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Special Interest Group Report

Women's Professional Subcommittee

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AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE
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Improving Health Through Medical Physics

CHAIR OF THE BOARD'S REPORT

Bruce Thomadsen, PhD | Madison, WI

AAPM Newsletter — Volume 44 No.3 — May | June 2019

Planning for the Future gets Closer and Farther: a Report on the AAPM Board Meeting at the Spring Clinical Meeting (and an announcement on the Societies Consortium on Sexual Harassment in STEMM)

For the second year running, your AAPM Board of Directors met at the Spring Clinical meeting to do strategic planning for the Association. Last year, the planning centered around finalizing the current strategic plan. At that time, over two days, the Board as a whole evaluated, analyzed and approved the plan (//w3.aapm.org/newsletter/posts/2018/july-aug/4304_1.php). (See AAPM Newsletter — Volume 43 No. 4 — July|August 2018.) Admittedly, there had been work on the plan by all the councils, committees, and much of the membership before the meeting. This year, something more amazing happened. But first, an announcement: After discussion that included several committees, AAPM became an Inaugural Member of the Societies Consortium on Sexual Harassment in STEMM. The consortium is organized by the American Association for the Advancement of Science and includes at least 77 societies as of this writing. More information can be found at these websites:
https://www.aaas.org/news/aaas-joins-52-organizations-launch-societies-consortium-sexual-harassment-stemm (https://www.aaas.org/news/aaas-joins-52-organizations-launch-societies-consortium-sexual-harassment-stemm)
http://science.sciencemag.org/content/363/6434/1408 (http://science.sciencemag.org/content/363/6434/1408)

The last “M” in STEMM stands for medicine, which apparently is a recent addition to the science, technology, engineering and math.

Back to the Board meeting. This year, the Board, sitting as one large strategic planning committee, took on planning for the future. This took three steps and followed the model from the *President's Workshop at the Nashville meeting* (//w3.aapm.org/newsletter/posts/2018/sept-oct/4305_16.php). The first step was to envision what we would like the AAPM and medical physics to be like 20 years from now, recognizing the changes we can envision. The second step was to identify the likely impediments that could keep us from getting to our ideal future. The final exercise was to think about what steps AAPM should take now to set us on a course to overcome or avoid the impediments and move toward our bright future. I will spare you a lot of details, such as the groups into which the board broke to consider these questions (see Figure 1) or the presentations at the Board meeting (Figure 2). The Newsletter deadline falling right after the meeting does not allow great detail of that. Bulleted descriptions of the future we would want is shown in Figure 3. Some of the suggested actions are shown in Figure 4, and I will include a complete list in the next Newsletter. We tried not to reject ideas, not that all suggested actions will be taken, or should be taken, but all should be considered.

The next step is to go through all the suggested immediate actions and, for each suggestion, see if there is an appropriate committee to send it for discussion. There were far too many suggestions to take on them all; AAPM just does not have the bandwidth for that. (However, only about 30% of our members are active in committees. If we can increase that, we might be able to take on more of the suggestions.) The committees will report back to the Board their recommendations on each suggestion and the Board will prioritize what actions to take.

This is all very exciting. Keep in mind that the actions we need to take to get to our ideal future in 20 years will continue to evolve, change and develop for the next 20 years.

Figure 1. Board Member Kyle Jones mapping his group's plan for the future.

Figure 2. Board Member Chris Baird presenting his group's ideas to the whole Board.

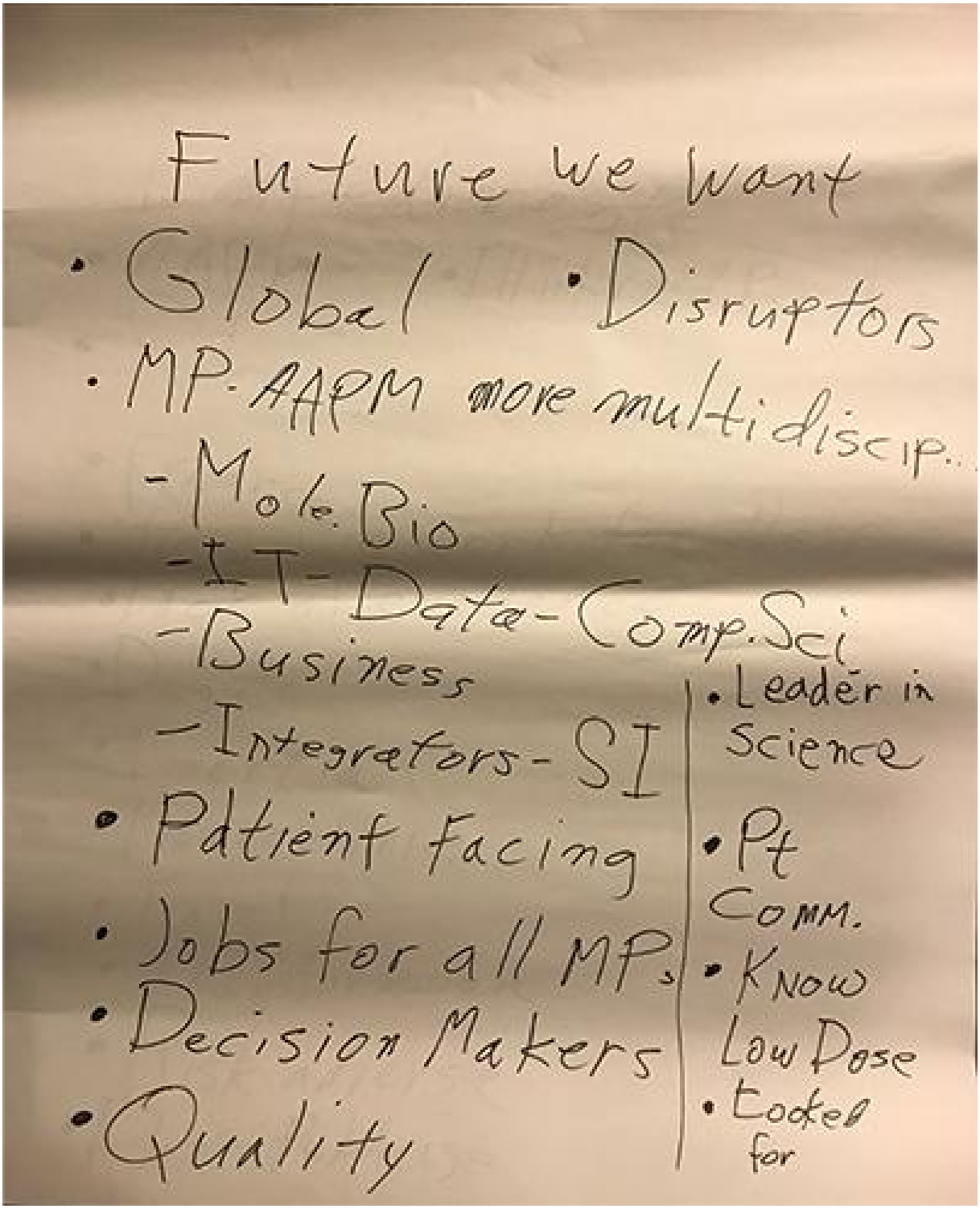

Figure 3. A page where the Board as a whole thought about the future they would want.

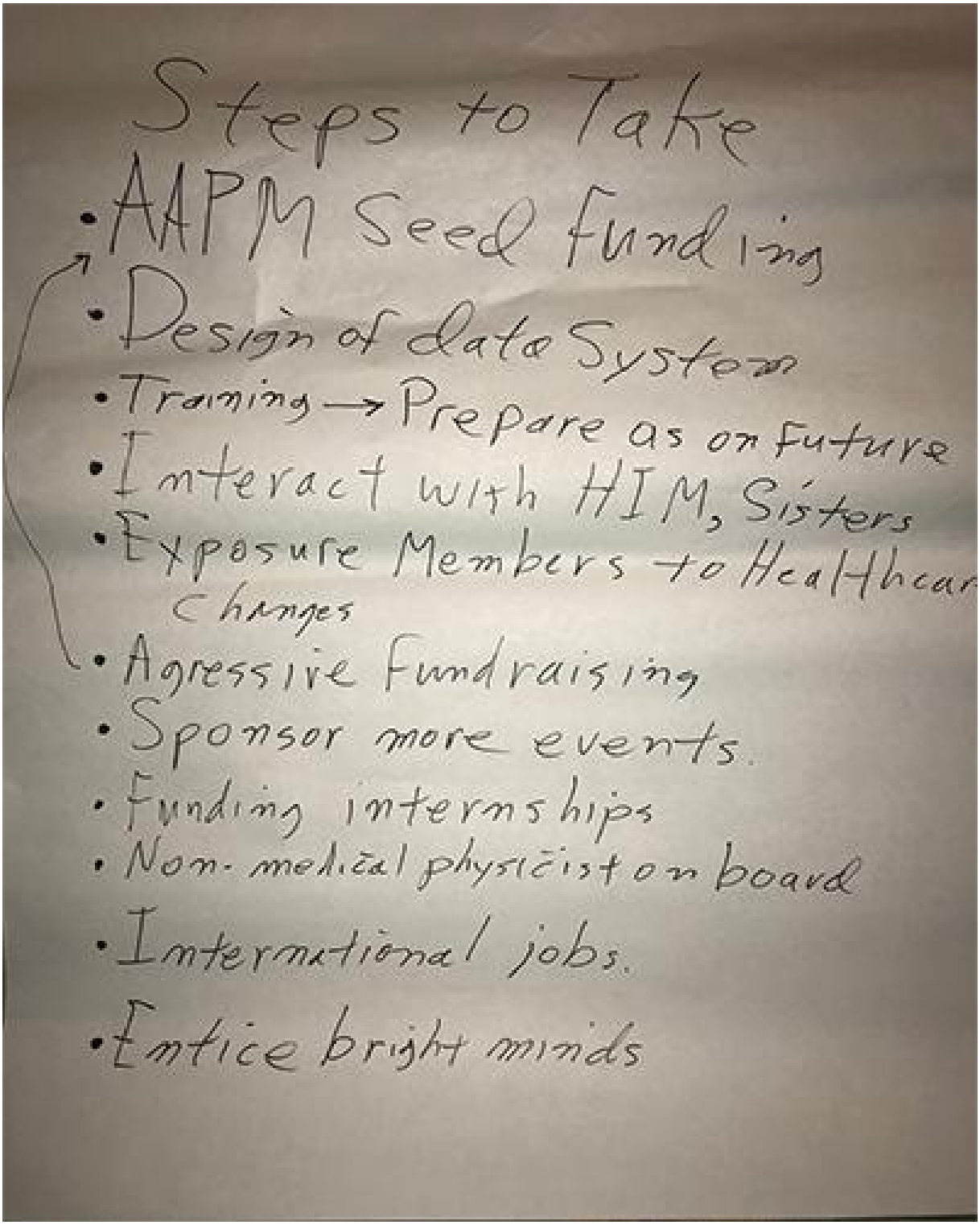

Figure 4. A page of suggested actions to achieve the desired future.

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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Improving Health Through Medical Physics

EXECUTIVE DIRECTOR'S REPORT

Angela R. Keyser | Alexandria, VA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Election Process Online Only!

Elections for the 2019 Officers, Board Members-At-Large and Nominating Committee Members will open on June 5 and will run through June 26. The AAPM Bulletin Board System (BBS) will be used during the election process to allow members to discuss issues of concern with the candidates and the election in general. The election process will be online only so be alert for e-mail announcements.

Did You Know?

