AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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Improving Health Through Medical Physics

AAPM Newsletter — Volume 44 No. 2 — March | April 2019

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PRESIDENT-ELECT'S REPORT

Saiful Huq, PhD | Pittsburgh, PA

AAPM Newsletter — Volume 44 No.2 — March | April 2019

It is with great humility and excitement that I write my first article in the AAPM Newsletter as your President-elect. AAPM is the premier society of medical physicists in the world because of you, the members of AAPM, and the value and dedication that you bring to fulfilling the society's mission: advancing medicine through excellence in the science, education and professional practice of medical physics. I am grateful to have crossed paths with hundreds of you over the years, and I have often found that your stories and your vision as members of AAPM bear great resemblance to my own. While I am eager to discuss specific initiatives for AAPM over the upcoming year, I would like to begin my tenure by sharing some personal stories and experiences with you, with the hope that together, our stories will inspire us mutually and pave the way for our work over the coming years.

I was born in Bangladesh in a middle-class family that emphasized the importance of making an impact on others' lives through public service. My father spent his entire professional life working for the Bangladesh Ansar, an organization that provides volunteer services to the country. My late elder brother became a national role model for his services as a business person and as the mayor of the northern part of Dhaka, the nation's capital city. One of my younger brothers dedicated his career to the service of the nation by working in the Bangladesh Army. It was in this early life environment that the spirit of rendering public service was instilled in me; it would go on to shape my entire professional career.

Like many of you, I was naturally drawn toward physics from childhood. As I progressed through my education, my overarching goal was to find ways to combine my love for physics with a profession that could be dedicated to doing something for the greater good for those who are ailing. Like many in the profession of medical physics, I chose to immigrate to the United States to pursue higher education and fulfill this dream. I completed my PhD in Atomic and Molecular Physics from the College of William and Mary—where even more importantly, I met my wife

Marian—and went on to complete two postdoctoral fellowships, first at William and Mary and then at Oak Ridge National Laboratory. I then stumbled into medical physics during a subsequent postdoctoral fellowship at Yale. During those formative years, I felt at home and realized that medical physics was the perfect avenue through which I could combine my love for physics with the ability to improve human health around the world.

Despite my excitement about medical physics, I soon realized that navigating early years of fulfilling the triad mission of academia—patient care, teaching, and research—and forging a career path in the real world are formidable tasks. I was fortunate to be surrounded by strong mentors and great friends who guided my growth and development. As I became more immersed in medical physics, the most gratifying moments were often the human ones—the feeling of accomplishment clinically, scientifically, and professionally by working with colleagues, young and old; seeing a smile on the face of a mother on the last day of radiation treatment of her child; and seeing a healthy newborn of a young woman who had successfully undergone radiation treatment for breast cancer while pregnant. Even more rewarding was the mother's follow-up appointment years later, as her then-three-year old child rambunctiously ran laps around the department while she offered her heartfelt thanks for our team's efforts in helping her bring a healthy child into this world. I know these are your stories, too, and it is these human moments that affirm why we do what we do.

As my passion for medical physics grew, I found myself wanting to become further involved in efforts to advance our field and contribute to its growth. I first explored organized medical physics by joining the AAPM Ethics Committee. These organizational-level initiatives excited me and became an increasingly important part of my career; I became deeply involved with many AAPM committee and Task Group activities as well as other professional societies and organizations such as IAEA, ASTRO, and radiation oncology and medical physics societies around the world.

The bedrock of my career to date has been the guidance and wisdom of close mentors and colleagues. One of the key drivers in my decision to run for AAPM President was to promote similar opportunities for others in our field, with a particular focus on developing our young generation. We are at an exciting juncture in our organization's history with unprecedented opportunities ahead of us amidst a changing healthcare landscape. We find ourselves immersed in an explosion of new technologies and data, incredible advances in medical imaging, genomics, computation science and biology, and the emergence of artificial intelligence and Big Data that will revolutionize the way we practice medicine today. Medical physicists play a pivotal role in transforming laboratory science into essential technologies in imaging and radiotherapy to improve the quality of life and safety of patients. To meet these challenges, my charge is to position AAPM and its members to be leaders in this changing healthcare landscape. I will focus my term as AAPM President on investing in our young generation and promoting excellence in a few key areas:

Professional, Clinical, Science, Education, and AAPM Governance. I'll discuss these initiaitves more in future newsletters, but if you would like to read more now, the goals I have outlined can be found at this link (//w3.aapm.org/newsletter/docs/President_Elect_s_Report-Goals.doc).

I ask you to join our AAPM leadership team in working together on this journey. We will build opportunities for fellow medical physicists, clinical and scientific, domestically and globally. We will continue striving for excellence in patient care, and we will push the boundaries of our scientific knowledge. We have incredible opportunities before us, and I am confident that we will seize them. Together, we will forge the future of medical physics.

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EXECUTIVE DIRECTOR'S REPORT

Angela R. Keyser | Alexandria, VA

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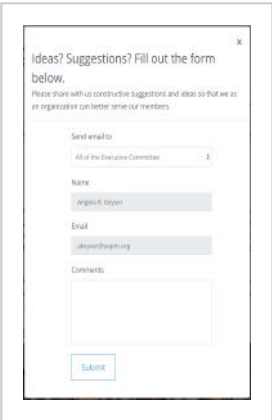
Did you know?



- **Have a suggestion?** Use the "Suggestion Box" in the upper right corner of the website to reach the Executive Committee, Chairs of AAPM Councils or the Executive Director.
- **AAPM reports authored Included in membership directory listing** Ever want to find an AAPM Report, don't remember all the details, but remember the name of one of the authors? AAPM includes "AAPM Reports Authored" in the AAPM Membership Directory listing of each AAPM Member. Login and check it out!
- **AAPM's Virtual Library** now allows members to rate presentations on a Likert-type scale of 1 to 5, (higher is better).
- **Interested in emeritus membership?** If you have fully retired from the field after being a Full or Associate member of AAPM for 10+ total years (the last two consecutive) and are over the age of 55, you are eligible for Emeritus Membership. To request a change to Emeritus, email Jennifer Hudson (mailto:jennifer@aapm.org) your request and our HQ team will do the rest!
- **AAPM's got swag!** AAPM now offers a line of customized, handmade ties and scarves (https://www.aapm.org/merchandise/) that incorporate our signature logo in a distinctive

pattern that AAPM Members will be proud to wear. Order yours today and wear it to the meeting! Please allow 3 - 5 weeks for fulfillment.

- **Do you receive Medical Physics in print and would prefer to get it online only?**
    1. If so, go to: http://www.aapm.org/memb/profile/journalpref.asp?show=j-prefs (http://www.aapm.org/memb/profile/journalpref.asp?show=j-prefs)
    2. Look for "My Journal" - Medical Physics in Print
    3. If your current preference is "I wish to receive Medical Physics in Print and Online", click the "change" button and it will read "I wish to receive Medical Physics Online Only"
    4. That's it! In 4–6 weeks, you will no longer receive a print copy!
    5. Change your mind? Click the change button to revert to print at any time!

2019 Exhibitor Site Visit

2019 Exhibitor Site Visit participants getting the scoop on what to expect in San Antonio.

A successful Pre-Meeting Exhibitor Site Visit was held in San Antonio, Texas in January. Ten individuals representing six exhibiting companies participated, along with AAPM President Cynthia McCollough, Technical Exhibits Subcommittee Chair Norman Brown, Brede Exposition Service Executive Vice President Bobby Rispoli, myself and other members of the AAPM HQ team. The group toured the exhibit hall and meeting room space, discussed new initiatives planned for the 2019 meeting and had the opportunity to meet with key personnel from the convention center.

New AAPM Publications

Two new AAPM Reports (https://www.aapm.org/pubs/reports/) are available online:

- Interoperability Assessment for the Commissioning of Medical Imaging Acquisition Systems: The Report of AAPM Task Group 248 (https://www.aapm.org/pubs/reports/detail.asp?docid=180)
- Display Quality Assurance: The Report of AAPM Task Group 270 (https://www.aapm.org/pubs/reports/detail.asp?docid=183)
- Acceptance Testing and Annual Physics Survey Recommendations for Gamma Camera, SPECT, and SPECT/CT Systems: The Report of AAPM Task Group 177 (https://www.aapm.org/pubs/reports/detail.asp?docid=184)

Also, AAPM Members have access to a New Online NCRP Publication Report : No. 180 - Management of Exposure to Ionizing Radiation: Radiation Protection Guidance for the United States (2018) (https://www.aapm.org/pubs/NCRP/detail.asp?docid=176).

2019 Funding Opportunities

Science Council Associate Mentorship Program (Application Deadline: April 1, 2019)
This program has been established to recognize and cultivate outstanding researchers at an early stage in their careers, with the goal of promoting a long-term commitment to science within AAPM. The program uses the process of 'shadowing' to integrate the Associates into the scientific activities of the organization. The program will include six Associates, each assigned to shadow one member from the AAPM Science Council (SC) or one of its committees. SC Associates will participate in the program for one year and would be funded for up to $4000 per

Associate (to cover travel costs including flight, hotel, and meeting registration) to attend two consecutive AAPM Annual Meetings.
View additional information and access the online application » (http://gaf.aapm.org/)

AAPM / RSNA Imaging Physics Residency Grant (Application deadline: May 3, 2019)
AAPM Board of Directors has approved $420,000 in support over 6 years ($70,000/year starting in 2019) to fund six spots in existing or new imaging residency programs. The RSNA Board of Directors approved $210,000 in funding for 3 additional slots in existing or new imaging residency programs. The purpose of the AAPM funding is to provide 50% support of a resident's salary for two imaging physics residents. The awardee institution(s) will provide the other 50% support. After the period of the award is over, the intent is that the awardee institution(s) will continue to fully support this new imaging physics residency position. CAMPEP accreditation is expected within the first year of the funding period, if a program is not currently accredited. Open to existing or new imaging residency programs.
View additional information and access the online application » (http://gaf.aapm.org/)

Research Seed Funding Grant (Application Deadline: May 3, 2019)
Three $25,000 grants will be awarded to provide funds to develop exciting investigator- initiated concepts, which will hopefully lead to successful longer-term project funding from the NIH or equivalent funding sources.

Funding for grant recipients will begin on July 1 of the award year. Research results will be submitted for presentation at future AAPM meetings.

Applicants must be a member of AAPM at time of application (any membership category).
View additional information and access the online application » (http://gaf.aapm.org/)

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/)

AAPM Meeting News

Mark your calendars for four upcoming AAPM meetings:

AAPM 2019 Spring Clinical Meeting (http://www.aapm.org/meetings/2019SCM/)
March 30 – April 2, 2019
The Gaylord Palms Resort and Convention Center (https://www.marriott.com/hotels/travel/mcogp-gaylord-palms-resort-and-convention-center/), Kissimmee, Florida
The Spring Clinical Meeting program (https://w3.aapm.org/meetings/2019SCM/programInfo/meetingProgram.php) is available online. Also, note that several AAPM groups plan to meet during the 2019 AAPM Spring Clinical Meeting. A list of AAPM activities (https://w3.aapm.org/meetings/2019SCM/attendeeInfo/associationActivities.php) is available online. Please make time during the meeting to visit the vendors (https://w3.aapm.org/meetings/2019SCM/attendeeInfo/buyersGuideDetails.php) and thank them for their support of AAPM and the medical physics profession.

