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Improving Health Through Medical Physics

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

Special Interest Group Report

Women's Professional Subcommittee

Articles in This Issue

Articles in This Issue

Announcements in This Issue

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2018 WOMEN'S PROFESSIONAL SUBCOMMITTEE MEETING

Jennifer Pursley, PhD | Boston, MA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

The WPSC met on Saturday July 28, 2018, before AAPM Annual Meeting in Nashville, TN. Attendees included committee members and guest members of AAPM, who are always welcome to join the meeting. **Laura Cerviño**, committee Chair, led the discussion, which started with a round of introductions.

Topics of discussion were far ranging and included the annual WPSC luncheon scheduled for later in the week, sexual harassment in the workplace, outreach efforts including the WPSC newsletter, collaboration with other women in science groups, nominating more women for awards and fellowship, and plans for a leadership conference targeted for mid-career women. The group approved highly of the efforts AAPM had made to develop and publicize a code of professional conduct for the Annual Meeting; this code was presented on posters around the convention center.

There was also a discussion on the pilot childcare program at the Annual Meeting; anecdotally, many parents had made childcare arrangements before hearing AAPM would be offering a childcare option, so the program utilization is expected to increase as more people become aware of it. There was a lengthy discussion of the #MeToo movement and its relevance in medical physics, given the heated discussion on the Med Phys listserv around sexual harassment and the experiences of women AAPM members.

The group also proposed ideas for assisting with AAPM's new Diversity and Inclusion strategic goal, about which more details are given in Laura Cerviño's article *"Equity, Diversity, and Inclusion Strategic Goal"* (4306_18.php) in this edition of the Newsletter.

Overall it was a productive meeting, and the WPSC is excited at the opportunity to help AAPM achieve its strategic goals. For any feedback to the WPSC, you can reach the entire committee at 2018.WPSC@aapm.org (mailto:2018.WPSC@aapm.org). Please make plans to join us for the meeting next year in San Antonio!

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DISCHARGING THE BIAS: RECOGNIZING AND ADDRESSING UNCONSCIOUS BIAS IN THE WORKPLACE

Courtney R. Buckey, PhD | Phoenix, AZ

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

Panelists and moderators from the "Discharging the Bias" session at the AAPM 2018 Annual Meeting. From left to right: Indrin Chetty, Maryellen Giger, Kristi Hendrickson, Julianne Pollard-Larkin, Jean Moran, and Laura Cerviño.

At this year's AAPM Annual Meeting there was a well-attended SAM session on Wednesday afternoon entitled "*Discharging the Bias: Recognizing and Addressing Unconscious Bias in the Workplace*." The large crowd of attendees was welcomed to the unique session by **Laura Cerviño, PhD**, an Associate Professor in the Department of Radiation Medicine and Applied Sciences at the University of California, San Diego. She began with a simple question, "Why should medical physicists think about unconscious bias?"

Slides showing the breakdown of AAPM membership by race and gender flashed onto the screen, showing that while the group's makeup has changed over time, we are still a professional society that is overwhelmingly white and male. Studies have shown that diversity enriches innovation, performance, well-being, and problem solving—

and that unconscious bias can adversely affect diversity.

To get to the root of the matter, we need to know what unconscious bias is—these are attitudes and beliefs we have about a person or group on an unconscious level, things that are subtly impactful on our actions and hard to recognize even from within ourselves. They develop at a young age, and progress throughout childhood. They are not intentional or cultivated, and they can be deeply impactful on our professional lives.

Examples of unconscious bias include studies showing that when similarly strong CVs are sent to employers, both male and female reviewers are more likely to hire the candidate with the male name. And, more strikingly, when candidate pools contain only one woman, there's statistically no chance that she will be hired.

This introduction was followed by a panel discussion from: **Maryellen Giger, PhD**, FAAPM, Professor of Radiology/Medical Physics at the University of Chicago and winner of the AAPM Coolidge Award; **Indrin Chetty, PhD**, FAAPM, Professor and Head of Radiation Physics in the department of Radiation Oncology at Henry Ford Health Systems; **Julianne Pollard-Larkin, PhD**, Assistant Professor of Radiation Physics at MD Anderson Cancer Center; and **Kristi Hendrickson, PhD**, Assistant Professor of Radiation Oncology at University of Washington. Moderators were **Laura Cerviño** and **Jean Moran, PhD**, FAAPM, Professor and Co-Director of Medical Physics at University of Michigan Medical Center. This distinguished group answered questions related to their own personal experiences with diversity, unconscious bias, and striving for a more equitable workforce.

Indrin Chetty spoke about how to minimize unconscious bias in the hiring process, including using a blinded review of the CVs to level the playing field and separate candidates from their demographics, and standardizing the interview format so that all candidates are asked the same questions. He also recommended setting diversity goals with team members to bring the issues to the forefront and permit open discussion of what can be a sensitive topic.

Maryellen Geiger was asked about changes that she has seen since the beginning of her career. She mentioned that until a few years ago, unconscious bias wasn't really on her radar. "I just thought that was the way it was. I wasn't looking for it." But after her university began compiling statistics, she started to see how unconscious bias was influencing decisions and demographics. She also mentioned that at her university it is now acceptable to call out when there aren't enough diverse candidates in a pool. This wouldn't give preferential treatment to those candidates—they still need to stand on their merits and experience to be selected as the right person for the position—but having a suitably diverse pool is valued.

Kristi Hendrickson shared her recent published work about what questions are being asked of our newest potential coworkers—those participating in the medical physics match. From 2015-2018 the numbers of applicants who report being asked about their marital status, their plans to have children, and their religion have remained high. She also shared data from the survey respondents that if the applicant was asked about their marital status or their family goals, women were much less comfortable answering than their male counterparts (see her article *"MedPhys Match and Discriminatory Behavior in the Residency Search Process"* (//w3.aapm.org/newsletter/posts/2018/nov-dec/4306_15.php) in this edition of the newsletter for a detailed analysis).

Julianne Pollard-Larkin offered strategies for overcoming unconscious (and also explicit) bias, from her unique perspective as an African-American woman in a STEM field. She has risen to a level in her career where she can be part of the residency search committee, to help serve as a gatekeeper for the illegal and unfair questions that Dr. Hendrickson's work spotlighted. She brought up that minority students can be disadvantaged from the very

beginning, because they are less likely to have worked with a "big name" in the field. As we are a small field, where "everybody knows everybody" the potential detriment of not having a big-name collaborator or advisor on one's CV can be crushing even at the early stages of a career.

Following the planned question and presentation portion, multiple audience members stepped up to the microphone to share their experiences, ask about situations which they've been involved in, and wonder how they and the community can do better. Questions and comments included:

- I have been part of a selection committee, and it took a few years before I recognized my own unconscious bias. I found that I was a woman, who was unintentionally setting the bar higher for female candidates. Could CAMPEP blind the applications to things like gender and race?
- One thing I did not hear mentioned is the issue of mentorship. "Like begets like" which is very hard when a junior level female medical physicist is seeking mentorship from one of our few female senior-level leaders. Are there comments about this issue?
- Reaching out to the community to increase female representation in STEM programs is so important. I really appreciate the panel, and feel more empowered to talk about this topic. Can we discuss salary differentials between men and women? Pay based on education and experience should be the norm.
- Every year I meet new graduate students who are trying to diversify their programs. Do you have recommendations for how to push faculty to make the time for these initiatives?
- The issues that women in private practice and community hospitals face are likely different from those of women in academia. Can we look into those differences in the future? And how can those community clinics help to diversify their applicant pools, to start the process of getting female physicists in the door?

Responses to the above questions, and the entire presentation, can be found in the AAPM Virtual Library (https://www.aapm.org/education/vl/vl.asp?id=13067).

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SEXUAL HARASSMENT IN THE WORKPLACE

Lauren Courlas Long, MS | Tacoma, WA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

The 2018 Women Physicist Luncheon was held during the AAPM Annual Meeting in Nashville, TN. Similar to previous years, it was a sold-out event with over 200 attendees and many on the waitlist. This year's luncheon focused on sexual harassment in the workplace and featured an invited speaker. To promote audience participation and make the session more interactive, the Social Q&A web app was used by the audience to ask questions and give live feedback during the keynote presentation.

Jaclyn Marcel, a member of the Women's Professional Subcommittee (WPSC) and Chair of the Luncheon Working Group, kicked off the luncheon by acknowledging and thanking our generous sponsors, who are listed at the end of this article. **Laura Cerviño**, the WPSC Chair, then gave an update on some of the work coming out of the WPSC and other groups within AAPM. She highlighted the new AAPM events harassment policy published by the Ethics Committee, which all meeting attendees must acknowledge and sign, as well as the new AAPM Equity, Diversity, and Inclusion (EDI) strategic goal. She also noted the Unconscious Bias SAM session, the Med Phyz Wiz Kidz outreach program, and the AAPM childcare program featured at this year's Annual Meeting. Lastly, Dr. Cervino recognized the accomplishments of the attendees by asking AAPM fellows and award recipients to stand, along with those attendees who had made contributions to the organization by serving as committee chairs and members. It was pointed out later in the luncheon that women hold over half of the AAPM EXCOM positions for 2018, including President-Elect (**Cynthia McCollough**), Secretary (**Susan Richardson**), and Chair of the Board (**Melissa Martin**).

AAPM President, **Bruce Thomadsen**, followed with his President's Address. Dr. Thomadsen discussed two of his female mentors, including **Lucille Du Sault**, who shaped his early medical physics experience and career and influenced what he thought a medical physicist should be, and **Dolores Buchler, MD**. Dr. Thomadsen stressed that AAPM takes diversity very seriously and considers it a top priority, as demonstrated by the new EDI strategic goal that was approved at the last board meeting, but acknowledged that we still have a long way to go.

After the opening remarks, **Jaclyn Marcel** introduced the keynote speaker for the event, **Corbette Doyle, EdD**. Dr. Doyle is a senior lecturer in organizational leadership in the Department of Leadership, Policy, and Organizations at Vanderbilt University. Her areas of expertise include diversity in the workplace and women's leadership.

Dr. Doyle's talk focused on sexual harassment in the workplace, and what women individually and organizations as a whole can do to combat it. She began her presentation by defining sexual harassment and explaining why sexual harassment definitions matter. She highlighted the large difference between the percentage of women who report that they have been a victim of “sexual harassment” (25%) and the percentage of women who report experiencing sexual harassment behaviors or activities when given a specific list, eg. crude jokes or sexist hostility (60%). Dr. Doyle noted that women in the military and academia, and in the STEM and medical fields specifically, are subject to the most sexual harassment. One big factor in whether sexual harassment remains an issue in a workplace is if the organization has a culture of tolerating or downplaying the seriousness of such behavior.

Prior to the luncheon, a survey had been sent to attendees polling them on their experience with sexual harassment in the workplace, to help guide the presentation. Dr. Doyle reported the results of the survey during the luncheon. It was interesting to note that the respondents were much more likely to tell a friend/family member or a colleague than to take formal action in reporting sexual harassment, indicating a need to make reporting and taking formal action safer in our organizations.

The luncheon presentation highlighted suggestions for what women medical physicists can do for themselves and for their colleagues who experience sexual harassment. The suggestions included keeping detailed records of any incidents, discussing it with a trusted confidant in the workplace, and formally reporting it. Both men and women physicists must participate in changing the culture by taking notice and taking action. This can include speaking out if they observe sexual harassment, calling attention to women's contributions in the workplace, or by speaking up against and not participating in gender hostility (e.g., laughing along to crude jokes).

Employers and organizations must have clearly communicated policies on civility and effective training on sexual harassment in place with a focus on changing behaviors and culture. Dr. Doyle suggested that AAPM needs to make sure there are “teeth” to the new harassment policy and ethics guidelines; as an example, by revoking one's Fellow status for violations. Dr. Doyle ended the presentation by asking attendees to come up with one action item they want to work on with their AAPM colleagues.

This successful luncheon was organized by **Jaclyn Marcel**, with contributions from other members of the Luncheon Working Group and WPSC, as well as our AAPM staff. It would not have been possible without support from the following luncheon sponsors: at the Platinum level, Fluke Biomedical, Landauer, and RaySafe; at the Gold level, LAP Laser and Nelco Worldwide; at the Silver level, LifeLine Software Inc., MD Anderson Cancer Center, Northwest Medical Physics Center, Radcal, and RIT; at the Bronze level, the American Board of Medical Physics, American College of Radiology, CivaTech Oncology, Modus QA, Sun Nuclear Corporation, and The Phantom Laboratory + Image Owl.

Please consider joining us for the WPSC luncheon at next year's Annual Meeting in San Antonio, TX. It is a great opportunity to network and connect with women medical physicists from different backgrounds and in various stages of their careers. The Luncheon Working Group and WPSC are investigating ways to increase luncheon capacity to allow for more attendees, but as always, be sure to register early!

Attendees of the 2018 WPSC luncheon at the AAPM Annual Meeting in Nashville, TN, are welcomed by WPSC Luncheon Working Group Chair Jaclyn Marcel.

WPSC Chair Laura Cervino gave an update on WPSC activities and the AAPM Equity, Diversity, and Inclusion strategic goal to luncheon attendees.

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BATTLE TACTICS FOR YOUR SEXIST WORKPLACE

Kristi Hendrickson, PhD | Seattle, WA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

"Yes, your workplace is sexist. Even if it's not visible. And even if you work for yourself."

Battle Tactics is a relatively new podcast that first aired its trailer on May 29, 2018, and has since produced eight 30-minute episodes (as of this writing). Hosts are **Jeannie Yandel** and **Eula Scott Bynoe**, a white woman and a woman of color, both from the Seattle area. The podcast was inspired by the 2017 book *Feminist Fight Club: A Survival Manual for a Sexist Workplace* by **Jessica Bennett**. The author is not otherwise associated with the podcast.

Several of the topics considered include the gender wage gap, manterruption, imposter syndrome, men as allies in combating a sexist workplace, and institutional policies that contribute to a sexist workplace. In each episode, the hosts present the topic and share their personal experiences or the experiences of guest interviewees. The most important aspect I find is that the hosts include and emphasize action on our part while acknowledging the challenges. As the podcast title suggests, these are battle tactics—things we can do to combat the specific issues that can make our workplaces sexist.

In one episode, expert guest **Ruchika Tulshyan** begins, "I read somewhere that people are more comfortable talking about sex than they are talking about salary." A conversation on the gender wage gap begins. It's hard to look at your pay and figure out that you're getting paid less because of gender. The Pew Research Center releases data every year to quantify the pay gap between men and women and reports around 77–80 cents to the dollar for the same job.

There are several known contributing factors to this gap. Implicit gender bias in the workplace is one factor that we likely cannot control. Some evidence suggests that lack of negotiation is another contributing factor. For example, a Harvard Business School study found that if a job ad didn't say that salary was negotiable, women tended to not negotiate salary but male applicants would.

The way in which the gender pay gap is stated tends to hide another layer of inequality. The 77–80 cents value includes all women—white women and women of color. And that average value is compared to white men—only white men. Presenting the data this way tends to hide that fact that white women on average make more than black men.

In a capitalistic nation, it makes sense to close the pay gap for all. More equal pay in the workplace would increase the gross domestic product, according to a McKinsey Global Institute report. Several tactics were discussed that we can employ to help us all get paid what we're worth, including negotiating your pay and advocating for yourself.

Negotiation skills were the primary topic in another episode. Several studies conclude that women negotiate only about 10% of the time, while men negotiate 50% of the time. This episode included several strategies on negotiation and how to build your negotiating skills. First, do your research; simply put for women, find out what your white male counterpart is making. The podcasters present several strategies for asking, without directly asking. Recall the earlier comment on how difficult it is to talk about salary? Another strategy is to ask during the negotiation, "Is this the best deal?" Many women are uncomfortable doing this in a workplace setting. Practice by calling your cable company and asking if you can get a better deal. Continue practicing by doing this twice a year.

If you battle with being taken as seriously as your male counterpart, **Keita Williams**, Founder and Chief Strategist of Success Bully, suggests checking your speech patterns. Does your speech pattern tend to end in upward intonation? Do your statements sound like a question? Observe yourself speaking in a meeting or to a colleague. If you find that you do have this tendency, practice when you're alone to undo this speech pattern. The upward intonation can be a signal to the listener to question your authority and to minimize the impact of whatever you're saying.

"Didn't I just say that?" How many of you have experienced being in a meeting where you propose a solution, to which you get no response, and moments later a male colleague says the same thing, which is suddenly the best idea ever. Amplification can be your battle tactic: plan ahead by getting a (probably) female co-worker to repeat your (unheard) idea at the meeting, while giving you due credit.

My summary in this review skims the top of these issues; please listen to the podcast yourself to appreciate the depth of research and exploration of each topic, and the first-person stories that illuminate the variety of topics related to sexism in the workplace. New episodes are created and released approximately every two weeks.

The easy banter between the two hosts makes this podcast easy to listen to. The high-quality productions include well crafted storytelling and address compelling and timely topics that are well researched. I particularly value the inclusive perspectives of white women and women of color, as reflected in the hosts and by their choice of interviewees and experts, as well as in the analysis presented.

You can find this podcast at the NPR podcast directory, on Apple podcasts, or wherever you get your podcasts. At their website, you can also subscribe to their newsletter and submit your comments and suggestions to contribute to the ongoing discussion.

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ONSITE CHILDCARE AT 2018 ANNUAL AAPM MEETING IN NASHVILLE

Kristi Hendrickson, PhD | Seattle, WA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

"... I would like to express how grateful I was to have been able to use the AAPM daycare this year. As a new mother and a young faculty, it is very important for me to be able to keep attending big international meetings so that I do not lose touch with current research directions and my colleagues. The AAPM daycare enabled this to me.

I was very pleased with the care and the services my 16-month old daughter received. The staff was great and very flexible in terms of hours. They even texted me asking if they could give my daughter food that was not hers and that she was eyeing! It was also nice to see that our daughter made daycare friends in such a short period of time.

Thank you for organizing the AAPM daycare," — Magdalena Bazalova-Carter, Victoria, BC

The 2018 Annual Meeting included the first offering of onsite childcare at an AAPM meeting. Camp AAPM welcomed children ages 6 months to 12 years. The program was managed onsite by Accent on Children's Arrangements, Inc., a national child care provider that works with many professional and medical organizations at their national meetings, including RSNA. Children participated in age-appropriate activities including arts and crafts, active games, and more. All staff were trained childcare providers. Supervisors, located onsite at all times, were CPR and pediatric First Aid certified. Registration was available for half and full days during the general hours of 7:00 am to 6:30 pm, starting on Saturday July 28 through the end of the meeting on Thursday August 2. Registration was available for any or all of the available dates.