- A new AAPM Report is available online: Report of the AAPM TG-256 on the relative biological effectiveness of proton beams in radiation therapy (https://www.aapm.org/pubs/reports/detail.asp?docid=182)
- The AAPM Working Group on Grand Challenges (WGGC) is charged with promoting the conduct of grand challenges designed to assess or improve the use of medical imaging in diagnostic and/or therapeutic applications. The WGGC is now accepting proposals from groups that wish to host a challenge in advance of the 2020 Annual Meeting. Learn More & Submit a Proposal (https://www.aapm.org/GrandChallenge/) by Friday, June 21.
- AAPM Members are now eligible to receive weekly discounted rates for AAMD Annual Meetings. AAMD has created a code for AAPM members to use for the AAMD 44th Annual Meeting, June 16–20 in Anaheim, CA. For more information, click here (https://www.aapm.org/announcements/AAMD2019DiscountCode.asp)
- An update to the Safety is No Accident: A Framework for Quality Radiation Oncology and Care (https://www.astro.org/News-and-Publications/News-and-Media-Center/News-Releases/2019/ASTRO-releases-updated-radiation-oncology-safety-g) guide has been released.

Education and Research Fund Update

> Are you a Platinum, Gold, Silver or Copper-level contributor to the AAPM Education and Research Fund? This information is displayed on the AAPM website to assist you in keeping track of how much you have put into the fund. If you are logged in, you will see a message along the right-hand side of the page that shows your cumulative contributions with an indication of the additional donations required to elevate your contribution to the next “level.”

There will once again be an Education and Research Fund Donors' Lounge (https://w3.aapm.org/meetings/2018AM/specialEvents/donorsLounge.php) at the Annual Meeting. Individuals who have made a cumulative lifetime donation of $100 or more will have access to the Lounge. Comfortable seating, beverages and electronic charging stations will be available.

Consider donating to the Education and Research Fund (https://ams.aapm.org/eWeb/DynamicPage.aspx?webcode=CSCDonationsList&pager=30) today.

2019 Funding Opportunities

AAPM BEST Award (Application deadline: May 20, 2019)

BEST Medical will provide five fellowships in the amount of $1,000 each, to be used for travel, food and lodging expenses to attend the 2019 AAPM 61st Annual Meeting & Exhibition. AAPM will provide complimentary Annual Meeting registration for each recipient, including social function tickets. Eligibility limited to Student, Resident or Junior Members of the AAPM and first author on an accepted abstract for the 2019 AAPM Annual Meeting & Exhibition,

View additional information and access the online application » (http://gaf.aapm.org/)

RSNA/AAPM Graduate Fellowship (Application Deadline: May 28, 2019)

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

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

View additional information and access the online application » (http://gaf.aapm.org/)

Your Online Member Profile

This is a reminder to keep your AAPM Membership Profile information up to date by clicking here (https://www.aapm.org/memb/profile/default.asp) 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 (https://www.aapm.org/org/policies/details.asp?id=373&type=PP).

AAPM recognizes that not everyone is interested in every topic that we communicate to our membership, so we are now organizing our e-mail communications into “campaigns” that are typically time and event based. The first time you receive an e-mail about a particular event, you may opt out of receiving future e-mails on this topic at the bottom where it says, “To inhibit future messages of this kind, click here.” For example, if you know you aren't able to go to the 2019 Annual Meeting and don't want communications about the meeting, you may opt-out from any e-mail in the campaign, or from the e-preferences screen in your member profile (https://www.aapm.org/memb/profile/mailcodes.asp?show=e-prefs).

AAPM HQ Team at your Service

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

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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Improving Health Through Medical Physics

EDUCATION COUNCIL'S REPORT

John A. Antolak, PhD | Rochester, MN

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Highlights of the 2019 MedPhys Match

The fifth edition of the MedPhys Match (MPM) was completed in March of 2019, and the purpose of this article is to review some highlights from this year's statistics in comparison to prior years. We will also review some different ranking statistics that will hopefully provide some insight into the importance of rank list length.

Summary of 2019 MedPhys Match Results

Every year, as soon as the results are sent out to programs and applicants, National Matching Services Inc provides year by year statistics on the MPM website.[1] There were 208 applicants that submitted rank lists this year, which was slightly higher than the 204 applicants that submitted rank lists in 2018. The number of acceptable applicants, defined as those applicants ranked by at least one program, decreased slightly from 176 to 174.[2] The number of matched applicants increased from 116 to 131, and the number of unmatched applicants decreased from 88 to 77. From a program perspective, the number of positions offered in the MPM increased from 129 in 2018 to 138 in 2019, and the number of unfilled positions decreased from 13 to 7. Overall, the status of the MPM appears to be quite healthy, with overall increasing program participation and more positions being offered though the MPM each year.

When combined with demographic data from MP-RAP,[3] the residency application system, we can also get some insight into matching statistics for applicant subgroups, and this has been published in prior articles.[4] Figure 1 shows statistics for the same subgroups, updated for this year's MPM data. For those with a CAMPEP graduate background (degree or certificate program), about 81–96% were ranked by at least one program. For those that are ranked at least once, CAMPEP PhD graduates have a match rate of 96%, followed by certificate graduates at 77% and CAMPEP MS graduates at 72%. Compared to 2018, the match rate for CAMPEP-accredited MS and PhD degree holders was a little higher, with certificate holders being about the same. Similar to 2018, applicants without a CAMPEP graduate or certificate background are at a disadvantage, with only 63% of applicants ranked by at least one program and only 73% of those matched to a residency position. The success rate, which is defined as the ratio of matched applicants relative to those that did not withdraw from the MPM, was also lowest for this subgroup.

If we look at applicants by reported gender, female applicants continue to have an advantage over male applicants with 86% of female applicants being ranked by at least one program and 86% of those being matched to a residency position. For male applicants, 81% of applicants are ranked by at least one program, and 77% of those applicants are matched to a residency position. Drilling down a little further (data not shown), 100% (11) of the female CAMPEP PhD applicants were ranked by at least one program and matched to a residency position.

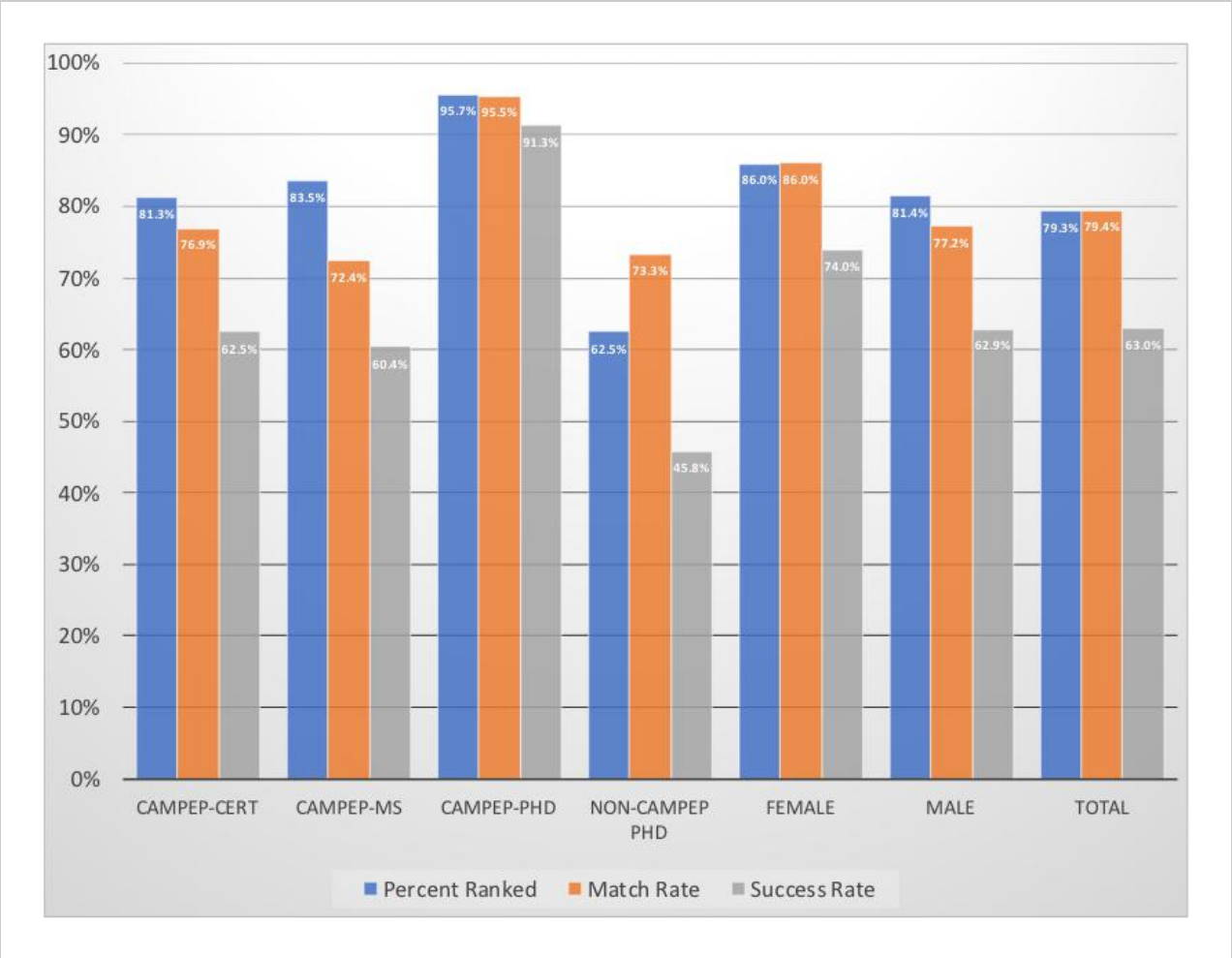

Figure 1. Percent ranked, match rate, and success rate for various subsets of applicants. Percent ranked is the number of applicants ranked at least once by programs relative to the number of applicants submitting rank lists. The match rate is the number of applicants matched relative to the number of ranked applicants. The success rate is the product of the first two quantities, or the number of applicants matched relative to the number of applicants submitting rank lists.

Ranking Insights

One of the most frequently asked questions, for both applicants and programs, is about rank lists. More specifically, how long should a rank list be to provide a good result? The answer to this question is multi-faceted and depends on the definition of a good result and the quality of the applicant or program. For an applicant, a good result might be finding a residency position, or it might be finding the best position. The former may only require a short rank (or interview) list, while the latter will generally require a longer rank list. For all applicants and programs to get the best result, one could argue that all programs should review all applicants, but that is obviously impractical.

Table 1. Summary applicant match statistics for the first 5 years of the MedPhys Match (2015-2019). The first column is the number of ranks an applicant received. Subsequent columns show the number that were matched, the number that were not matched, the number that withdrew and the percentage that matched. The last column does not include the number that withdrew.

# of Ranks	Matched	Not Matched	Withdrawn	% Matched
1	43	118	17	26.7%
2	51	56	13	47.7%
3	59	32	7	64.8%
4	64	17	3	79.0%
5	50	12	3	80.6%
6	44	4	3	91.7%
7	39	3	0	92.9%
8	53	1	1	98.1%
9	26	2	1	92.9%
10	36	3	0	92.3%
11	30	0	0	100.0%
12	21	1	0	95.5%
13	24	0	0	100.0%
14	10	1	0	90.9%
15	6	0	0	100.0%
16	5	0	0	100.0%
17	7	0	0	100.0%

Table 1 shows summary applicant match statistics for the first five years of the MPM as a function of the number of ranks that an applicant received. Programs are generally only going to rank applicants that they interview, so the number of ranks received is a surrogate for the number of interviews. Getting ranked by as few as 6 programs gives a greater than 90% chance of being placed in a residency position. However, even with 14 ranks, there is a chance of being unmatched. It should be obvious that going on more interviews will increase the chances of being matched to a position, but the stark reality is that 10 or more interviews might not be enough. For the 2019 MPM, all applicants with 6 or more ranks were matched to a position, but this

was the lowest number in the first five years. It is worth noting that the number of acceptable applicants was reasonably constant over the last 3 years, but the number of available positions has increased significantly. If this trend continues, one might expect fewer applicants with large numbers of ranks to be unmatched.

Table 2. Summary program match statistics for the first 5 years of the MedPhys Match (2015-2019). The first column is the number of ranks a program had on their list. Subsequent columns show the number that were matched, the number that were not matched, the number that withdrew and the percentage that matched. The last column does not include the number that withdrew.

