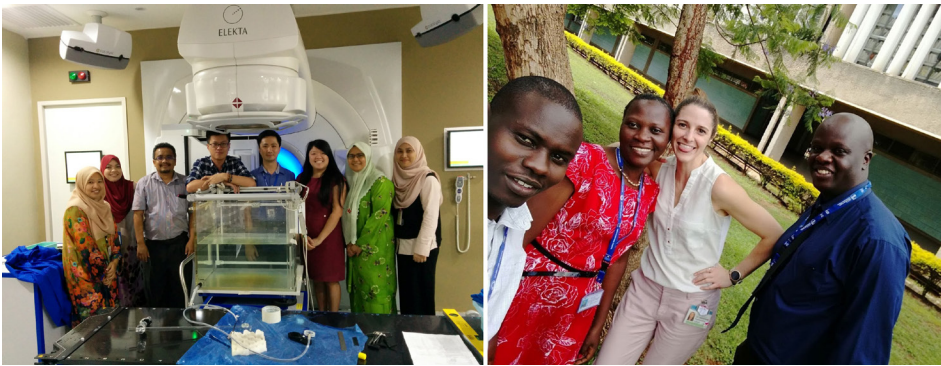
Overall, these cross-institutional training opportunities are highly valued and appreciated by both residents and programs. They serve

SPECIAL INTEREST FEATURE: SDAMPP EDUCATION PRACTICES COMMITTEE, Cont.

as important enhancements to home programs and can be wonderful opportunities for residents to network with potential future colleagues. There seems to be an opportunity for national organizations like SDAMPP and AAPM to play an important role

in helping sustain and strengthen these programs — possibly through providing grant funding, creating a centralized repository of resources or coordination services, and publishing best practice guidelines. The AAPM Multi-Institutional Residency Journal

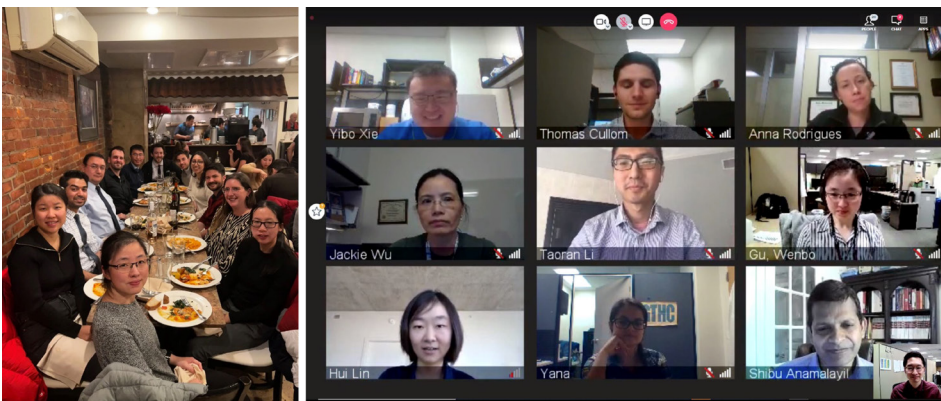
Club is a great example of impactful efforts in this space spearheaded by a national organization. It will be exciting to see how cross-institutional activities might bring about a new paradigm in residency training in the coming years. ■



Photos of residents in Malaysia (left) and Kenya (right) during the UC San Diego International rotation.



A diagram of the types of opportunities available in the Great Lakes resident exchange program.



Faculty and residents hosting visiting UCLA residents for dinner as a part of the University of Pennsylvania Resident Exchange and Observership Program (left). Penn and Duke residents in a virtual exchange session on proton beam modeling (right).

Multi-Institutional Career Development Program

- Prepare residents for applying and interviewing for their first jobs post-residency and planning their careers
- Learn about job opportunities, job search process, career-planning, and growth strategies
- Get perspective and advice beyond what is available at any single institution

LW Medicine

The kickoff meeting for the 2023 Multi-Institutional Career Development Program organized by the University of Washington

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 (WGNC) is certainly staying busy with many events this spring of 2023!

Webinar in April! The WGNC is hosting an exciting final session in our webinar series. The session will be held on April 27, 2023, at 12:00 pm ET and will discuss, "How non-clinical physicists fit into the field: A Collaboration with MPLA and MedPhys3.0." Check out the [AAPM Webinar page](#) for the webinar information. We hope you will join us for our final webinar!