"... thank you for organizing and providing childcare at AAPM this year. The cost and accommodations were very reasonable and made attendance easier for me as a new mother. I hope this option will continue at future AAPM meetings." — Paige Taylor, Houston, TX

Camp AAPM was conveniently located in a large and secure conference room within the convention center. In addition to the 15 children who participated this year, several AAPM members checked out the camp, staff, and facilities with the intention of using the service at subsequent Annual Meetings.

Look for Accent to return to future AAPM Annual Meetings and to continue offering onsite childcare. The first year is just the beginning! We recognize that it will take a few years for AAPM members to realize that they can count on onsite childcare options when making their plans to attend the AAPM Annual Meeting.

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MEDPHYS MATCH AND DISCRIMINATORY BEHAVIORS IN THE RESIDENCY SEARCH PROCESS

Kristi Hendrickson, PhD | Seattle, WA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

The MedPhys Match (MPM) was initiated in 2014 with first matching results released in 2015. The MPM was designed similarly to other national matching systems for medical school graduates being placed into medical residency programs. Applicants and programs each submit a rank order list of their preferred and acceptable programs and applicants, respectively, by a single deadline. The placement of applicants into residency slots is binding by both parties.

Medical Physics is a highly desirable career where currently the numbers of graduates of medical physics graduate programs and certificate programs far outnumbers the number of residency slots available each year. Completion of a CAMPEP-accredited residency is now required for a medical physicist to be eligible to take ABR board exams. While ABR certification is not required for all careers in medical physics, a scan of job openings listed on the AAPM website makes it clear that it is required by many clinical positions. All of these factors lead to a highly competitive environment for medical physics graduates vying for residency training.

The U.S. Equal Employment Opportunity Commission (EEOC) is responsible for enforcing federal laws that prohibit discrimination against a job applicant or employee because of an individual's race, color, religion, gender (including gender identity, sexual orientation, and pregnancy), national origin, age (40 or older), disability, or genetic information. The law forbids discrimination in every aspect of employment, including the search and hiring processes of programs participating in the MPM.[1]

A survey study of gender discrimination

A voluntary and anonymous survey was sent to all applicants and program directors registered for the MPM in each of the years 2015-2018 (all years of the MPM to date). The survey study was reviewed by the University of Washington Human Subjects Division and determined to be exempt by the Institutional Review Board. The survey questions asked about the respondents' experiences in the MPM and all stages of the residency search and hiring process, including the interview and post interview interactions. Results from the first two years of the MPM have been published.[2] In this article, we present select results related to gender discrimination from the first four years of study results.

	2015	2016	2017	2018
Asked about marital status	40%	49%	39%	43%
M/F	39%/41%	47%/54%	48%/30%	34%/58%
Asked about children/ plans to have children	23%	28%	17%	24%
M/F	19%/33%	22%/36%	15%/20%	22%/27%
Asked about sexual orientation				1

Table 1: Gender discrimination questions. The table shows the percentage and number of survey respondents in each of the four years of the survey who indicated that they were asked the following questions during an interview for a residency position.

In Table 1, the survey questions related to gender discrimination are shown. According to the respondents, during the interview or post interview process applicants were asked (1) about their marital or relationship status, (2) about their children or plans to have children, and/or (3) about their sexual orientation. The percentages of respondents who indicated that they were asked these illegal and potentially discriminatory questions are shown in Table 1, including a breakdown by gender. The survey also asked how comfortable respondents were in answering these questions. These results are shown in Figures 1-4. Female respondents are significantly more uncomfortable answering these questions because they know that the information could be used to discriminate against them in the residency search process.

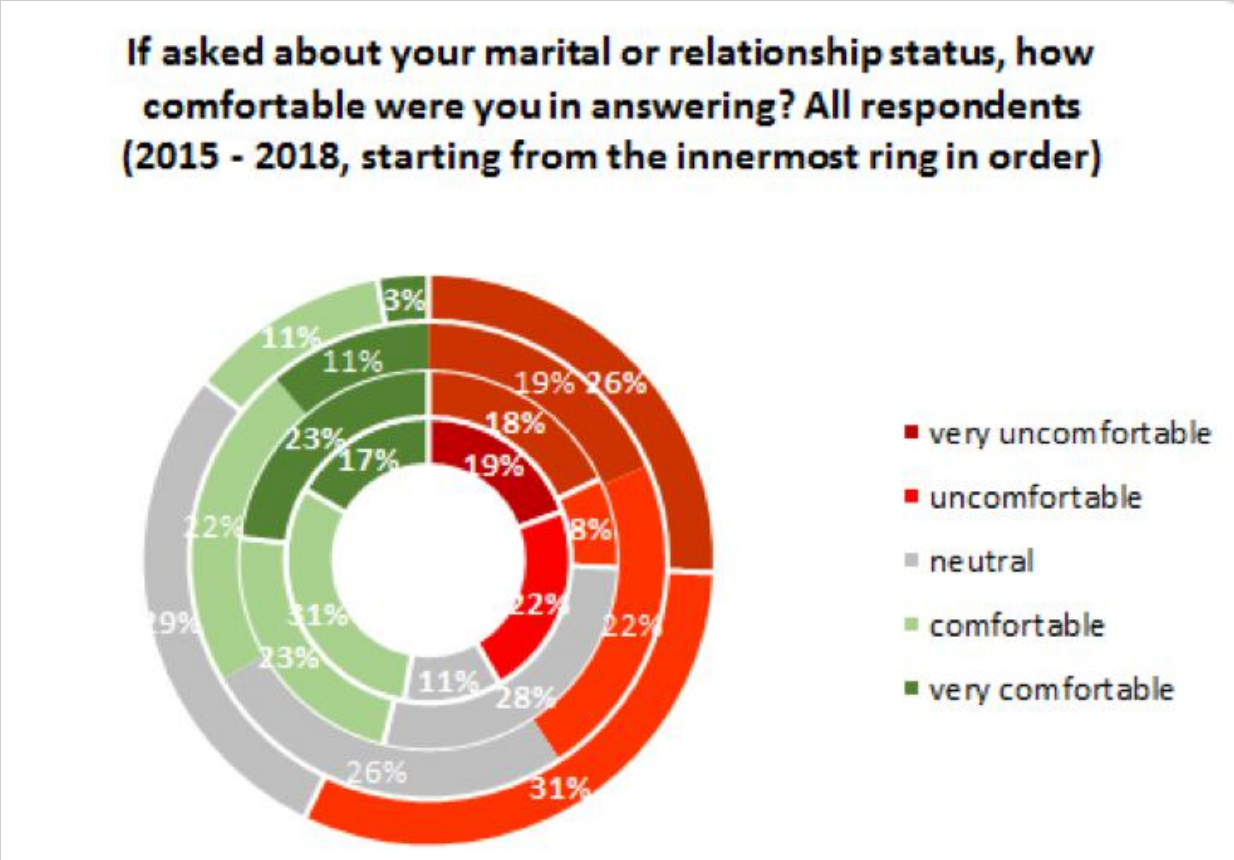
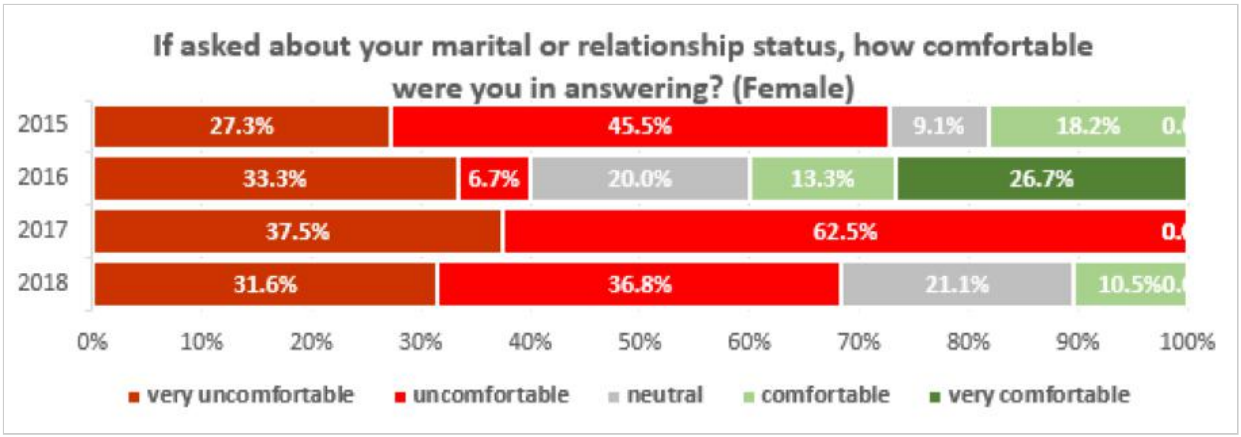


Figure 1: Four years of survey data indicate the comfort level of all respondents who were asked about their marital or relationship status during an interview for a residency position.



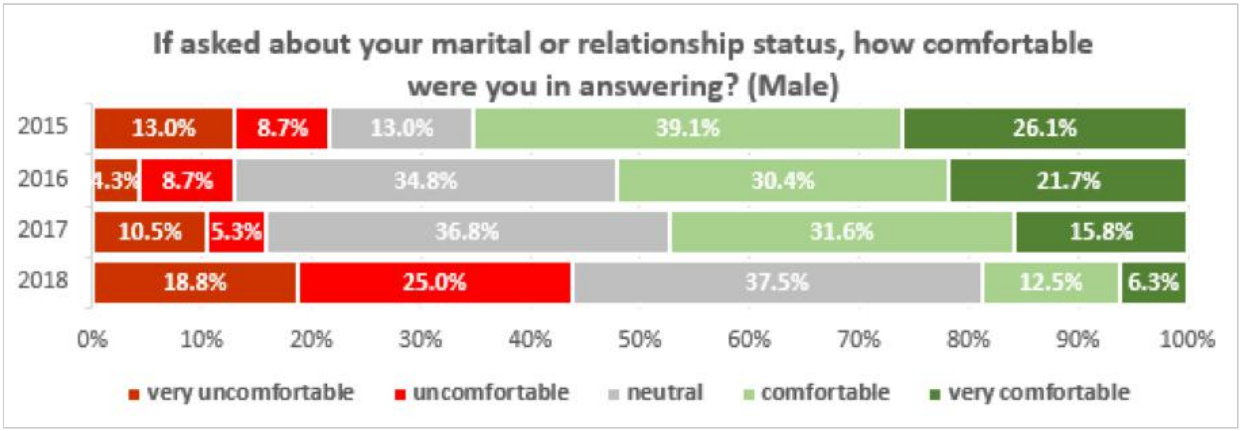


Figure 2: The bar graphs in this figure show the comfort level of female and male respondents who were asked about their marital or relationship status during an interview for a residency position.

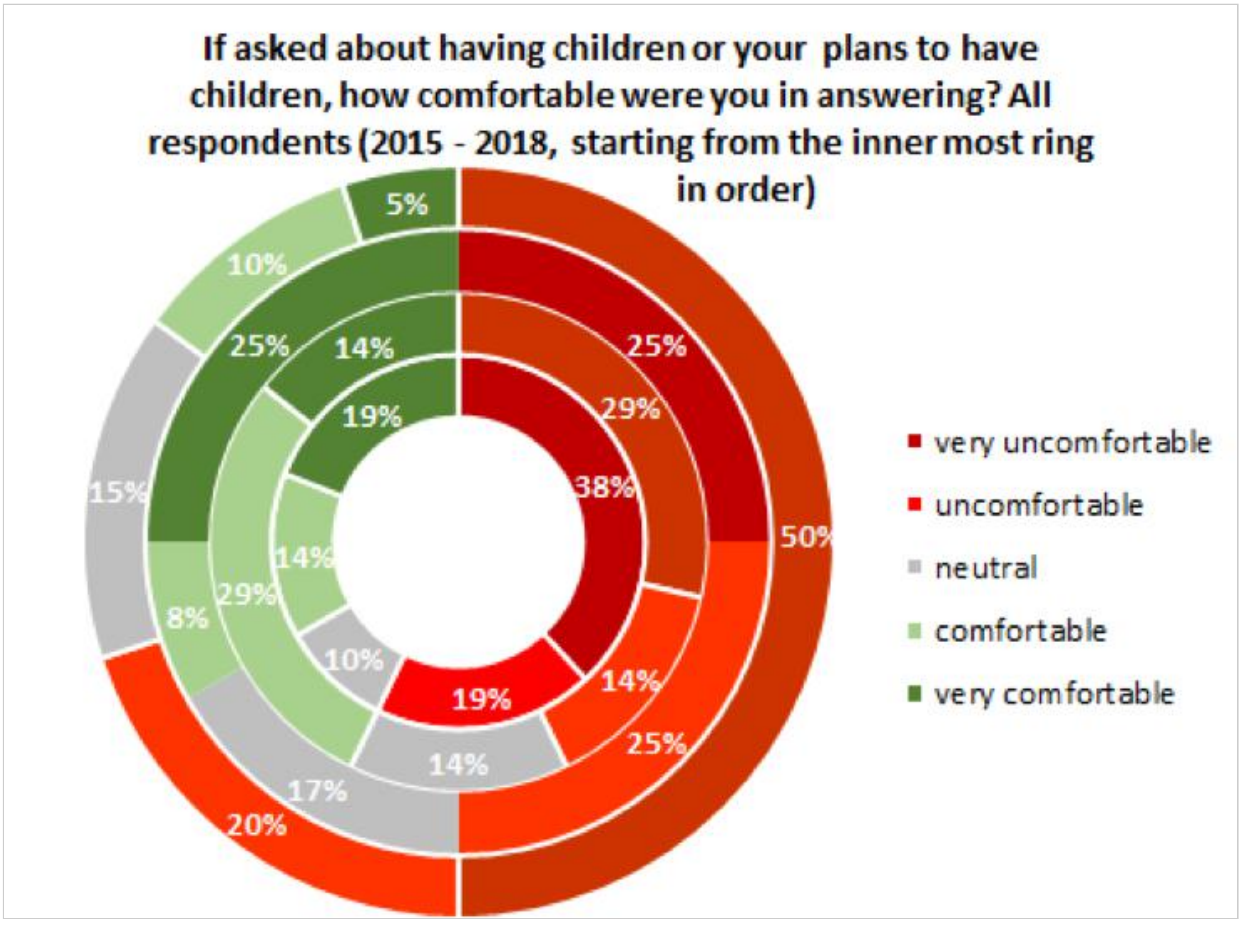
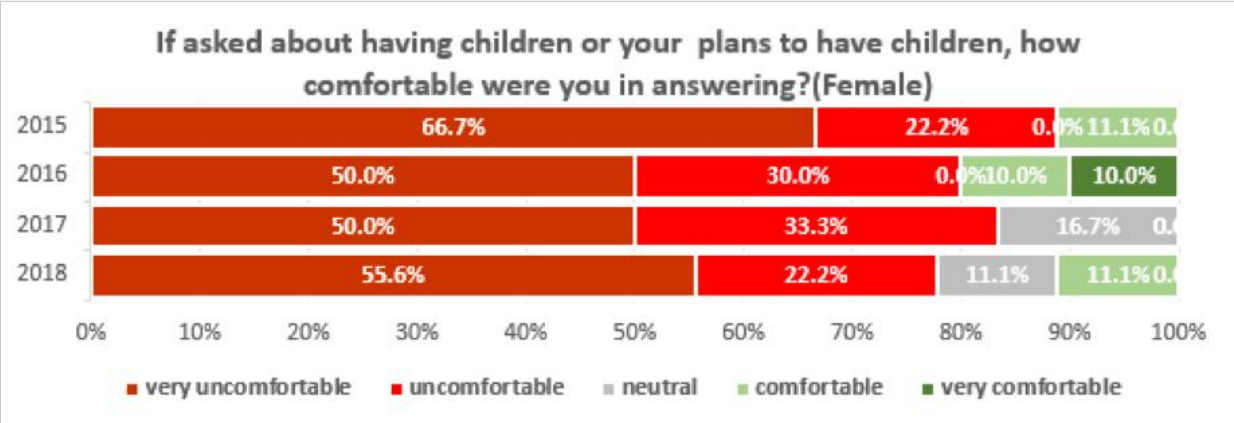


Figure 3: Four years of survey data indicate the comfort level of all respondents who were asked about having children or their plans to have children.



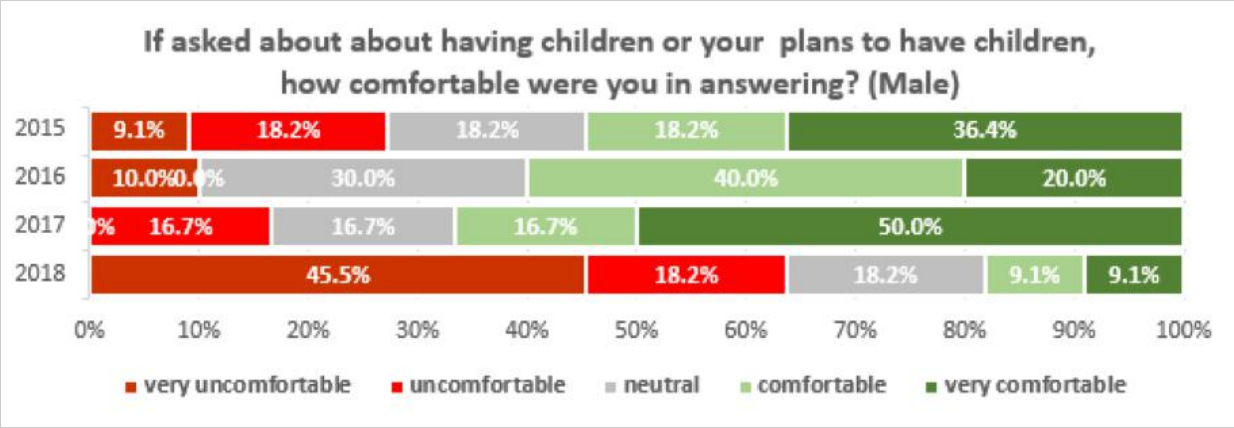


Figure 4: The bar graphs in this figure show the comfort level of female and male respondents who were asked about children or their plans to have children.