	One Position		Two or More Positions	
# of Ranks	Filled	Not Filled	Filled	Not Filled
1	3	2	-	-
2	3	2	0	2
3	10	1	0	1
4	5	2	0	0
5	22	1	7	0
6	18	0	5	4
7	28	1	9	1
8	33	1	4	0
9	26	0	9	1
10	31	3	8	1
11	34	0	7	2
12	19	0	14	1
13	25	0	6	0
14	15	1	11	0
15	9	0	7	0
16	5	0	5	0
17	3	0	5	0
18	2	0	6	0

	One Position		Two or More Positions	
19	2	0	4	0
20	2	0	3	0
21	1	0	1	0
22	0	0	1	0
23	1	0	1	0

Table 2 shows similar summary program match statistics for the first five years of the MPM as a function of the number of ranks in each program's rank list and data for programs with a single opening is shown separately. There are a few circumstances where a program will decide to enter a zero-length rank list and those are excluded from the table. For programs with a single residency position, rank lists with 10 applicants or greater was not enough to fill the position on 4 occasions (2015, 2016, and for 2 programs in 2018). For programs with two or more positions in a given year, you might expect that more ranks are required and the data shows that at least 5 ranked applicants are required to fill all positions. With a rank list of 10 or greater applicants, there were 4 occasions where not all positions were filled (2017, 2 programs in 2018, and 2019).

Table 3. 2019 MedPhys Match status versus number of first ranks for applicants that were ranked by at least one program. The first column is the number of times an applicant was ranked first (or ranked to match) by a program that they also ranked. Any number greater than zero guarantees a match unless the applicant withdraws from the MedPhys Match. The number in parentheses is the number of positions those first ranks represent.

# of First Ranks	Matched	Not Matched	Withdrawn
0	65	34	9
1	35 (35)	-	-
2	18 (36)	-	-
3	7 (21)	-	-
4	4 (16)	-	-
5	2 (10)	-	-

Table 3 drills down a little further into the ranking statistics for applicants. For all applicants that were ranked by at least one program (174), only 66 applicants (38%) were ranked first (or ranked to match) by at least one program that they also ranked. For a program offering more than one position, a first rank is counted for the top n applicants, where n is the number of offered positions. Because of the way the matching algorithm works, those 66 applicants were guaranteed to match at least as highly as their top

ranked to match position. Of the remaining 99 applicants (not counting those that withdrew), 65 (66%) were matched to positions, and 34 were not matched. There was a total of 118 positions represented by the first ranks for programs, but there were 137 positions offered. This implies that 19 applicants (14%) did not rank a program that ranked them to match!

We can go in even further (not shown) and anyone with at least 3 first ranks was ranked by 5–17 programs. However, there were also 8 applicants that were ranked by at least 10 programs that received no first ranks; therefore, getting a lot of interviews does not guarantee getting ranked to match. Of the 99 applicants that were not ranked to match, 26 of them were ranked second by a program and 24 of those were matched to a position. There was a total of 39 matched applicants that had neither a first or second rank by any program.

Table 4. 2019 MedPhys Match status versus number of first ranks for programs that were ranked by at least one acceptable applicant. The first column is the number of times a program was ranked first (or ranked to match) by an applicant that they also ranked. Any number greater than zero guarantees a match unless the program withdraws from the MedPhys Match. The number in parentheses is the number of applicants those first ranks represent.

# of First Ranks	Positions Filled	Positions Unfilled
0	26	5
1	30 (30)	-
2	19 (38)	1* (2)
3	11 (33)	-
4	6 (24)	-
5	2 (10)	-

* This program offered more than 2 positions, which is why they could be ranked to match and have unfilled positions.

Programs can also be ranked to match, which means that at least one of their ranked applicants ranked them first in their list, and Table 4 shows a summary of first ranks for programs. In total, 69 of 100 programs that offered positions in the MPM had at least one applicant in their rank list that ranked them first. Of the 31 programs that were not ranked to match, 26 (84%) were still able to fill all of their positions. The total number of applicants represented by the first ranks in Table 4 is 137, but there were 174 applicants that were ranked by at least one program. That means there were 37 ranked applicants (21%) whose first-ranked program did not rank them!

Assuming that all programs and applicants follow the MPM rules, applicants and programs are not aware of whether they are ranked first by anyone. However, I found it quite surprising that a significant number of applicants (14%) and programs (21%) who were ranked to match did not rank the party that ranked them to match. This points out that while an applicant (or program) might be impressed enough by a program (or applicant) to rank them first, the feeling may not be mutual. Applicants and programs should generally not make assumptions regarding how highly they are regarded and proceed accordingly.

The opinions expressed in this article belong to the author and should not be attributed to his employer or to AAPM. The author welcomes any and all constructive criticism regarding any aspect of the MPM program.

John A. Antolak, PhD
Chair, Subcommittee on the Oversight of MedPhys Match (SCOMM)[5]

References:

[1]MedPhys Match Statistics (https://natmatch.com/medphys/statistics.html), accessed April 8, 2019

[2]Summary Results for 2019 (https://natmatch.com/medphys/stats/2019stats.pdf), accessed April 8, 2019

[3]Medical Physics Residency Application Program (MP-RAP) (https://www.aapm.org/mprap/), accessed April 8, 2019

[4]AAPM Newsletter, Vol 40, No. 3, pages 20-22 (https://www.aapm.org/pubs/protected_files/newsletter/4003-aapmnews.pdf#page=22),AAPM Newsletter, Vol 41, No. 5, pages 15-17 (https://www.aapm.org/pubs/protected_files/newsletter/4105-aapmnews.pdf#page=15),AAPM Newsletter, Vol 43, No. 4 (https://w3.aapm.org/newsletter/posts/2018/july-aug/4304_12.php) accessed April 9, 2019

[5]AAPM SCOMM Committee Page (), accessed April 9, 2019

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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Improving Health Through Medical Physics

SCIENCE COUNCIL'S REPORT

Julianne Pollard-Larkin, PhD | Houston, TX and Sam Armato, PhD | Chicago IL

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Hollywood Comes to the AAPM: AAPM Wins AIP Grant to Fund Diversity Videos

Did you know that in most Physics programs, women compose just 20% of the entire program (1)? However, in Medical Physics, our graduate programs' students are 42% female (2)! It's time we advertised how diverse and equitable we are becoming!

So just in time for the Oscars, Drs. Eduardo Moros (Moffitt Cancer Center, Tampa, FL) and Julianne Pollard-Larkin (MD Anderson Cancer Center, Houston, TX) were awarded, on behalf of AAPM's Science Council, funding for their American Institute of Physics (AIP) Venture Partnership Fund (VPF) (https://www.aip.org/aip/member-benefits/venture-partnership-fund) proposal for the production of a set of videos focused on attracting a new, diverse pool of future medical physicists to our field.

Filming will begin at this year's Annual Meeting in San Antonio, TX. Drs. Moros and Pollard-Larkin have an interesting take on what diversity, equity and inclusion means and looks like in our field. The videos will show the full “spectrum” of physicists who are already actively changing the public's views of what a typical physicist looks like. Currently, they are seeking AAPM member volunteers who are willing to tell their stories of how they entered the field, what makes them unique and how they belong in this field. The sole goal and unifying theme of the films will be “You Belong”, that there is room for each and every one of us talented medical physicists to take part in one of physics' best kept secret subspecialties.

If you are an under-represented Medical Physicist and or are unique—not the physicist stereotype—and wish to be included in this project, please reach out to Drs. Moros (mailto:Eduardo.Moros@moffitt.org) or Pollard-Larkin (mailto:JMPollard@mdanderson.org).

References:

1. https://www.aps.org/programs/education/statistics/womenstem.cfm
(https://www.aps.org/programs/education/statistics/womenstem.cfm)
2. http://www.sdampp.org/documents/2017AnnualGraduateReport.pdf
(http://www.sdampp.org/documents/2017AnnualGraduateReport.pdf)

Call for AAPM Grand Challenge Proposals

The AAPM Working Group on Grand Challenges (WGGC) is charged with promoting the conduct of grand challenges designed to assess or improve the use of medical imaging in diagnostic and/or therapeutic applications. The WGGC is now accepting proposals from groups that wish to host a challenge in advance of the 2020 Annual Meeting. The WGGC will identify up to two proposals that merit sponsorship and assist the organizing groups to move forward with the challenges. The timeline for a proposed challenge should allow for the conduct and conclusion of the challenge in time for presentation at the 2020 Annual Meeting.

Please visit the website (https://www.aapm.org/GrandChallenge/) to download the proposal application template. Proposals should be emailed to Shayna Knazik (mailto:shayna@aapm.org) by 5:00 PM EDT on Friday, June 21, 2019

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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LEGISLATIVE & REGULATORY AFFAIR'S REPORT

Richard Martin, JD | Alexandria, VA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Worldwide Radiation Safety Culture Addressed at San Diego Workshop

AAPM GRAC members joined others from the International Radiation Protection Association (IRPA), the World Health Organization (WHO), Image Lightly, the International Atomic Energy Agency (IAEA), the Conference of Radiation Control Program Directors (CRCPD), the American College of Radiology (ACR), the Health Physics Society (HPS), the Nuclear Regulatory Commission (NRC) and a patient advocacy group to discuss what radiation safety culture in medicine means to their organizations.

These discussions took place February 17–22 at the 6th IRPA IOMP WHO IAEA Workshop on Radiation Safety Culture in Health Care Workshop for North America. **Steven King**, GRAC Member, skillfully organized the workshop, held in conjunction with the Health Physics Midyear meeting, to gather experts working on a framework document on worldwide radiation safety culture in healthcare. **Bette Blankenship**, GRAC Chair, represented AAPM at this workshop.

This one-and-a-half-day meeting represented the final worldwide workshop on safety culture in healthcare. The group will now focus on drafting the framework document, which will present an important perspective on radiation safety culture. We will update you on developments.

Conference Attendees

If you have any questions or require additional information, please contact **Richard J Martin (mailto:richard@aapm.org)**, JD, AAPM Government Relations Program Manager.

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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ABR NEWS

Dr. Jerry D. Allison, PhD, Dr. Kalpana M. Kanal, PhD, and Dr. Matthew B. Podgorsak, PhD, ABR Trustees | Dr. J. Anthony Seibert, PhD, ABR Governor

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Online Longitudinal Assessment (OLA) – A New Approach to Diplomate Assessment

Introduction to ABR OLA

The American Board of Radiology (ABR) is replacing the decennial maintenance of certification (MOC) exam with a new program named Online Longitudinal Assessment (ABR-OLA). Since the process is done ***online***, you will no longer have to take time away from your practice to go to a Pearson VUE Professional Testing Center to take an MOC exam. You can participate anywhere you can connect to the internet (at home, at work, or anywhere else that is convenient) using a desktop PC, laptop, or tablet[1]. The ***longitudinal assessment*** part refers to the diplomate assessment that is a required part of the MOC process. The assessment is now spread over many years instead of through a high-stakes exam every 10 years.

ABR-OLA was rolled out for diagnostic radiologists at the beginning of 2019. It is expected to be implemented for medical physicists, interventional radiologists and radiation oncologists at the beginning of 2020[2]. Through March 31, we have had more than 16,000 radiologists participate and more than 270,000 questions have been answered. The feedback from participants has been largely positive.

In a Nutshell - How ABR-OLA Works

Each Monday, you will receive an email that two new questions are available to answer. They are valid for four weeks so you may answer them at your convenience. When opened, each question has either a one-minute or a three-minute time limit. This may not seem like much time but a key point is that ABR-OLA questions are designed to assess one's "Walking Around Knowledge," so that clinically active medical physicists can answer them without consulting references.