AAPM 2019 Summer School (http://www.aapm.org/meetings/2019SS/)
Practical Medical Image Analysis
June 3-7, 2019
University of Vermont, Burlington, Vermont
View program (https://w3.aapm.org/meetings/2019SS/programInfo/index.php) and register now (https://w3.aapm.org/meetings/2019SCM/registrationInfo/index.php)!
This 4.5-day school will introduce you to the concepts of medical image processing and analysis, including segmentation, registration and feature extraction. Both traditional and machine learning (including deep learning) methods will be covered. Basic theory will be discussed, but the focus will be on implementation and assessment. The program will include both lectures and guided hands-on application of algorithms. The goal of this Summer School is to do, not just sit and listen. Prior programming experience, while useful, is not required. Please take a moment to review the program outline (https://w3.aapm.org/meetings/2019SS/programInfo/index.php) for more details of material to be covered.

AAPM 61st Annual Meeting and Exhibition (https://w3.aapm.org/meetings/2019AM/)
July 14 – 18, 2019, San Antonio, Texas
This year's program focusing on "Building Bridges, Cultivating Safety, Growing Value" will be held in the Henry B. González Convention Center, which is nestled in the heart of historic

downtown San Antonio, along the banks of the River Walk. With its recent $325 million expansion, the modern comfortable meeting space features natural lighting and impressive artwork and is just a short walk from many surrounding hotels.

Meeting registration and housing information will be available on March 6. Program will be posted by May 7.

AAPM will once again offer childcare. Camp AAPM welcomes children ages 6 months – 12 years. The program will be managed by Accent on Children's Arrangements, Inc., a national child care company also used by RSNA. Children participate in age-appropriate activities including arts and crafts projects, active games and much more in a safe, nurturing environment.

ACCENT's professional, trained supervisors are CPR and Pediatric First Aid certified. They are teachers, professional children's program providers, or mothers who simply love working with children and have completed ACCENT's specialized training program.

To assure that your child has a place, please preregister by June 29, 2019. This deadline ensures proper staffing, which is in the best interest of your child(ren).

Click here (https://www.accentregister.com/Event/CEvents/6852) to register your child for Camp AAPM. Questions? Email (registration@accentoca.com)

Orchid Event Solutions is the official housing provider for our meeting. Convention Data Services is the official registration service provider.

If you are approached by any other company regarding meeting registration or hotel rooms in San Antonio, please be aware that they have no relationship with AAPM. You put yourself at financial risk if you provide them your credit card information. Look for the logo to instantly identify a legitimate AAPM service provider.

Questions when registering: 508-743-8511; aapm@xpressreg.net (mailto:aapm@xpressreg.net)
Questions when making housing reservations: 888-505-4486; help@orchideventsolutions.com (mailto:help@orchideventsolutions.com)

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.

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TREASURER'S REPORT

Mahadevappa Mahesh, PhD | Baltimore, MD

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Where Do My Membership Dues Dollars Go?

Part 1

Like so many of you, I too recently paid my annual AAPM dues for 2019. And I thank you for your support, commitment, and continued dedication to the American Association of Physicists in Medicine. Through your support and efforts, AAPM remains the premiere organization in medical physics.

However, when making that payment you may ask yourself:

1. What benefit am I receiving from my membership in AAPM?
2. Where are my dues dollars going?

I started answering these questions and the column started to become too long. So, I thought I would answer these questions in installments.

In this column, I want to focus on the following: current access to National Council of Radiation Protection and Measurements (NCRP) and International Commission of Radiation Units and Measurements (ICRU) reports and also upcoming access to International Council on Radiation Protection (ICRP) reports too. No matter what subspecialty our members are, one time or the other we would have used, cited and read these reports. In fact, many of our members have and are serving on these councils and commission and have authored reports.

Let's start with NCRP reports. Figure 1 shows who among the AAPM members are using these reports and the savings members have realized by the free access to these reports. More detailed information can be found here (https://www.aapm.org/pubs/ncrp/stats-full.asp).

Annually, through an arrangement with NCRP, we budget $35,000 for free access to NCRP documents and the benefits we all receive are significant. Basically, assuming our current membership is around 8000, then $4.38 of our annual dues are going towards NCRP reports and as of now the quantifiable benefit is greater than $2.1 million dollars.

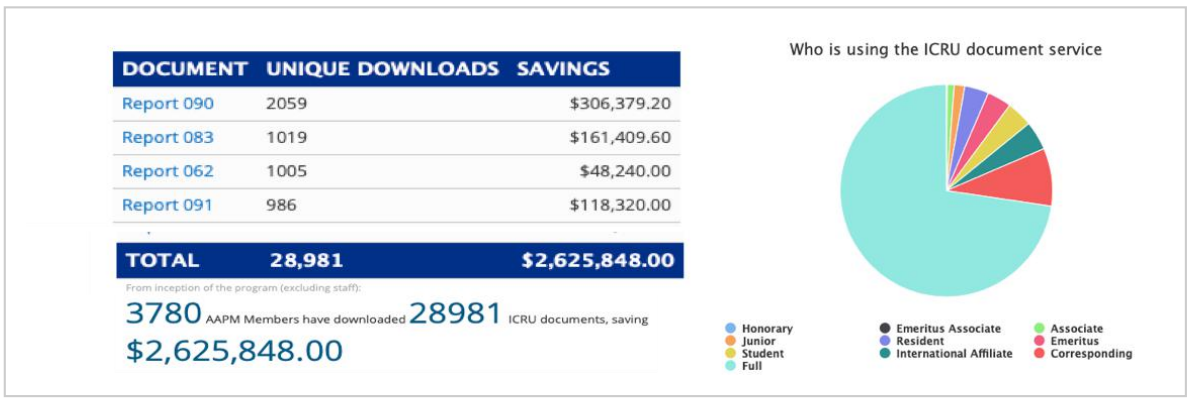
DOCUMENT	UNIQUE DOWNLOADS	SAVINGS
Report 151	1788	$143,040.00
Report 147	1496	$119,680.00
Report 174	930	$130,200.00
Report 160	905	$90,500.00
Report 116	803	$22,484.00
TOTAL	40,436	$2,113,144.80

3492 AAPM Members have downloaded 40436 NCRP documents, saving $2,113,144.80

Figure 1: NCRP publication stats and document use by AAPM membership categories

Now let us examine the information regarding ICRU reports. Figure 2 shows who among the AAPM members are using these reports and the savings members have realized by the free access to these reports. More detailed information can be found here (https://www.aapm.org/pubs/icru/stats-full.asp).

Annually, we budget $25000 for free access to ICRU documents and the benefits we all receive are significant. Basically, assuming our current membership is around 8000, then $3.13 of our annual dues are going towards ICRU reports and as of now the quantifiable benefit is greater than $2.6 million dollars.



DOCUMENT	UNIQUE DOWNLOADS	SAVINGS
Report 090	2059	$306,379.20
Report 083	1019	$161,409.60
Report 062	1005	$48,240.00
Report 091	986	$118,320.00
TOTAL	28,981	$2,625,848.00

From inception of the program (excluding staff):
3780 AAPM Members have downloaded 28981 ICRU documents, saving $2,625,848.00

Figure 2: ICRU publication stats and document use by AAPM membership categories

Soon AAPM members will have free access to ICRP reports also.

I would like to continue providing this type of information in subsequent newsletter issues. In my next column, I will focus on the membership benefits with regard to AAPM publications. Please let me know if you have any questions or you can tweet me (https://twitter.com/@mmahesh1). I would like to thank **Angela Keyser**, AAPM's Executive Director, **Robert A. McKoy**, AAPM's Director of Finance, and **Michael Woodard**, AAPM's Deputy Executive Director, for compiling the stats used in my column.

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EDUCATION COUNCIL'S REPORT

Jim Dobbins, PhD | Durham, NC

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The Education Council recently held its annual retreat, and I am pleased to offer this brief summary of items looking back over the past year and ahead to high priority items for our efforts in the coming year.

From the Council Chair's perspective, there are three major achievements of our council that I would like to call to your attention. First, we have achieved our multi-year goal of establishing a large number of new resident slots, and we are now roughly at where we predicted we would need to be back in 2010 when a large work force analysis was done by AAPM. We estimated then that about 175 residency slots per year would be needed. We currently have 98 accredited residency programs in therapy, 27 accredited programs in imaging, and 5 accredited DMP programs. All together these provide about 170–180 total residency slots per year, not counting the DMP programs. Reaching this goal has involved a huge amount of work by many individuals over the past decade, and I want to publicly acknowledge all of those who have contributed to this effort. We continue to monitor the required number of residency slots, and one of our key priorities for the Education Council is to work collaboratively with the Professional Council in assessing how the output of our graduate and residency programs matches the current workforce needs. Both of our councils will continue to collaborate in this work and we will keep you informed as we make progress on our updated work force estimates.

A second major achievement relates to the previous one, and that is that we have made significant progress in the expansion of the number of imaging residencies. While my previous statement that we have reached the approximate number of overall residency slots needed is true, we feel that there is growing evidence that we need to further expand the number of residency slots in imaging. With ongoing initiatives such as MP 3.0 and others, we as an organization are working to further the value that medical physicists are uniquely positioned to provide in the medical enterprise. Medical physicists can play a very valuable role in enhancing the performance of

imaging departments and clinics, and we need additional residency training slots to meet that need. Through the generous support of AAPM's board and the board of RSNA, we now have committed substantial funding to establishing additional residency slots in imaging. The first two such imaging residency awards were made this year as part of this initiative and will continue adding more slots in the coming years.

A third major achievement this year is the completion of a task group report (TG 318) to develop a business plan for better utilization of our online educational resources. AAPM has a number of online resources of value to our members, including the Virtual Library and a set of quizzes that can be used towards maintenance of certification. There has been a sense over the past few years that we could do a better job of promoting these resources for our members and at the same time developing a more comprehensive business model for these resources that would add revenue to AAPM— which again, allows us to improve our service to our members and to the field. This task group has completed its report and we will now be looking at the implementation of those recommendations.

In addition to the above three major achievements, I would also like to call to your attention several other things that our committees, working groups, and task groups have accomplished over the past year. Our Public Education Committee (**George Sandison**, Chair) has received a grant from the American Institute of Physics (AIP) to develop an "Ask-the-Expert" website as part of our expanding outreach in public education. This new website will not only allow expert technical answers to the general public, but will also serve to highlight the role that medical physicists play in the medical community. A second achievement of note was the very successful workshop held this July just prior to the annual meeting, entitled," Improving the Teaching and Mentoring of Medical Physics," put on by our Medical Physicists as Educators Committee (**Victor Montemayor**, Chair). We also have just completed the fifth round of the MedPhys Match (**John Antolak**, SCOMM Chair), and we are looking at ways to integrate that with the common residency application process (MP-RAP). Our Medical Physics Education of Physicians committee (**Karen Brown**, Chair) and the ROMPES subcommittee (**Matt Studenski**, Chair) have completed a set of 27 trial online modules for radiation oncology; these are undergoing evaluation for their use in education of both radiation oncology and physics residents. And last, we have also made considerable progress in the collection of comprehensive data on graduate and residency programs under the leadership of council Vice-Chair, **Ed Jackson**.