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

Virtual Career Expo! The WGNC is excited to hold a Non-Clinical Career Expo on March 8 from 7–8:30 pm ET/4–5:30 pm PT. The theme for this event will be Industry Careers, with representatives from diverse companies in radiation therapy and medical imaging. The virtual event will start with short presentations from each representative, followed by breakout sessions with small groups led by each representative. You can sign up to receive information about our events [here](#) and you will find the Zoom information for the Virtual Career Expo [here](#).

Zoom Meeting ID: 945 6419 5310 and Passcode: 309754. You may also find your local number [here](#). We look forward to seeing everyone there!

AND MORE! We have so many more events this year, including more content, collaboration events at the AAPM meeting in Houston, and other exciting opportunities to stay connected. Stay tuned! ■



Ken Cashon, MS DABR
AdventHealth Orlando



AAPM / RSNA IMAGING PHYSICS RESIDENCY GRANT

Applicant Eligibility:

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

- CAMPEP accreditation is expected within the first year of the funding period, if a program is not currently accredited.
- Open to existing or new imaging residency programs.
- 1st priority — New programs (hence new slots), no previous funding from any AAPM program. A new program is defined as one that has applied for CAMPEP accreditation after January 1, 2022, or has not yet applied for CAMPEP accreditation.
- 2nd priority — Existing program but with new slots, no previous funding from any AAPM program. A new slot is defined as one that has been created or filled after January 1, 2022.
- 3rd priority — Existing program but with new slots, has had previous funding from an AAPM program. A new slot is defined as one that has been created or filled after January 1, 2022.



In October 2022 AAPM and RSNA agreed to continue their partnership on this grant. Their matched funding will support 2023 and 2024 awarded grants. Two programs are selected for the award to be funded over the following two years. Each institution receives \$35,000 for two years as matching support for one resident.

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

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

Award Duration: July 1, 2024 – July 1, 2026

Application Deadline: May 10, 2023

Recipients Notified by: June 2, 2023



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



AAPM Acting as Leader in Coalescing Multi-Professional Society Efforts Developing Consensus-Based Standardizations Supporting Data Science in Healthcare

SCIENCE COUNCIL REPORT

(Written on behalf of the AAPM Big Data Subcommittee)

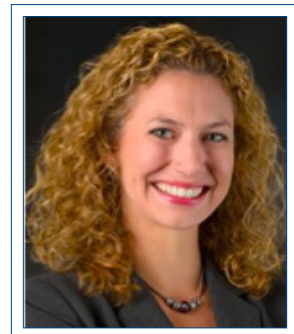
The AAPM Big Data Subcommittee (BDSC) is leading the way with multiple professional societies, industry, and other stakeholders in developing consensus-driven standardizations to enable creating artificial intelligence (AI) ready data sets. It is important for AAPM members to understand the landscape of standardizations and why this is an important component of the work done by the BDSC to improve the usefulness, quality, and quantity of data collected supporting data science applications in imaging and radiation oncology. Standardization is one aspect of the work carried out by BDSC that also includes informatics, infrastructure, workflow, data collection, contextualization, labeling, linkage, workflow, and archival functions.

Anyone who has collected patient data sets from their electronic health record systems (EHRs), radiation oncology information systems (ROIS), treatment planning systems (TPS), or picture archiving and communication systems (PACS) quickly comes up against a host of problems. For example, consider trying to create a data set of all of the diagnosis and staging information, dosimetric information, chemotherapy information, imaging information, toxicities, and outcomes for a set of patients treated for cancer at a specific site (e.g., prostate, breast, lung) in your department. To get truly large and representative data sets, you will ultimately need to be able to automate this data aggregation with computer programs versus manual extraction. Combing through the data, groups that have carried out this exercise find that important information may be missing or inconsistently entered, inconsistent value sets may be used so that data isn't interoperable among different institutions or even within the same institution across different time points.

The amazing work that could be done at scale, applying AI algorithms to healthcare data, can quickly be hobbled by challenges in data quality and volume. For example, the subsets of data that are most complete could be surrogates for which patients are on trials or treated by specific physicians or institutions, introducing selection biases. Often the effects we are interested in discovering models for (e.g., grade 3 toxicities) are infrequent (i.e., undersampled) so that statistical noise in our data sets can obscure the signal of predictors like dose volume histogram metrics, chemotherapy agents, or social determinants of health measures. Methods like imputation provide means to fill in data gaps so that AI algorithms can run, but when large fractions of missing data are filled with synthetic data, signals can, at best, be obscured and, at worst, falsely created. Improving standardizations and workflows to increase the volume, diversity, and quality of data will increase the applicability, generalizability, and validation of AI algorithms to improve healthcare.