The EEOC is responsible for enforcing federal laws that prohibit workplace discrimination, including in search, hiring, and training. They provide guidelines for appropriate interviewing behavior and a list of inappropriate and/or invasive personal questions that are to be avoided. Basically, any question that could be construed as a reason to discriminate against a candidate should be avoided. Such illegal and potentially discriminatory questions have been asked during the MPM search and interview process and, as multiple year data show, continue to be asked. Programs need to do better to avoid gender discrimination.

What You Can Do?

Programs should instruct their interviewing participants—including direct interviewers and all individuals who may be involved in more casual interactions such as current residents, other faculty and staff, and administrators—not to initiate any topics related to family, spouse, children, or sexual orientation. Invite your HR department to provide training and require all interviewing participants to attend. Create a code of conduct for your department that outlines acceptable and unacceptable interviewing behaviors, and ask each of your participants to sign it. Standardize your interview questions to ensure that all applicants are asked the same set of questions. These are common strategies used in other fields and in the business environment.

Graduate schools can also educate their students who are participating in residency interviews regarding their rights related to illegal discriminatory questions. Student groups can role play scenarios where illegal questions are asked and practice how they would like to respond.

The AAPM Board of Directors approved several focus areas and strategic goals at its April 11, 2018 meeting. Among these focus areas is Diversity and Inclusion, where the Strategic Goal is to champion equity, diversity, and inclusion (EDI) in the field of medical physics.[3] Eliminating gender discrimination in the field of medical physics is an important part of achieving this.

[1] *https://www.eeoc.gov/laws/practices/index.cfm; accessed 10/8/2018 (https://www.eeoc.gov/laws/practices/index.cfm)*

[2] *Ethical violations and discriminatory behavior in the MedPhys Match; (https://aapm.onlinelibrary.wiley.com/doi/10.1002/acm2.12135)* J Appl Clin Med Phys 2017; 18:5:336-350 (https://aapm.onlinelibrary.wiley.com/doi/10.1002/acm2.12135)

[3] *https://www.aapm.org/org/objectives.asp; accessed 10/8/2018 (https://www.aapm.org/org/objectives.asp)*

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OUTREACH IS THE ANTIDOTE: MED PHYZ WIZ KIDZ 2018

Julianne Pollard-Larkin, PhD | Houston, TX

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

Just like the rest of the world, I have been riveted by nonstop news stories, but one thing always makes me feel better—outreach. Focusing on someone else and helping them with whatever skillset you have is one of the best types of therapy any of us can try.

Med Phyz Wiz Kidz is the embodiment of an idea I came up with two years ago to impact students in the local area at AAPM Annual Meetings. After speaking to the Women's Professional Subcommittee and getting the green light to plan the event for the 2017 AAPM Annual Meeting in Denver, and with the wonderful help of **Jaime Hoza** from AAPM Headquarters, Med Phyz Wiz Kidz was born! I seriously can't say enough about Ms. Hoza who purchases all of the supplies for the event, helps design our city-specific logo, coordinates our room reservations in the Partners in Solutions room, and arranges our free goodie bags for each participant. I am proud to say we just had our second successful event at the 2018 AAPM Annual Meeting in Nashville, and we had an amazing turnout with 40 registered participants between the ages of 12–17, some of whom were AAPM members' children.

Our event opened with a welcome from **Dr. Kristy Brock** which was followed by a presentation from our President-Elect, **Dr. Cynthia McCollough**. Dr. McCollough gave the students a thrilling overview of how she discovered that medical physics would be the perfect field for her and what steps she took academically to get to her current leadership role. Then I gave a Med Phys Slam-style presentation about the MR-Linac. For the mostly medical physics-naïve audience, such a fast, "high-energy" (forgive the pun) educational talk really helped get them geared up before we unleashed them on to their guided exhibit hall tours.

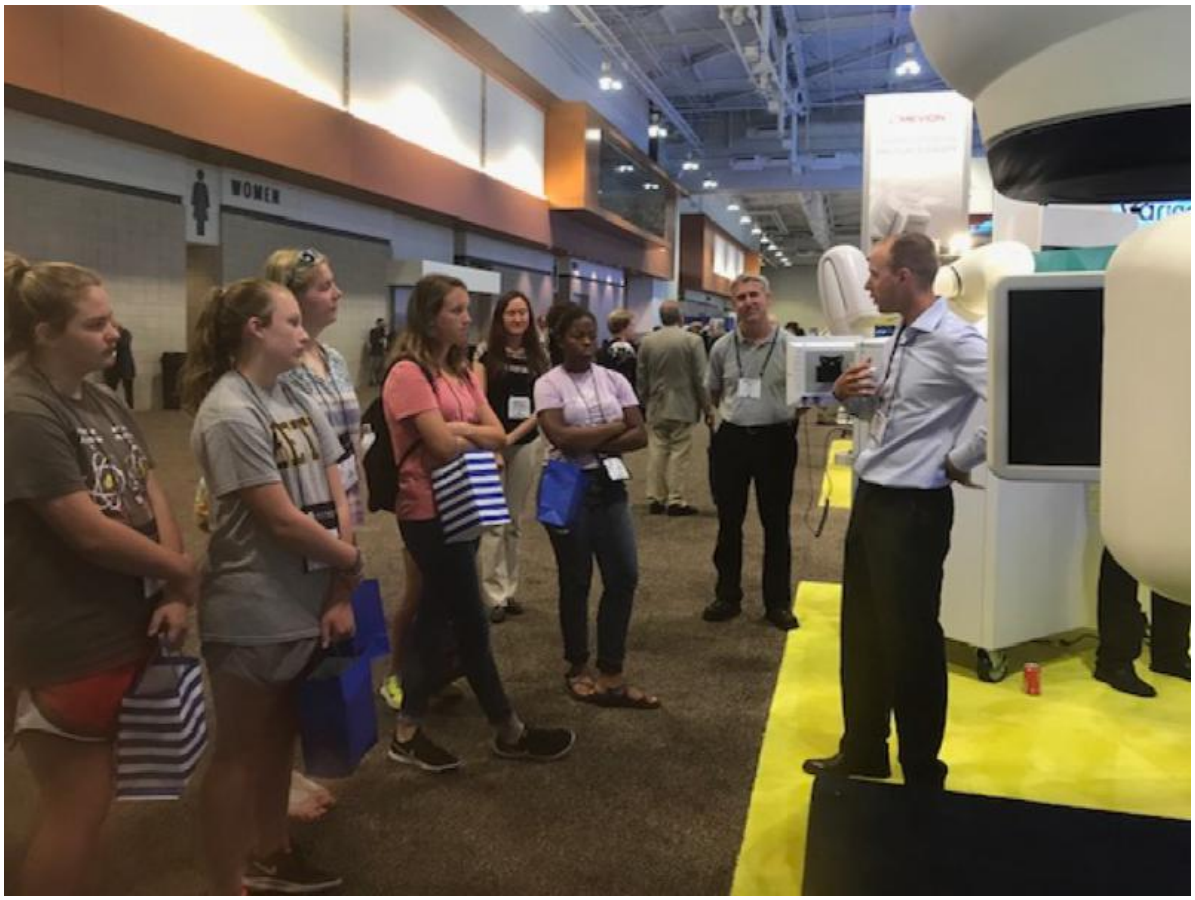
The tours are typically the highlight of our events and were led primarily by graduate student volunteers and members of the Students and Trainees, Women's Professional, and Diversity and Inclusion Subcommittees. It's easy for current members to be a bit jaded about the exhibit hall, but for people who have never seen a linac or even a water tank or treatment planning before, it opens up a whole new world of possibilities. Also, it gives the vendors we interact with a chance to give a no-pressure fun explanation of just how fabulous their products are.

After the tours wrapped up, participants competed in the world-famous spaghetti tower competition. This was a new activity and now a new favorite! In this activity, participants were arranged in tables of eight and given 20 spaghetti noodles, some Scotch tape, and a marshmallow. The goal was to build the tallest structure possible in 20 minutes using just those items and place the marshmallow at the top. Even the parents of the kids got to participate and had just as much fun as their children. This game involved teaching some basic structural engineering, balancing, teamwork, and communication.

Finally, each table was given a poster to use for a brief presentation to the group to teach the whole room what they learned over the course of the three hours of activities. Hearing the children recount all that they had learned and what they enjoyed about the event helped to show how worthwhile it was. Also, several of the children were aware of our field's connection to cancer treatment and mentioned feeling better about having a firmer understanding of what radiation therapy involved. Some even said they would consider our field after their time with us at Med Phyz Wiz Kidz. The cutest response I got from one child was that she finally understood what her dad did all day since he was a medical physicist and AAPM member.

This event helps to not only impact the local students in the environment we choose for each Annual Meeting, but it also gives a convenient opportunity for our members to mentor a community they otherwise would not be exposed to. It's the perfect outreach opportunity for physicists who lack connections to academic schools in their typical daily routines. The goal is to continue helping reach out to local students with a focus on girls and underrepresented students for every upcoming AAPM Annual Meeting. In times like these with two recently named women Nobel laureates in Physics and Chemistry (**Drs. Donna Strickland** and **Frances Arnold**, respectively), we are excited to do what we can to inspire the next generation!

Participants in the 2018 Med Phyz Wiz Kidz program took on the spaghetti tower challenge!



Participants in the 2018 Med Phyz Wiz Kidz program take a tour through the vendor hall and listen to fun explanations from vendors of their products.

Dr. Cynthia McCollough, president-elect of the AAPM, speaks to participants of the 2018 Med Phyz Wiz Kidz program in Nashville, TN.

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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SOCIAL SUCCESS AT THE WPSC/D&I HAPPY HOUR AT AAPM 2018

Julianne Pollard-Larkin, PhD | Houston, TX

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

On Tuesday July 31 at the AAPM Annual Meeting in Nashville, the Women's Professional and Diversity and Inclusion Subcommittees hosted our second annual joint happy hour. Everyone in AAPM was invited to meet up for drinks and appetizers at Al Taglio restaurant in the Music City Center at 5:00 pm, before the AAPM Night Out. This year we had a great turnout of new and familiar faces, taking up all the free chairs on the venue patio, and used this time to reconnect or get to know each other and share ideas for other joint efforts.

Recently, AAPM leadership approved a new strategic goal for AAPM regarding diversity and inclusion, and this is of major interest to both the WPSC and D&I. **Dr. Laura Cerviño** (Chair of WPSC), myself (Chair of D&I), and **Dr. Stephen Avery** (Vice-Chair of D&I) were present at the happy hour to discuss the implications of this new initiative with those in attendance. This news was enjoyed even more than the delectable appetizers that were being passed around.

Last year's event, hosted at a local bar in Denver near the convention center, was just as successful, and the goal for the future is to keep the momentum going. In previous years, the major social event for the WPSC has been the annual Women Physicists luncheon on Tuesday of the meeting, but attendance is limited by the room size and with the wonderful programs and speakers each year, there's never sufficient time for networking or in-depth conversations. This is the void that happy hour fills; here you can talk to your heart's content with no time constraint. All AAPM members are invited to happy hour; you do not need to be a member of the WPSC or D&I. The exact time and location of happy hour will be advertised on the meeting website under the Special Events category. We look forward to seeing you at next year's event in San Antonio!

Attendees at the WPSC/D&I happy hour on Tuesday July 31, 2018 at Al Taglio in the Music City Center in Nashville, TN. In the foreground on the right are Dr. Stephen Avery (Vice-Chair of D&I) and Dr. Julianne Pollard-Larkin (Chair of D&I and article author).

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EQUITY, DIVERSITY, AND INCLUSION STRATEGIC GOAL

Laura Cerviño, PhD | San Diego, CA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

At the Spring Clinical Meeting in April 2018, AAPM Board of Directors had a retreat to discuss and approve a strategic plan. The objective was to set strategic goals for the next five years, with the idea in mind that these goals would be part of a dynamic document. During the discussions that happened at the retreat, diversity and inclusion in the medical physics field was identified as a strategic goal that AAPM as a leading organization should work towards. At the end of the day-and-a-half retreat, the Board approved the strategic goals (https://w3.aapm.org/org/objectives.php). Since the diversity goal was brought up during the discussions and there was not enough time during the meeting to further shape the goal, AAPM President **Bruce Thomadsen** formed an ad-hoc committee to draft the strategic goal on diversity. This committee worked during two months to name and draft the strategic goal, and it was finally approved during AAPM board meeting on August 2.

The strategic goal on equity, diversity, and inclusion, and objectives were defined as follows:

- Champion Equity, Diversity, and Inclusion (EDI) in the field of medical physics
- Objectives
  - [x] Evaluate EDI in the current AAPM organizational structure and activities
  - [x] Create and sustain the structure in AAPM necessary to support the EDI strategic goal
  - [x] Cultivate and encourage a diverse pool of trainees for entry into medical physics and AAPM
  - [x] Create and deliver professional and educational content that supports the importance of EDI, specifically supporting the needs of underrepresented medical physicists
  - [x] Collaborate with other professional organizations to implement and support the commitment to EDI in the medical physics field
  - [x] Ensure that the EDI strategic objectives and AAPM's core mission of advancing medicine through excellence in the science, education, and professional practice of medical physics are continually aligned.

While there are many individual and independent efforts to study and evaluate EDI in the medical physics field, its identification as a strategic goal means that AAPM will work towards it and will allocate resources for that purpose as needed and available. The Women's Professional Subcommittee (WPSC) and the Diversity and Inclusion Subcommittee (WMRSC) were identified as the initial pillars to start building upon the strategic goal. These two committees will coordinate efforts to evaluate AAPM infrastructure and resources to achieve the goal's objectives.

On top of the prior initiatives from WPSC and WMRSC, such as professional and educational sessions during the annual meeting, newsletters, and annual women's luncheon, two of the first initiatives resulting from the approval of the EDI strategic goal are: 1) a climate survey amongst AAPM members, which is currently being shaped; and 2) AAPM's Accelerating Mid-Career Physicists in Leadership specialty meeting, for which the first proposal has been submitted to the Professional Council. These initiatives are led by groups with members in both the WPSC and WMRSC working together.

Other strategic goals approved by AAPM Board of Directors, also listed here, include:

1. Drive scientific and clinical innovation in medical physics to improve human health
2. Enhance the value of AAPM membership experience and services
3. Promote leadership role of the organization and its members
4. Cultivate excellence in medical physics education
5. Practice stewardship in continuous assessment of programs and services
6. Improve communication internally and externally
7. Ensure High-Quality patient care

Anyone interested in further information, in getting involved, or in providing suggestions and comments on the Diversity and Inclusion strategic goal can contact **Laura Cerviño**, Chair of the WPSC, or **Julianne Pollard-Larkin**, Chair of the WMRSC.

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WPSC NEWS BITES

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

Congratulations to all new AAPM fellows and awardees! The WPSC would particularly like to recognize the exceptional group of women who received the distinction of FAAPM: **Maria-Ester Brandon, PhD**; **Eileen Cirino, MS**; **Jessica B. Clements, MS**; **Carrie K. Glide-Hurst, PhD**; **Lakshmi Santanam, PhD**; **Jennifer B. Smilowitz, PhD**; **Cynthia L. Thomason, PhD**; and **Twyla R. Willoughby, PhD**. Congratulations also to **Magdalena Bazalova-Carter, PhD**, for receiving the John S. Laughlin Young Scientist Award! The website with information on fellowship and award requirements is here (https://awards.aapm.org/); members who are eligible to nominate are encouraged to start the nomination process for members they feel are deserving of these awards.

Members in the News

Many AAPM and WPSC members are featured in or write articles for other organizations about their work, medical physics, or being a woman in physics. Recent examples are listed here and each is a good read. If you're aware of other articles by female AAPM members that should be brought to our attention, please send them along to WPSC editor **Jennifer Pursley**. AAPM Fellow and ABR trustee **Kalpana Kanal** wrote an article for the winter issue of the BEAM, the ABR newsletter, on diversity and fairness within the ABR. AAPM Fellow **Robin Miller** was the featured ABR diplomate in the spring issue of the BEAM (https://www.theabr.org/wp-content/uploads/2018/05/The-Beam_Spring2018.pdf). Chair of AAPM Diversity and Inclusion Subcommittee **Julianne Pollard-Larkin** wrote an article for the summer edition of the ASTROnews (https://bluetoad.com/publication/?i=509707&ver=html5&p=24#{%22page%22:24,%22issue_id%22:509707}) on gender-equity in medical physics and the progress made in increasing diversity. And AAPM Fellow and past president **Maryellen Giger** wrote a commentary for Physics Today (https://physicstoday.scitation.org/doi/10.1063/PT.3.3882) on entrepreneurship and academia, based on her experience as part of the team establishing the field of Computer-Aided Detection (CAD).

If you're attending this year's RSNA in Chicago, please check out the events (http://www.aawr.org/Events/Events) sponsored by the American Association for Women Radiologists (AAWR). In particular, the AAWR Educational Session on November 28 features a panel discussion on "Parental/FMLA Leave in Residency."

For the third time, Elsevier has produced a Virtual Special Issue on Women in Physics. The issue highlights recent, novel publications by women in different branches of science and makes those publications free to download and read for 12 months. The Virtual Special Issue on Women in Physics 2018 (https://www.elsevier.com/physical-sciences-and-engineering/physics-and-astronomy/journals/virtual-special-issue-on-women-in-physics-2018) is available for download until March 2019.

Earlier this year the National Academies of Sciences, Engineering, and Medicine (NASEM) published a report on sexual harassment of women working in academic sciences, engineering, and medicine fields titled “Together We Can Do Better.” The report is available on the NASEM website (https://www.nap.edu/catalog/24994/sexual-harassment-of-women-climate-culture-and-consequences-in-academic); pdf downloads are free and paper or ebook copies are available to purchase. The report concluded that culture change in academia is key to reducing the incidence of the sexual harassment, in particular by increasing diversity and reducing the dependence of students and junior faculty on a single senior advisor. Several responses have been published by medical journals, including the New England Journal of Medicine (https://www.nejm.org/doi/full/10.1056/NEJMp1809351), and the ASCO Post published an article by radiation oncologist Stephanie L. Graff, MD (http://www.ascopost.com/issues/september-25-2018/an-invitation-to-be-quiet-no-longer/). AAPM is working on its own response which will be published in the Journal of Applied Clinical Medical Physics. The NASEM Committee on Women in Science, Engineering, and Medicine is hosting a national convocation in Washington, DC, on Friday Nov 9 on how to address the issues highlighted in the report. If you are unable to attend in person, you can also register for the free Webcast connection through this Eventbrite link (https://www.eventbrite.com/e/together-we-can-do-better-a-convening-of-leaders-in-academia-to-prevent-sexual-harassment-registration-48597305850).