One of the key points of discussion at our retreat was on how we could better integrate the international efforts of AAPM across the organization. Currently, international efforts are primarily overseen by the International Educational Activities Committee (**Cari Borrás**, Chair) under the Education Council and the International Affairs Committee (**Derek Brown**, Chair) under the Administrative Council. It is the sentiment of **Jatinder Palta**, Chair of Administrative Council, and me, and an ad hoc committee appointed last year by Board Chair **Bruce Thomadsen**, that we can better serve AAPM by putting all international activities under one umbrella. We held a joint

session at our retreat between Education and Administrative councils, and we collectively concurred that moving international activities under one umbrella was the best way to go. Details on that move will be worked out collaboratively with our two councils and then a recommendation will go to EXCOM for consideration.

In summary, the retreat reminded us of the considerable work done by many in AAPM to support high standards of education and training across many types of learners. I am particularly grateful to the Chairs and Vice-Chairs of our many committees and subcommittees who put in considerable effort to advance education in medical physics. As always, we welcome any thoughts or suggestions you would have to help us further enhance our value to AAPM and its members.

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LEGISLATIVE & REGULATORY AFFAIR'S REPORT

Richard Martin, JD | Alexandria, VA

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GRAC Chair Presents at Hill Briefing on Beneficial Use of Radiation

Medical and industry experts engage in panel discussion

Bette Blankenship, M.S., Chair of the Government and Regulatory Affairs Committee (GRAC), presented on January 15, 2019, at a Capitol Hill briefing entitled, "Radiation for Life and Health: How Radioactive Sources Benefit Daily Life and the Economy." The briefing, organized by the Source Security Working Group, provided the audience of Hill staffers and government relations professionals insight on how radiological sources are used for medical and industrial purposes, and how they are licensed and regulated to protect the public health and safety. Two expert panels —one made up of medical and industrial users and another made up of federal and state regulators—engaged in a lively discussion addressing current uses of radioisotopes and emerging innovative uses.

Bette described the work of medical physicists in the treatment and imaging of patients. She focused her presentation on innovative targeted therapies—radionuclide therapies based on administering disease-specific radioactive substances that target cells of malignant tumors, while reducing potential side effects. Bette noted that current targeted therapies include Y90 Zevalin, Ra-223, and Lu-177, with additional nuclides in the approval process. She told the audience that these therapies offer renewed hope in cancer treatment where there may be no other current treatment options. Moreover, Bette conveyed excitement over new and developing nuclide imaging and therapy protocols, stressing the need for maintaining access to medical isotopes and supporting additional research.

Thomas Eichler, M.D., President-Elect of the American Society for Radiation Oncology, joined Bette on the medical panel and talked about high dose rate (HDR) brachytherapy and Gamma Knife therapies.

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

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ABR NEWS

J. Anthony Seibert, PhD | Sacramento, CA

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Governance Structure Of The American Board of Radiology: Focus On The Board of Governors

From its beginning in 1934 to October 2015, the ABR maintained a single Board of Trustees (BOT) to implement the necessary oversight to continue its goals and objectives and carry out its mission, now stated as, "To certify that our diplomates demonstrate the requisite knowledge, skill, and understanding of their disciplines to the benefit of patients." This is certainly a multi-faceted effort in a multi-specialty environment that incorporates the disciplines of radiology, interventional radiology, radiation oncology, and medical physics. My tenure in the ABR began in October 2013 as a Trustee representing Diagnostic Medical Physics on the BOT. I quickly learned of the multiple committees and cross-commitments of 25 trustees needed to provide the oversight, direction and decision-making processes of a wide spectrum of issues, and the presence of an Executive Committee comprising the officers who lead the operations, finance, compliance, strategic planning and other business and professional responsibilities, all of which were integrated within the structure to create exams and deliver certification and maintenance of certification services. Decision authority of the Executive Committee was limited, resulting in unwieldy and inefficient implementation of policies and directives, often revisited by the Board because of re-discussion and re-voting.

In 2014, President **Jim Borgstede** brought in a consultant specializing in board size, structure, and function to review the ABR Board structure and make recommendations on improving efficiency, quality, and decision-making processes. The ultimate outcome of ongoing discussions and task force meetings, resulted in substantial bylaw changes 1.5 years later in October 2015, to form the Board of Governors (BOG) as the Governing Board to direct the corporate powers, business and affairs of the ABR, and the Board of trustees (BOT) as the body

to oversee the examination processes (certification and maintenance of certification including exam standards, alternate pathways and management of volunteer committees). This was a major heavy lift requiring careful considerations of appropriate balance and identification of interactions between the BOG and the BOT, expertly guided by the then current President, **Dr. Mickey Guiberteau**. The hierarchical structure of the ABR is shown in Figure 1.

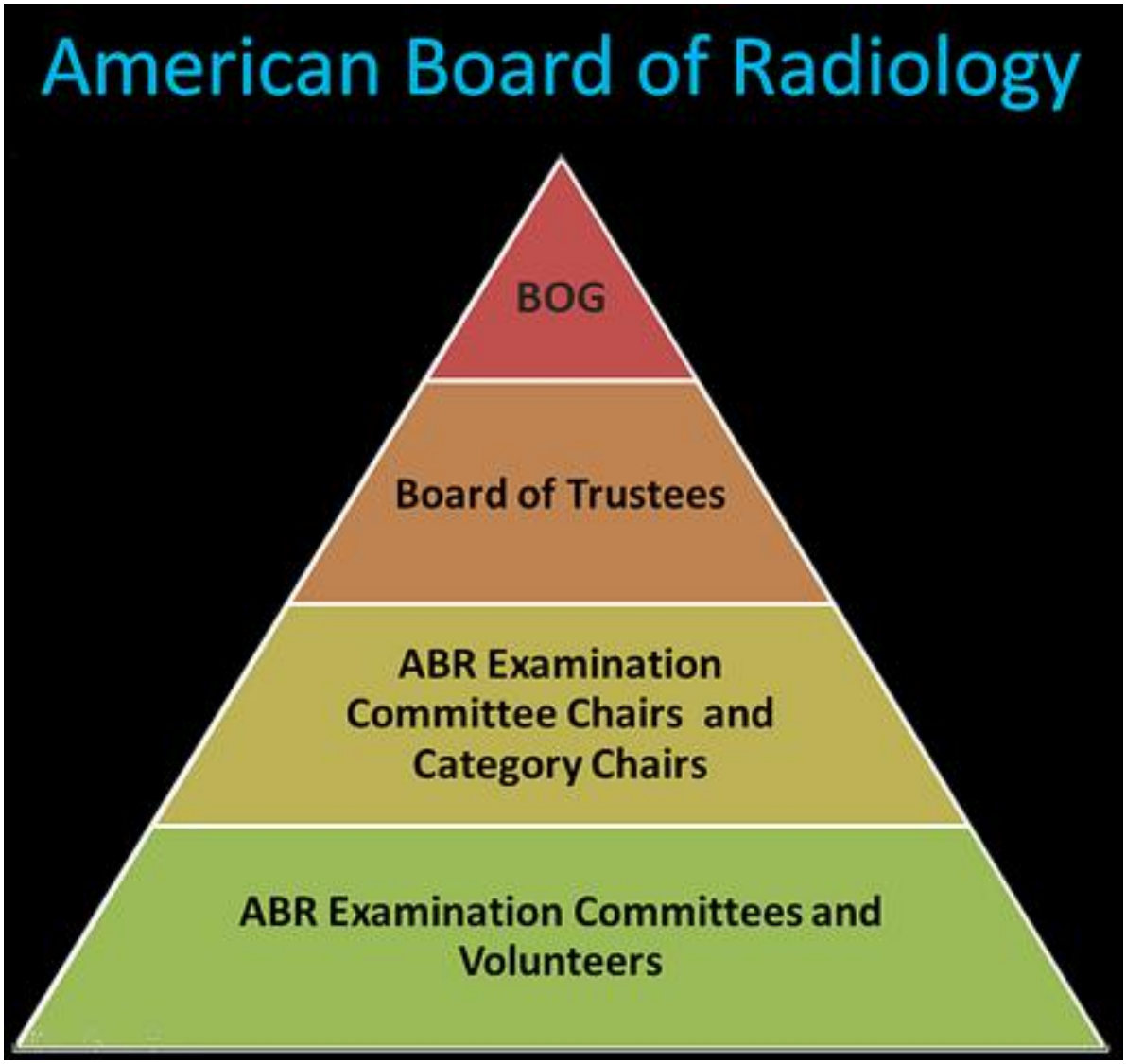

Figure 1. The volunteer composition of the BOG, BOT, ABR Examination Chairs, Committees and volunteers within the ABR

The ABR BOG is comprised of the officers of the corporation, including the President, President-Elect, Secretary-Treasurer, and the chair of the BOT, in addition to board members chiefly recruited (but not always) from the BOT. There are currently 8 "governors", but 7 to 11 can serve as determined by the needs of the BOG and the directives of the President. Each governor serves a term of 2 years, once renewable. Unlike the representational structure of the BOT, the BOG members serve in the best interest of the ABR independent of their disciplines. As BOG members term out, the nominating committee strives to identify candidates from each discipline to ensure a minimum of one seat on the BOG and to provide for balanced interactions and deliberations during board meetings. This is usually achieved by replacing the retiring governor with an individual from the same discipline. Current BOG membership is listed on the ABR website (https://www.theabr.org/).

Primary BOG responsibilities are to provide oversight of ABR operations and to direct ABR policies. These include budget and finance duties, regulatory compliance, certification policies, intersociety relations, short-term and long-term strategic planning, governance structure, nomination/election processes, bylaws maintenance, and election of officers and members. Committees are explicitly identified in the bylaws to implement BOG activities, directives, decisions, and policies, and are constituted as:

- Finance
- Bylaws
- Audit review
- Professionalism
- Hearing
- Strategic planning
- Certification policy
- Executive compensation
- Nominating

Each governor is assigned a portfolio of responsibilities at the discretion of the President and maintains membership on committees as described in the bylaws. The small size of the BOG requires participation in most committees, with exceptions for simultaneous participation in the Professionalism and Hearing committees. As needed, Trustees are appointed to assist in meeting the charge of the BOG committees. Details of BOG and BOT duties and responsibilities are specified in the ABR bylaws (https://www.theabr.org/about/abr-bylaws).

The BOG selects and employs an Executive Director (ED), who serves as the Chief Executive Officer. The ED is responsible to the BOG through the President to implement policies relative to the mission, goals and objectives of the ABR, with directives to plan, organize, coordinate and direct the staff, programs, and activities of the corporation. Associate Executive Director (AED) positions assist the ED as liaisons between the BOT and ABR staff. Of note for this article is the excellent work performed by Dr. Don Frey as the AED for Medical Physics, who provides the consistent institutional knowledge, great support, and exceptional service for the medical physics trustees and governor. The reporting structure is illustrated in Figure 2.