Charles S. Mayo, PhD
University of Michigan



Kristy Brock, PhD
MD Anderson Cancer Center

SCIENCE COUNCIL REPORT, Cont.

The BDSC was initiated in July 2019 to explore common ground from the stakeholders' collective experience of issues that typically compromise the formation of large inter- and intra- institutional databases from EHRs. BDSC is a diverse committee including 42 members from multiple institutions and members of several professional societies: AAPM, ASTRO, CARO, COMP, ESTRO, ASCO, RSNA, AMIA, as well as members of NRG Oncology, SWOG, NIH, NCI, IHE-RO, US Veterans Administration, and DICOM working group. The BDSC adopted an iterative, cyclical approach to engaging stakeholders beyond its membership to optimize the integration of diverse perspectives from the community. Members are added as specific gap areas are identified.

For imaging data DICOM standards, first developed in the 1990s, greatly reduced the variability of representations of imaging data supporting interoperability and the current growth of AI in radiology. A wide range of concepts, stakeholders, and technologies must be engaged in developing standardizations for therapy data. **As a first step to address the gaps**, BDSC developed a standardized, professional society-based, consensus-driven [operational ontology for radiation oncology \(OORO\)](#) to identify, define and encode key elements, attributes value sets, and relationships needed to support clinical practice and research efforts. To promote ordering of adoption and coordination of efforts, key elements and attributes were ranked in the relative importance of clinical significance, likelihood of availability in EHRs, or the ability to modify routine clinical processes to permit aggregation.

BDSC's work has become folded into the work of other groups working on standardizations. Providing some context, the *21st Century Cures Act* promoted the implementation of Health Level 7 Fast Healthcare Interoperability Resources (HL7-FHIR) as the basis for improving patient access to their healthcare data and interoperable exchange of data among their providers. The HL7-FHIR standard overcomes significant gaps in the current HL7 standard by providing means to extend it with medical domain-specific coding. Development of medical domain-specific FHIR tags is being carried out as part of the mCODE (minimal Common Oncology Data Elements) and CodeX (Common Oncology Data Elements eXtensions) projects organized by HL7 and MITRE Corporation. MITRE

Corporation is a not-for-profit organization that works in the public interest across federal, state, and local governments, as well as industry and academia.

AAPM and ASTRO are founding members of CodeX, with BDSC representatives leading the radiation therapy treatment data (RTTD) use case project. BDSC representatives in RTTD successfully lobbied for IHE-RO medical physics inclusion in RTTD, in addition to radiation oncologists. AAPM also sponsored the Canadian Organization of Physicists in Medicine (COMP) and Society for Imaging Informatics in Medicine (SIIM) to join as CodeX and RTTD members.

In an early success of this combined effort, BDSC worked with RTTD in developing definitions and value sets for technique, modality, course, and phase that have incorporated manufacturer-created HL7-FHIR interfaces for summarizing treatment courses. These are currently being tested (IHE-RO) and deployed in commercial systems. This is an important example of the power of combined professional society effort to drive the standardizations and products used in the clinic.

The development of OORO within the BDSC intersects with other efforts. BDSC communicated with members of the Office of the National Coordinator for Health Information Technology (ONC) proposing OORO driven extensions to the United States Core Data for Interoperability (USCDI) standards. Mappings of OORO concepts to VA-ASTRO collaborations in developing quality measures were supported by BDSC members who were part of both efforts.