The American Institute of Physics (AIP) publishes Physics Today, the most closely followed magazine in the world for physics research updates and physics-related topics. Recently Physics Today has featured several interesting articles related to diversity and women in physics. One, titled "*Gender matters* (https://physicstoday.scitation.org/doi/10.1063/PT.3.3870)," goes over the evidence for patterns of gender inequity in physics academia and offers suggestions and resources for departments to reduce inequity. Another article highlighted a *hearing from the federal House Science Committee* (https://physicstoday.scitation.org/do/10.1063/PT.6.2.20180309a/full/) which addressed sexual harassment in science, and at which a panel of four women scientists called for change within a culture that remains permissive of harassment. Another, provocatively titled "Diversity in Physics: Are you part of the problem? (https://physicstoday.scitation.org/doi/10.1063/PT.3.3536)" from University of Washington's Dr. Ann Nelson, asked faculty to take a hard look at their department's culture and their own unconscious biases that may be restricting efforts to create a more diverse environment. The American Physical Society (APS) also has an active Committee on the Status of Women in Physics (https://www.aps.org/about/governance/committees/cswp/index.cfm), whose most recent Gazette newsletters feature articles on harassment and diversity issues in the physics field. All of these articles are a good resource for our members as well!

Seeking Contributors!

The WPSC Newsletter is published biannually in the spring and fall, and we are always on the lookout for news, stories, ideas, and features related to Women in Medical Physics to include in future editions. Contributions and suggestions can be sent directly to the WPSC at 2018.WPSC@aapm.org (mailto:2018.WPSC@aapm.org).

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CHAIR OF THE BOARD'S REPORT

Melissa Martin, MS | Signal Hill, CA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

We have just completed an all-day meeting of the Finance Committee along with the Council Chairs, Vice Chairs and EXCOM with their supporting staff to develop the 2019 budget for submission to the next meeting of the Board of Directors at the RSNA meeting. The collective effort of all participants is greatly appreciated. It is very impressive how active and involved our members are with a tremendous variety of interests on behalf of AAPM. Every activity from economics to each scientific task group to all international activities to each educational endeavor are discussed and evaluated for importance and delivery of information back to the organization. Special thanks to **Robert McKoy**, our Director of Finance, and **Mahadevappa Mahesh**, our Treasurer for all their work in preparation of this meeting.

This set of meetings here at Headquarters brings me close to the culmination of years of service to AAPM as a Board Member since 1994. It has certainly been a privilege to have participated in the many activities of this great organization as a Chapter Representative, then Board Member at Large, then Treasurer, then Administrative Council Chair and finally through the Presidential Chain for a total of 24 years. The final activities left in my term of service as Chair of the Board will be the Board of Directors meeting at the RSNA and final EXCOM conference call in December. I have thoroughly enjoyed serving the many and varied requests of the members of AAPM and I want to thank you all for allowing me to work with you and get to know many of you through various committee activities. Representing AAPM at many outside meetings both here in the US and internationally has given me a broad perspective of the role of the medical physicist in industry, regulatory agencies, research and certainly clinical roles. I want to especially thank those who have served on the Executive Committee with me for the past three years. As some of us have expressed too many times, the Executive Committee spends more time together than we do with our spouses.

One of those international groups that I have enjoyed working with for the past several years is the IAEA in Vienna. The latest IAEA meeting at which I represented AAPM was the Radiation Safety Culture meeting held October 1–3 at IAEA Headquarters. Participants from around the world and representatives of professional organizations from the US, Europe, Asia and Africa each presented the development status of Radiation Safety Culture in their nations. The many programs of the IAEA and WHO were also presented. Participation by **Lisa Brudigan** of Texas, representing the CRCPD, added the regulators perspective to this well organized meeting developed by **Debbie Gilley** and chaired by **Madan Rehani**, Chairman of the IOMP.

Planning is being quickly completed for the upcoming meetings of the Strategic Planning Committee by phone and in person at the RSNA meeting. Many of our members have presentations in Chicago along with the many committee meetings and finally the Board of Directors meeting at which all committee and council appointments will be approved along with the 2019 budget. **Cynthia McCullough**, President-Elect, has been working extremely hard to complete all of the Presidential appointments of liaisons and committee chairs. If you are attending the RSNA meeting, please plan to come to AAPM Reception on Tuesday evening at the Headquarters hotel, the Hyatt Regency-Chicago (not the Hyatt at McCormick Place). For those of you who may be interested in how committees of AAPM work, please attend the meeting of interest to you on Sunday. All AAPM committee meetings are open for attendance by any member except Executive Committee, Ethics Committee, and Awards and Honors Committee. We would especially encourage any of our younger members who may not have attended a committee meeting before to come visit one or more of our meetings and introduce yourself to the Chair.

Again, thank you for the opportunity to have been your President and the many opportunities that you have afforded me to attend your chapter meetings and get acquainted with you. It has been a great pleasure for me to serve AAPM. I look forward to continuing to participate in upcoming meetings and having more free time to visit with you.

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EXECUTIVE DIRECTOR'S REPORT

Angela R. Keyser | Alexandria, VA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

AAPM EVENTS DURING RSNA 2018

- ***REMINDER!*** AAPM's Headquarters during the RSNA meeting will be located at: The Hyatt Regency Chicago (https://chicago.regency.hyatt.com/en/hotel/home.html) located at 151 E. Upper Wacker Drive.
- AAPM committee meetings and annual reception will be held at the Hyatt. Make plans to join your colleagues on Tuesday, November 27 from 6:00 pm – 8:00 pm for the annual AAPM Reception (http://www.aapm.org/meetings/rsna2017/receptioninvite.asp).
- Make plans to attend the RSNA/AAPM Symposium: State of the Art in CT Imaging (https://meeting.rsna.org/program/) on Tuesday, November 27, 10:30 am - 12:00 pm – Room E451B (http://meeting.rsna.org/roomlocate/rm_map.cfm?rm_name=E451B) in McCormick Place.
- Visit AAPM at Booth 1109 in McCormick Place - South Building - Hall A to charge your mobile devices! Pick up information on association programs, the current list of AAPM publications, and complimentary copies of *Medical Physics* as well as checking out the recent advancements in the AAPM Virtual Library.
- The most up-to-date schedule for AAPM meetings during the RSNA meeting is available online (https://www.aapm.org/meetings/rsna2018/schedule.asp).

DID YOU KNOW ...

- AAPM Journals are now available on your Android device. Download single articles or entire issues for offline reading. Go here (https://play.google.com/store/apps/details?id=com.wiley.jas.aapm) to download the app. Choose "I already have access through my society affiliation," then enter your username and password for aapm.org (https://w3.aapm.org/) to log in.
- If you have fully retired from the field after being a Full or Associate member of AAPM for 10+ total years (the last two consecutive) and are over the age of 55, you are eligible for Emeritus Membership. To request a change to Emeritus, email jennifer@aapm.org (mailto:jennifer@aapm.org) your request and our HQ team will do the rest!
- AAPM includes "AAPM Reports Authored" in the AAPM Membership Directory listing of each AAPM Member. Ever want to find an AAPM Report, don't remember all the details, but remember the name of one of the authors? Login and check it out!

- AAPM provides links to ACR-AAPM Practice Parameters and Technical Standards from AAPM's Publication page (http://www.aapm.org/pubs/ACRAAPMCollaboration.asp)
- A very important service provided by the American Institute of Physics (AIP) is the FYI science policy bulletins with a focus on the physical sciences. The sign-up is free, and it is an easy way to stay on top of what is happening within the administration and Congress. To subscribe, go here (https://www.aip.org/fyi/fyi_subscribe)
- There are 44,000+ pictures on AAPM's Flickr site (https://www.flickr.com/photos/96369280@N00/albums), where you will find pictures grouped by event. AAPM's history has been well documented through the photographic efforts of many members. Take some time to stroll down memory lane!
- You can get your AAPM Swag through a partnership with Knotty Tie Company. Go online (https://w3.aapm.org/merchandise/) to order customized, handmade ties and scarves that incorporate AAPM's signature logo.

YOUR ONLINE MEMBER PROFILE

This is a reminder to keep your AAPM Membership Profile information up to date by going here (http://www.aapm.org/memb/profile/) and making any changes necessary. **Please, upload your picture** if you have not already done so.

Remember to review the "Conflict of Interest" area of the Member Profile to self-report conflicts per the AAPM Conflict of Interest Policy (http://www.aapm.org/org/policies/details.asp?id=373&type=PP).

STAFF NEWS

Who does what on the AAPM HQ Team? See a list with contact information and brief descriptions of responsibilities online (https://www.aapm.org/org/contactinfo.asp). An Organization Chart (https://www.aapm.org/intranet/board/documents/orgchart.pdf) is also provided.

AAPM's Headquarters Team

I firmly believe that part of the success of AAPM HQ operations is our ability to attract and retain an excellent team of high performing association management professionals. The years of service documented below is very telling; the AAPM HQ team is very committed to serving the AAPM membership. The following AAPM team members have celebrated an AAPM anniversary in the last half of 2018. I want to publicly thank them and acknowledge their efforts.

Lisa Rose Sullivan	25 years of service	Abby Pardes	5 years of service
Michael Woodward	22 years of service	Phyllis Doak	3 years of service
Farhana Khan	20 years of service	Rohan Tapiyawala	3 years of service
Yan-Hong Xing	12 years of service	Nick Wingreen	3 years of service
Tammy Conquest	11 years of service	Andrew Gillis	1 year of service

Corbi Foster	11 years of service	Janelle Priestly	1 year of service
Jackie Ogburn	11 years of service		

Holiday Announcements

The AAPM Headquarters office will be closed Thursday, November 22 – Friday, November 23, Monday, December 24 – Tuesday, December 25 and Monday, December 31 – Tuesday, January 1.
I wish you and your loved ones all the joys of the season and happiness throughout the coming year.

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TREASURER'S REPORT

Mahadevappa Mahesh, PhD | Baltimore, MD

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

As the final column for 2018, I'm writing to share my thoughts on the recent Finance Committee (FINCOM) meeting I chaired on October 17, 2018. One of the primary roles of FINCOM is to review and approve a budget to present to the Board of Directors that will move the association towards achieving its strategic goals and yet is fiscally responsible. The AAPM budget process is nearly a year-round process that begins in the first quarter of the new fiscal year and concludes when the Board approves the budget during the board meeting held at RSNA. The budget process is quite lengthy and includes:

- Strategic Planning Committee (SPC) deciding major budget priorities
- BOD discussing SPC budget recommendations
- Management preparing compensation plans for EXCOM review/approval
- Management determining the target deficit based upon the statistical model
- Councils/committees meeting during Annual Meeting and submitting budget requests
- Headquarters staff compiling the first draft budget
- FINCOM meeting and reviewing the draft budget and making changes to the draft budget and ultimately approving an initial draft budget
- FINCOM hearing appeals from Councils on budget changes and approving budget for the Board of Directors
- Board of Directors approving the final budget

This year's FINCOM meeting to review the draft budget was very efficient. Advanced communication regarding anticipated levels of growth, managed budget submission requests and improved reporting helped to focus the discussion on areas of greatest impact. Both revenues and expenses were carefully evaluated and at the end of the day, FINCOM unanimously approved the 2019 draft budget that will be sent to the AAPM Board. FINCOM will meet again via a conference call in early November to review one final time (to process any budget appeals) before submitting the budget to the AAPM Board. The Board will then vote at the next board meeting (during the RSNA meeting in Chicago, IL).

FMS and AMS Conversion Update

The FMS conversion is complete. The final portion of the conversion was the implementation of the reporting module BI360 which is currently being implemented. Finance staff are currently working through several implementation challenges and anticipate having the reporting module fully functioning by the end of the fourth

quarter.

The AMS conversion is proceeding nicely and recently achieved another milestone, with the conclusion of Phase 2. As a result, AAPM is no longer in the implementation phase and resolution of issues with Abila is now being handled by their support team. The IS team continues to work diligently to restore connections between the database and the new AMS.

With the completion of selecting and purchasing of both AMS and FMS systems, the primary function of Task Group 285 is now complete. I would like to express my sincere thanks to all who served on TG 285.

My first column next year will go over the approved budget for the 2019 year. I want to thank all the members of FINCOM and the council chairs, vice-chairs and their respective staff liasions for a very constructive budget meeting this year that eventually led to the unanimous approval of the draft budget. Finally, I would like to thank **Robert A. McKoy**, AAPM Director of Finance, for all of his work on the budget and helping me throughout this year on finances and other related topics. Since this is the last column for 2018, I wish all of you very Happy Holidays and a Happy New Year.

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GOVERNMENT & LEGISLATIVE AFFAIRS REPORT

Richard Martin, JD | Alexandria, VA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

NRC ASSESSING FEASIBILITY OF LIMITED AU STATUS FOR RADIOPHARMACEUTICAL ADMINISTRATION

The Nuclear Regulatory Commission (NRC) is studying the feasibility of creating a limited authorized user (AU) status for radiopharmaceutical administration. In its "Staff Evaluation of Training and Experience Requirements for Administering Different Categories of Radiopharmaceuticals," dated August 28, 2018, NRC staff stated it may be feasible to establish tailored training and experience requirements for categories of radiopharmaceuticals under 10 CFR Part 35 subpart E. The NRC Advisory Committee on the Medical Uses of Isotopes meeting September 20–21 provided a forum for discussion of this issue.

The ACMUI's Training and Experience for all Modalities Subcommittee presented an update on its activities and the planned path forward to explore a limited AU pathway for administering radiopharmaceuticals. The subcommittee stressed the necessity of determining appropriate training and experience requirements. ACMUI members expressed concern that any alternate pathway protects patient safety and ensures the quality of administrations. Members acknowledged the availability of patient-ready doses that simplify administrations, yet they cautioned that administrations of new radiopharmaceutical therapies are getting more complicated and questioned whether new agents would fit into any newly crafted requirements.

Stakeholders in attendance at the ACMUI meeting expressed a range of opinions on advancing a limited AU status. A representative of the Council on Radionuclides and Radiopharmaceuticals, Inc. (CORAR) advocated for an alternative to the current 700 hours of training and experience, citing physicians' limited role in handling patient ready doses and existing safety profiles. In contrast, the American Society for Radiation Oncology (ASTRO) recommended staying with current requirements.

A nuclear medicine physician from the Society of Nuclear Medicine and Molecular Imaging (SNMMI) talked about the evolving nuclear medicine field. He explained the United states is falling behind European and other countries, where there is a greater variety of therapeutics being offered to patients. He believed that loosening training requirements would not help patient access. He argued that the United States needed a strong, clear pathway to

nuclear medicine sub-specialization for the new age of targeted therapies and recommended mastery of the current curriculum, including complex medical and safety risks, to ensure that a physician administering radiopharmaceuticals has broad expertise in nuclear medicine—not just in one procedure.

The NRC staff plans to conduct extensive outreach over the next 12–14 months with the medical community, including international groups, on how to tailor training and experience requirements to establish a limited AU status. We will keep you updated on developments and opportunities for engagement.

If you have any questions or concerns about this issue, please contact **Richard Martin** (mailto:richard@aapm.org), JD, AAPM Government Relations Program Manager.

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ABR NEWS

Kalpana Kanal, PhD | Seattle, WA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

THE ABR CORE PHYSICS COMMITTEE

The ABR depends upon volunteers to function. ABR trustees, governors, committee members, and oral examiners are all volunteers who serve without pay. One of the key functions of ABR medical physics volunteers is to write the physics questions for all ABR exams. This includes not only the medical physics certification questions, but all also physics questions for diagnostic radiology, interventional radiology/diagnostic radiology, and radiation oncology certification exams. For question writing purposes, volunteers are organized into committees according to their expertise. In this article, the focus is on the Core Physics Committee.

The ABR Core Exam offered in early summer each year is taken by diagnostic radiology residents typically after 36 months of residency training. This is a computer-based exam which covers 18 clinical subspecialty and modality categories as shown in the table. The columns represent the clinical subspecialties. Each associated committee is made up of radiologists who are experts in the particular subspecialty. The rows represent categories for imaging modalities as well as categories for physics and noninterpretive skills. Questions from each category are integrated across all clinical subspecialties. There is no separate physics exam. Physics content is part of the Core Exam and has to be passed independent of the clinical content.

Breast Imaging	Thoracic	Cardiac Imaging	Urinary	GI	Vascular / IR	MSK	Neuro Radiology	Pediatric Radiology	Reproductive / Endocrine
CT									
MRI									
Radiography/Fluoroscopy									
Nuclear Radiology									
Ultrasound									
Noninterpretive Skills									
PHYSICS									

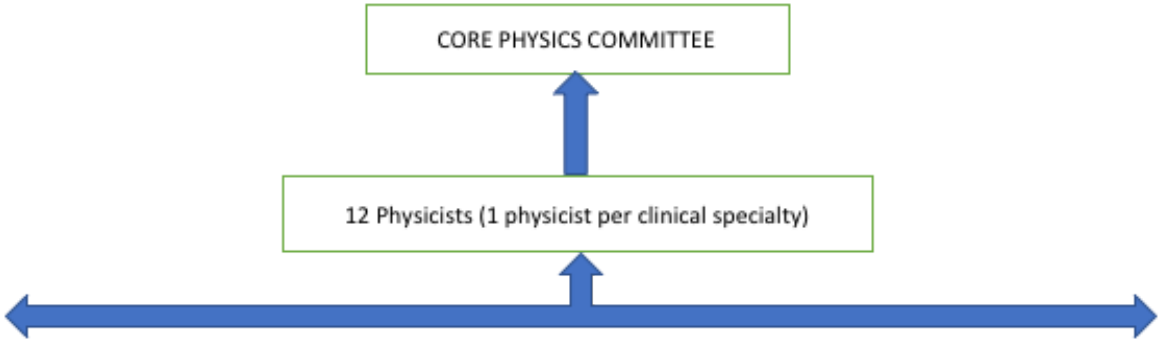
The Core Physics Committee consists of 12 ABR certified medical physicists, with one physicist embedded in each of the clinical subspecialty, nuclear radiology and ultrasound committees. These physicists have the following two-fold responsibilities:

✔ Clinical Subspecialty Committee:

- Write clinically relevant physics questions pertaining to the clinical subspecialty
- Participate in the clinical subspecialty conference calls to review questions
- Attend the clinical subspecialty committee exam assembly meeting and select physics questions for the exam

✔ Core Physics Committee:

- Participate in the Core physics committee conference calls periodically to review questions written by all physicists
- Participate in the Core Physics committee exam assembly meeting with other physicists and review all the physics questions selected by the clinical committees for the Core Exam



Breast Imaging	Thoracic	Cardiac Imaging	Urinary	GI	Vascular / IR	MSK	Neuro Radiology	Pediatric Radiology	Reproductive / Endocrine	US	Nuclear Radiology

The writing cycle generally starts in April and ends in early September. As the physicists write questions and have their questions approved/revised by their respective clinical subspecialty committees, the questions are sent for review to ABR editorial staff, who check each question for ABR recommended stem and response format, clarity and grammar. The ABR maintains an item writing style guide to inform item writers and editorial staff of the appropriate style for exam items. If there is an image associated with the question, it is checked for copyright and HIPAA violations along with image clarity and focus. Clinical subspecialty committees, which include a physicist, meet towards the end of the item writing cycle to review their subspecialty questions and the physics questions associated with the subspecialty. The physicist for each clinical subspecialty committee attends these meetings.