In the course of a year you will receive 104 question opportunities for each specialty in which you are board certified. You must answer 52 of them. You can also decline up to 10 questions each year without penalty. When you have reached 200 questions (generally, in about four years) you will be expected to meet a well-defined passing standard. For any individuals below the standard at the MOC annual review, which takes place every March 1, their MOC status will be shown as "not meeting MOC requirements." Their status will return to "meeting MOC requirements" as soon as their performance meets or exceeds the passing standard and will remain as such until at least the next MOC annual review. Even before the 200-question level is reached, a diplomate's standing will be shown on the ABR-OLA dashboard.[3]

Advantages of ABR-OLA

There are a number of advantages of the ABR OLA program:

- OLA eliminates the decennial MOC exam;
- OLA eliminates the need to go to a Pearson VUE Center;
- It does not require you to set aside time to study;
- It offers immediate feedback with rationale and references, thus meeting the important goal of MOC to encourage everyone to "do a little better;"
- Incorrect answers are followed up with a similar question in a few weeks;
- It is designed to be an ongoing, non-stressful experience;
- It is flexible – within broad guidelines you decide how often to engage with ABR-OLA;
- It evaluates a diplomate's performance using a sliding 200 question window instead a single decennial exam.

We will provide more ABR-OLA details in subsequent newsletters. In the meantime, be sure you are meeting the current MOC standards by checking myABR.

Results from the 2018 Oral Exam for Medical Physics

The oral exam results for 2018 are shown in the table below. The overall performance was similar to historical data. Again, CAMPEP trained residents outperformed those who used the traditional 36-month process.

Candidate Performance				
Candidate Status	Number of Candidates	% Pass	% Condition	% Fail
First Time Takers	228	60	20	20
Completed a CAMPEP Residency	147	63	23	14
No CAMPEP Residency	81	56	14	31

More than 60 percent of the first-time takers were from a CAMPEP residency. Note that the 36-month pathway for new applicants will close starting with the 2024 exam.

Changes to the Initial Certification Part 1 Requirements

The ABR is adopting slightly changed requirements for those who register for the 2021 Part 1 exam in 2020. Those that register for the 2020 exam in 2018 will be evaluated by the current requirements.

- For those in CAMPEP graduate programs or DMP programs, the program must be completed OR the candidate must have successfully completed the CAMPEP core courses;
- Candidates from a certificate program must have completed the program and have a Ph.D. or equivalent.

More details will soon be available on the ABR website (https://www.theabr.org/).

Dr. Jerry Allison

Dr. Robert Pooley

New ABR Nuclear Medical Physics Trustee

Dr. Jerry Allison will complete his term as an ABR trustee at the end of 2019. The ABR is pleased to announce that **Dr. Robert Pooley** from Mayo Clinic Jacksonville has been selected to replace Dr. Allison as the ABR Nuclear Medical Physics Trustee.

References:

1. It will work on a smartphone but that is not recommended because of image quality issues.
2. Lifetime certificate holders not enrolled in MOC are not required to participate in OLA and diplomates enrolled in MOC cannot enter OLA until they meet the current standard.
3. While the performance level will not be available at first it will appear when the diplomate has answered enough questions to make a statistically valid decision.

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ACR ACCREDITATION: FREQUENTLY ASKED QUESTIONS FOR MEDICAL PHYSICISTS

Dustin A. Gress, MS | Reston, VA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

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

Before I present FAQs, I am proud to share that the ACR's inaugural awardee of the Richard L, Morin, PhD, Fellowship in Medical Physics (https://www.acr.org/Member-Resources/rfs/fellowships/Morin-Fellowship) is **Ashley E. Rubinstein**, PhD. Dr. Rubinstein is a medical physics resident at UTHealth McGovern Medical School in Houston, TX, and was featured in the April 11 entry of the Voice of Radiology Blog (https://voiceofradiologyblog.org/). The Morin Fellowship is ACR's eighth fellowship (https://www.acr.org/Member-Resources/rfs/fellowships) and the only one exclusively for medical physics residents and fellows, recognizing the importance of our incoming generations of medical physicists and the value of mentoring them in the work of the ACR. Congratulations, Dr. Rubinstein! Now, some FAQs.

Last November, the ACR released its 2018 Digital Mammography QC Manual with 2D and Digital Breast Tomosynthesis. The following are select FAQs pertaining to the manual. Current, FDA-approved FAQs can be found on the ACR Digital Mammography QC Manual Resources (https://www.acraccreditation.org/resources/digital-mammography-qc-manual-resources) web page, where you can also find updated Microsoft Excel forms for technologist and medical physicist QC (free to download), and recordings and slides from recent webinars pertaining to the manual. Please contact us (mailto:mamm-accred@acr.org) if you have questions.

Q: Can ACR Members in Physics access the manual for free?
A: Yes. When members login at acr.org they can now access our Medical Physics Resources (https://www.acr.org/Clinical-Resources/Medical-Physics-Resources) page, which includes all of our current QC manuals available for download.

Q. May I use our old ACR phantom to perform the tests in the ACR Digital Mammography QC Manual instead of obtaining the new ACR Digital Mammography Phantom?
A. No. The ACR Digital Mammography QC Manual procedures were designed around the new ACR Digital Mammography Phantom. The old ACR phantom cannot be used to conduct the tests in the manual.

Q. If our facility does not want to purchase the new ACR Digital Mammography Phantom, can we continue to use the old phantom and follow the manufacturer's QC manual?
A. Yes.

Q. Where do I obtain the ACR Digital Mammography Phantoms?
A. The ACR posts the name and contact information for approved vendors of the ACR Digital Mammography Phantom on the ACR Digital Mammography QC Manual Resources (https://www.acraccreditation.org/resources/digital-mammography-qc-manual-resources) web page. For a manufacturer to sell the new phantom, they must have it reviewed and approved by the ACR.

Q. How much is the new ACR Digital Mammography Phantom?
A. Please contact the phantom manufacturers for their pricing.

Q. How does the new ACR Digital Mammography Phantom differ from the old one?
A. The main differences are as follows:

- The new phantom is large enough to cover most of the detector. This enables artifact evaluation to be done at the same time that the phantom image quality is evaluated.
- The largest test objects have been removed and smaller ones have been added. The gradations between test objects are also smaller so that the phantom is more sensitive to changes.
- The tolerances for test object size and location are much tighter ensuring minimal phantom-to-phantom variation.
- A filter has been included under the wax insert so that the signal throughout the phantom is much more uniform.

Q. What is the biggest change in evaluating the new ACR Digital Mammography Phantom image relative to the old phantom?
A. The biggest change is ***failing the phantom image for artifacts***. QC technologists, medical physicists and ACR phantom reviewers should fail the phantom image if there is a clinically significant artifact in a location that could impact clinical interpretation, even if all fibers, speck groups and masses pass. This change was made since phantom reviewers noted that phantom images submitted for accreditation would occasionally contain clinically-significant artifacts that would not prompt failure since they did not obscure test objects in the old phantom.

Q. Can my unit fail accreditation if the ACR phantom reviewers fail my ACR Digital Mammography Phantom image submitted for accreditation due to clinically-significant artifacts?
A. Yes.

Q. I am still using the old, small ACR Mammography Phantom for routine QC using the manufacturer's QC manual and am submitting that phantom's image for accreditation. Will the ACR phantom reviewers fail my phantom image if clinically-significant artifacts are present but all fibers, speck groups and masses pass?

A. No. At this time, ACR phantom reviewers will continue to use the scoring protocol outlined in the 1999 ACR Mammography Quality Control Manual. This means they will not fail the old phantom images for artifacts if all fibers, speck groups and masses pass. However, they will note that the artifacts are "unacceptable" and provide possible causes. If this occurs, the facility should work with their medical physicist to further diagnose and eliminate the artifact.

Q. What are clinically-significant artifacts?

A. Clinically-significant artifacts may be broad-area artifacts (e.g., non-uniformities, blotches, and streaks) or detailed artifacts (e.g., black or white pixels, clusters of pixels, lines, or dust particles). This aspect of the test fails if any artifacts are in a ***location*** that could impact clinical interpretation and the artifacts:

- Are as prominent as (or more prominent than) the visible test objects in the phantom image, or
- Obscure test objects in the phantom, or
- Could affect clinical interpretation.

For more information, see the Artifact Evaluation Guide in the ACR Digital Mammography QC Manual.

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WORKING GROUP UPDATE

From Working Group on the implementation of TG-100

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Practical suggestions for dipping your toe in the TG-100 waters

1. **Start with a small project.** There may never be a need to take on a large project, since most large projects in radiation oncology can be addressed through working on small parts of a big project. Starting with a small project increases the chance that the project can be completed in a reasonable time and encourages the facility to have follow-up projects.
2. **Assemble a team representative of the entire department relevant to the project, and educate the group on prospective risk analysis concepts and the TG-100 recommendations.** The group may include nursing, therapist, administrative, physician, dosimetrist and physicist representation.
3. **Focus on process mapping first.** Start with a high-level map of the process under study. Do not attempt to map the entire treatment process or the departmental operation, since it would take a long time and bog down the team. Often, simply mapping a process provides clarification and eliminates problems and conflicts.
4. **Focus the initial FMEA work on a clinical process – not on established machine QM processes.** Much of the scope of machine QM has well defined guidelines (e.g., AAPM TG reports) that have been codified into regulation in many states, whereas clinical processes largely lack national guidance documents and are much more variable. For example, focus on the simulation process (which contains many potential high-risk steps, such as reference point selection, reference dataset(s) for planning, and target identification) or a particular treatment planning process (contouring, correct reference dataset and reference point coordinate, Rx interpretation – particularly in the era of hypofractionation where the dose per fraction in Gy and number of fractions are similar).
5. **Invest time and effort to become proficient at the FMEA method and to develop useful tools for further FMEAs.** Discuss the variability in how your team members assigned individual O,S,D scores and clarify the scales as needed. Allow enough discussion within the group to become comfortable with the subjective process of relying on the team's collective experience for process steps where we lack “hard data” to measure risk. Rank steps sorting by RPN and by S.

6. **Build a Fault Tree Analysis based on your process maps.** Fault trees illustrate the paths that could lead to failures. This helps provide an understanding of how errors propagate into failures and where QA checks should be placed in the process.
7. **Design your quality management as described by the report of TG 100.** Be sure to address the key core components and prevent propagation along all branches of the fault tree.
8. **Any significant changes to the quality management program should be undertaken only after careful review.** Significant changes would be the elimination of quality management checks or significant deviation from guidelines published by professional organizations. Remember to include in your quality management any checks required by regulatory authorities.

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A MEDICAL PHYSICS TOUR OF IRAQ

Muthana Al-Ghazi, PhD | Irvine, USA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

The first medical physics conference and workshop was held at the Middle Euphrates Cancer Centre (MECC) in the holy city of Najaf, Iraq during the period October 12-13, 2018. Figure 1 provides information on the location of this historic city. The author was the sole faculty conducting this activity.

The program was as follows:

Friday, October 12, 2018

Mini-course on imaging for radiotherapy treatment planning and verification:
Part 1: Simulation and CT-simulation – technical and physics considerations
Part 2: CT-simulation process
Part 3: Multimodality imaging
Part 4: Treatment delivery verification

Lecture 1: Dose specifications for photon and electron beams
Lecture 2: Quality and safety in radiation oncology

Saturday, October 13, 2018

Lecture 3: Monitor units calculations
Lecture 4: Dosimetry of photon and electron beams: review of the TG-51 and IAEA TRS-398 dosimetry protocols

Workshop 1: Linear accelerator calibration and quality assurance
Workshop 2: Treatment planning – clinical treatment plans review and critique

There were approximately 45 attendees from five Iraqi cities (Najaf, Basra, Hilla, Baghdad and Mosul). Attendees received certificates of completion signed by myself and the MECC director, **Dr. Emad Kareem**. Additionally, I pointed out to the attendees the valuable resources freely available on the American Association of Physicists in Medicine (AAPM) website (//www.aapm.org).

The conference was organized by Dr. Kareem and **Dr. Haider Rabee**, chief of the clinical oncology service. It is noteworthy that amongst the attendees were faculty from Kufa University Medical College. The chairman of the Iraqi cancer board, **Dr. Haider Hamza**, travelled from Baghdad specially to attend the conference. This has given medical physics in Iraq recognition by the official authorities. There was also local media coverage and a press interview, adding to the popularization of the event locally.

