# Bulletin... Fall 2011

## The Pennsylvania Radiological Society

*A Chapter of the American College of Radiology*



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## PRESIDENT'S MESSAGE


**Mary H. Scanlon, MD, FACR**
**University of Pennsylvania**
**Philadelphia, PA**


(Dr. Scanlon's inaugural address delivered September 10, 2011 at The Four Seasons Hotel, Philadelphia, PA)

I would like to thank Dr Farber for the outstanding job he did leading our society through its 96th year and congratulate Dr Arger for his well deserved recognition as this year's honoree.

Beverly Coleman, as always, you are right on …radiology is under fire ***and that means the quality of care our patients are provided is in danger as well.***

***It has never been as important as now*** to demonstrate our value and commitment to quality and safety and to excellence in patient care. As radiologists we are best trained to lead the way in knowing the right study to be done, with the right protocol-at the right dose, providing the right interpretation.

**I have two main goals for this year:**
**1. My primary focus is on quality and safety with an emphasis on right dose.**

Currently there are only 8 sites in Pennsylvania that are part of the American College of Radiology's Dose Index Registry. My goal is to increase that number 100 fold. This is the right thing to do and it is imperative that we do it. It's already been mandated and it is already being done poorly by others.

On August 25, 2011 the US Joint Commission issued an alert on the dangers of medical radiation. As a result of the potential dangers, CMS will require accreditation of all freestanding facilities that provide advanced diagnostic imaging services effective January 2012.

Three accrediting agencies fulfill that CMS requirement: Joint Commission, The International Accreditation Council (whatever that is) and the ACR. Specific actions recommended include:
1. Proper dosing protocols be in place
2. Appropriate dose ranges for high volume/high dose studies be established
3. Review of all dosing against the latest evidence either annually or at least every two years
4. Investigation of doses outside appropriate range
5. Tracking cumulative radiation doses for patients who undergo repeated exams

Participation in the Dose Index Registry in conjunction with RADIANCE or other similar programs* will facilitate these processes being in place. Dose tracking is already being done by Highmark Blue Shield and indirectly by Independence Blue Cross.

Highmark Blue Shield launched a Radiation Safety Awareness Program in March of this year in conjunction with National Imaging Associates (NIA) a nationally recognized Radiology Benefits Manager. At risk patients, defined by cumulative radiation exposure over 50 millisieverts (the annual radiation worker limit), are identified through Highmark radiology claims. Referring physicians are notified during the pre-authorization process that they have ordered a study on an at risk patient. They are offered an opportunity to discuss risk/benefits and alternate exams. A Dose Limit Threshold

Notification is sent with the authorization or adverse determination letter.

We are the ones who should be having this discussion with our referring physicians (right study) when the exam is scheduled at our centers, not a third party. RADIANCE or other similar dose monitoring applications* can provide easier access to CT dose estimates. We are the ones who can more accurately identify at risk patients with real dose parameters for each exam from each scanner, corrected for patient size. The ACR's Dose Index Registry can provide this information. Highmark's histrionic Dose Limit Threshold Notifications are based solely on published dose estimates, which can vary 10 fold from reality and do not account for patient size. It is our job to take the lead on this and to do it right.

Funded in large part by Independence Blue Cross, the ECRI Institute and the Healthcare Improvement Foundation just recently launched a new Partnership for Patient Care regional (five county greater Philadelphia area) initiative on improving CT radiation safety. Dose reporting for participating facilities just began this past month which, while not as complete as the DIR, is at least real and not estimated; these initiatives sound fine but there is concern about source of funding and ulterior motive.

As a state society we must demonstrate our commitment to the safety of our patients and take the lead on dose reduction by participating in the ACR Dose Index registry. This was discussed at September's board meeting and presented at the scientific session of the PRS meeting on September 10. Price reduction has already been negotiated with the ACR. I encourage all board members and all radiologists to sign up now.
**We cannot afford to take the back seat on this issue. Radiology is under fire; the quality of patient care is threatened.** ***It has never been as important as now*** **to be politically active.**

**2. My second goal is to support and facilitate the work of Keith Haidet, MD, FACR and our lobbyists the Kline's.**
This support has already begun at this year's meeting with the PARADPAC booth manned by my son Adam Posner and resident Mikhail Higgins. New at this meeting, as is the practice on the national level, is contribution ribbons added to attendee ID badges. Our goal is 100% participation by all board members.

To get the word out on these two important issues (dose reduction and RADPAC participation) we will resurrect the board call chain first used by Richard Taxin, MD, FACR. Thanks to Phyllis Smith, each board member will soon be receiving names and numbers of Pennsylvania groups to contact.

Lastly, during this year I would like to expand our partnership with PRRS on resident educational activities to include a joint sponsored mock board review as well as a jointly sponsored letter to Blue Cross to build on the relationship already established by past presidents and members of our society. We will attempt similar activities on the western side of the state as well.