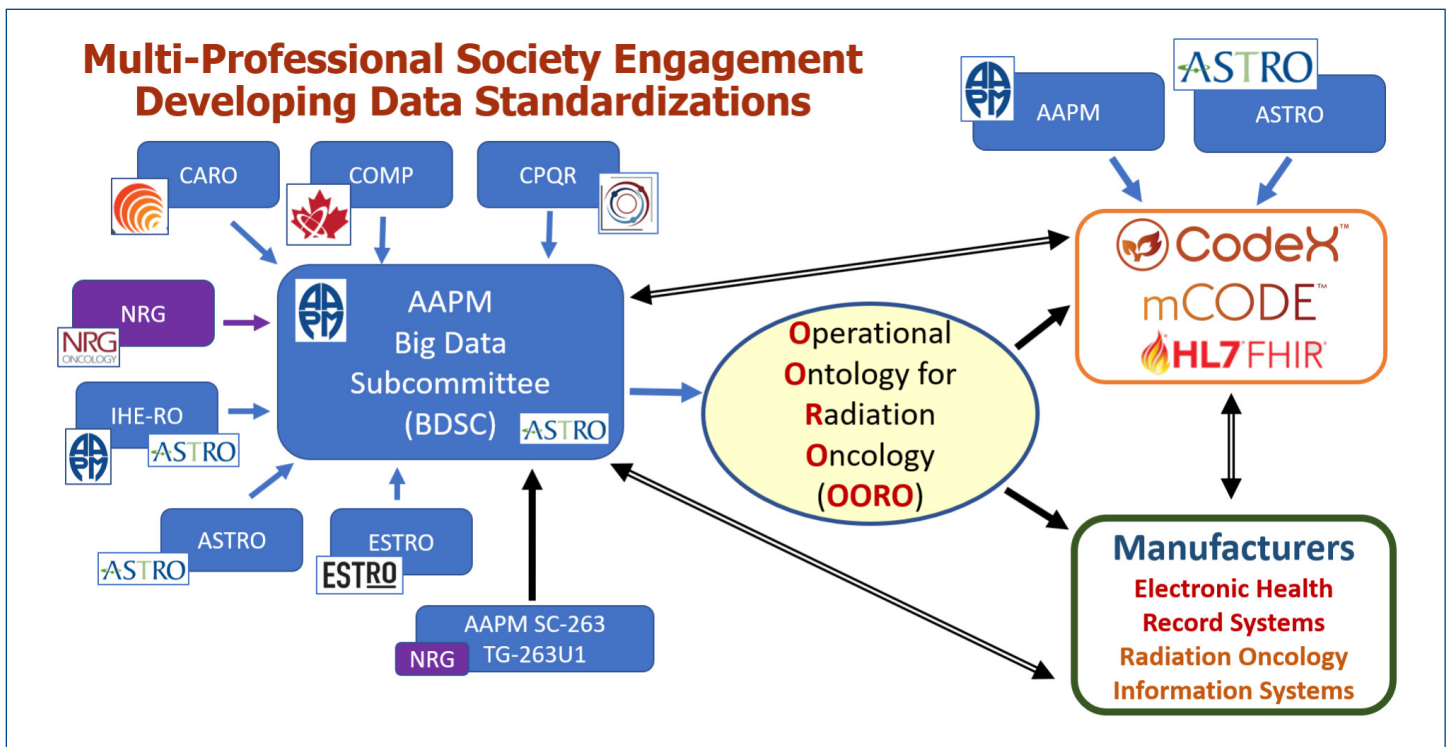
To promote the interoperability of OORO with other coding systems (e.g., SNOMED-CT and NCI Thesaurus) BDSC enumerated and mapped OORO attributes to attributes in these other systems. NCI Thesaurus is a framework coding system for medical concepts used in clinical trials research. BDSC engaged with leadership of the NCI Thesaurus to validate mappings and homologate the OORO. SNOMED-CT is a coding system for multi-lingual health concepts. It has been designated as a national standard used by ONC and in HL7-FHIR. BDSC created mappings to SNOMED-CT codes and identified gaps. Late in 2022, SNOMED and LOINC formed a collaborative relationship to form a common framework for end users. As that relationship

SCIENCE COUNCIL REPORT, Cont.

matures developing a common coding base, it will be incorporated into OORO.

In summary, standardizations are vital to long-term objectives for coupling healthcare and imaging data of patients to AI algorithms. There are multiple stakeholders

and objectives in creating these standardizations and AAPM is a leader in this area. With their combined skill sets, medical physicists are well positioned to bring together the multiple stakeholders representing technical, clinical, research, and policy perspectives as we venture into this new data science-driven era of medicine. ■





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 an Industry Scientist or Regulatory Physicist, **YOU CAN VOLUNTEER.**

AAPM Full Members and Emeritus Members in good standing are eligible for voting appointments on committees, subcommittees, working groups, and task groups. Many AAPM groups could benefit greatly from the unique perspective an industry scientist or regulatory physicist offers. Explore current volunteer opportunities at [here](#) (member login required).