A few words on how this conference came about, and the MECC, are in order to give context to this activity. I had known Dr. Rabee for a number of years. I had planned a vacation in Iraq and contacted him to see if I can be of any assistance while I am there. He welcomed the idea of holding this conference and workshop. He worked with Dr. Kareem to put the workshop together in record time. They secured funding for local expenses from the Imam Ali endowment which graciously supported this activity with enthusiasm.

The MECC is a modern facility that sees approximately 2000 – 2500 new patients annually. Sixty percent of patients seen at MECC are from Najaf governorate. The rest are from other Iraqi provinces. Some patients seen there come from as far afield as Mosul. It has a linear accelerator, CT-simulator and a treatment planning system for the radiotherapy program. The equipment is used for extended hours daily to accommodate the clinical workload. They participate in the IAEA quality assurance service for peer-review of their linac calibration. MECC also provides chemotherapy, imaging and other services to aid in the diagnosis and treatment of cancer. It is affiliated with Kufa University College of Medicine. It conducts weekly continuing education seminars attended by faculty, staff, medical students and residents. Daily sessions and clinical rotations for final year medical students are also offered.

I am indebted to Drs. Kareem and Rabee for their impressively generous hospitality and the Imam Ali endowment for supporting this conference and workshop. The historic city of Najaf was a superb venue for it. The Imam Ali shrine gold plated dome and minaret dominate the city's skyline (figure 2). Some photographs of the workshop and its environment are presented in figures (3,4).

While I was in Iraq, I also visited the Radiotherapy Department, University of Baghdad Medical College and gave two lectures to residents and attended a multi-disciplinary tumor board (MDT) on neurooncology on October 14 & 16. This was an opportunity to renew my friendship with the Professor of Clinical Oncology (**Dr. Khudhair Al-Rawwaq**). I also met the dean of the Baghdad Medical College, **Professor Ali Al-Shalchi**, a neurosurgeon, and other faculty.

I spent the morning of October 11, at another oncology teaching hospital in Baghdad (Al-Amal Hospital) and conducted a short workshop on treatment planning. I had previously travelled to the city of Sulaimaniyya in the Kurdistan region and visited the Zhianawa Cancer Centre (ZCC), a place that I am well acquainted with having participated in workshops and conferences there in 2015 and 2017. Wherever I found myself, I was humbled by the warmth of the hospitality extended to me. What was planned as a personal vacation blossomed into a celebration of Iraqi medical physics, a specialty that is developing rapidly in a country that needs it most.

The narrative provided above stands in stark contrast to the media depiction of Iraq over the past sixteen years that dominates our television, computer and smartphone screens. It demonstrates clearly that in the midst of turmoil, there are intellectually and professionally sophisticated people working with dedication and resilience against impossible odds, with very little resources and under unimaginable circumstances to provide high quality care to cancer patients, totally undeterred by the dangers they bravely face daily. They challenge themselves every day to excel and exceed all expectations. It is a sobering reminder to what we take for granted in the West.

This was an immensely satisfying experience for me. I renewed longstanding friendships and made new ones.

Figure 1: Map of Iraq showing the cities the author visited. To appreciate the scale, the country is ~ 1000 km north-south.

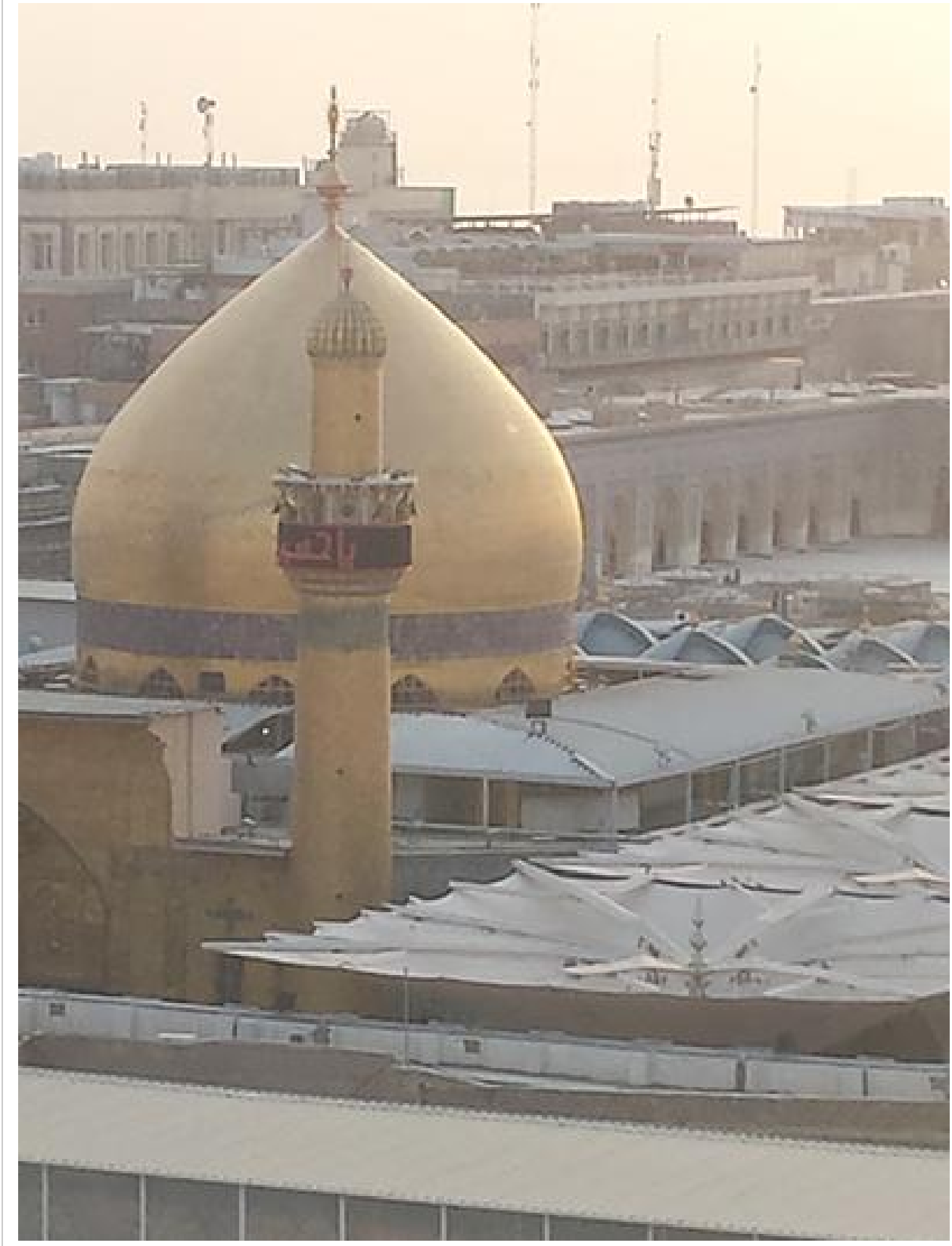

Figure 2: Imam Ali shrine gold plated dome and minaret dominate Najaf's skyline

Figure 3: Conference attendees at the entrance of the Middle Euphrates Cancer Centre (MECC).

Figure 4: In the linac room, some of the attendees showing their certificates. MECC director, Dr. Emad Kareem, is 4th from the right. Chairman of the Iraqi Cancer Board, Dr. Haider Hamza, is 6th from right (to the author's right).

*Disclosure: The author is a native of Iraq. He can be reached via e-mail (mailto:malghazi@uci.edu).

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IN MEMORIUM - EDWARD L. NICKOLOFF, DSC

Mahadevappa Mahesh, PhD | Baltimore, MD

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

It is with sadness I am writing this column to share the news about Dr. Edward L. Nickoloff passing away on March 11, 2019 after a long illness and also to talk about his invaluable contributions to the profession of medical physics.

Dr. Nickoloff was born in Harrisburg, PA and attended Central Dauphin High School, Carnegie Tech, Lebanon Valley College, the University of New Hampshire, where he received a Master of Science degree, and the Johns Hopkins School of Public Health, where he received a Doctor of Science degree with Distinction in 1977.

Dr. Nickoloff was an Emeritus Professor of Radiology at the Columbia University College of Physicians and Surgeons and Chief Hospital Physicist at the Columbia University Medical Center for 33 years. He had lectured extensively at scientific conferences across the country; wrote two books on the subject of Radiation Physics - one of which was used extensively in Radiology Residency programs across the USA; published 150 journal articles, 57 peer reviewed journal articles, and 87 abstracts; and held 24 offices in professional organizations.

Among his many professional affiliations throughout his career, he held twenty-four positions including: President of The Radiological and Medical Physics Society of New York (RAMPS), Chairman of the American College of Medical Physicists (ACMP), and Secretary of the American Board of Medical Physics (APMP). He has been honored and given the titles of Fellow of the American College of Radiology (FACR), The American Association of Physicists in Medicine (FAAPM), The American College of Medical Physics (FACMP) and the Heath Physics Society (HPS). Throughout his career, he received dozens of honors and awards. Among them are a Lifetime Achievement Award from the Upstate NY Association of Physicists in Medicine, the AAPM Edith Quimby Lifetime Achievement Award and the Marvin Williams, M.D. Award from the AAPM/ACMP. He also received the Distinguished Alumni Award from Lebanon Valley College. The President of Columbia University awarded Dr. Nickoloff the permanent title of Professor Emeritus of Radiology and Medical Physics for his 33 years of service to the University.

A colleague of Dr. Nickoloff, Ajoy Dutta, had the following to say:
"I began working with Dr. Nickoloff in February of 1989. As I was completely new to the profession, he became my boss and mentor closely supervising my performance and fostering my growth as a physicist. In addition to

teaching me the fundamental techniques of the job, he also instilled in me the ethos of putting the patient's needs and comfort level above all else. He always reminded me that our job was to give the patient the kind of care and attention we would want for our own loved ones. This meticulousness and integrity earned him an unparalleled reputation in the field and set a standard for excellence for all those who followed. Of course, after working together so closely for such a long time, I was lucky to call Ed a true friend. We travelled across the country submitting papers, and shared countless lunches, dinners, laughs and memories. I, along with all those who had the privilege of knowing him, will never forget him."

I knew Ed for a long time, as he graduated from Johns Hopkins and worked for few years before I joined Hopkins, we always enjoyed talking about our common friends. He was very dedicated and passionate medical physicist. One distinct note I recall about his presentation was the color graphics he used. Even though it was annoying sometimes to see so many colors in his charts, his insights into the measurements were always valuable.

He is survived by his wife of 35 years, Diane (Zambetti); daughter, Andrea; son, Edward Jr., and daughter-in-law, Katarina. He was an avid reader, Jack of all trades, and outdoorsman.

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IROC HOUSTON REPORT

David Followill, PhD | Houston, TX

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

A Change in OSLD Electron Depth Dose Criterion

A review of the IROC Houston QA Center OSLD electron depth dose results was recently performed. We had noticed that our ±5 mm criterion was never exceeded unless the OSLD were irradiated with the wrong energy. We researched the origin of the 5 mm criterion and could not find any data, reference or person who could identify its origin. In the 1980s when electron beam checks were initiated, it was probably a consensus value of the RPC physicists at the time, and the value continued up until today.

An analysis of the electron depth dose results since 2010 was performed. Just as we have done in the past for the output checks, we established what the three sigma level was for our depth dose results to establish a more meaningful acceptance criterion. These data are shown in the table below.

	OSLD Results (2010-2019)					
Nominal Energy	average (mm)	N	std Dev (mm)	3 x (std dev) (mm)	Proposed new criteria (±mm)	# of e- PDD audits outside prop. Criteria*
6	0.4	3138	0.85	2.6	3	4
9	0	2889	0.89	2.7	3	7
12	0.2	3055	0.97	2.9	3	15
15/16	-0.2	2785	1.04	3.1	3	10
18	-0.4	1131	1.28	3.8	4	16
20-22	-0.7	1799	1.46	4.4	4	15

* based on results between 2010-2019

Instead of the ±5 mm criterion used in the past, the new IROC Houston OSLD electron depth dose criterion will be ±3 mm for nominal electron energies between 6 and 16 MeV and ±4 mm for nominal electron energies greater than 16 MeV. Our new criterion would have earmarked a total of 67 results that needed correction since 2010, as compared to 23 results using the 5 mm criterion. To be outside of the new criterion, is to be a true outlier compared to the nearly 15,000 other electron beams monitored by IROC Houston during the past nine years. Implementation of this new OSLD electron depth dose criterion will begin on May 1, 2019.