At the end of the writing cycle in early September, the Core Physics Committee, which includes 12 physicists and the diagnostic and nuclear medical physics trustees, meets in Chicago for 1.5 days to assemble the physics content of the Core Exam for the following year. All physicists participate in the exam assembly meeting. At this meeting, three exams are assembled for the Core Exams to be given the following year. Each question is scrutinized for physics content, relevance and clinical applicability. A question may be rejected if not appropriate and revised/replaced as needed even if it has been reviewed at the clinical committee level. Typically 15-20% of the questions are replaced at the Core Physics Committee meeting. This is the final step in the process of selecting and reviewing questions for the physics content of the Core Exam.

The medical physicist volunteers on this committee dedicate a tremendous amount of time and effort in creating the questions and assembling the content for the exam.

Core Committee members as of September 2018: *Samuel Brady, Karen Brown (Chair), Andrea Dohatcu, Tyler Fisher, David Jordon, Brad Lofton, Zheng Feng Lu, Mark Madsen, Mahadevappa Mahesh, Mathew Palmer, Timothy Szczykutowicz, David Zamora, Jie Zhang.*

The ABR thanks all the medical physicists who serve on the Core Physics Committee for ensuring that the physics content on the Core Exam is appropriate, of high quality and clinically relevant.

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ACR ACCREDITATION: FREQUENTLY ASKED QUESTIONS FOR MEDICAL PHYSICISTS

Dustin A. Gress, MS | Reston, VA

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

In each issue of this Newsletter, I'll continue Penny's tradition of presenting frequently asked questions (FAQs) or other information of particular importance for medical physicists. You may also check out the ACR's accreditation web site portal (http://www.acraccreditation.org/) for more FAQs, accreditation application information, and QC forms.

The ACR recently transitioned to requiring electronic uploads for accreditation. The following FAQs address this recent, important change. Please contact us at accreditation@acr.org (mailto:accreditation@acr.org) if you have questions.

Q. The ACR now requires electronic upload of all accreditation images and documents. What is the benefit of electronic image submission via TRIAD?

A. TRIAD overcomes the challenges of manual image submission with easy-to-use tools that reduce cost and streamline the image submission process. Benefits of TRIAD for electronic image submission include:

- Faster turnaround time from image submission to final results
- Reduced costs associated with burning and shipping CDs
- Elimination of delays in shipping images
- Mitigation of risk of losing image data
- Ensured compliance with HIPAA regulations throughout the submission, review, and reporting processes
- Submission and storage of images on an encrypted secure server

Q. What options are available for electronic submission of images?

A. Facilities seeking ACR Accreditation will choose between two options to upload clinical and phantom images electronically, as follows:

1. The new and improved TRIAD web-based image submission:
    - Offers user-friendly functionality
    - Provides full-size image display with a fully functional DICOM viewer, allowing you to view images before submission
    - Provides the ability to upload individual files or entire folders (depending on your browser)
    - Does not require any software to be installed on your computer
    - Is compatible with Windows PC or Mac
2. The TRIAD Windows PC Client image submission:
    - Requires software installation on your Windows PC
    - Allows direct connection between TRIAD and PACS systems for image data retrieval
    - Provides the ability to upload individual files or entire folders
    - Enables connection with ClearCanvas Workstation for viewing full images before submission
    - Requires user to have administrative privileges on local computer

Q. Where can I find instructions for electronic image submission and how can I get assistance if needed?

A. ACR Accreditation Image Upload Instructions (https://www.acraccreditation.org/-/media/ACRAccreditation/Documents/General/ElectronicSubmissionofImages.pdf?la=en) are found on the modality-specific webpages on the accreditation microsite (//www.acraccreditation.org). For additional assistance on electronic image submission, facilities may contact the ACR Accreditation team for guidance. The knowledgeable staff will assist with submission questions and concerns.

Q. How do I prepare images for electronic submission?

A. Review the modality-specific accreditation testing instructions as well as the ACR Accreditation Image Upload Instructions (https://www.acraccreditation.org/-/media/ACRAccreditation/Documents/General/ElectronicSubmissionofImages.pdf?la=en) for specific requirements on image submission. In general, the following rules apply to preparing for electronic image submission:

- DICOM images are required or preferred for accreditation submission (some modalities may allow images to be uploaded as jpeg, gif, tiff or bmp files).
- Do not anonymize images for accreditation.
- Physician reports should not be included in the image upload.
- Only postprocessed images should be uploaded.
- Upload only the required images for accreditation review.
- Once the images are uploaded, view all of the images within the testing package to ensure all required images have been uploaded and are viewable.
- Do not upload lossy compressed images.
- Images can be exported from PACS or the unit and saved to your computer, a CD, DVD, or thumb drive.

Q. Our facility is unable to submit images electronically. How should we proceed?

A. If images can be burned to a CD, DVD, or thumb drive, or saved locally to a computer, the images can be uploaded into TRIAD. After the accreditation testing package is sent to the facility, refer to the ACR Instructions for Image Upload Instructions (https://www.acraccreditation.org/-/media/ACRAccreditation/Documents/General/ElectronicSubmissionofImages.pdf?la=en) for guidance. After this, if your facility realizes that there is a technical limitation that prohibits you from uploading images electronically, please contact the ACR staff for assistance.

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HEALTH POLICY & ECONOMIC ISSUES

Wendy Smith Fuss, MPH | Delray Beach, FL

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

AAPM SUBMITS COMMENTS ON 2019 MEDICARE PROPOSED RULES

AAPM recently submitted comments to the Centers for Medicare and Medicaid Services (CMS) regarding the 2019 Medicare proposed rules for payments to hospital outpatient departments, ambulatory surgical centers (ASCs), freestanding cancer centers and physicians.

CMS will address public comments in the 2019 final rules, which will be published on the first of November. AAPM's full comments to CMS can be found here (//www.aapm.org/government_affairs/CMS/2019HealthPolicyUpdate.asp).

Medicare Hospital Outpatient Prospective Payment System

AAPM provided written comments to CMS regarding the 2019 Medicare Hospital Outpatient Prospective Payment System (HOPPS) proposed rule, which provides facility payments to hospital outpatient departments.

In the 2019 Medicare hospital outpatient proposed rule, CMS proposes to continue the existing Comprehensive APC (C-APC) payment methodology for single-session cranial stereotactic radiosurgery and for brachytherapy device insertion procedures.

CMS defines a Comprehensive APC as a classification for the provision of a primary service and all adjunctive services and supplies provided to support the delivery of the primary service. The primary service is assigned a "J1" status indicator. Under this policy, CMS calculates a single payment for the entire outpatient encounter, defined by a single claim, regardless of the date of service span.

Since the inception of the Comprehensive APC methodology, AAPM has commented on concerns around the claims data used for rate setting due to significant variations in clinical practice and billing patterns across the hospitals that submit these claims. The episode of care for cancer is complex and the treatment time varies significantly not only based on the type of cancer but on the treatment modality. The assumption that a patient is being treated exclusively in the outpatient hospital setting for a single problem represented on a single claim is not representative of complex oncology care.

AAPM is concerned that the rates associated with Comprehensive APCs do not accurately reflect all of the services and costs associated with the primary procedure. The current C-APC methodology is of particular concern as CMS continues to expand the number of packaged and bundled services. Given the complexity of coding, serial billing for cancer care, and potentially different sites of service for the initial surgical device insertion and subsequent treatment delivery or other supportive services, AAPM continues to oppose the current Comprehensive APC payment methodology for cancer care.

AAPM did propose an alternative payment policy to pay for “J1” brachytherapy device insertion codes under the C-APC payment methodology but exclude and make separate payment for designated preparation and planning services in addition to the C-APC payment. AAPM created a list of twenty-eight (28) codes proposed for separate payment, in addition to the bundled C-APC

payment for the brachytherapy insertion codes effective January 1, 2019. This recommendation mirrors the current CMS payment policy for single-session cranial stereotactic radiosurgery codes 77371 and 77372, which allows separate payment for specified preparation and planning codes.

Medicare Physician Fee Schedule

AAPM also provided written comments to CMS regarding the 2019 Medicare Physician Fee Schedule (MPFS) proposed rule, which impacts physician payment and payments to freestanding cancer centers. One key proposal would significantly reduce future reimbursement for stereotactic body radiation therapy (SBRT) and high dose rate (HDR) brachytherapy services.

CMS initiated a market research contract with StrategyGen to conduct an in-depth and robust market research study to update the direct practice expense (PE) inputs for supply and equipment pricing for CY 2019. These supply and equipment prices were last systematically developed in 2004-2005. StrategyGen found that despite technological advancements, the average commercial price for medical equipment and supplies remained relatively consistent with the current CMS price. StrategyGen submitted a report with updated pricing recommendations for approximately 1,300 supplies and 750 equipment items currently used as direct PE inputs. After reviewing the StrategyGen report, CMS is proposing to adopt the updated direct PE input prices for supplies and equipment as recommended by StrategyGen.

AAPM provided the follow comments and recommendation:
While AAPM supports CMS efforts to update equipment and supply pricing to reflect current costs, AAPM also believes that the proposed post-transition pricing for certain medical equipment items used for cancer care are inaccurate. The lack of transparency of the contractor process and specific inputs (i.e. manufacturer name, model and price) used to develop updated pricing are concerning. In particular, AAPM believes the three medical equipment items shown in Table 1 are significantly undervalued relative to fair market pricing.

Equipment Item	2018 Current Price	2022 Recommended Price	Percentage Change Over 4-Year Transition Period
ER003 HDR Afterload System, Nucletron - Oldelft	$375,000	$111,426	-70%
ER083 SRS System, SBRT, Six Systems	$4,000,000	$931,965	-77%
ES052 Brachytherapy Treatment Vault	$175,000	$134,998	-21%

By way of example, SRS LINAC (ER082) and SBRT LINAC (ER083) systems are similar in both technological complexity and pricing in the current marketplace, yet the proposed StrategyGen pricing would value the latter ($931,965) at a small fraction of the former ($4,195,100). All equipment items shown in Table 1 have recommended prices that are below industry standards. Given the high cost of these items and their substantial utilization in certain radiation oncology delivery codes, it is imperative that CMS inputs accurately reflect the marketplace pricing.

The 2018 price for the Nucletron Oldelft High Dose Rate (HDR) Afterload System (ER003) is $375,000. CMS proposes a new price of $111,426, a 70 percent pricing reduction. We think that StrategyGen may have included updated pricing for a less costly electronic brachytherapy system used to treat non-melanoma skin cancer. This equipment type would not be utilized with procedures that utilize a HDR afterloader (i.e. CPT 77767, 77768, 77770, 77771 and 77772). Alternatively, the new recommended price may represent an equipment upgrade or refurbished equipment. Due to the lack of transparency, we are not able to verify the specific types of medical equipment used to determine the new pricing for ER003, but it is clearly in error.

The 2018 price for the Brachytherapy Treatment Vault (ES052) is $175,000. CMS proposes a new price of $134,998. Invoices for the Brachytherapy Treatment Vault were submitted in 2015 when the HDR Brachytherapy codes were last revalued by the AMA Relative Value Scale Update Committee (RUC). The recent pricing data supports the current price of $175,000.

AAPM recommends that CMS utilize the existing practice expense inputs for equipment items ER003 HDR Afterload System, ER083 SBRT System and ES052 Brachytherapy Treatment Vault. AAPM believes the current prices for those items, which were established through the RUC process, should be retained.

In addition, CMS proposed to phase in the use of the new direct PE input pricing over a 4-year period using a 25/75 percent (CY 2019), 50/50 percent (CY 2020), 75/25 percent (CY 2021), and 100/0 percent (CY 2022) split between new and old pricing. We agree that implementing the proposed updated prices with a 4-year transition will improve payment accuracy, while maintaining stability and allowing stakeholders the opportunity to address potential concerns about changes in payment for particular items.

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AAPM Newsletter — Volume 43 No. 6 — November | December 2018

Our Condolences

Martin W. Johnson (https://www.dignitymemorial.com/obituaries/east-lansing-mi/martin-johnson-8012532) • ***William G. Artner*** (https://www.legacy.com/obituaries/jsonline/obituary.aspx?n=william-g-artner-bill&pid=189059901&fhid=17777) • ***Dwight W. Glenn*** (https://www.borgwardtfuneralhome.com/notices/Dwight-Glenn) • ***Kalman N. Vizy*** (https://obits.democratandchronicle.com/obituaries/democratandchronicle/obituary.aspx?n=kalman-n-vizy&pid=184708978)

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

If you have information on the passing of members, please inform HQ ASAP so that these members can be remembered appropriately.

We respectfully request the notification via e-mail to: 2018.aapm@aapm.org (mailto:2018.aapm@aapm.org)

Please include supporting information so that we can take appropriate steps.

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EDUCATION COUNCIL REPORT

Jim Dobbins, PhD | Durham, NC

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

As the year comes to a close, I am pleased to report on the activities of Education Council during 2018. There are several items that deserve particular mention.

Over the past decade, much work has been done to increase the number of residency training programs. This has actually been a great success, as we have increased from about 25 residency slots per year in 2008 up to about 170–180 residency slots per year today. We have 98 accredited therapy programs, 25 accredited imaging programs, and five accredited DMP programs. Our initial estimate based on the workforce analysis done in 2010 was that about 145–175 total residency slots were needed per year, so we are virtually at where we need to be. Additional good news is that there appears to be only minimal loss of slots by attrition. We do need to continue to monitor the number of residency slots and that is one of the major ongoing initiatives of Education Council. We are working collaboratively with Professional Council, SDAMPP, and CAMPEP to collect data that will enable us to understand whether these available residency slots are appropriately matched to current work force needs.

One area that is a particular emphasis is ascertaining whether additional imaging residency slots are needed. We are exploring options for how we might add to the number of available training slots in imaging. We are pleased to announce that RSNA has joined with AAPM to provide financial support for several new imaging residencies over the coming six years.

The efforts of the Subcommittee on the Oversight of MedPhys Match, chaired by **John Antolak**, have borne great fruit over the past four years. We just completed the fourth round of the match and there were 201 total applicants with 116 matched. Equal numbers of MS and PhD candidates from CAMPEP programs matched, though a smaller percentage for the Masters candidates, indicating that there is a residency pathway available for both of these types of students.

The Medical Physicists as Educators Committee (**Victor Montemayor**, Chair) organized a workshop on "*Improving the Teaching and Mentoring of Medical Physics*", which took place in Nashville on Thursday and Friday, July 26-27, prior to the AAPM Annual Meeting. It included a great line-up of speakers and brainstorming sessions for the participants on many topics related to future directions in education.

Our International Educational Activities Committee (**Cari Borrás**, Chair) conducted a number of cooperative education projects this year. One of those was a Special Session at the IUPESM World Congress of Medical Physics and Biomedical Engineering in Prague on June 5, 2018, entitled, "Expanding Horizons of Medical Physics: Patient Safety and Beyond." The objective of the session was to present and discuss state-of-the-art technological developments in medical imaging and therapeutic interventions with a specific focus on their impact on patient safety.

The Medical Physics Education of Physicians Committee (**Karen Brown**, Chair), through the ROMPES subcommittee, has completed a draft set of 27 radiation oncology physics modules. These modules are undergoing review and are part of our efforts on Education Council to explore mechanisms for online education of our members, trainees, and physician colleagues.

We also continue to explore ways to highlight different career pathways for individuals in medical physics. While many (or even most) of our trainees will explore a clinical career path, medical physicists can also provide valuable service in non-clinical areas such as academic research, industry, and government labs. We want to make sure that our trainees are well informed about the

variety of career paths that are available today. The Working Group to Promote Non-Clinical Career Paths for Medical Physicists (**Humza Nusrat**, Chair) has generated a series of blogs related to training, skills, and career options for trainees interested in non-clinical careers. The blogs are reviewed by the Education and Training of Medical Physicists Committee (**Joann Prisciandaro**, Chair) and have appeared online this calendar year.

We also have several initiatives in place for the coming year. One is to produce useful material for the general public to inform them about issues of risk and benefit from uses of radiation in medicine, and to highlight the role of medical physicists as experts in such areas. Our Public Education Committee, chaired by **George Sandison**, is undertaking this effort, and has received grant funding from AIP to support this work.

We always welcome feedback from the AAPM membership on issues of importance in our education and training mission. We look forward to hearing from you.

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REPORT FROM NEW PROFESSIONALS SUBCOMMITTEE

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

JOB APPLICATION TIPS FOR NEW MEMBERS

Some of these tips will be useful for any job applicant, while others may be specific to residency applications or first job after residency. In this series, you will find guidance to the job application process including how to apply for a job, how to write an effective CV (//w3.aapm.org/newsletter/docs/20181005-3-CV.pdf) and resumé (//w3.aapm.org/newsletter/docs/20181005-4-Resume.pdf), and how to formulate a personal statement (//w3.aapm.org/newsletter/docs/20181005-2-Essay.pdf). Also see our article in the previous issue on how to request reference letters and how to write reference letters (//w3.aapm.org/newsletter/posts/2018/sept-oct/4305_17.php).

Are you Board eligible?

According to the ABR, Board Eligibility (https://www.theabr.org/wp-content/uploads/2017/09/BoardEligiblePolicy.pdf) begins either upon completion of a CAMPEP residency or upon acceptance to take ABR Part II, whichever comes first. Acceptance to take Part II typically occurs in December or January. Unless you were grandfathered in prior to October 31, 2012, you will not be board eligible at the time you apply for a CAMPEP residency.

When should I apply for a job?