As an Industry Scientist or Regulatory Physicist, **YOU HAVE OPTIONS.**

If the Full Member category doesn't apply, consider Associate, Professional Affiliate, International Affiliate, Junior, Resident, or Student member options.

Visit aapm.org/memb for more details.



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of PHYSICISTS IN MEDICINE

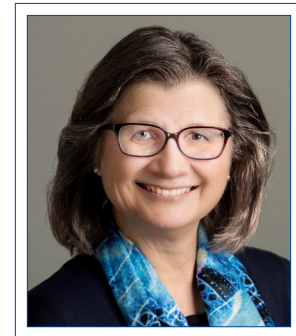
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Report from the Medical Imaging and Data Resource Center (MIDRC)

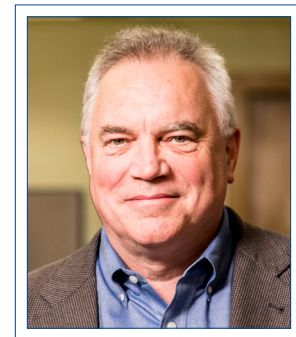
MIDRC SUBCOMMITTEE UPDATE

The Medical Imaging and Data Resource Center (MIDRC), an AAPM, ACR, RSNA, and University of Chicago Gen3 collaboratively-built COVID medical images and metadata commons, funded through the National Institute of Biomedical Imaging and Bioengineering (NIBIB), has hit the ground running as it begins its third year! As part of its mission to become a national resource for medical artificial intelligence research, MIDRC, while currently housing both lung radiographs and CT imaging data, is preparing to accept brain and cardiac MRIs and ultrasounds as well, supporting the research of long COVID.

After two years, MIDRC hit a major milestone in January 2023 when it published over 100,000 imaging studies to its public open data portal! We commend the 100+ MIDRC investigators from over 24 different academic institutions, community practices, and government agencies around the country for their dedication and commitment to this endeavor. Other important accomplishments throughout 2022 include:



Maryellen Giger, PhD
University of Chicago



Paul Kinahan, PhD
University of Washington

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

- The creation of the MIDRC Sequestered Data Commons, privately housing 20% of incoming data to test algorithms and fast-track regulatory approval;
- The publication of over 21 manuscripts in peer-reviewed journals, with three more currently under review;
- The presentation of multiple conference proceedings,
- The awarding of additional grants; and
- Over 30 presentations given by MIDRC investigators at meetings, symposia, and conferences around the world.

MIDRC publication as of early January 2023

The MIDRC team just recently held an evening demonstration workshop at the [SPIE Medical Imaging conference](#). We also celebrate a successful MIDRC showing at RSNA 2022, where many presentations were given by our investigators, the top-ranked finishers of MIDRC's first COVIDx Grand Challenge (led by AAPM's **Sam Armato**, **Karen Drukker**, and **Lubomir Hadjiiski**) were announced (Congratulations to the top-ranked team of **Ran Zhang**, **Dalton Griner**, and **Guang-Hong Chen**, all from University of Wisconsin-Madison) and the MIDRC booth in the McCormick Learning Center received many visitors, along with volunteer annotators at our "Annotate Away COVID" workstations,



MIDRC SUBCOMMITTEE UPDATE, Cont.



helping to prepare data for MIDRC's upcoming COVID Severity Grand Challenge.

MIDRC is committed to maintaining a continuous open dialogue with the medical community by hosting monthly seminars and quarterly town halls. You can access past presentations for free by visiting our [MIDRC Media channel](#). In February, MIDRC hosted a well-attended seminar featuring AAPM's **Paul Kinahan** discussing the curation of the MIDRC collection of DICOM images using the Logical Observation Names and Codes (LOINC) ontology. The next Seminar, on Tuesday, March 21 (register [here](#)), will feature AAPM-MIDRC investigators **Heather Whitney** and **Karen Drukker** (both, University of Chicago) along with Rui de Sá

(NIH, University of California San Diego) discussing the work of [MIDRC's Bias and Diversity Working Group \(BDWG\)](#).

As MIDRC continues to need **your** support in the form of medical imaging and metadata contributions, we bring to your attention NIH's newly revised [Data Sharing Policy](#). This policy requires that all researchers applying for NIH funding on or after January 25, 2023, must have a plan for data management and sharing, with MIDRC being listed as one of the approved data repositories. While this requirement will improve access to data and promote replicability, it may also place a seeming burden on future research efforts. MIDRC can help navigate this new requirement! The team can assist you with three important stages: 1) intake, curation, de-identification, abstraction, and quality assessment; 2) annotation and labeling of images and other data using semi-automated approaches; and 3) distributed user access and data discovery methods, including cohort building for AI/ML applications.