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ANNUAL MEETING SUBCOMMITTEE'S REPORT

Robin Stern, PhD | Sacramento, CA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

We've got another great Annual Meeting programmed for this year. Some of the exciting and new offerings are:

- **Medical Physics Life Hacks** (Tuesday 11:00-12:15). Learn real-world solutions to real-world problems in both the Therapy and Diagnostics realms. This will be a fun, engaging, interactive session where anyone can share their favorite tips, tricks, life-hacks, and Jedi mind tricks. You will be able to vote for your favorite hack, win prizes, and most importantly, learn something new that you can take back home and immediately apply to your practice. Be part of the session! Submit your hack along with photos, videos, and a description of how it all works and how it saves you time to lifehacks@aapm.org (mailto:lifehacks@aapm.org) by June 15.
- **Multidisciplinary Joint AAPM-SNMMI Symposium: Nuclear Medicine Theranostics and Functional Image-guided Radiation Therapy for Precision Oncology** (Monday 7:30 – 9:30). Please joint this "Best of SNMMI" session, where highlights from the Physics, Instrumentation, and Data Science sessions as SNMMI will be presented.
- **Day of QA** (Wednesday). The Therapy Education track is presenting an entire day of QA-related sessions. Come and see how your colleagues are performing QA from adaptive therapy to verification of your linac beams.
- **Joint ISMRM-AAPM Symposium on MR Safety Foundations** (Monday 7:30 – 9:30). Three education sessions on MR safety practice will be delivered by field experts from clinical and research environments. Learn about MR safety foundations, operational structure and the role of physicist experts in maintaining the MR safe environment.
- **Outstanding Science Published in 2018: Medical Physics & JACMP** (Wednesday 4:30 – 6:00). Hear award-winning authors discuss how they created and developed their projects, and receive advice on how to select and develop your own high-impact research project. Learn from the experts some of the pitfalls they have encountered and how to avoid them.
- **Day of Scripting and Programming** (Monday). Three sessions spanning the Therapy Education and Practical tracks will discuss scripting and programming for the clinic and for research. These are

complemented by two Partners in Solutions Therapy sessions on vendor solutions for scripting (Monday 1:30-3:45 and Wednesday 10:00- 12:15).

- **Current Challenges and Prospects in Particle Therapy** (Monday 2:45 – 3:45). This session will present highlights from the November 2018 special edition of Medical Physics.
- **Young Investigators Symposium** (Monday 1:45 – 3:45): Please note the **time change** for this session highlighting some of the best younger researchers in our field. And then attend the Awards Ceremony Monday evening to see which of them receive the John R. Cameron Young Investigator Awards.

There will be many more interesting sessions, including the 3-day Ultrasound Specialty track, two Distinguished Lectureships, a four-part Leadership Symposium on "The Understanding and Courage to Lead", the Med Phys Slam, and too many more to list. Check out the meeting program and use the taxonomy and keywords to help plan your meeting.

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MEDICAL PHYSICS EDUCATION ABROAD: ICTP COLLEGE ON MEDICAL PHYSICS

Hasin Anupama Azhari, PhD | Dhaka, Bangladesh

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Editor's note: Dr. Azhari completed her PhD work, "Physical, Biological, and Clinical Aspects of Remote Afterloading Brachytherapy," in 2011 through a sandwich program between the OWSD (Organization for Women in Science for the Developing world) and National University, under an ICTP fellowship. In addition to her many current roles, Dr. Azhari was the founding president of the Medical Physics Society of Bangladesh. She also received an International Day of Medical Physics (IDMP) award in 2018 for her special contributions to the field of medical physics. Dr. Azhari took the initiative to work with the Bangladeshi Ministry of Health, Directors of the Hospitals, and Directorate General of Health Services, and after more than seven years of hard and persistent work, has succeeded in creating the post of Medical Physicist in Bangladesh.

The Abdus Salam International Centre for Theoretical Physics (https://www.ictp.it) (ICTP) in Trieste, Italy, is not only for theoretical physics. For more than 50 years, it has also been dedicated to the dissemination of applied physical and mathematical scientific expertise in the developing world. ICTP was founded in 1964 by the late Nobel Laureate Professor Abdus Salam with a vision to harmonize the expertise of scientists throughout the world. His successors have continued working on his goal to stem the scientific brain drain from the developing world by providing scientists there with the same access to research, education, and training as their counterparts in wealthier parts of the world. With funding support from the Italian government, UNESCO, and IAEA, ICTP is able to provide various programs and support for the scientists in different fields. Scientists working at ICTP have access to up-to-date technologies for advanced studies and research in many areas of physical and mathematical sciences, especially in support of excellence in developing countries.

At ICTP, training activities in medical physics began in 1983 with the efforts of Anna Benini and Sergio Mascaren. In 1988, a series of more formal education programs, the College on Medical Physics (CMP) was started to further strengthen medical physics in developing countries by familiarizing scientists with the roles and responsibilities of medical physicists in radiology and imaging. The main promoters and organizers of CMP, ICTP are Anna Benini, John Cameron, Perry Sprawls, Luciano Bertocchi, Slavik Tabakov, and Franco Milano, among others. Women students and scientists are particularly encouraged to participate in the CMP. In this report, I would like to briefly describe my experiences from attending the CMP, ICTP.

Attendees of the 2006 CMP, ICTP in Trieste, Italy.

In 2006 after receiving the M.Sc degree in medical physics from the Department of Medical Physics and Biomedical Engineering at Gono University (with a thesis semester in Heidelberg University, Germany), I applied to attend the courses of CMP, ICTP. The CMP is enriched in imaging, which is really helpful for an academic beginner. I remember the organizers asked the participants to present on the medical physics situation in their countries. I was the only participant from Bangladesh and at the time I was a beginner, knowing very little about medical physics in Bangladesh. However, I felt I must do something for the sake of my country, so I worked hard day and night preparing my slides, collecting information from different sources and especially from Professor Golam Abu Zakaria, a Bangladeshi medical physicist working in Germany. In the end I was one of the representatives from different countries who presented their situations, and this experience guided the rest of my pathway in medical physics. I also attended the ICTP Regional College on Medical Physics in 2007 when it was held in Mumbai, India. In 2008 I was made an

associate member in ICTP in Medical Physics and will remain an associate member until 2021. During my visits to Trieste, I have joined the courses of CMP, ICTP several more times. We received the best poster presentation award in 2014.

The list of CMP, ICTP courses I have attended is given below. These courses are jointly sponsored by ICTP, AAPM, and regional medical physics associations.

- September 4-29, 2006, CMP, ICTP
- November 12-23, 2007, ICTP Regional College on Medical Physics, Radiological Physics & Advisory Division, Bhabha Atomic Research Centre, Mumbai, India
- September 10-28, 2012, CMP, ICTP
- November 4-December 1, 2013, training course on medical physics for radiation therapy, ICTP
- September 1-19, 2014, CMP, ICTP
- March 25-April 25, 2017, School of Medical Physics on Radiation Therapy: Dosimetry and treatment planning for basic and advanced applications, ICTP

Receiving the best poster presentation award at the 2014 CMP, ICTP in Trieste, Italy.

Attendees of the 2007 Regional CMP, ICTP in Mumbai, India.

Benefits from CMP, ICTP in Bangladesh

Contributions to the Department of Medical Physics and Biomedical Engineering

During my 15 years of teaching experience at Gono University in the Medical Physics and Biomedical Engineering department (MPBME) I have transferred my knowledge from the CMP courses to my students and colleagues. The Sprawls Educational Foundation (//www.sprawls.org) provides open resources online to enhance learning and teaching of radiology and medical imaging. The European Medical Radiation Learning Development (EMERALD) (http://www.emerald2.eu/emerald_index.html) workbooks and e-learning materials are used in our department as one source of teaching material. The chapters on radiology and imaging with figures help the students quite a lot. The website guides students' study in a direction parallel to the book. The book on Magnetic Resonance Imaging: Principles, Methods and Techniques has been written in a very simple manner for easy understanding by the students. The students practice the workbook with tasks and visualizing the database of digital images is of a great help for them to increase their knowledge. Also, lesson plans for radiology and imaging courses can be organized using the structured timetables provided on the website. The radiation protection class delivered by Anna Benini at CMP, ICTP was also very informative at that time for our country.

Contributions to the Bangladesh Medical Physics Society

In Bangladesh there are no medical physicists working in the radiology and imaging sector. Knowledge from the CMP courses has been disseminated through the Bangladesh Medical Physics Society (BMPS) by its members who attended. BMPS and the MPBME together have started to increase public awareness of medical physics, as well as approach the hospitals in Bangladesh to make them understand the role and importance of medical physicists in radiology and imaging. The EMERALD website and knowledge of ICTP is also helping us with these types of activities.

Contributions to Encyclopaedia EMITEL and its Multilingual Dictionary

The European Medical Imaging Technology e-Encyclopedia for Lifelong learning (EMITEL) (http://www.emitel2.eu/emitwwwsql/index-login.aspx) is an international project coordinated by Dr. Slavik Tabakov to compile a multilingual dictionary of medical physics terms available as an e-encyclopaedia. I am one of the fortunate people selected to assist with this project, representing Bangladesh as the Bengali language coordinator. The other members for Bangladesh are Mr. Safayet Zaman, Mr. Akhtaruzzaman, and Professor Zakaria. We are teaching our students to use this encyclopaedia, which is very beneficial for them. In Bangladesh the education language is Bengali up to the higher secondary stage (12th grade), so after university admission it is very handy for the undergraduate students to have a medical physics Encyclopaedia from Bengali to English.

Acknowledgements: Thanks to Luciano Bertocchi for always supporting me during my visits at ICTP, and Dr. Slavik Tabakov for always encouraging medical physicists in the developing countries and for his vision for women empowerment. Thanks also to Professor Zakaria who continuously encourages us to attend these types of activities and his commitment to the improvement of medical physics in Bangladesh.

Top: at a celebration of Encyclopaedia EMITEL. Bottom: from left to right, the EMITEL members from Bangladesh: Prof. Golam Abu Zakaria (University of Cologne, Germany); Ms Hasin Azhari (Anupama) [Bengali Coordinator], Mr Md Akhteruzzaman, and Mr Safayet Zaman (all from Gono University, Dhaka).

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Improving Health Through Medical Physics

BOOK REVIEW

Erika Chin, PhD | Victoria, BC

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Crucial Conversations: Tools for Talking When Stakes Are High, 2nd Edition

Kerry Patterson, Joseph Grenny, Ron McMillan, Al Switzler

Crucial Conversations – Tools for Talking When Stakes are High *is written by the co-founders of VitalSmarts, LC, a company that specializes in corporate training and organizational performance services. First published in 2002, the second edition (2012) has some updated examples and clarifications of key points.*

Overview

In this book, the authors argue that the root cause of many human relationship problems, whether in people's personal or professional lives, is due to how they behave when others disagree with them about high-stakes, emotional issues (i.e., a crucial conversation).

First Impressions

The authors do a good job at breaking down the topic of having high-stakes conversations into detailed chapters. You've probably had difficult conversations in your life. If you're like me, it's unlikely that you've gone back to do an in-depth analysis of what went wrong, what went right, or how to adjust the strategy in the future. As a result, it's natural to have developed haphazard strategies or unfortunate habits when dealing with difficult conversations. In the aftermath of a conflict, we often just want to forget and move on. If you're looking for a framework to help guide you through personal analysis and improvement, Crucial Conversations is a great starting point.