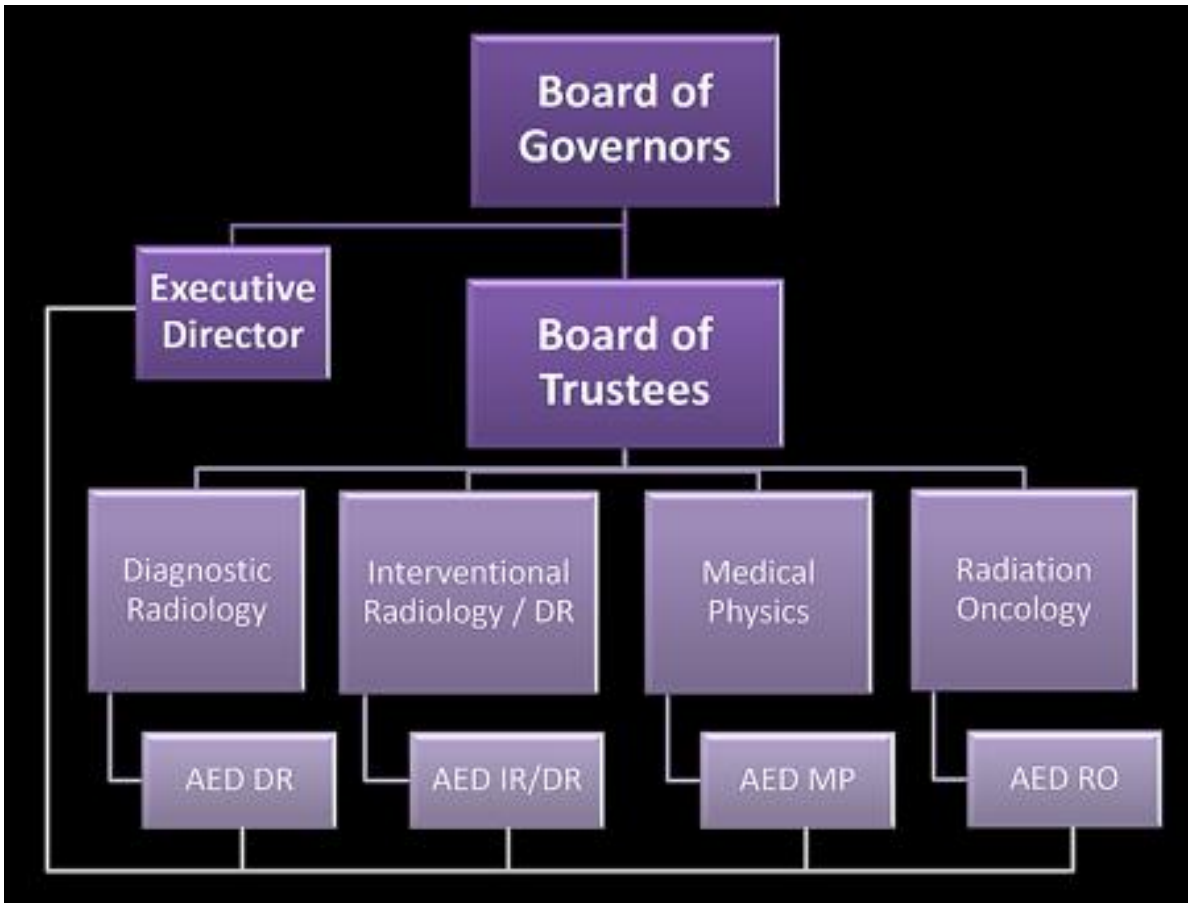

Figure 2. Reporting and governance structure of the ABR BOG and BOT

For Medical Physics, **Dr. Geoffrey Ibbott** was the first to serve on the BOG as Secretary-Treasurer, from October 2015 to October 2017. This led to the appointment of a Trustee in Therapy Medical Physics, now served by **Dr. Matthew Podgorsak**, which effectively expanded the presence of medical physicist volunteers to 4 individuals within the Board structure of the ABR. With Dr. Ibbott's term completed in 2017, I was nominated to the BOG appointment, leaving a vacancy in the Diagnostic Medical Physics Trustee position, subsequently filled by **Dr. Kalpana Kanal**. Even though my presence on the BOG is as an independent diplomate, I serve as the bi-directional communications conduit between the medical physics Trustees BOT and BOG regarding current issues, directives, and policies. This is achieved through participation in bi-weekly medical physics BOT conference calls, monthly (or as needed) BOG conference calls, and in exam activities where appropriate, including oral examinations. For the BOG, I am assigned and responsible for the communications portfolio, and am Editor of the BEAM, the quarterly ABR newsletter. I am proud of our many recent accomplishments including providing all Part 1 and Part 2 candidates with feedback about their exam performance. I also look forward to the next several years of improvements that will be coming to the ABR for all diplomates, particularly Online Longitudinal Assessment. Participating in efforts that are meaningful and beneficial to our profession continuously pushes me to do the best I can. Indeed, it has been a great honor to serve as a Trustee representing Diagnostic Medical Physics and now as a Governor of the ABR. Certainly, I am open and welcome to suggestions and comments regarding this article or any other issue you have on your mind regarding the ABR – there's always room for improvement. Please contact me (mailto:jaseibert@ucdavis.edu) via email.

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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Improving Health Through Medical Physics

ACR ACCREDITATION: FREQUENTLY ASKED QUESTIONS FOR MEDICAL PHYSICISTS

Dustin A. Gress, MS | Reston, VA

AAPM Newsletter — Volume 44 No.2 — March | April 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 in January, the ACR Board of Chancellors approved the **Richard L, Morin, PhD**, Fellowship in Medical Physics (https://www.acr.org/Member-Resources/rfs/fellowships/Morin-fellowship). 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. The application period for our inaugural Morin Fellow(s) closed March 1. Dr. Morin is an ACR Gold Medalist (https://www.acr.org/Member-Resources/Fellowship-Honors/Gold-Medal) and Fellow, and a Fellow of the AAPM, among many other accomplishments. The ACR is delighted to name this Fellowship in Dr. Morin's honor. Now, some FAQs.

The ACR recently released its 2018 Digital Mammography QC Manual with 2D and Digital Breast Tomosynthesis. The following are select FAQs pertaining to the new manual. These and more 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-a[illegible]red@acr.org) if you have questions.

Q: Does the 2018 edition of the manual supersede the 2016 edition?
A: Yes.

Q: For a facility with multiple units whose annual test dates are spread throughout the year, is it acceptable to do the transition surveys when annual surveys come due?
A: Yes. Each unit (and display device) must be evaluated according to an FDA-approved QC manual at all times. Transitioning each unit on its own annual survey schedule is acceptable.

Q: Must all units within a facility follow the same QC manual?
A: No. All units within a facility are not required to use the same QC manual. Each unit within a facility must be evaluated according to a QC manual that has been approved by the FDA, but the QC manuals do not need to be the same.

Q: What if radiologists reading from remote workstations do not want to transition to the new ACR QC manual?
A: If your facility will be switching to the new QC manual and the images are going to be reviewed offsite, those offsite display devices must be evaluated according to the ACR DM QC Manual, including the Technologist's QC. This is why it is so important that the lead interpreting physician be involved with the facility's decision to transition (or not to transition) to the ACR manual. The ACR manual offers a streamlined and standardized QC program.

Q: Can the medical physicist, during an annual survey, conduct and report failed tests normally performed during MEEs (e.g. kVp, collimation, etc.), or is the facility allowed to ignore the failures because they are not required for an annual survey?
A: The MEE tests are also troubleshooting tests for medical physicists to use as they see fit. If a medical physicist performs a test and it fails, then the failure must be reported and corrective action initiated.

Q: MQSA requires that the AGD delivered during a single cranio-caudal view of an FDA-accepted phantom be less than 3.0 mGy. Are the 2D and DBT views of a clinical "combo mode" acquisition considered separate views?
A: Yes. The 2D and DBT views are considered separate, and therefore each view is individually subject to the 3.0 mGy limit, even in a “combo mode” acquisition.

Q: If we do not switch to the ACR phantom for QC and continue with the manufacturer QC, do we still need to do reject or repeat tests?
A: If your facility chooses to follow the manufacturer's QC manual, and the manual requires that a reject or repeat analysis be performed, you must perform it.

Q: How do I know which vendor "tests" are necessary calibrations that must be continued if we choose to use the ACR QC manual?
A: Equipment calibrations are procedures that are used to detect and automatically correct equipment problems. For example, digital detector manufacturers create calibration procedures that optimize detector performance by compensating for dead or over-responding pixels, structured or other noise, nonlinear response, and other technical performance

parameters. QC tests are procedures that detect problems but the procedure itself does not correct the problem. Manufacturers should clearly identify the calibration procedures necessary to keep their detectors in optimal operating condition. If you have questions regarding which manufacturer tests are “calibrations” as opposed to QC tests, you should contact your equipment manufacturer.

Q: Should the medical physicist stop subtracting from the phantom image quality score due to artifacts for both the small ACR Mammography Phantom as well as the large ACR Digital Mammography Phantom used with the new ACR QC manual?

A: No. If the unit is using the manufacturer's QC manual with the small ACR Mammography Phantom, artifacts should be subtracted from the test object scores as described in these manuals. For units using the new ACR QC manual with the large ACR Digital Mammography Phantom, there is no subtraction from the phantom test object scores due to artifacts. However, note that artifacts can cause failure of the unit's phantom image quality test.

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AAPM Newsletter — Volume 44 No.2 — March | April 2019

Our Condolences

Karl L. Prado (https://www.caringbridge.org/public/karlprado)
Our deepest sympathies go out to their families. We will all feel the loss in the Medical Physics community.
If you have information on the passing of members, please inform HQ ASAP so that these members can be remembered appropriately.
We respectfully request the notification via e-mail to: 2019.aapm@aapm.org (mailto:2019.aapm@aapm.org)
Please include supporting information so that we can take appropriate steps.

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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Improving Health Through Medical Physics

HEALTH POLICY & ECONOMIC ISSUES

Wendy Smith Fuss, MPH | Delray Beach, FL

AAPM Newsletter — Volume 44 No.2 — March | April 2019

MEDICARE BILLING FOR BRACHYTHERAPY SOURCES

Radioactive sources used in brachytherapy treatment are available in many different forms such as seeds, needles, wires, ribbons, pellets or liquids. Medicare coding and billing for brachytherapy sources (also known as brachytherapy seeds, radioelements, devices) is unique to the site-of-service.

Physician Office or Freestanding Center

The brachytherapy source(s) is reimbursed when billed in an office or freestanding center (site-of-service 11) using HCPCS Q3001.

Q3001 Radioelements for brachytherapy, any type, each

HCPCS Q3001 may be used to recover the cost of expendable radioelements such as Iodine-125, Palladium-103 and Cesium-131 sources. Only the entity that bears the cost of purchasing the brachytherapy source(s) may bill this code. Sources used for remote afterloading high intensity brachytherapy (also known as High Dose Rate Brachytherapy) are not separately payable in the office or freestanding center setting.