Your strategy for applying will be different in the early and late stages. It is wise to begin looking at job ads 6 - 9 months before you will be available to start. At that early stage, you can be very targeted in applying to positions that are exactly what you want. Even if you don't think you're ready to apply, it's still great to look at job ads so that you know how your preferred jobs are being advertised (and if you don't have the right experience or skill, go get it!). Be aware that some positions need to be filled soon after the ads are posted, and good applicants might be rejected simply because of timing.

As you become closer to being available to start, if you haven't locked down an offer already then you may wish to apply more broadly for jobs that are appealing but are not exactly what you hope to do (or where you hope to be) long-term. Spending a few years at a job that would provide good experience or connections will help you move towards your dream job. There are many stages to a career, and you may have to spend time in your second or third choice before your first-choice job is available.

How do I network or make connections prior to applying for jobs?

- Attend professional meetings,
- Ask your colleagues or faculty to introduce you,
- Attend the Chapter meeting in a geographic area you're interested in,
- Connect with the individual at the center you are interested in, in person first. Maybe at local meetings.

Where should I look for a job?

- Everywhere
- AAPM Career Services (https://careers.aapm.org/jobs/)
- General websites with job listings, like:
    - Indeed, Monster, Glassdoor, Simply Hired, ZipRecruiter
- USA Jobs (https://www.usajobs.gov/)(All government jobs advertised here)
- MedPhys and DXIMGMedPhys ListServ (https://www.aapm.org/links/medphys/default.asp#lists)
- Emails from colleagues
- Cold calling or e-mailing physicists in geographical areas where you'd like to work
- LinkedIn
- HR at a facility you're interested in
- IAEA

How do I know whether to submit a resume or CV?

- If the ad specifies one or the other, give them what they asked for
- If the ad doesn't specify, or if it requests a CV/resume:
    - Make a judgement call
    - Call someone you know who's familiar with that facility

When and how should I query receipt of job application?

- If you don't receive an acknowledgement, you can contact after one week
- If the ad doesn't specify a timetable, it's reasonable to contact and ask — then follow up again when it reaches the time indicated
- Reach out to a hiring manager, not necessarily the HR department

How many jobs should I apply to?

- All of them!
    - If you're interested
- Consider applying to jobs for which you do not have enough experience
    - If the ad says they want someone board certified and you're Board Eligible, it's worth a try
    - If the ad says five years experience and you're just finishing residency, it's worth a try
    - Sometimes the job ad is a wish list

What do I do if I am rejected?

- It's very common, especially early in your career, to be rejected many times
    - Keep trying and don't get discouraged!
    - If the same job is re-listed, depending on the institution, they might consider you again
- Consider jobs outside your narrowest interest, and build your skills up over time
- If you're rejected, consider calling a physicist at the facility to find out if your application got blocked in HR, but the physicists are really interested in you
- Ask your colleagues to review your application materials and critique them

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WGIMRT ARTICLE WATCH

Collaboration with VCU (M. Ostyn, M. Riblett, M. Wagar and S. Wang), Henry Ford Cancer Institute (J. Cunningham, A. Doemer, J. Dolan, X. Liu, S. Rusu and Q. Wu), and William Beaumont (C. Knill)

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

1. To propose adding index of achievement (IOA) to IMRT QA process

Kim et al. performed a systematic analysis of a newly proposed dosimetric performance metric, the index of achievement, in relation to spatial and dosimetric uncertainties. Known spatial and dosimetric perturbations were added to model 1D geometric cases and clinical 2D cases, which were then analyzed through conventional gamma analysis. The IOA, IOH (index of hotness), and IOC (index of coldness) were then calculated and compared to the gamma passing rate. The IOA metrics all showed greater granularity in results than gamma analysis with generous criteria (such as 3-mm distance to agreement or 3% dose tolerance), while also showing weak-to-moderate correlation between index and gamma passing rate. The authors argue that because the IOA indices are purely dosimetric measures, they are a more realistic measure of quality of deliverability of a given plan compared to gamma analysis, and that the indices could be easily added to existing patient-specific QA workflows. An IOA value of 1.025 was proposed as a reference threshold for considering a plan of sufficient quality.
View this article here (https://doi.org/10.1186/s13014-018-1055-5)

2. Dosimetric Evaluation of Incorporating Patient Geometric Variations Into Adaptive Plan Optimization Through Probabilistic Treatment Planning in Head and Neck Cancers

Liu et al. performed a retrospective dosimetric study (N=18) of head and neck cancer patients using four different adaptive radiotherapy strategies, comparing non-adaptive radiotherapy to two different conventional adaptive radiotherapy techniques and a probabilistically adaptive radiotherapy method (4D ART). The conventional adaptive plans redrew contours for the 13th–22nd and 25th–35th fractions with 0-mm and 3-mm PTV margins based on diagnostic scans acquired at the 10th and 22nd fractions, respectively. In the 4D ART scheme, adaptations to the plan were based on patient-specific interfraction geometric variations measured directly by CT or CBCT. Mean and maximum dose to all typical head and neck OARs were found to be reduced with 4D ART compared to 0-mm margin ART, and lower in 0-mm margin ART than compared to 3-mm ART. Target coverage was better in 3-mm ART compared to either 0-mm ART or 4D ART, but significantly better in 4D ART compared to 0-mm ART, in terms of percentage of volume of the target CTV receiving the prescription dose.
View this article here (https://doi.org/10.1016/j.ijrobp.2018.03.062)

3. Monte Carlo dose verification of VMAT treatment using Elekta Agility 160-leaf MLC

Onizuka et al. attempts to do for the Elekta Agility MLC on the Synergy systems what had previously been done of Varian Millennium and HD 120-MLCs on Varian linear accelerators. In this analysis, the group performs an in-depth Monte Carlo dose calculation method as a verification tool for VMAT treatment plans. The ability of the Monte Carlo method to property model the dosimetric properties of the Agility MLC were evaluated my comparing to a combination of film and chamber measurements. VMAT plans were created and verified using the Monte Carlo method and evaluated using 3D Gamma and DVH analysis. Results of this study show good agreement between Monte Carlo and the measured dosimentric properties as well as between VMAT plans from the TPS and the Monte Carlo Verification. This study shows there is utility in verifying VMAT plans using Monte Carlo dose calculation.
View this article here (https://www.sciencedirect.com/science/article/pii/S1120179718304848)

4. Differences in lung injury after IMRT or proton therapy assessed by 18FDG PET imaging

Shusharina et al. explores post-treatment lung injury for IMRT and Proton therapy treatments, in hopes of finding predictors of symptomatic radiation pneumonitis. This study used 18FDG uptake to visualize the inflammatory process for each case on PET-CT imaging. While the dose distributions differed expectedly, with IMRT plan result in a larger low dose bath of V5 to the lung and the proton plans having greater mid to high dose to the lung, there was minimal difference in the perceived dose response between the two different modalities. While it was confirmed that higher MLD and slope of SUV are indicators or development of radiation pneumonitis, this occurred in both cohorts without any notable correlation to modality.
View this article here (https://doi.org/10.1016/j.radonc.2017.12.027)

5. Evaluation of machine log files/MC-based treatment planning and delivery QA as compared to ArcCHECK QA

Stanhope et al. evaluated the use of linear accelerator log files and Monte Carlo dose calculation as an alternative to phantom-based QA for planned IMRT and VMAT treatment. An Elekta Infinity was used to deliver eleven clinical treatment plans onto a Sun Nuclear ArcCheck phantom. Two of the eleven treatment plans were simple brain cases; nine were head and neck treatments with higher complexity and low gamma-pass rates. All tested cases were delivered at 6MV with a flattening filter. Planned doses were optimized initially using Pinnacle's convolution-superposition (CS) algorithm and subsequently recalculated using ScientificRT's SciMoCa Monte Carlo (MC) algorithm. For each delivered plan, machine log files (LF) were recorded and used to reconstruct a delivered dose using one of the two dose algorithms. The agreements between the three delivered, reconstructed doses (LF-CS, LF-MC, and ArcCheck) and the two planned doses (Plan-CS and Plan-MC) were compared using statistical (mean percent dose difference) and gamma-pass analysis methods in order to characterized dosimetric uncertainties. These comparisons demonstrated that highlighted greater agreement between both Plan-MC and LF-MC doses and the ArcCheck measurement than between the analogous CS doses. Both Plan-MC and LF-MC were found to generally agree with ArcCheck measurements with 3% across evaluated treatment plans. The researchers concluded that LF-based QA which incorporates MC-based dose reconstruction is a viable method of performing patient-specific QA without additional physical measurement.
View this article here (https://doi.org/10.1002/mp.12926)

6. Second Cancer Risk After Radiation Therapy Of Ependymoma Using The Flattening Filter Free Irradiation Mode Of A Linear Accelerator

Moret et al. investigated the possibility of reducing secondary malignancies arising from the treatment of ependymoma by using flattening filter free (FFF) mode in 3D conformal radiotherapy (3DCRT), IMRT and VMAT treatments. Five treatment plans were developed for each of 11 pediatric subjects consisting of IMRT with/without FFF, VMAT with/without FFF, and conventional 3DCRT. The quality of these treatment plans, developed on Oncentra External Beam for an Elekta Synergy accelerator operating at 6MV, was evaluated through the comparison of corresponding DVHs. Treatment plans were shot on a 2D ionization chamber array for dose verification. Excess absolute risk (EAR) of secondary brain malignancies was computed for each treatment plan. It was determined that IMRT and VMAT plans produced better coverage of the PTV and greater sparing of organs-at-risk (OARs) than 3DCRT. EAR was not found to be reduced for the brain using FFF plans, however lower EAR was assessed for peripheral OARs (e.g. gonads, bladder, bowel). Additionally, FFF plans resulted in a reduction in overall treatment time compared to their flattening filtered counterparts. The researchers suggest that the combination of low treatment delivery time and reduced peripheral EAR to OARs resulting from VMAT treated in FFF mode make it an advantageous option for the treatment of pediatric ependymoma.
View this article here (https://doi.org/10.1002/acm2.12438)

7. Deep-inspiration breath-hold intensity modulated radiation therapy to the mediastinum for lymphoma patients: setup uncertainties and margins

Aristophanous et al. investigated the setup uncertainties and margins in IMRT for mediastinal lymphoma patients using DIBH. The setup errors were retrospectively measured, using autoregistration software, for the total PTV and 6 anatomic subregions in 3 directions. Large differences were found among various subregions and directions, most noticeably in the lower heart, neck, and axilla regions and in the superoinferior direction. In addition, 3 IGRT daily setup strategies were also examined: no IGRT, CBCT, and CT on rails (CTOR). Despite the measurable improvement in margin reduction from using IGRT, there was no clear conclusion whether CTOR offers an advantage over CBCT.
View this article here (https://www.sciencedirect.com/science/article/pii/S0360301617339366)

8. Intensity modulated radiation therapy and second cancer risk in adults (Commentary)

Filippi et al. commented on the second cancer (SC) risk of IMRT in comparison with that of 3D-CRT. Citing recent radiobiological modeling studies, preclinical data, and preliminary clinical data, the authors suggest that there is at least an equivalence in SC

induction risk between 3D-CRT and IMRT, with possible reduced risks of certain solid tumors for IMRT. The article also addresses the need for more clinical data in order to gain further insights.
View this article here (https://www.sciencedirect.com/science/article/pii/S0360301617339391)

9. Multi-Center validation of automated MCO VMAT prostate cases.

Heijmen et al. reported on a multi-center study to investigate the potential for apriorMCO automated planning to improve on manually planned prostate and seminal vesicles VMAT cases. The apriorMCO optimization created a single Paerto-optimal plan per patient. The automated plans showed dosimetric improvements in bladder and rectum metrics and were preferred by physicians over the manual plans. The authors noted the improvements were very center and patient specific, suggesting the automated planning may have been overcoming inconsistencies in manual planning.
View this article here (https://www.ncbi.nlm.nih.gov/pubmed/29970259/)

10. Spinal Metastases post-radiotherapy pain response: single-fraction SBRT versus 3DCRT

Sprave et al. performed a randomized phase II study (N=55) to evaluate the 3-month and 6-month post-radiotherapy pain response of palliative spinal metastases patients treated with single-fraction SBRT (24Gy) versus 3DCRT (30Gy in 10 fractions). SBRT was treated using IMRT/VMAT on an Elekta Versa HD or TomoTherapy. Pain relief was primarily quantified as a >2 point change on the visual analog scale. Pain response was similar after 3-months (p=0.13), however SBRT showed a faster initial pain reduction (p=0.01). SBRT showed improved pain reduction after 6-months (p= 0.002). No ≥3 grade toxicities were observed in the SBRT arm (24 month follow up).
View this article here (https://www.ncbi.nlm.nih.gov/pubmed/29843899)

11. Optimized radiotherapy to improve clinical outcomes for locally advanced lung cancer

Jaksic et al. optimized IMRT radiotherapy treatment schedule to improve outcome for locally advanced lung cancer. Seventy-three patients were consecutively treated with IMRT. A total dose of 66 Gy was delivered using two different schedules of radiotherapy: simultaneous modulated accelerated radiotherapy (30 × 2.2 Gy, across 6 weeks) with or without chemotherapy, or moderate hypofractionated radiotherapy (24 × 2.75 Gy, across 4 weeks) in patients unfit to receive concomitant chemotherapy. They found the 1-year and 2-year local-regional control (LRC) were 76% [95 confidence interval (CI) %: 66–87%] and 62% [95 CI%: 49–77%] respectively. The 1 and 2-year overall survival rates were 72% [95% CI: 63–83%] and 54% [95 CI%: 43–68%] respectively. No significant differences were observed in the toxicity rates associated with each of the RT schedules. Authors concluded that Accelerated IMRT for locally advanced lung cancer is associated with low toxicities and high LRC. Moderate hypo fractionated radiotherapy, by decreasing the total treatment time, may be promising in improving clinical outcomes.
View this article here (https://ro-journal.biomedcentral.com/articles/10.1186/s13014-018-1094-y)

12. The clinical target distribution: a probabilistic alternative to the clinical target volume

Shusharina et al. incorporate a clinical target distribution (CTD) to address the challenge of decreasing the significant uncertainty stemming from the delineation of the traditional CTV (on the order of 1 cm in contrast with millimeter uncertainties in delivery). Their paper discusses the incorporation of the CTD into treatment plan optimization algorithms, the flexibility it provides in optimizing the therapeutic ratio, and the reduction observed in inter-user variability of the CTV delineation. Increased conformality in radiation treatments via IMRT has increased the significance of the binary decisions made when contouring the CTV. The CTD concept proposes a continuous probabilistic portrayal of the CTV where each voxel is given a probability of containing tumor cells. The authors suggest a few approaches to the development of the CTD and focus on its inclusion in plan optimization and plan quality. Shells of defined tumor probabilities were placed around the GTV and weighted according to those probabilities in the commercial TPS. Results are based on synthetic geometries and two clinical cases. The authors demonstrate dosimetric improvements from the CTD approach. Additionally, a sensitivity analysis of the dose distributions is performed where CTD parameter adjustment is compared to variations in CTV delineation, proving more robust distributions for the CTD approach.
View this article here (https://doi.org/10.1088/1361-6560/aacfb4)

13. Agility MLC transmission optimization in the Monaco treatment planning system

This study performed by *Roche et al* concentrates on the optimization of the transmission probability filters (TPF) using measurements from the linear accelerator with an Agility multi-leaf collimator (MLC). The TPFs in the TPS were characterized by both geometry and probability of particle transmission, specifically, the secondary collimator TPFs are editable which can help differentiate the variation in transmission through the distinct MLC regions (through the MLC body, adjacent leafs and MLC tips). The minimum leaf gap width, secondary collimator transmission, leaf offset, dosimetric leaf gap, tongue and groove effect were

used to adjust the corresponding TPF parameters through the use of vendor provided fields and a set of additional fields to perform optimization. The validation of the optimization was then performed using point dose measurements and 2D dose matrices for a number of clinical IMRT and VMAT plans and compared to those from the TPS. All plans calculated with the optimized beam model had a gamma pass rate of > 95% using 2%/2mm criterion. On the other hand, plans calculated with the default beam model had pass rates as low as 88.4%. For measured point doses, the most noticeable difference was achieved in low dose regions. Although it is possible to achieve good clinical results by randomly selecting TPF parameter values, it is recommended that the optimization process outlined in this study is followed so that the transmission through the TPF is characterized appropriately.
View this article here (https://aapm.onlinelibrary.wiley.com/doi/full/10.1002/acm2.12399)

14. Comparison of two different EPID-based solutions performing pretreatment quality assurance: 2D portal dosimetry versus 3D forward projection method

Bresciani et al. studied the ability of 2D portal dosimetry and the 3D projection technique, for pre-treatment VMAT quality assurance, to catch main critical delivery errors. Using a linear accelerator equipped with EPID aSi1000, Portal Dose Image Prediction (PDIP) software for the 2D forward method, and PerFRACTION software for the 3D projection technique, measurements were acquired. Perturbations of the reference plan were applied through systematic variations in dose values and micromultileaf collimator position. To assess the performance of these software, PDIP was evaluated calculating gamma passing rate between no-error and error-simulated measurements and PerFRACTION was analyzed by calculating the difference between reference and perturbed DVH. Subsequently pre-treatment verification with PerFRACTION was done for 27 patients of different pathologies. The sensitivity of PerFRACTION was slightly higher than sensitivity of PDIP and the specificity of PerFRACTION was also higher than PDIP. The analysis of patients' DVHs indicated that the mean percent dose difference was (1.2 ± 1.9)% for D2%, (0.6 ± 1.7)% for D95% and (−0.0 ± 1.2)% for Dmean of PTV. For the OARs, important discrepancies on DVH were observed but the higher dose variations were in low dose area (< 10 Gy). These findings support the use of the 3D forward projection method for pretreatment QA and highlight the potential major advantages of visualizing the delivered dose distribution on patient anatomy versus traditional portal dosimetry QA systems.
View this article here (https://www.physicamedica.com/article/S1120-1797(18)30486-1/fulltext)

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REPORT FROM THE WORK GROUP ON TASK GROUP REVIEW STREAMLINING (WGTGRS)

Jean M. Moran, PhD | Ann Arbor, MI

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

IMPROVING THE TASK GROUP REVIEW PROCESS – ONE IMPROVEMENT AT A TIME

In July of 2016, we kicked off a new working group to improve our review process of AAPM's task group reports. Reports continue to be valuable resources for our membership as well as the international medical physics community. Our group has been making a series of changes in our review process. These changes include sharing all comments and responses with all reviewers as a report goes through review, using a standard cover sheet which summarizes any controversial items from earlier reviews, experimenting with combining different stages of reviews to minimize the overall time, and decreasing the time between review cycles. Regular updates on our progress are shared with the Board of Directors.