Book Structure

The first two chapters establish the authors' definition of a crucial conversation, why it is important to deal with them well, and the information flow required to have a productive conversation. The next four chapters discuss the required mindset and environment needed, as well as the tools to properly analyze

and master our emotions. The final three chapters provide actionable tips on how to talk persuasively, listen sincerely, and how to effectively make and implement decisions.

Weaknesses

To a cool head, everything in this book comes across as obvious, repetitive, and painfully common sense. It would be very easy to skim through this book and not get anything from it. The key is to replace all the stilted examples in the book with experiences from your own life. Suddenly, what would obviously be good behaviour when the mind is clear, may not be how one acts when under stress. In the book, these poor behaviours are classified into either “silence” or “violence,” where “silence” refers to avoiding or withdrawing from conversation, and “violence” can include anything from subtle manipulation to verbal attacks.

Takeaways

The authors state that when having a crucial conversation, it is not about winning or losing, or even coming to a compromise where no one is happy. Rather with skillful dialogue, a larger mutual purpose and better solutions can be found if there is open sharing of information.

Key points for achieving this are to always keep in mind what we really want for ourselves, for others, and for the relationship; to remember that we may not have all the information to find the best solution; to try and sincerely understand other people's perspective, and to find something about the other person we can respect and that humanizes them.

Conclusion

Likely, the hardest part of this book will be practicing the skills consistently when emotions are high and there is little time to think. However, the authors state that perfect recall of this book is not required. Simply being aware of when a conversation takes a turn and maintaining calm and empathy can already help. Even with the best dialogue skills, not every conversation will go our way and we must take the longer-term perspective of building rapport over time. With its practical advice, I think this book is a good start for anyone struggling with difficult conversations.

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FEATURED PHYSICIST - MARGIE HUNT

Katie Woch Naheedy, MS | Ann Arbor, MI

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

Margie Hunt *is the Service Chief and Vice Chair of Radiotherapy Physics at Memorial Sloan Kettering Cancer Center (MSK). She earned her bachelor's degree in radiological health from Duquesne University in Pittsburgh then earned her master's degree in radiation health from the University of Pittsburgh. I met Margie in 2009 when I started working as a physicist in the External Beam Treatment Planning Section at MSK. I had just finished residency and was eager to start my first professional position. I am fortunate to have had the opportunity to work with Margie at the beginning of my career. I learned innumerable things from her, but what stands out the most to me is her vast knowledge and enthusiasm for treatment planning, her passion for patient care, and her dedication to patient safety. Thank you to the WPSC for the opportunity to share this interview with Margie Hunt.*

Margie Hunt, MS

Where did you grow up?

I grew up in a very rural part of south-central Pennsylvania. My father was a cabinet maker, but my parents divorced when I was quite young, and I was raised primarily by my mother and paternal grandmother. I always loved school and had my heart set on being the first person in my family to go to college (which I eventually was). At the time, though, my family felt strongly that I should become a secretary. This conflict was ultimately resolved by my high school allowing me to take typing and stenography in addition to college prep classes. It wasn't until I got to graduate school and started using computers that I realized how serendipitous it was that I got the opportunity to become a really good typist!

How did you get into the medical physics field?

I always knew I wanted to work in health care and went to Duquesne with the intention of majoring in medical technology. A completely chance encounter there with a priest who taught physics and encouraged me to take his class led me in a totally new direction. While exploring the career options in physics, I learned that Duquesne was one of a handful of colleges at that time who offered an undergraduate degree in radiological sciences and that I could subsequently move into medical physics by attending graduate school at the University of Pittsburgh. It seemed like the perfect fit for me and I happily changed my major to point me in this new direction.

Where have you worked as a medical physicist?

My first job was at Montefiore Hospital just next to the University of Pittsburgh campus where I worked with another physicist just out of graduate school, Peggy Eddy Blackwood. We bonded over our shared fear of being such novices and became close friends. Once my husband finished graduate school, we moved to New York where I started at MSK by working as a “traveling physicist” for the Northeast Center for Radiological Physics— we went all over the northeast and did QA measurements on linacs and cobalt units at hospitals participating in clinical trials—it was loads of fun but ultimately I moved into the external beam treatment planning section at MSK because I really missed working directly with patients. I left MSK in 1990 when my son was born to work at Fox Chase Cancer Center under the excellent leadership of Tim Schultheiss and the late Gerald Hanks. It was there that I was given opportunities to take on some leadership projects. In 1996, I returned to MSK to become the head of the external beam treatment planning group. I've been at MSK ever since and have been fortunate enough to serve there in a variety of roles.

What project have you worked on that you are most proud of?

I'm proud of many things in my career but two really stand out. The scientific project that has meant the most to me was one I did way back in the 1980's where I studied breast cosmesis after external beam radiotherapy using a Moiré camera to photograph, quantify, and track long term changes to breast size and shape. It was very challenging technically at the time (think digitizing Moiré fringe patterns off of polaroid photos) but also very innovative in my opinion. Even though we were never able to get really solid results, the project has always had special importance to me (I still have a binder with all the data)

because I loved getting to know the women and hearing their stories, and I came to very deeply admire their courage not only for choosing radiation over mastectomy at that time but also for being willing to participate in my study and allowing me to photograph them at each follow-up.

The other “project” in my career that I'm especially proud of is my role in building the external beam treatment planning section at MSK during the 1990's and 2000's. We were in the throes of early IMRT development, and it was incredibly exciting to lead that group through the development of clinical IMRT methods and protocols as well as through the hiring, training, and mentoring of so many incredibly talented dosimetrists and physicists who ended up working so well together as a team. I have very fond memories of those times and of the folks that shared them with me.

What is your favorite medical physics task?

My favorite medical physics tasks have always centered around treatment planning and direct patient care—to which I remain deeply committed. I love being called to the clinic by a radiation oncologist to see a patient with a particularly challenging situation. I like troubleshooting with the rest of the clinical team and coming up with really creative but practical approaches to plan and deliver radiotherapy. I also really like the focus and intensity of developing anything new. MSK is a unique environment for doing things like that both because of its resources and because there are so many like-minded people around. I don't get many chances to see patients anymore but there are still one or two MSK physicians who will call me time-to-time and when they do, I grab the lab coat I keep in my office for just those occasions and literally run to the exam room with a big smile on my face!

Who do you admire professionally?

I had the incredible privilege of working with Sam Hellman when he was Physician-in-Chief and a practicing radiation oncologist at MSK. His skills as a physician were superb but it was his charisma and leadership that really impressed me as a young medical physicist. Through his interactions with patients, residents, and everyone else, he was a tremendous role model and motivated everyone to be involved and do their best in a way that seemed almost second nature to him (although I'm sure it wasn't!) Working with him really impressed upon me that in addition to innate intelligence and technical expertise, there are other attributes needed for leadership and career success and how essential it is for us to work hard at cultivating those attributes in ourselves as an important part of life-long learning.

What has surprised you most about working in medical physics?

How dynamic it is and how valuable the contributions of people with non-medical physics backgrounds have been to our profession. Many years ago, I was told by a physicist at CERN that medical physics was not “real physics.” I thought to myself, “I'm not sure that's accurate but even if it is, I'm totally okay with that.” In my opinion, the incredible evolution of medical physics that we've witnessed over the years is due, in no small part, to the wonderful influx of ideas from physicists, chemists, engineers, computer scientists, and others who ultimately find their way into medical physics. It reinforces with me how important it is to foster a diverse profession so that we continue to be steered in a direction that is defined solely by the needs of patients.

What advice do you have for women entering the field of medical physics today?

I believe that there are some very specific positive perspectives and attributes brought to medical physics by many women (although by no means are they exclusive to women). In addition to scientific and technical ability, these include understanding others' perspectives, being able to hold in your mind and consider conflicting opinions at the same time, and seeing the big picture. My advice would be to develop awareness of your own strengths, be aware of your own limitations as well and trust in others to help you overcome those, and remember that cultural change is very slow to come. Another thing that I think is really valuable for anyone early in their career and which I myself never had, is a really good mentor. They are hard to find but worth their weight in gold. Lastly, I've found it professionally advantageous to be slow and steady, while also being very conscious about watching for and being ready to seize any good opportunity—I think of this as professional “watchful waiting.” And, of course, being willing to work really hard always helps!

Do you have any skills, hobbies or talents that most people do now know about?

Ha, as many people who work with me already know, I have a very intense work ethic and have little down time. However, I do try to keep my Saturdays sacred because I absolutely love to go to farmer's markets and spend as much of the day cooking and being with my family as possible. I also really enjoy any opportunity to be outdoors particularly in the American West to hike, cross country ski, and most recently I've started to learn to fly-fish!

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THE IMPORTANCE OF DIVERSITY IN MEDICAL PHYSICS

Jennifer Pursley | PhD, Boston, MA and Laura Cervino, PhD | San Diego, CA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

One of the recently approved strategic goals for the AAPM was to champion equity, diversity, and inclusion (EDI) in the field of medical physics. An initial step is to understand the importance of diversity and the negative impacts of a lack of diversity and harmful stereotypes or biases. As physicists, we rely on data to guide our understanding and responses. There is a wealth of data in recent publications on the continued evidence of gender bias and stereotypes in medical physics, and the potential or measurable impact on the field. Some of the available data and publications include:

- Development and testing of a database of NIH research funding of AAPM members: A report from the AAPM Working Group for the Development of a Research Database (WGDRD) (https://aapm.onlinelibrary.wiley.com/doi/full/10.1002/mp.12098).
- The impact of diversity, bias and stereotype: expanding the Medical Physics and Engineering STEM workforce (https://link.springer.com/article/10.1007/s13246-016-0473-7).
- Female medical physicists: The results of a survey carried out by the International Organization for Medical Physics (https://www.sciencedirect.com/science/article/pii/S1120179715000435).
- Participation of women medical Physicists in European scientific events: The European experience (https://www.sciencedirect.com/science/article/pii/S1120179718300085).

Similar work exists for women physicians; women have historically been underrepresented as physicians. While that is changing across medicine with more women than men enrolled in US medical schools now, there is evidence that a gender gap still exists in radiation oncology, a traditionally male-dominated specialty. **Reshma Jagsi, MD, DPhil,** from University of Michigan, has been very active in this area and with her colleagues has contributed to much work on this topic including the following publications:

- Sex differences in attainment of independent funding by career development awardees (https://www.ncbi.nlm.nih.gov/pubmed/19949146). Jagsi R, Motomura AR, Griffith KA, Rangarajan S, Ubel PA. Ann Intern Med 2009 Dec 1;151(11):804-11.

- Similarities and differences in the career trajectories of male and female career development award recipients (https://www.ncbi.nlm.nih.gov/pubmed/21952061). Jagsi R, DeCastro R, Griffith KA, Rangarajan S, Churchill C, Steward A, Ubel PA. Acad Med 2011 Nov;86(11):1415-21.
- Gender differences in publication productivity, academic position, career duration, and funding among U.S. academic radiation oncology faculty (https://www.ncbi.nlm.nih.gov/pubmed/24667510). Holliday EB, Jagsi R, Wilson LD, Choi M, Thomas CR Jr, Fuller CD. Acad Med 2014 May;89(5):767-73.
- Gender, Professional Experiences, and Personal Characteristics of Academic Radiation Oncology Chairs: Data to Inform the Pipeline for the 21st Century (https://www.ncbi.nlm.nih.gov/pubmed/30684662). Beeler WH, et al. Int J Radiat Oncol Biol Phys 2019 Jan 23 [Epub ahead of print].

The proponents of the EDI strategic goal are considering these and similar works in evaluating the necessity of increased EDI awareness and measurable benefits from increasing diversity in the field of medical physics.