For Medicare, HCPCS Q3001 is “carrier-priced.” There is no national Medicare payment rate for Q3001. The carrier has the discretion to assign a price. When the service is performed in the physician's office or freestanding center, the correct method to report the sources is the following:

- Report the number of sources in the “units” field.
- Documentation consists of provision of a ' rachytherapy device acquisition invoice.

It is recognized that a small number of additional seeds may be ordered and billed to cover plan changes or intraoperative loss.

Hospital Outpatient Department and Ambulatory Surgical Center

Medicare makes separate payment for both Low Dose Rate (LDR) and High Dose Rate (HDR) sources in addition to brachytherapy treatment delivery when provided in a hospital outpatient department or ambulatory surgical center (ASC).

CMS has designated HCPCS Level II codes for separately reimbursed radiation sources to report stranded (embedded into the stranded suture material and separate within the strand by material of an absorbable nature at specific intervals) and non-stranded sources. If facilities use both stranded and non-stranded sources for the same patient, they can separately report each type of service.

The following codes should be used to report sources in the hospital outpatient setting.

HCPCS	Long Descriptor
A9527	Iodine I-125, sodium iodide solution, therapeutic, per mCi
C1716	Brachytherapy source, Gold-198, per source
C1717	Brachytherapy source, High Dose Rate Iridium-192, per source
C1719	Brachytherapy source, Non-High Dose Rate Iridium-192, per source
C2616	Brachytherapy source, Yttrium-90, per source
C2634	Brachytherapy source, High Activity, Iodine-125, greater than 1.01 mCi (NIST), per source
C2635	Brachytherapy source, High Activity, Palladium-103, greater than 2.2 mCi (NIST), per source
C2636	Brachytherapy linear source, Palladium-103, per 1MM
C2637	Brachytherapy source, Ytterbium-169, per source
C2638	Brachytherapy source, stranded, Iodine-125, per source
C2639	Brachytherapy source, non-stranded, Iodine-125, per source
C2640	Brachytherapy source, stranded, Palladium-103, per source

HCPCS	Long Descriptor
C2641	Brachytherapy source, non-stranded, Palladium-103, per source
C2642	Brachytherapy source, stranded, Cesium-131, per source
C2643	Brachytherapy source, non-stranded, Cesium-131, per source
C2644	Brachytherapy source, Cesium-131 chloride solution, per mCi
C2645	Brachytherapy planar source, Palladium-103, per square millimeter

Brachytherapy sources are paid separately from the services to administer and deliver brachytherapy in the hospital outpatient and ASC setting. Payment reflects the number, isotope and radioactive intensity of devices furnished, as well as stranded versus non-stranded configurations of sources. Seed-like sources are generally billed and paid “per source” based on the number of units of the HCPCS source code reported, including the number of sources within a stranded configuration. It is important to use the source specific C-code that best describes the radioelement used. Note that when billing for stranded sources, providers should bill the number of units of the appropriate source HCPCS C-code according to the number of brachytherapy sources in the strand, and should not bill as one unit per strand.

In the case where most, but not all, prescribed sources are implanted in the patient, Medicare will pay for the relatively few brachytherapy sources that are ordered but not implanted. The hospital may charge for all sources if they are specifically acquired by the hospital for the particular patient according to a physician's prescription, in order to ensure that the clinically appropriate number of sources are available and not implanted in any other patient. Sources not implanted must be correctly disposed of, and the sources would typically constitute a small fraction of the total ordered.

For Medicare patients, the hospital may report the codes for brachytherapy needles and catheters. No additional payment will be made for these devices; however, they will be used to track the cost for future ambulatory payment classification (APC) rate calculations. Your hospital may itemize miscellaneous supplies on bills by using revenue codes. If you use revenue codes, the specific date of service should appear with each code. By providing the date of service it will allow Medicare to set payment rates more accurately in the future.

- **C1715** Brachytherapy needle
- **C1728** Catheter, brachytherapy seed administration

Physicians (and physician offices or freestanding centers) should not bill these codes because the codes only apply to the hospital outpatient setting.

How to Calculate Charges for Brachytherapy Sources

The actual reimbursement for sources in hospital outpatient departments and ambulatory surgical centers is based on cost and charge data that is reported by individual departments and centers. The reimbursements each year are based upon the date that was submitted two years earlier.

Below are suggestions on how to calculate charges for single use brachytherapy sources so that you receive future reimbursement for the sources at their full cost.

Step 1: Determine your cost per source for each source type that you use in your hospital.
Step 2: Find out your hospital's cost-to-charge ratio from the department in your hospital that is responsible for completing the annual cost report. This is often the finance department. The cost-to-charge ratio is calculated by summing all the Medicare allowable costs across departments and dividing this by all the charges billed to patients. The fiscal intermediary that processes your claims should also have this number.
Step 3: Divide the cost from step 1. by the cost-to-charge ratio from step 2. To receive reimbursement from Medicare for the cost of the source this is the amount that should be recorded as a charge on your charge master.

In order to recover any departmental overhead costs, the charge would need to be more than these calculated amounts. Remember the charges for the single use sources are per source, so you must enter the number of sources used on each claim in the “units” field.

The radiation source or brachytherapy seed is billed based on the type used. Don't forget to bill the correct number of units! Medicare will pay you per source, so it is very important to make sure the number of sources used is indicated in the “units” field of your billing system. It is appropriate to bill for all the sources ordered for an individual patient, even if some are wasted and not implanted in the patient.

Determining a charge for High Dose Rate Iridium-192 (C1717) is a bit more complicated, because these sources are used for multiple patients. HCPCS code C1717 is the source used in HDR remote after-loading procedures. This source will also be paid by Medicare by multiplying your charge and your hospitals cost-to-charge ratio.

In order to cover your costs for this source you need to set your charge carefully. The following steps will help you determine an accurate charge for HCPCS C1717. This is estimated on your utilization and costs for a quarter. It calculates a charge that will result in reimbursement of your direct costs for the source. If you need to recover administrative overhead the charge would need to be higher. These charges are calculated per treatment, when billing a single treatment the number of units should be one.

Step 1: Average number of patients treated with HDR per quarter.
Step 2: Estimated number of treatment fractions per patient.
Step 3: Estimated number of treatment fractions per quarter (Line 1 multiplied by Line 2).

Step 4: Estimated quarterly service and source costs. If you have a service agreement, enter the quarterly cost of the service agreement and any other service related costs. If you do not have a service agreement, enter your estimate of the quarterly preventive maintenance and source costs.
Step 5: Calculate the average cost per treatment fraction (Divide Line 4 by Line 3).
Step 6: Enter your hospitals cost-to-charge ratio.
Step 7: Estimate the charge needed to recover direct costs of the source (Divide Line 5 by Line 6).

Setting Medicare charges for brachytherapy sources accurately is important so that your facility does not lose money. Medicare pays for brachytherapy sources by multiplying the hospital's charge as it appears on the claim by the hospital's cost-to-charge ratio as calculated from the cost report. If your charge is the published payment rate, your payment will be reduced below this charge based on your hospital's average mark-up over costs.

Complete and correct brachytherapy source coding and setting accurate charges for each source significantly impacts hospital payment and the ability to offer brachytherapy to Medicare beneficiaries.

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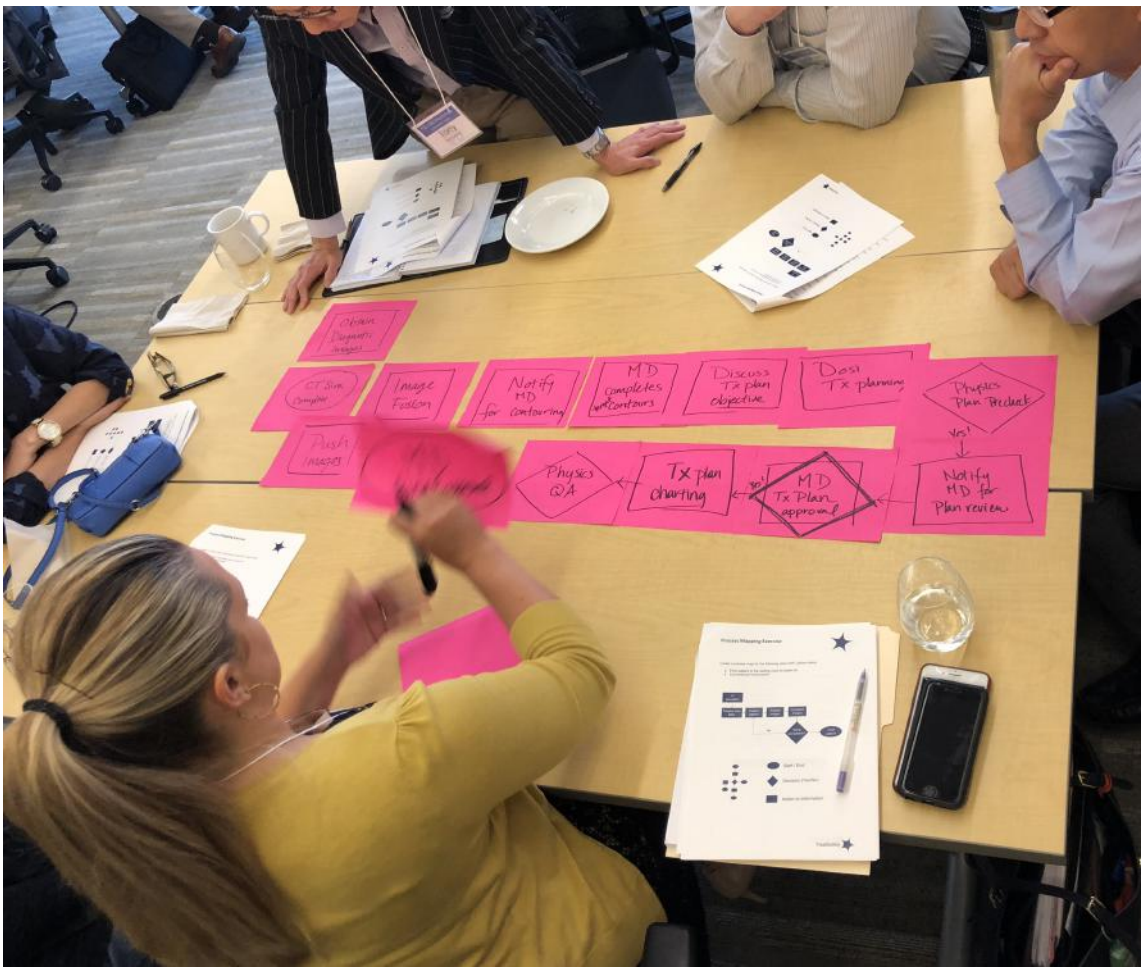
REPORT FROM THE AAPM WORKGROUP ON PREVENTION OF ERRORS IN RADIATION THERAPY (WGPE)

Todd Pawlicki, PhD | La Jolla, CA & Leah K. Schubert, PhD | Aurora, CO

AAPM Newsletter — Volume 44 No.2 — March | April 2019

Successfully Leading Quality and Safety Initiatives in the Clinic

"PATIENCE, PERSISTENCE, AND PIVOTING"



Have you ever tried to implement quality and safety initiatives, such as incident learning or prospective risk analysis, in your clinic? Did you identify great ways to improve quality and safety, but no one ever changed their practice? It takes unique leadership skills to motivate and sustain change. What are the secrets to effectively implementing safety initiatives? The AAPM Work Group on Prevention of Errors in Radiation Oncology asked **Todd Pawlicki**, one of the leading physicists in quality and safety, to share his experiences, insights, and tips for success.