One of the key changes has been a public comment period for AAPM members. We have piloted the public comment period for Task Group 275 on Strategies for Effective Physics Plan and Chart Review in Radiation Therapy and Task Group 178 on Gamma Stereotactic Radiosurgery Dosimetry and Quality Assurance. We appreciate the time spent by the Task Group chairs to incorporate the feedback in their revisions and we thank those members who took the time to comment on the report. The public comment period can provide critical feedback to the TG authors as well as to the parent committees which are responsible for the final reviews. In fact, a public comment period has been a staple of AAPM Medical Physics Practice Guidelines.

To improve the management of the review process, we are launching a Formal Report Management System (FRMS) to review AAPM reports once they reach the committee level (such as Imaging Physics Committee, Therapy Physics Committee, or the Clinical Practice Committee). The FRMS became possible once AAPM moved to a unified platform for our journals, *Medical Physics* (http://www.medphys.org/) and the *Journal of Applied Clinical Medical Physics* (https://aapm.onlinelibrary.wiley.com/journal/15269914). Council and Committee leaders will be able to use the FRMS in numerous ways. By using the FRMS, we are able to have a service provide copy-editing and standardization of the format of reports. Those managing the reports will have a dashboard view of all submitted reports, be able to track the reviews, and will have a clear designation of final file versions which are required for votes. Finally, files will be able to be exported to Wiley to appear in one of the journals, as appropriate. **Nancy Vazquez** is our headquarters lead for this project.

These changes have been made possible thanks to the efforts of the WGTGRS, Science Council, Imaging Physics Committee and Therapy Physics Committee. We appreciate the patience and commitment of our TG chairs and members who are working with us as we pilot these changes to our process. We look forward to using these changes to improve the quality and the timeliness of reports that reach our membership.

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REPORT FROM THE WORK GROUP ON THE IMPLEMENTATION OF TG-100

Brad Schuller, PhD | Denver, CO & Kelly Paradis, Phd | Ann Arbor, MI

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The multifaceted settings in which we are treating patients continue to grow in complexity each day. Because of these advancements, prospective approaches to risk management have become increasingly vital in ensuring safe and efficient treatment. As a field, we are moving away from a "check everything" mentality toward a more risk-based approach. The TG-100 implementation session at this year's AAPM Annual Meeting, "Prospective Risk Management in the Wild: Tales from the Clinic," highlighted the application of these techniques in both an academic medical center and a community practice-based center. The following is a brief summary of each presentation in case you missed it! Both are available in the AAPM Virtual Library (https://www.aapm.org/education/VL/) later this year.

University of Michigan Experience

Dr. Kelly C. Paradis (née Younge), Medical Physicist at the University of Michigan, described two projects conducted at her home institution, sharing tips and tricks regarding the processes, ideas to encourage participation, costs and benefits of the projects, and solutions to possible implementation issues. The first project involved a failure mode and effects analysis (FMEA) of a newly instituted microsphere brachytherapy technology [1]. The second was the implementation of a pre-treatment chart review by radiation therapists, driven by incident learning system data [2].

Strategic Timing: FMEA on Microsphere Treatments

A primary advantage of the microsphere FMEA project was the timing of the work. Dr. Paradis explained that FMEA is often ideal for a new program or a major change to an existing program because it allows the team to start from scratch on QA methods, is easier to generate momentum within the team, and helps with the identification of any newly created error pathways and areas where efficiency could be improved. The major cost of this FMEA project was the amount of time involved to complete the project, similar to what has been reported in the literature for other FMEA ventures. Because of the significant upfront investment, it was important to be strategic about splitting up the project elements into group-based and individual work. Sharing the benefits of such efforts, such as improved patient safety, staff safety, efficiency, and role awareness, can help motivate ongoing participation in such long-term projects.

Improved Efficiency for Therapy Chart Checks

For the second project, quantitative data from incident learning system reports were used to strategically design downstream QA performed by treatment therapists. In contrast to the first project, the implementation of the therapist pre-treatment chart review constituted a major workflow change in a large department, and thus the primary hurdle was staff acceptance of the change. Keeping the entire team well-informed on behind-the-scenes efforts (how errors were being addressed upstream with automation and additional workflow changes) and giving the treatment team ownership of the new QA strategies were key to achieving acceptance. Benefits of this prospective risk management approach included significantly reduced treatment unit delays for patients and improved workflow efficiency.

In both cases, Dr. Paradis noted that support from departmental leadership was crucial to achieving the initial goals set out by the project teams.

McKee Medical Center Experience

Dr. Brad Schuller, Medical Physicist at McKee Medical Center in Loveland, CO, presented a complete implementation of failure mode and effects analysis (FMEA) for stereotactic radiosurgery (SRS) in a community practice setting. Rather than focusing on how to perform FMEA, he discussed the subtleties and nuances his team found working through FMEA for the first time as a small community practice, with the aim of helping other interested groups complete their own prospective risk management projects [3].

Buy-In from the Clinical Team

His presentation started by highlighting the central problem for small clinics; since clinical process is equally complicated across various practice sizes, small clinics may have difficulty performing prospective risk management given the time and effort required to complete it. The McKee group anticipated that prioritizing the FMEA project would be a substantial first hurdle. As a result, they dedicated considerable time toward buy-in, which included department education, team recruitment, and thorough training on how to perform FMEA. The net effect was a team consensus that prospective risk management should be made a priority.

Strategic Scheduling for FMEA Meetings

The remainder of Dr. Schuller's presentation focused on solutions to roadblocks his team found working through FMEA for the first time. Meetings were difficult to schedule since the multidisciplinary team composed a large percentage of the available clinical staff. This impacted both process mapping and FMEA scoring meetings. Their solution was to schedule voluntary meetings for staff to attend as their schedules permitted, with the facilitator being present for every meeting. This allowed the team to make progress without requiring attendance to every meeting. The level of detail contained in the process map directly impacts the amount of time required to complete the FMEA. The McKee group chose to provide enough detail such that another radiation oncology team could execute their SRS procedures. This minimized the risk of missing important failure modes due to lack of sufficient detail in their process map. Finally, it was shown that simple mitigation steps were implemented to reduce patient risk following the FMEA. For their ten highest scoring failure modes, simple checklist additions or procedural changes had a large impact on risk reduction.

Communication is Key

A few unforeseen benefits were identified to show the value of prospective risk management beyond generating an FMEA dataset. Creating a process map resulted in a much more comprehensive understanding of the complexity of SRS for every involved team member. This resulted in better communication and more efficient clinical workflows. Spending time together as a multidisciplinary team in a different clinical context enabled discussions between disciplines that do not ordinarily interact in the normal work day. Broad understanding of each discipline's perspective on patient risk had universal positive impact on their program.

[1] *K. C. Younge et al.: Failure mode and effects analysis in a dual-product microsphere brachytherapy environment.* Practical Radiation Oncology 6(6):299-306 (2016).

[2] *K. C. Younge et al.: Improving patient safety and workflow efficiency with standardized pre-treatment radiation therapist chart reviews.* Practical Radiation Oncology 7(5):339-345 (2017).

[3] *B.W. Schuller et al.: Failure mode and effects analysis: A community practice perspective.* J Appl Clin Med Phys 18(6): 258-267 (2017).

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TRAVELING LECTURE GROUP REPORT

Chengyu Shi, PhD | Basking Ridge, NJ

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

China has a large population of cancer patients; however, the overall cancer cure rate is only about 50% of that in the United States. There are about 4,000 medical physicists, but they are mainly doing medical dosimetrists' jobs. All other necessary quality assurance tasks are distributed among vendors, medical physicists and radiation therapy technicians. The majority of medical physicists in China are bachelor degree academically prepared, and the depth and breadth of training are not enough to perform the latest requirements for medical physicists as in the United States. Considering the recent advances in the field, it is very necessary to share the latest quality assurance concepts both theoretical and practical aspects with the Chinese medical physicists in order to improve the quality of cancer treatment.

In light of this idea, a Traveling Lecture Group was formed in April 2018. On May 9, a leadership team was formed in the presence of **Raymond Wu, PhD**, ESPS Chairman. The team was chaired by **Chengyu Shi, PhD** of Memorial Sloan Kettering Cancer Center. The Vice Chair is **Minsong Cao, PhD** of University of California at Los Angeles. The Treasurer is **Hai Luo, PhD**, Chief Physicist of Orange Regional Medical Center, NY. The Liaison with ESPS is **Jason Yan, MS**, of University of Arizona Cancer Center in Phoenix. All of them are AAPM full members. **Yakov Pipman, D.Sc.**, Chair of the IOMP's Professional Relations Committee also joined the group with other six physicists from different organization in the United States. In total, ten medical physicists are in the Traveling Lecture group.

The travel expenses are provided by a company based in Beijing. The person in charge is **Guangyu Zhou**, President of the Beijing Molin Company. He is the coordinator for the Chinese side and manages the contact with the hospitals and cancer centers. The group visited a total 14 institutions in different provinces of China on this round from September 11 - 23.

The tour was very welcomed by the local hospitals. The Vice President of the hospital or the Chair of the Radiation Oncology Department usually hosted the meeting when the lectures were given. After the lectures, the people had discussion sessions and asked questions related to the lectures given or the clinical questions beyond the lectures. Suggestions were also given to the hospital for future quality improvements. All the events were well received with active discussions. The participants included physicians, medical physicists, radiation therapists and colleagues from other local hospitals. The lectures were also broadcast through the web instantly for the whole country and audiences were also able to view the lectures later on, if they did not have time to attend.

In total, 39 lectures were given during the tours, which drew great attendance from the medical physicist communities in China. After the event, several hospitals expressed their interests in a repeat tour next year, which may be hosted depending on financial conditions and speakers' availability.

In summary, during the two weeks of the tour, 14 hospitals were visited and 39 lectures were given. The whole lecture tour drew medical physicist society's attention in China and provided very useful information for the medical physicists. Following the tour, the positive feedback from the audiences and summaries for the speakers were gathered for future reference.

For more information on the Exchange Scientist Program please visit the AAPM International Portal (https://www.aapm.org/international/).

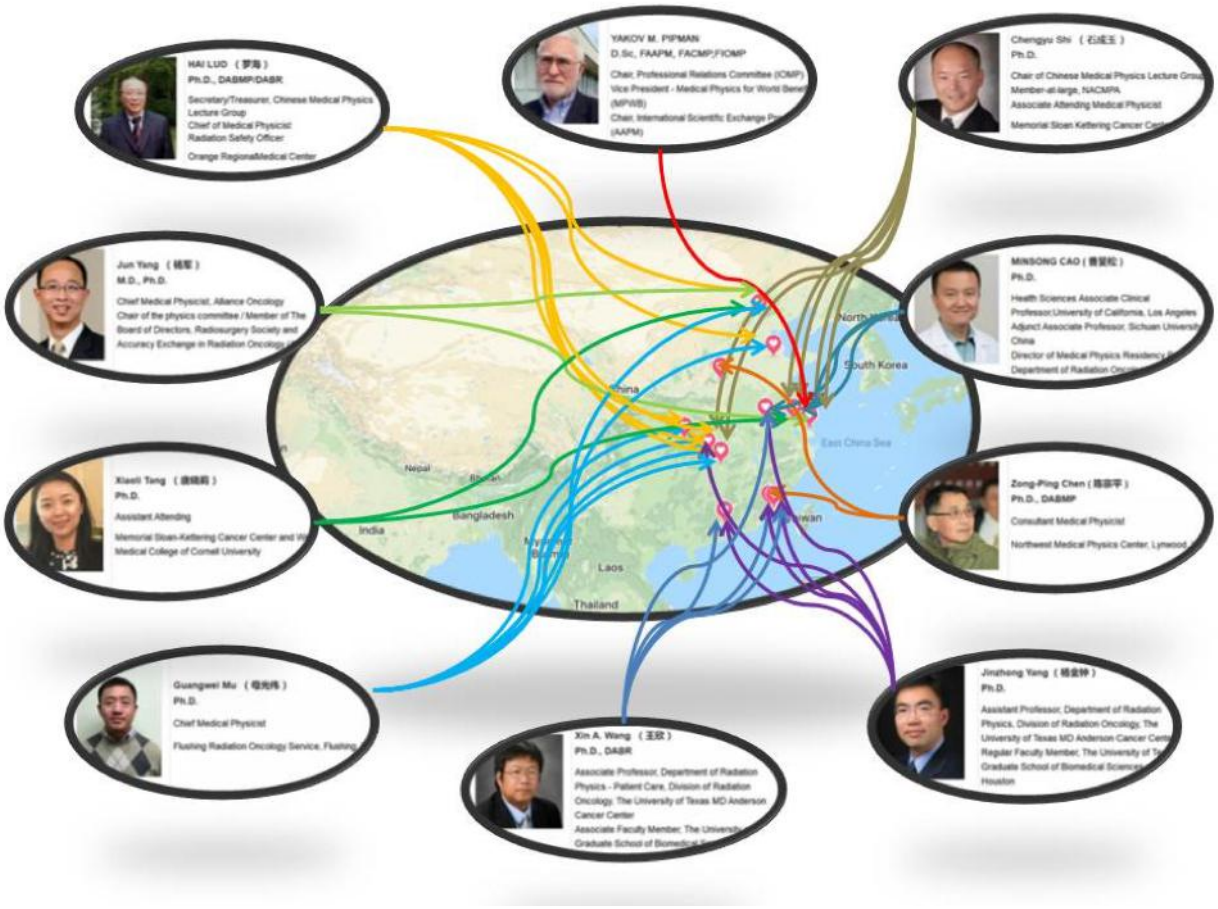

Illustration of the speakers and hospitals visited.

a. Group picture at the tenth hospital in Shanghai

b. Group picture at the Luhe hospital in Beijing

c. Group picture at No.1 hospital of Xiamen University

d. Group picture at Fudan University

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STRATEGIC PLANNING

Bruce Thomadsen, PhD | MADISON, WI

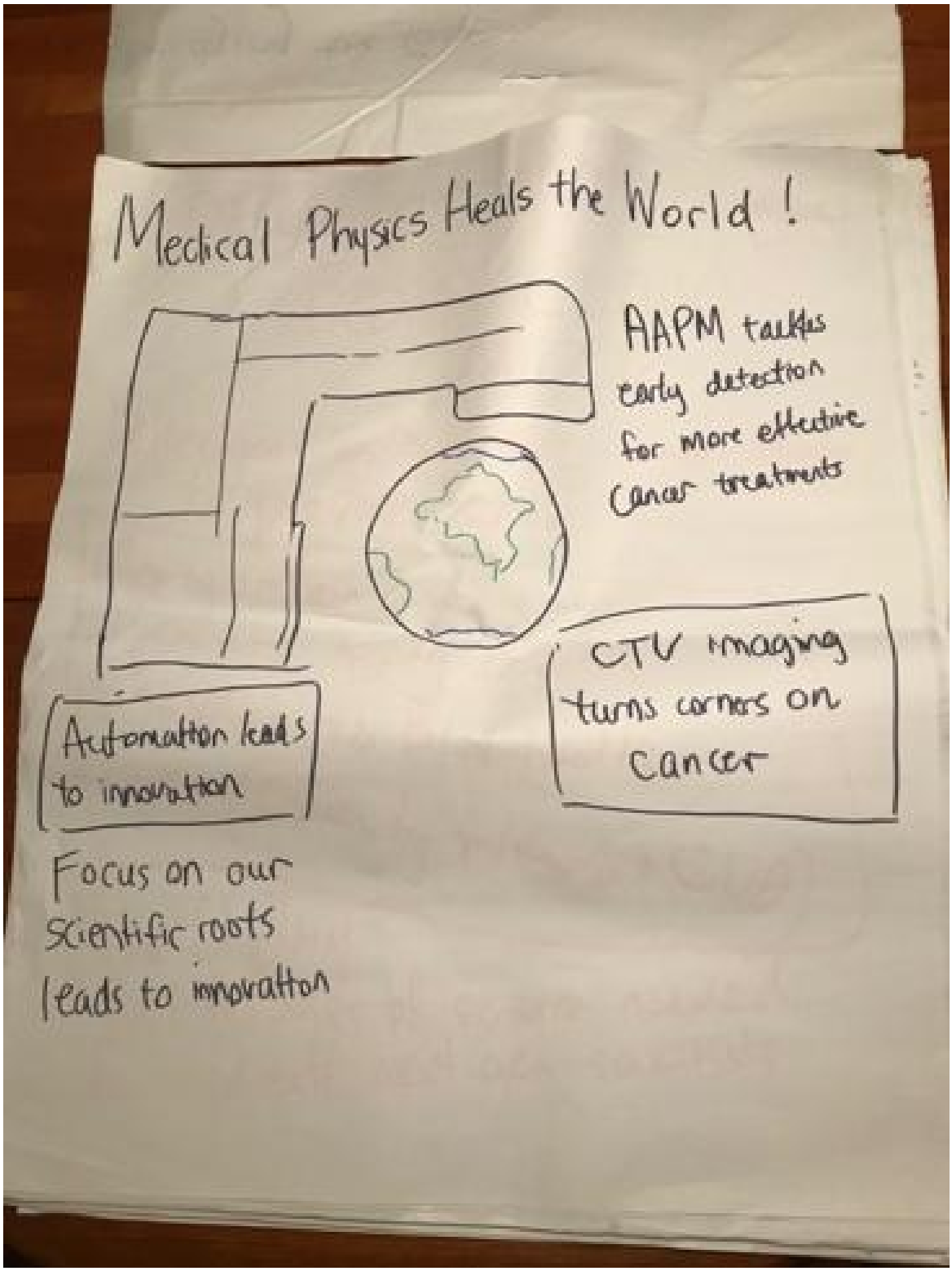
AAPM Newsletter — Volume 43 No. 6 — November | December 2018

Last Newsletter I gave a very brief overview of the President's Workshop at the Nashville meeting. Summarizing from that article in a sentence, "This Symposium was intended to generate ideas for making the future for Medical Physics and AAPM. **Paul B. Brown**, one of the keynote speakers at the President's Symposium facilitated the workshop... the assignment was for each of the nine tables to make a magazine cover from the future looking back at '*How medical physics became so great?*'". Part of the goal of the exercise was to identify where we would like medical physics to be in the future, the obstacles to overcome to get there and the important characteristics we need to overcome those obstacles. The full (but very short) article can be found here (//w3.aapm.org/newsletter/posts/2018/sept-oct/4305_16.php). The bottom line for this single exercise was that medical physics suffers from two very important failures: inadequate communication of what we do and our value and failure to think big enough. The figures below are samples of flipchart pages generated during the session.