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INTERNATIONAL WOMEN'S DAY AND THE CONNECTION TO WOMEN IN PHYSICS

Jennifer Pursley, PhD | Boston, MA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

International Women's Day (https://www.internationalwomensday.com/) (IWD) is celebrated each year on March 8 and has been on this date since 1913. It was initially strongly connected to the plight of working women and the struggle for equal pay and working conditions, and with the Suffragist movement for women's voting rights. Now it is a global day to celebrate the social, economic, cultural, and political achievements of women, in addition to a call for action to accelerate gender equality. In some countries it is an observed holiday and celebrated in a similar fashion as Mother's Day in the US. Incidentally, there is also an International Men's Day (https://internationalmensday.com/), celebrated since 1999 on November 19, which promotes men's health (in accordance with the Movember Foundation (https://us.movember.com/about/foundation) in November), positive male roles, and support of gender equality.

The United Nations (https://www.un.org/en/events/womensday/index.shtml) began to celebrate IWD in 1975, which was designated International Women's Year, and has continued to support it to this day. The UN began the adoption of an annual theme in 1996; recent themes have included “Empower Rural Women, End Poverty & Hunger” and “A Promise is a Promise—Time for Action to End Violence Against Women.” This year's theme was a hashtag, #BalanceforBetter, calling for a gender-balanced world and asking supporters to post pictures on social media of the “hands out” #BalanceforBetter pose. In addition to these visual signs of support on IWD, the group is continuing the momentum by asking supporters to enumerate ways they are working to improve gender balance in the world. While there has been a significant change both in society's attitude about and treatment of women in the past century, the goal of gender parity has not yet been reached even in developed countries, with women CEOs and leaders still being a rarity. And in some parts of the globe women still face lack of access to equal healthcare and educational opportunities, and threats of violence against them that are worse than men face in the same societies. International Women's Day will continue to bring awareness to these disparities.

Many governments, companies, and other institutions planned events or produced content to show their support of women on IWD, and there are great resources on the internationalwomensday.com website for planning and hosting an event including free downloadable content and event packs for purchase. Anyone can view and participate in the social media content related to IWD, and several physics societies also published content. The Canadian Organization of Medical Physics referenced an enlightening LinkedIn article from 2016 by Shirin Enger on The Importance of Women in Medical Physics (https://www.linkedin.com/pulse/importance-women-medical-physics-shirin-abbasinejad-enger/). In 2018, the Institute of Physics (IOP) publishing gave free access to recent ebooks about women in physics (https://ioppublishing.org/celebrate-international-womens-day-with-a-gift-from-iop-ebooks/), with a short Q&A with the authors. In 2019, Physics World Magazine from IOP Publishing highlighted some of the most notable content (https://physicsworld.com/a/celebrating-international-womens-day/) from the prior 12 months by or about women in physics. And, while not tied to IWD, the IOP also recently held a summit on gender equality in medical physics; Physics World published an excellent summary (https://physicsworld.com/a/gender-equality-how-does-medical-physics-shape-up/) by Tami Freeman on what the summit found medical physics is getting right and where the field could improve. While medical physics is getting a lot right, there are opportunities to do better, particularly in encouraging women to seek more leadership roles, which may require more family-friendly work environments; affording women more time to participate in large group research projects; and defining a pathway to return to work in medical physics after a career break.

While International Women's Day is not specific to women in physics, it is a global opportunity to raise awareness about the achievements and importance of women in all areas of life, while also being a reminder that full equality has not yet been achieved. Hopefully medical physics will continue lead physics fields in the inclusion of women and also strive to improve where it can.

Poster for International Women's Day demonstrating the “hands out” #BalanceforBetter pose (internationalwomensday.com)


Better the balance,
better the world.
#BalanceforBetter
#IWD2019
International Women's Day

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#WOMENWHOCURIE: USING SOCIAL MEDIA TO PROMOTE AWARENESS OF WOMEN IN RADIATION ONCOLOGY

Jennifer Pursley, PhD | Boston, MA

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

November 7 is a notable day for medical physics. It's the anniversary of Marie Curie's birth, and as such, has been selected as the annual International Day of Medical Physics (https://www.iomp.org/idmp/) by the International Organization for Medical Physics. The theme of IDMP in 2018 was “Medical Physics for Patient Benefit,” and you can see a list of activities and video messages for the public on the IOMP's website. But in 2018, the IDMP shared Madame Curie's birth anniversary with another important campaign – the trending hashtag #WomenWhoCurie.

As explained in their open access article (https://www.advancesradonc.org/article/S2452-1094(19)30004-1/fulltext) in *Advances in Radiation Oncology*[1], #WomenWhoCurie was launched by members of the Society for Women in Radiation Oncology (SWRO). This group was founded in 2017 by a group of Radiation Oncology residents with a mission of providing a platform to promote women in the field of radiation oncology, to support trainees and faculty, and to champion gender equality in oncology[2]. As part of these efforts, SWRO members took inspiration from the #ILookLikeAnEngineer and #ILookLikeASurgeon social media campaigns, which aimed to break the stereotypes of these traditionally male-dominated fields by showcasing the diversity of modern practitioners (these also inspired the hashtag #ILookLikeAPhysicist in August 2015 for the same purpose). SWRO decided that Marie Curie's birth anniversary would be an auspicious date to launch their campaign, to further highlight her essential contributions to the discovery and clinical use of radiation while promoting the contributions of today's women in the field of radiation oncology. They encouraged all women radiation oncologists to take pictures capturing what it means to them to be part of this field and post those to social media with the #WomenWhoCurie hashtag. The response was enormous and inspiring as posts came from over 700 individual contributors around the world; many women radiation oncologists also included other colleagues in their pictures, such as other women members of the department in roles of therapist, nurse, dosimetrist, or medical physicist, and men in the department who wanted to show their support of women colleagues. ASTRO created a twitter moment

(https://twitter.com/i/moments/1060546024291385344) to commemorate the event, and some of the images are collected on the SWRO's webpage (https://www.societywomenradiationoncology.com/womenwhocurie-day).

The initial event was not intended as a research project, but due to the enthusiastic response the SWRO registered the hashtag with the Symplur Healthcare Hashtag Project[1] to facilitate social media analytics. The article contains more detailed information on the use of the hashtag and impressions, the number of potential views based on the number of retweets and number of followers of participants. Although November 7 has passed, the hashtag #WomenWhoCurie continues to highlight the contributions of women to the field of radiation oncology. It is being used to bring attention to achievements such as winning an award or grant funding, giving an informative lecture at a conference or seminar, or even for day-to-day excellence in care. Please consider promoting the women in your own department, while simultaneously showcasing the excellence of your department, by participating in social media!

Members of the Massachusetts General Hospital brachytherapy team in between cases, posted on Instagram by the author (@jmppursley) for #WomenWhoCurie and #IDMP2018 on Nov 7, 2018

References

1. Albert AA, Knoll MA, Doke K, Masters A, Lee A, Dover L, Hentz C, Puckett L, Goodman CR, Osborn VW, Barry P, and Jagsi R. “#WomenWhoCurie: Leveraging Social Media to Promote Women in Radiation Oncology (https://www.advancesradonc.org/article/S2452-1094(19)30004-1/abstract).” Article in Press, published online Jan 29, 2019, Advances in Radiation Oncology.
2. Masters AH. “#WomenWhoCurie Day.” ASTRO Blog (https://www.astro.org/Blog/February-2019/WomenWhoCurie-Day), posted Feb 13, 2019.

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WPSC NEWS BITES

AAPM Newsletter — Volume 44 No. 3 — May | June 2019

2019 AAPM Awards and Honors Ceremony: The WPSC would like to congratulate in advance all the AAPM awardees and new fellows to be announced at the Awards and Honors Ceremony at the AAPM Annual Meeting on Monday July 15. We would particularly like to recognize **Ellen D. Yorke**, who will be receiving the Edith H. Quimby Lifetime Achievement Award — a well-deserved honor! Please plan on attending the ceremony to recognize the honorees.

Addressing gender disparity: Several interesting lectures and articles were published recently on the topic of recognizing and addressing gender disparity issues in science and technology fields, particularly in nuclear and medical physics. One is a presentation made by Rumina Velshi (https://www.nuclearsafety.gc.ca/eng/pdfs/Presentations/president/2018/20180927-president-velshi-WIN-eng.pdf), the new president of the Canadian Nuclear Safety Commission, to the Women in Nuclear Canada Conference in Sept 2018. She spoke on her own and other women's experiences of not being welcomed or accepted in the science and technology fields, and the importance of changing the perceptions of what is "men's work" or "women's work" as early in a child's education as possible. Another two articles specifically for medical physics were published by **Rowan Thompson**, Canada Research Chair and Associate Professor at Carleton University, Ottawa. Dr. Thompson published an opinion piece in Physics in Canada 2018 Vol 74 with her Carleton colleague **David W. O. Rogers** called "*Take Action for Gender-Balanced and Diverse Scientific Meetings* (http://people.physics.carleton.ca/~rthomson/papers/ThomsonRogers_TakeActionDiversity_PiC2018_final.pdf)" in which they enumerate the benefits of diversity in conference speakers and suggest actions for conference planning committees to achieve speaker gender balance. Dr Thompson's second piece, "*How we can turn the tide for women in science* (https://theconversation.com/how-we-can-turn-the-tide-for-women-in-science-104477)," in The Conversation also supports gender balance in scientific meetings and outreach efforts showcasing the possibility of careers in science and technology to girls and students at a young age.

Women in Nuclear (WiN): WiN Global is a worldwide non-profit association for women working in nuclear energy and radiation technology fields. WiN currently has around 35,000 members in more than 100 countries; many countries (including the US and Canada) have a local WiN chapter and host chapter meetings. The US WiN holds several regional conferences each year in addition to a national conference. This year the national conference (https://www.winu[illegible].org/news/u-s-women-in-nuclear-national-

conference/) will be held in Chicago on July 28–31 and the theme will be "20/20 Vision for the Future." The chapter also publishes freely available newsletters highlighting chapter activities; the January 2019 issue is available here (https://www.winus.org/wp-content/uploads/2018/04/WIN-JAN-2018_Rev1.pdf). Anyone interested is welcome to join WiN.

Undoing disparities in faculty workloads: the results of a fascinating randomized trial were published recently in the peer-reviewed open access journal PLOS ONE. Titled "*Undoing disparities in faculty workload: a randomized trial experiment* (https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0207316)," the authors began with the evidence that women and underrepresented minorities spend more time on service work, teaching, and mentoring than their male peers, and that these "institutional housekeeping" roles, while necessary, are not valued by the academic reward and advancement system. The consequences of bearing a higher service load, particularly in STEM fields, include increased time to achieve promotion and greater career dissatisfaction. The authors designed and implemented a controlled randomized trial of an intervention aimed at improving the equitable distribution of service work in a department over an 18-month period; one notable component was that service work was assigned and had to be "opted out of" rather than "opted into." Their results showed that at the end of the study, departments that instituted interventions had measurable improvements in transparency of faculty work activities. However, the 18-month period was not sufficiently long for all interventions to be implemented and longer follow-up is needed. The encouraging short-term results did indicate that greater transparency and more equitable workload balancing improved faculty satisfaction.

Institute of Physics and Engineering in Medicine (IPEM) special issue on Medical Physics: SCOPE (https://www.ipem.ac.uk/ScientificJournalsPublications/SCOPE.aspx), the IPEM's quarterly newsletter, published a focus on medical physics in the March 2019 issue (freely accessible to IPEM members). Mixed in with articles on predicting IMRT pass rates from plan complexity and the development of portable medical devices was an article titled "*Gender equality: what is medical physics doing right*?" The article was a summary of a joint meeting between the IOP Medical Physics and Women in Physics Groups which took place on Nov 12, 2018 in London, UK. Another summary, by **Tami Freeman** and published in Physics World, is available here (https://physicsworld.com/a/gender-equality-how-does-medical-physics-shape-up/). Both articles indicate there is a lot that medical physics is doing right; in the UK National Health Service, about 50% of early-career medical physicists are women, compared with 20% for other physics disciplines. However, the number of women medical physicists in senior positions in the NHS is about 20%, and there is still evidence of a gender pay gap across all levels. Some opportunities for improvement identified were: increased mentoring at all levels; more accommodation of flexible, part-time, or job-share positions; and a well-defined re-entry path back into the field after absence (such as while caring for family members or young children).

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 (mailto:2019.WPSC@aapm.org).