You have successfully built a quality and safety program in your department. What was your approach?

We have a unique situation here in the sense that when I came to UC San Diego, the Chair was rebuilding the department so including quality and safety management naturally fit in. Partly because of my background, I thought that quality and safety was something we should emphasize from the beginning. Then, it was just a matter of finding the opportunities to introduce structure, tools, and techniques along the way.

What are the biggest challenges to implementing changes?

If you're trying to implement something new, whether it's new equipment, a program, or tool, then you have to be aware of the clinic's ability to assimilate and implement the change. It's easier to motivate people if you're addressing an acute safety-critical issue or an actual event. For example a wrong site treatment becomes a lever to get a multidisciplinary group focused on making changes. Most of the time we're not dealing with actual incidents like that. We are trying to incrementally improve our processes, so you have to be aware of whether the clinic is ready at a particular moment to engage and implement a change.

Participating in new quality and safety initiatives requires time and effort. How do you overcome that challenge when staff already have full workloads?

Additional time and effort is a real concern. Your response, especially if you're in a leadership role, can't be, “well I know it's more work but it's really important.” We only have so many hours each day to get things done. You can't just add more work on everyone's plate and not expect them to feel the stress. If you do that, you'll likely put the whole clinic in an even more unsafe state than it was before. There must be a balance between improvement efforts and routine clinical work. If you can find ways of changing what they do so that the net amount of work is roughly the same pre- and post-intervention, then you have a real shot at making it stick.

Patience and persistence are the two characteristics that will help you along the way. You always want to move things forward as soon as possible, but sometimes you can't do that, so you need patience. At the same time, you don't want to take your eye off of the long-term vision of what you want to achieve. That's where persistence comes in. It's a lot more difficult than it sounds.

How do you motivate staff to comply with new changes introduced in the clinic?

It's helpful to be aware of some change-management strategies. There are people in the department that aren't in leadership positions but that others look to for what is acceptable

and unacceptable. You should find out who those folks are and get them on your side. It's also beneficial to create a long-term vision of why you need to make a change. This helps people look past the bumps in the road during a change event.

The other thing to remember when implementing a change is that you should be comfortable with the fact that you're likely not going to get it right on the first try. Keep everyone informed that you're not going to give up if the change effort doesn't work perfectly the first time. You want to communicate that we plan to make the change, but then we're going to evaluate the change and make adjustments if it's not working.

If the clinic knows you're listening and you're willing to pivot, to make changes based on their input, towards a more appropriate and sustainable solution, then you're earning their trust along the way. Over time, people will be more willing to give whatever change you're recommending a chance because they know that you're not going to be wedded to a solution that may not be workable or preferable for them. As long as the final implementation achieves your long-term vision, then you have success.

What advice can you give to people who want to implement a new quality and safety initiative, but aren't in a leadership position?
That can be challenging but I think you need to find out where your boundaries of control are. In general, most people have more control than they realize even if they're not in an official leadership role. They just don't exercise it in the right way.

If you want to implement a broad process change or a broad quality and safety tool, then you have to be prepared that it may be a longer sell. Finding some early allies in a particular area can be helpful. Try to be clear about your long-term vision or implementation plan, and why you think it's important. Be prepared for pushback. You'll likely need to modify your ideas based on their concerns [pivot] and then come back around to sell it again at a later time. Being successful at change is all about relationships, and the strongest relationships are built on respect and trust.

Even if you're the one in charge, you're not really in charge. Especially with a physics team— you have a lot of incredibly bright and motivated people who have their own ideas. Being in the leadership role doesn't mean that they're just going to do everything that you want them to do. So what you do to successfully implement a new quality and safety initiative is basically the same whether or not you're in a leadership role. You really have to cultivate buy-in. In order to get buy-in, you need to have built good relationships. The only difference about being in a leadership role is that you will be able to implement the change faster than if you're not in a leadership role.

Safety culture is an important aspect of a quality and safety program, but can be difficult to create. How do you establish and maintain safety culture across an entire department?
What I've tried to emphasize for myself over the years is a focus on people: to care about how

people are doing, are they happy at work, are they stressed out or frustrated. This applies not just to physicists but to others in the department as well. As you begin to engage with them, hear their issues and try to make improvements, what you're doing is team building and that improves safety culture. When you feel comfortable in a team, you can talk more openly about difficult or challenging topics.

You're also very involved in numerous national societies. Can you share what is being done at the national or international society level to support quality and safety?
There is a lot going on but I can highlight some areas that I'm aware of. The IAEA hosts courses for developing countries to share quality and safety tools as well as good clinical practices. The IAEA also has SAFRON, an international incident learning system. ESTRO has the Radiation Oncology Safety and Quality Committee (ROSQC), which developed and hosts the ROSEIS incident learning system. ASTRO has one of its councils dedicated to quality and clinical affairs (the CAQC) and the Chair and Vice-Chair of ASTRO's councils are also a member of ASTRO's Board of Directors. Out of that council comes APEX accreditation, ROILS in collaboration with AAPM, and practice guidelines. The CAQC also has the multidisciplinary QA committee that is working on “Safety is no Accident”, ASTRO's guidance document for quality and safety in radiation oncology. And of course, the AAPM has the Workgroup on Prevention of Errors and other really great efforts such as **Dr. Bruce Thomadsen's** task group on incident narrative formatting. There are other AAPM efforts that may not be directed at quality and safety but will have a large impact there. Specifically, I'm thinking about MP3.0 and the future of physicists in medicine.

Is there anything else you would like to emphasize about leading quality and safety efforts?
I think medical physicists need to treat quality and safety as an active area of research. While TG-100 was a wonderful document for pointing our quality and safety compass in a new direction, it emphasized three quality and safety tools to the exclusion of dozens of others. This has created a hyper-focus on those three tools, as opposed to focusing on the overall direction and letting the research identify the best tools and strategies to improve quality and safety. The tool used makes a difference in the results. We need to identify the best tools for the job.

Quality and safety is accessible to everyone because it's intuitive. While it's great to have opinions, the solutions need to come from the application of the scientific method to quality and safety. There are so many areas that are wide open for research to help get us to that next level. My hope over the coming years is that there will be a lot of research in many different directions that culminates into guidelines and best practices for raising all clinics to the highest possible level of quality and safety.

Editor's Note: *The opinions expressed in this interview are that of Todd Pawlicki, not necessarily the WGPE. An invited editorial on this topic has been submitted to the* Journal of Applied Clinical Medical Physics.

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

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MULTI-SOCIETY COLLABORATION ON NRC RECOMMENDATIONS

Bruce R. Thomadsen, PhD | Madison, WI

AAPM Newsletter — Volume 44 No.2 — March | April 2019

I felt like titling this article "Multi-Society Miracle on NRC Recommendations." The Federal Register, in Volume 83, No. 209, Monday, October 29, 2018 asked for comments from stakeholders about a request they received to create a Limited-Use, Authorized-User category for physicians wanting to perform radiopharmaceutical therapy with only specific agents and requiring much reduced training and experience requirements. Such a category raises the possibility of having unqualified practitioners performing radionuclide therapy. The proposed policy could also expand to other forms radiation use and could apply to those providing physics support. Over the course of several national meetings and discussions with leaders of other professional organizations, it became clear that there was broad opposition to the proposal among our sister societies. Some of us wondered if we could make a stronger impression by voicing our opinions together?

AAPM contacted some societies that might have interest in the issue, in alphabetical order: the American Brachytherapy Society (ABS), the American College of Radiology (ACR), the American Society for Radiation Oncology (ASTRO), the Health Physics Society (HPS) and the Society for Nuclear Medicine and Molecular Imaging (SNMMI), all of which had interest in such a joint letter. While not professional societies and not intending to sign on to a joint letter, the Conference of Radiation Control Program Directors (CRCPD) and the International Atomic Energy Agency (IAEA) participated in the discussion. AAPM provided an e-mail alias for the group and started a dialogue. Comments to the NRC were due in three months, by January 29. The discussion was lively and, while it was clear that all involved shared the same goal, there were several, incompatible ideas on the pathway to get there—starting with what the letter should look like and what should be included.

Many drafts were circulated with comments shared. While there were some contentious issues that held the potential to scuttle the project, the group managed compromises and cooperation. A draft that seemed agreeable to all of the writing panel was reached on January 23, or so we thought. As a couple of societies took the draft for approval, one last, serious issue

was noticed. That was worked out over the next day, and the letter went to the six societies for approval. This was only five days before the submission deadlines! One by one the notices of approval came in (along with several messages noting typographical errors to be corrected).

In AAPM, the letter (//w3.aapm.org/newsletter/docs/Multi-Societal-Letter_to_NRC_Training.docx) was reviewed by the Government and Regulatory Affairs Committee, the Radiation Protection Subcommittee, the CRCPD Subcommittee, in addition to EXCOM. Contrary to the impression some have about the AAPM approval process, approval of the letter came through in time and the letter was submitted and received by the NRC.

AAPM thanks all the representatives of all the organizations for their commitment to the project, the creative ideas and thorough analyses provided, and the level of cooperation exhibited. It was an exhilarating experience to see this all in action.

For AAPM

- Bruce Thomadsen
- Jessica Clements
- Angela Keyser
- Richard Martin

For ABS

- Sushil Beriwal
- Firas Mourtada

For ACR

- Paul E Wallner
- Ralph P Lieto
- Gloria Romanelli
- Michael Peters
- **With contributions from**
    - Tina Getachew
    - Gary Dillehay
    - Kenneth Rosenzweig
    - Michael Steinberg
    - Munir Ghesan
    - Don Yoo
    - Seth Rosenthal

For ASTRO

- Gregg Franklin
- Amin Mirhadi

- Cindy Tomlinson

For HPS

- Christopher Martel
- Joseph Ring

For SNMMI

- Ben Greenspan
- S. Cheenu Kappadath

For CRCPD (Ex Official – non-voting)

- Jennifer Elee

AMERICAN ASSOCIATION of PHYSICISTS IN MEDICINE

(//w3.aapm.org/newsletter/index.php)
Improving Health Through Medical Physics

QATRACK UPDATE

Crystal Angers, Ryan Bottema, Lesley Buckley, Ryan Studinski | The Ottawa Hospital Cancer Centre (TOHCC) and Randy Taylor | Multi Leaf Consulting

AAPM Newsletter — Volume 44 No.2 — March | April 2019

QATrack+ v0.3.0 with Service Log now in Clinical Use at TOHCC

QATrack+ is a free and open source web application for managing the machine QA/QC programs of radiation therapy and diagnostic imaging clinics. Originally developed at The Ottawa Hospital Cancer Centre (TOHCC) in 2012, the QATrack+ user and developer community has grown steadily over past years and QATrack+ is now deployed in over 35 radiation therapy and diagnostic imaging departments worldwide.