Please consider supporting this curated and diverse data commons with a data contribution — you can contact any member of the [MIDRC subcommittee](#) (within the Data Science Committee) for assistance, review this [Data Contribution 101 Guide](#), or complete this preliminary [MIDRC data contribution inquiry](#). Make a difference; your contribution really matters — we thank you in advance for your continued support of MIDRC's mission! ■

MIDRC SUBCOMMITTEE UPDATE, Cont.

MIDRC at RSNA 2022



L: Andrey Fedorov (Massachusetts General Hospital), Paul Kinahan (University of Washington), MIDRC Subcommittee

R: The MIDRC booth at RSNA 2022



L: Lubomir Hadjiiski (University of Michigan), and Heather Whitney (University of Chicago), MIDRC Subcommittee

R: MIDRC principal investigators (left to right) Mike Tilkin (ACR), Paul Kinahan (AAPM), Adam Flanders (RSNA), Kris Kandarpa (NIH/NIBIB), Curtis Langlotz (RSNA) and Maryellen Giger (AAPM)

OUR CONDOLENCES

Harry J. Astarita, MS • [James E. Bowshe, PhD](#) • [Daniel J. Macey, PhD](#)

Our deepest sympathies go out to the family. 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 email to: 2023.aapm@aapm.org
(Please include supporting information so that we can take appropriate steps.)



focus on our future

THANK YOU!

AAPM wishes to acknowledge and thank the following individuals and organizations for their 2022 contributions:*

**Unaudited data subject to change*

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Contribute to the AAPM Education & Research Fund:
<https://www.aapm.org/education/edfundintro.asp>

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:

- Ten 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 AAPM at the time of application (any membership category). Pending membership status not eligible.
- No previous grants greater than \$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 four 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 and upload a letter of intent of your proposed topic (see Application Requirements).

You must log in to 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>



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 ONE Reference letter
- 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

2023 AAPM EXPANDING HORIZONS TRAVEL GRANT



The **EXPANDING HORIZONS TRAVEL GRANT** program is designed to provide students and trainees with an opportunity to broaden the scope of scientific meetings attended in their career. The proposed meeting should introduce new and relevant topics which may ultimately be incorporated into current or future medical physics research and progress the field in new directions.

Program Year 2023 will be broken into two application cycles: **Spring** (Round 1) and **Fall** (Round 2).

The total amount of support funding for use towards travel and/or meeting registration will be based on attendance type: **\$1,250 if attending IN-PERSON** or **\$500 if attending VIRTUALLY/ONLINE ONLY**.

Please Note: \$250 of the total award amount — *regardless of attendance type* — is contingent on a short presentation given by awardee at the next available AAPM Annual Meeting & Exhibition.

IMPORTANT SPRING DEADLINES

- Open: January 25, 2023
- Deadline: March 15, 2023
- Award Decisions: April 12, 2023

REQUIRED DOCUMENTS

- Cover Letter/Personal Statement
 - Long-term career goals
 - Motivation to attend proposed meeting
 - Expected scientific value of attendance on dissertation project or future research
- Curriculum Vitae
 - Limit to education, publications, presentations, and any relevant awards
- Letter of Recommendation
 - Must also confirm that additional expenses outside of total award amount will be covered
- Budget/Overall Expected Expenses

ELIGIBILITY CRITERIA

- Proposed meeting cannot be specifically related to medical physics.
- Proposed meeting must take place between December 1, 2022 – May 31, 2023.
- Must be a current graduate student, post-doctoral candidate, or current resident within five years of graduation at time of submission.
- Must be an AAPM member in good standing at the time of submission.
- Must not be a past Expanding Horizons awardee.

EXAMPLES OF INELIGIBLE MEETINGS

- Any AAPM-sponsored meeting
- American Society of Radiation Oncology (ASTRO) Annual Meeting
- Radiological Society of North America (RSNA) Annual Meeting
- Any meeting regularly attended by institutional group/program (judged on case-by-case basis)
- Any meeting that has previously been supported by an Expanding Horizons Travel Grant under the same Faculty/Advisor/Principal Investigator

QUESTIONS?

exhg@aapm.org

www.aapm.org

APPLY TODAY:

gaf.aapm.org/#EXHG



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