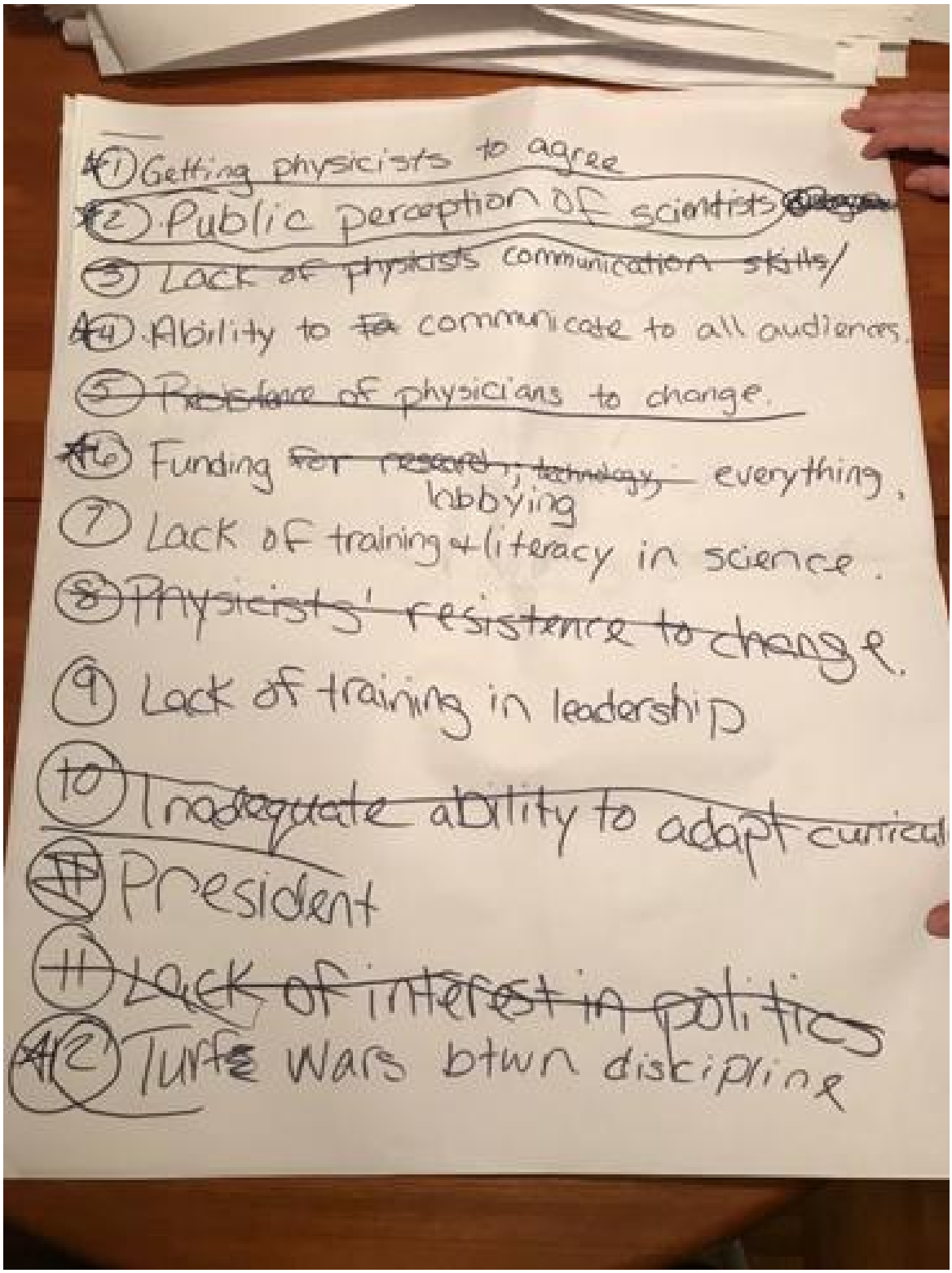
This is all part of the strategic planning AAPM needs to do. The Board just passed the Strategic Plan (https://www.aapm.org/org/objectives.asp) at the Nashville meeting, but that was really just a part of our strategic planning, where we determined our values and goals and the activities that we need to do to achieve them. Much of that is what we already do – we have been a very effective organization. There is still much to do, and the plan is serving as a roadmap for us. The councils are working on indicators that would serve as milestones to evaluate our progress.

What we are just starting to do is long-range strategic planning, and this relates to the topic of the President's Symposium and Workshop, and the first paragraph here. There are many forces acting on our profession, few of them very positive. If we just react to these forces, we likely will find ourselves in unfavorable situations in the future, as a discipline and as an organization. We need to try to change the playing field, make adjustments in the environment and adapt ourselves so that the forces we encounter move us at least closer to where we want to be. Figuring out what that place in the future looks like and what we need to do to arrive there is the deeper strategic planning in which we need to engage. The planning has to be continuous because the situation will always be changing, hopefully, in part, because of what we do. Knowing that it will take AAPM some time before we actually take steps, we should start thinking about this now, talking about it at chapter meetings, in the hallways and in the Boardroom. The discussion needs to start now. As Paul B. Brown points out, beginning to make your future starts with taking steps. We need to take the first steps soon.

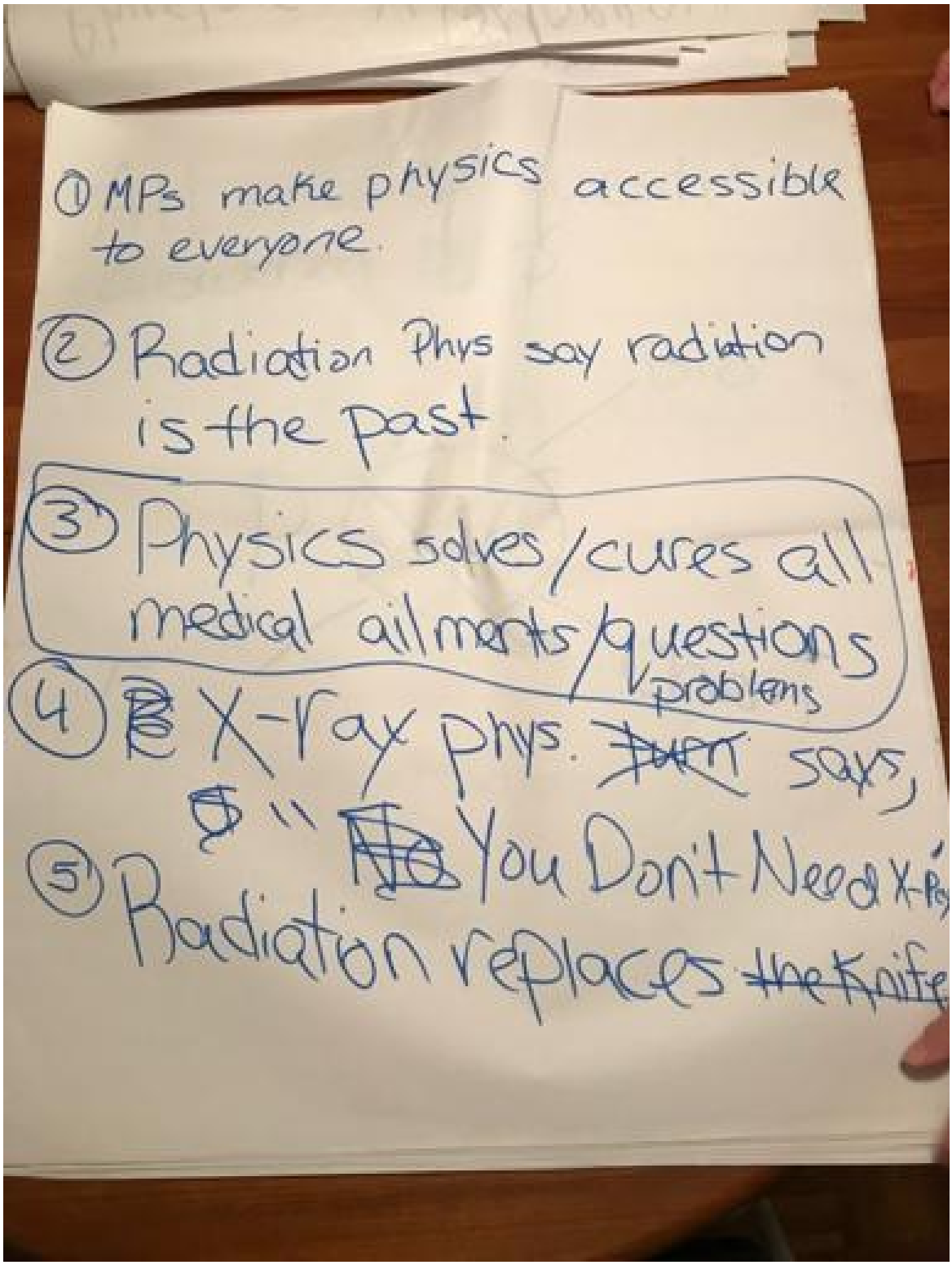
Figures of flipcharts from the 2018 President's Workshop.



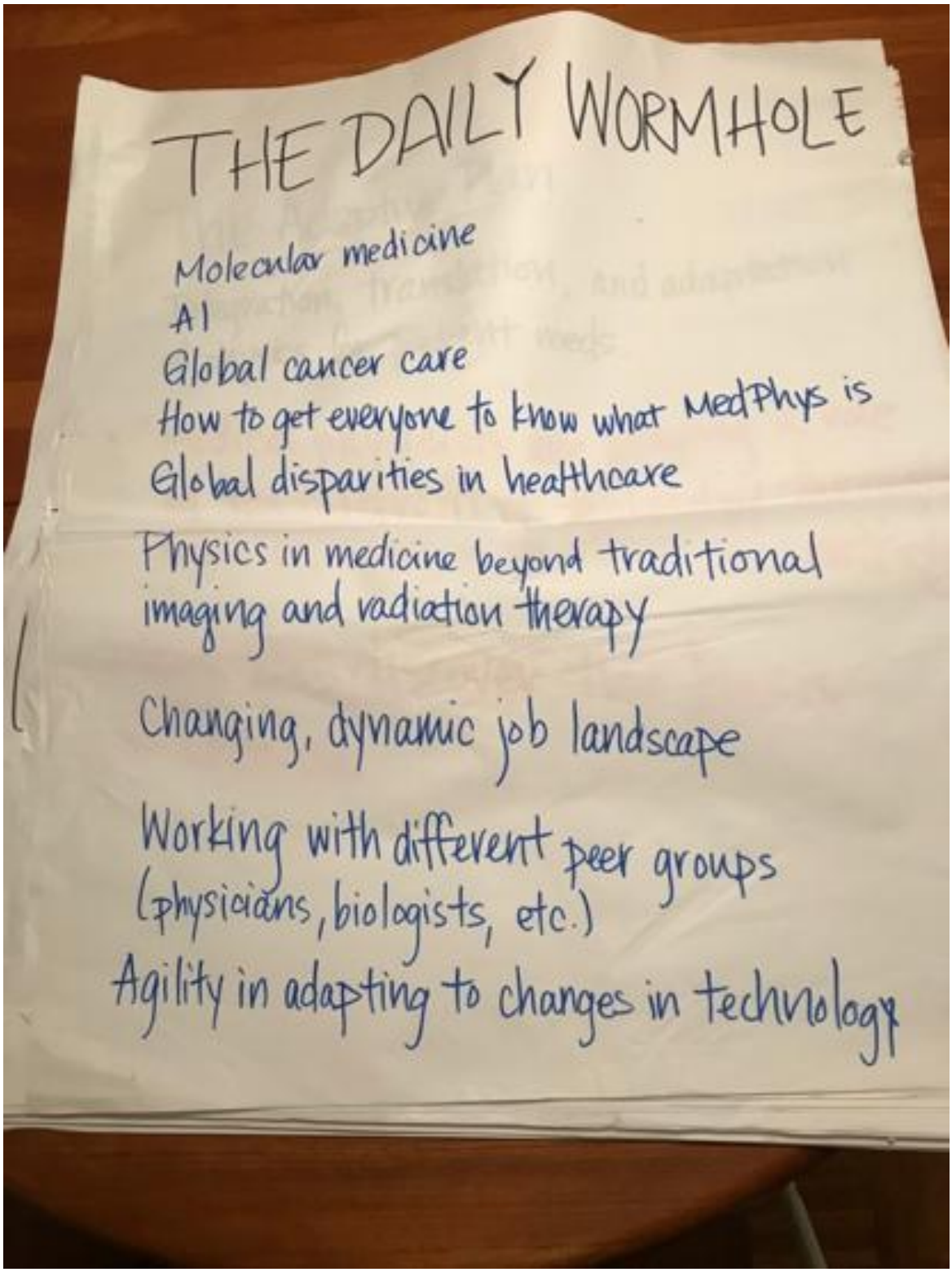
Headlines for a magazine on how medical physics became great in the future



Another vision of the future



Hurdles to overcome to reach that future



Forces at work on medical physics

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TG-327 CREATION

Gary Ezzell, PhD | Phoenix, AZ

AAPM Newsletter — Volume 43 No. 6 — November | December 2018

CROWD-SOURCING SOLUTIONS TO COMMON PROBLEMS

A question for those of us who work in Radiation Oncology clinics: does it ever happen that when therapists go to set up a patient, that their instructions for shifting from the original set up point are wrong? Or that the reference images used for IGRT are wrong in some way? Something went awry upstream, slipped through the checks, and wrong information made it to the machine? Most of us have seen this, and based on RO-ILS data, this type of error is uncomfortably common. Wouldn't it be useful to have a way to share experiences and (importantly) solutions?

A new AAPM Task Group has been formed to try a new approach to sharing solutions to common problems, with this "wrong shift information" being the test case. TG-327, "Crowd-sourced solutions to the problem of wrong shift instructions", will use a forum on the AAPM BBS as the platform, "Common Error Pathways." To get there, log into the AAPM website, click on the BBS link, and scroll to the bottom. (See screenshots below.) Or, knock wood, use this link (https://www.aapm.org/bbs/forums/forum-view.asp?fid=145).

We have posted there a number of common pathways that have different precipitating events but all result in the "wrong shift information" problem. For example, here are three:

Pathway 1: Patient marked incorrectly in sim
Pathway 3: IGRT reference images created from wrong dataset
Pathway 5: Shift instructions manually calculated or transcribed incorrectly

When you open one of the pathway postings, you see a more complete description: precipitating event, description of the normal workflow, how the event creates an error, and existing QC steps that failed. We invite people to look though these pathways and if your clinic has seen one or something similar and have *implemented a solution*, then share that.

How to share? Here is the strength and weakness of this experiment: you can't post directly to the BBS. We ask that you talk with one of the TG members by phone, have a conversation, to describe your experience and recommendation. The TG member will then post the response, extending the thread under the pathway. You can see an example under Pathway 1. We chose to use this indirect approach for two reasons. One is to ensure that the information is complete and clear. The other is to provide anonymity to responders, which is a concern for some when sharing information about errors. The contact information (phone numbers and emails) are in the first posting in the BBS forum. We have TG members spanning the US.

Also, if you have encountered a pathway not already described, you can contact a TG member and have that added to the forum.

How will solutions be disseminated? AAPM members can monitor the BBS and look at replies to any error pathway that is relevant to them. (You can be notified of new postings by subscribing to the forum via the Control Panel—see below.) Ultimately, we will move all the information to the new AAPM safety web page.

Will this work? We will see — this is an experiment. Whether this works depends primarily on AAPM members taking the time to engage with this community process. We are using the BBS because it is there, but if there is sufficient response to this trial then we can create a specific tool for crowd-sourcing. Because posting on this forum is limited to TG members, we have a second forum in the same space open to all so people can comment on the process and, importantly, if they find something useful.

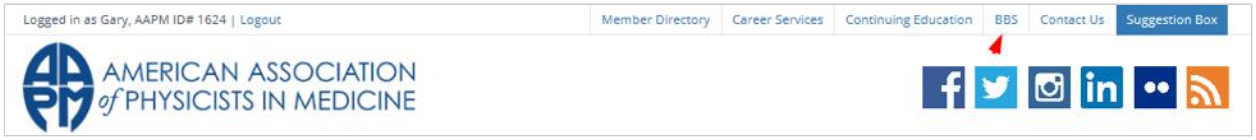
Participation is key, so we will be using multiple means to publicize this effort. Also, this could be a productive topic for a chapter meeting, and funding might be available for a TG member to attend.

Spread the word and help each other out.

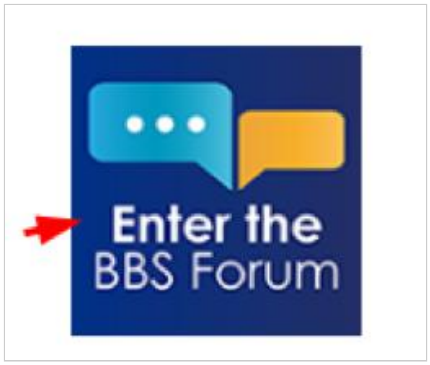
TG-327 members
Gary Ezzell (Arizona)
Sheri Weintraub (Massachusetts)
Ryan Manger (California)
Grace Kim (California)
Debbie Schofield (Florida)
Jackie Faught (Tennessee)

Here are some screenshots illustrating how to access the BBS forum and subscribe to updates.

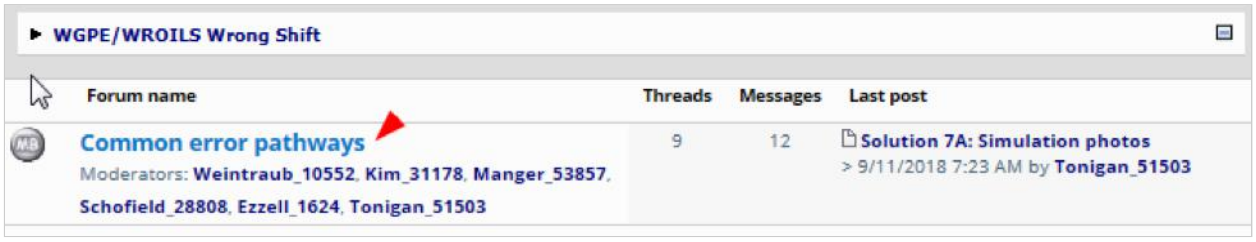
To enter the forum from the home page



Or use the large button on the right



This is the forum:



To subscribe:

Then

You can then select the forum you want.