QATrack+ forms the foundation of the infrastructure QA program at TOHCC. It supports our entire equipment QC program and is also used to track treatment planning system QC, calibration of secondary and tertiary standards, and routine radiation safety checks such as survey meter calibration and source inventory checks. Over 200 users (therapists, physicists, technologists and service technicians), spanning 2 hospital campuses, routinely use QATrack+ executing more than 1700 test lists each month.

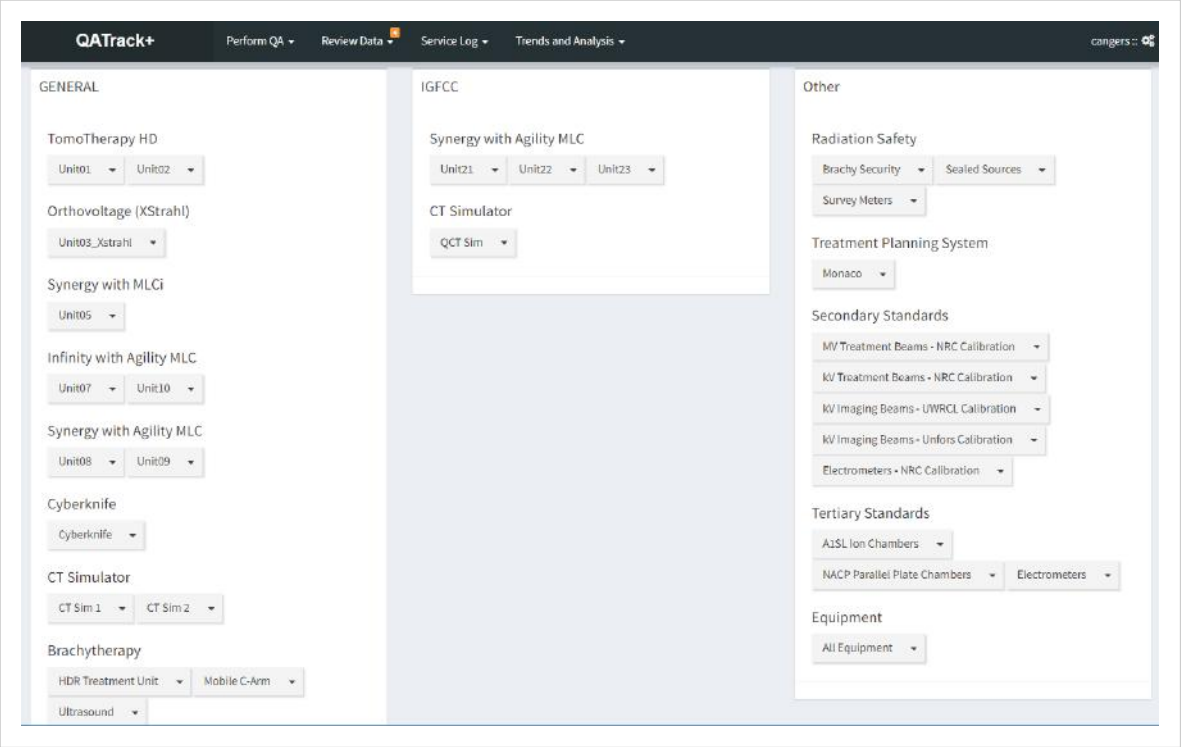

Figure 1: QATrack+ supports Equipment QC, Reference Dosimetry and Radiation Safety programs at the General and Irvin Greenburg Cancer Centre (IGFCC) campuses.

Shortly after the initial deployment of QATrack+ we recognized the potential advantages of linking equipment QC to machine service work. We ambitiously set a goal of integrating machine service log into a future version of QATrack+ and a project plan was drafted to define the scope and a development pathway. TOHCC launched the service log project in the fall of 2016 and began by establishing use cases, a high-level requirements document, a database taxonomy and a working prototype. Receipt of the Canadian Nuclear Safety Commission (CNSC) Innovation Grant in the spring of 2017 provided financial support for the project and allowed us to contract Multi Leaf Consulting (Randy Taylor) to assist with support and software development. Following 2 years of hard work we are pleased to announce that QATrack+ v0.3.0 is released and that it has been in clinical use at TOHCC since October. With version 0.3.0 the functionality of QATrack+ has been extended to include entry, review and approval of service events, to link service events with associated QC test data, and to include service events on QC trending plots. Additional features include a parts database, machine uptime reports, and a service log dashboard which reports the most recent service event activity. Similar to the configuration flexibility offered for QC test lists, QATrack+ provides numerous configurable service event fields such as service type, service area and service event status. At TOHCC, we have configured the service event status field so that is can be used to support workflow. Service events may have a status of Pending, Complete or Approved and a configurable "Requires Review" flag identifies those service events which require review and approval by a physicist.

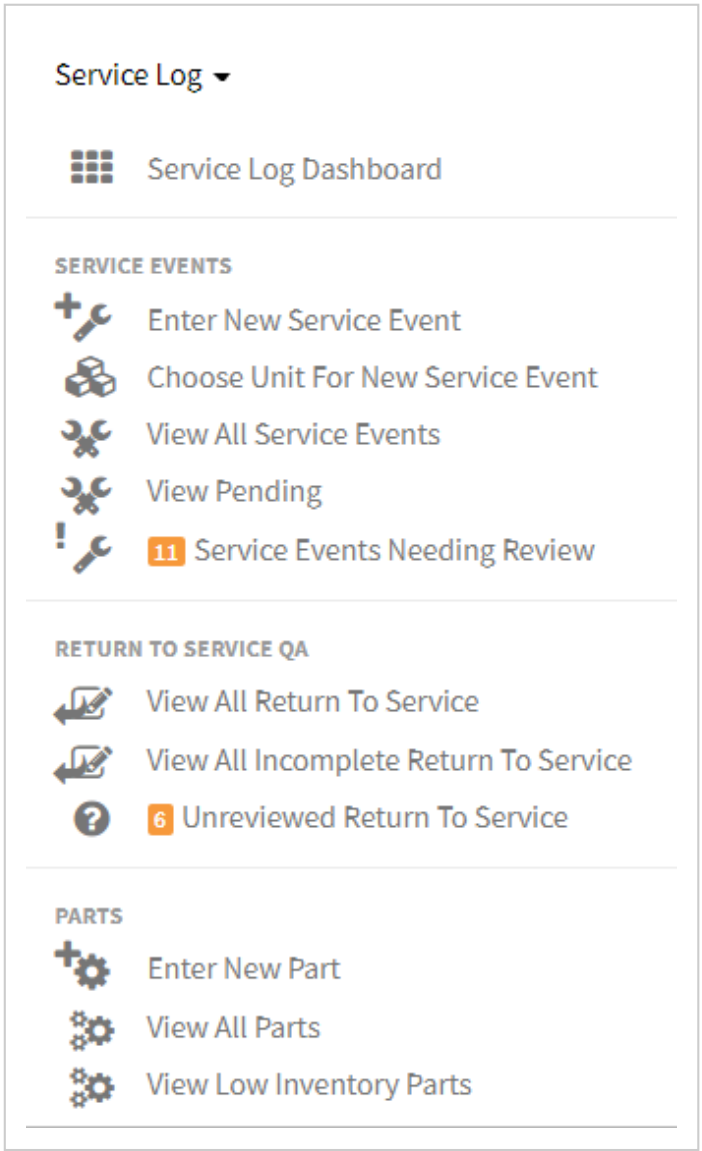

Figure 2: Service log menu.

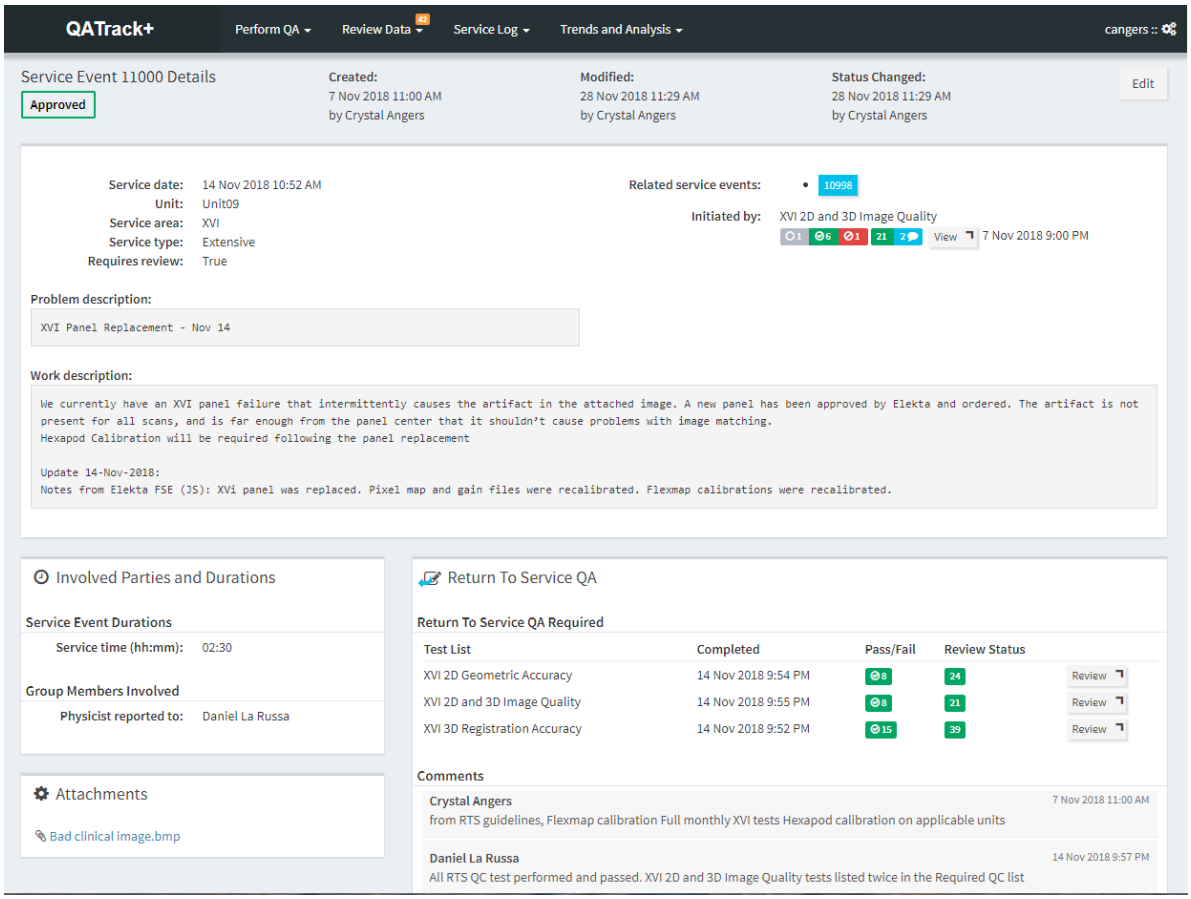

Figure 3: Service Event documenting XVI (kV) panel replacement and return to service tests. Note the associated failed XVI 2D and 3D Image Quality test list in the "Initiated by" field and the file attachment of the bad clinical image.

The service log functionality offered by QATrack+ v0.3.0 greatly improves machine service oversight and helps to ensure that TOHCC meets regulatory requirements for return to service testing. As part of the v0.3.0 implementation we migrated over 10,000 service records from our previous machine service database (Accel v7.0.4) permitting continued access to valuable historic service information via a modernized platform which provides numerous data filter options (figure 4).

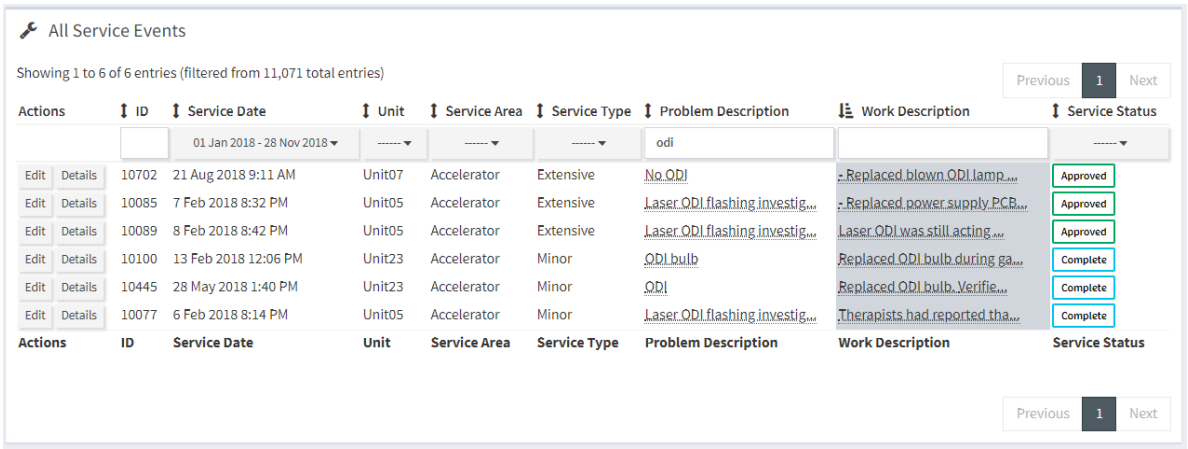

Figure 4: This screen capture demonstrates the benefit of data filters. In this example service events have been filtered to show all events related to the optical distance indicator (ODI) year to date.

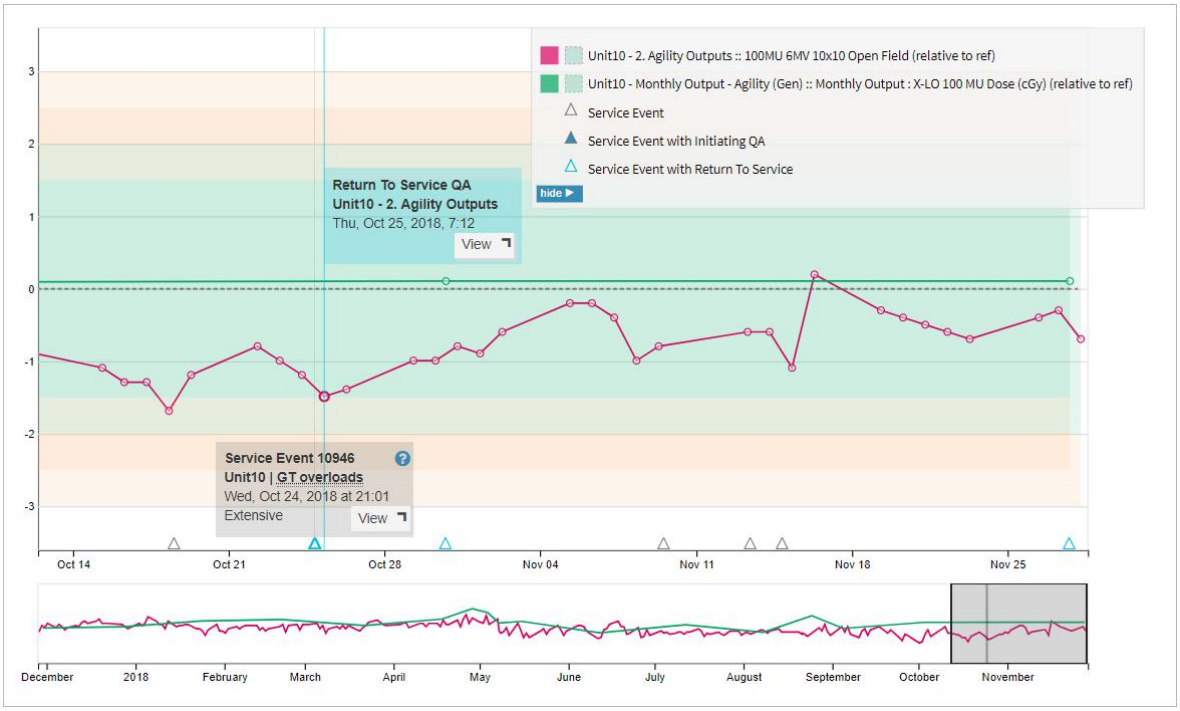

Figure 5: Example of service events superimposed on data trending plots of daily and monthly outputs.

In addition to service log, QATrack+ v0.3.0 incorporates many other new and valuable features:

- An API for automating QC data entry
- Online image analysis (picket fence, starshot etc) via pylinac (https://pylinac.readthedocs.io/en/latest/)
- Support for importing/exporting test configurations via QATrack+ TestPacks
- New and improved online documentation
- File Attachment capability at the point of test list configuration, during test list execution and during service event entry or edit
- Comment Tracking on Test lists and RTS QA

Full details of the v0.3.0 features are available in the QATrack+ v0.3.0 release notes (http://docs.qatrackplus.com/en/latest/release_notes.html), and a complete list of bug fixes can be found on BitBucket (https://bitbucket.org/tohccmedphys/qatrackplus/issues?page=4&milestone=0.3.0).

The authors would like to acknowledge and thank our physics and service technologist colleagues who provided valuable feedback during the validation and implementation phases of the project. We also gratefully acknowledge the financial support provided by the CNSC Innovation fund.

If you would like to learn more about the TOHCC implementation of v0.3.0 and the service log functionality, please don't hesitate to contact one of the authors. If you are not familiar with QATrack+ we encourage you to consider joining our community, qatrackplus (http://qatrackplus.com), multileaf (https://www.multileaf.ca).

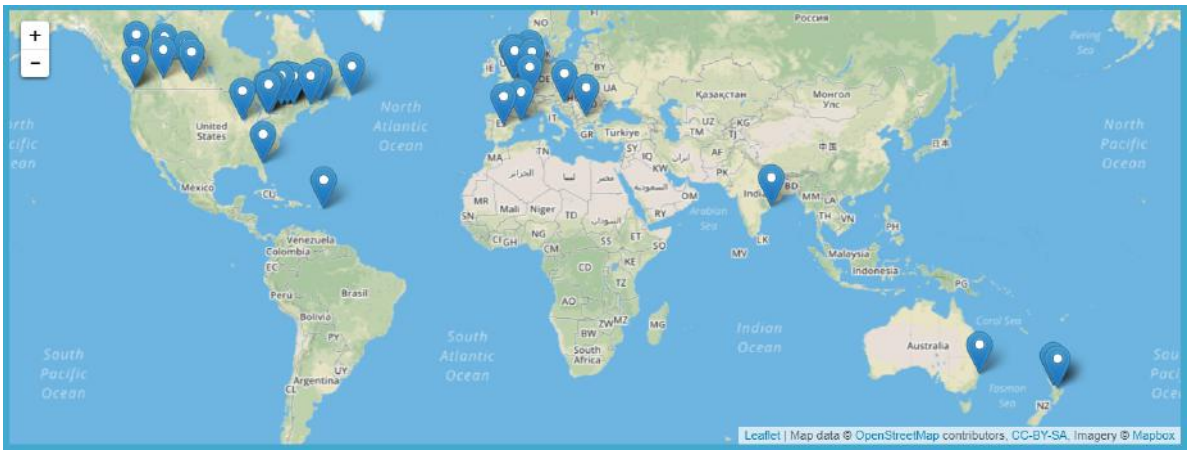

Figure 6: QATrack+ is deployed in over 35 radiation therapy and diagnostic imaging departments worldwide (map image courtesy of ©Mapbox, ©OpenStreetMap).

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Improving Health Through Medical Physics

CORPORATE ADVISORY BOARD REPORT

Jatinder R. Palta, PhD | Richmond, VA & Corey E. Zankowski, PhD | Palo Alto, CA

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Members of the CAB and AAPM's EXCOM perform a group exercise designed to identify and prioritize issues and topics impacting both the medical physics profession and its industry partners.

For a little over a year, AAPM's Corporate Advisory Board (CAB) has been in existence. Formed in late 2017, this newly created partnership with our Corporate Community came together as a vehicle to identify and prioritize important areas where industry and AAPM can work together for mutual benefit and to improve global healthcare.

With overarching goals and objectives, the CAB works to:

- Increase awareness of issues confronting AAPM and Industry;
- Increase collaboration between AAPM and Industry to resolve and mitigate important issues, and develop solutions
- Work with AAPM to develop training programs for physicists interested in or already involved within Industry
- Increase the safety and effectiveness of products and services used to diagnose and treat patients
- Increase the rate at which such products and services are adopted in clinics, and,
- Work with AAPM to better understand patient and provider needs and increase general awareness of existing solutions.

Through a synergistic relationship between AAPM and Industry, twelve elected Corporate members-at-large, representing a broad spectrum of our Corporate Affiliates from both large- and small-sized companies, and comprising a proportional mix of both imaging and radiotherapy equipment vendors, the Inaugural Board was formed. Beginning in 2020, as terms expire, candidates will be named from among our Corporate Affiliates members and voted upon by them to fill vacancies.

The Inaugural CAB Industry partners include representation from:

- CIRS
- Elekta
- GE Healthcare
- IBA Dosimetry
- NELCO
- Radcal Corporation
- RaySearch Laboratories
- RIT
- Siemens Healthcare
- Standard Imaging Corporation
- Sun Nuclear Corporation
- Varian Medical Systems

Corey Zankowski, Chief Technology Innovation Officer and SVP of Oncology Software Solutions at Varian Medical Systems, chairs the CAB and **Rick LeBlanc**, President of NELCO, is Vice-Chair. **Jatinder Palta** serves as Chair of the Corporate Relations Committee (CRC), providing direct

interface between the CAB, CRC, and AAPM's Board of Directors.

The CAB conducts three face-to-face meetings during a calendar year, which also include representation from AAPM's Executive Committee: Spring Clinical, Annual Meeting, and during RSNA. It also meets via conference call throughout the year.

In upcoming issues of the newsletter, and through its own web page (in development), the CAB will regularly report on its activities, provide project updates, and discuss strategic goals it may identify.