It's going to be a great year; we are already off to a running start. I look very much forward to serving this society as its 97th president. It is truly my honor and privilege.

**Updates as of November 6, 2011:**

**1. Quality and Safety-ACR Dose Index Registry**
There are now 13 registered sites from Pennsylvania with multiple other groups in discussion. If you are one of the sites drop me a note (mary.scanlon@uphs.upenn.edu).

Known sites to be applauded include:
*Waynesboro and Chambersburg Hospitals (Robert S. Pyatt, Jr., MD, FACR)
*Crozer-Chester Medical Center/Southeast Radiology (Eric Rubin, MD).
*University of Pennsylvania (Tessa Cook, MD, PhD)
*Mercy Catholic Medical Center (David Mayer, MD, FACR)
*Lehigh Valley Health Network (Julie Gubernick, MD and Robert Kricun, MD)
*Memorial Hospital, York (Terry York, DO)

PRS members who are currently enrolled in the ACR DIR will shortly be calling other groups around the state encouraging them to participate.

For those PRS sites that have already signed up- the ACR has agreed to credit you the onetime $500 registration fee you already paid (ask them for it). To get this discount moving forward just enter "PRS facility" in the additional information box on the registration page.

Check out the new column in this month's bulletin-"Tips on Dose Reduction Strategies". Share your best practice with the rest of the state-send to editor Anne P. Dunne, MD (adunne@geisinger.edu).

**2. Be Politically Active**

PARADPAC has received $7,015.00 from fifty-six members. While 62% of the PRS Board has contributed, this represents only 5% of our total membership.

There is no more an important time then now to be politically active. If you are not at the table you are on the menu. RADPAC contributions assure that our voices are heard in Harrisburg. Since our September meeting, our society radiologists have had one-on-one "face time" with Lt. Governor Cawley, President Pro Tempore Scarnati, House Majority Leader Turzai, and Senator Mensch. Our PRS Breast Imaging Committee chaired by Marcela Bohm-Velez, MD, FACR and our lobbyist the Kline's have been very busy addressing proposed legislation on the **Dense Breast Notification Act** coming from Senator Mensch's office. Senator Mensch is hearing our voice- we are at the table. Your contributions to RADPAC make this possible.

**Send a check now to:**

**PARADPAC**
101 West Broad St.
Suite 614
Hazelton, PA 18201

95% of our society members need to be heard from- get out your check books!

And while you're at it, send a check or credit card contribution to RADPAC. Fourteen percent of our members have contributed $55,000 to date. We want to at least meet the 20% level.

**Send check or credit card contribution to:**
**RADPAC**
Attn: Ted Burnes
ACR/RADPAC
505 9thSt. NW
Suite 910
Washington, DC 20004
Or on line at www.radpac.org

And while you are at it, **tell The Super Committee and Senator Toomey that Radiology Saves Lives** and not to further cut medical imaging – it takes 60 seconds to click on the link and send that message:
http://www.radiologysaveslives.org/petition/imaging-essential-american-patients-toomey

**3. Expanded partnership with Philadelphia and Pittsburgh Roentgen Ray Societies**

Date and place for jointly sponsored **Hot Seat Board Review** has been fixed: Saturday, March 31, 2012; Perelman Center for Advanced Medicine, University of Pennsylvania. Review will cover all 11areas tested at the oral boards and will be free of charge and include lunch to all third and fourth year residents. Tell your residents to save the date!

***Dose Monitoring Tools**

In order to optimize radiation exposure for patients imaged at your facility, it is important to be able to monitor dose estimates and imaging protocols. A number of software applications now exist to facilitate this:
- RADIANCE (http://www.radiancedose.com) is a freely available tool which extracts dose data from image-based dose sheets or from the DICOM radiation dose structured report (RDSR).
- A number of commercial options for extracting dose parameters from the dose sheet or RDSR also exist:
PEMNET (http://www.pemnet.info)
DoseMonitor (http://www.dosemonitor.com)
DoseMetrix (http://www.primordialdesign.com/home.html)
Imalogix (http://www.imalogix.com).
- In addition, there is an application called eXposure (http://www.radimetrics.com) that uses the CT scanner parameters to simulate the CT scan performed on a patient and calculate individual organ doses.

These dose tracking applications allow facilities to not only participate in the ACR's Dose Index Registry, but also to perform internal CT dose monitoring to promote regular review of dose estimates and protocols.

## EDITOR'S COLUMN

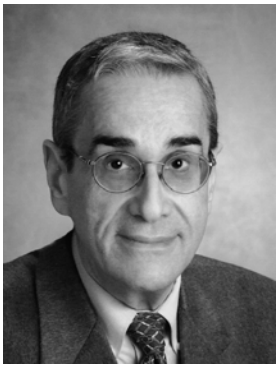
**Anne P. Dunne, MD**
**Geisinger Medical Center**
**Danville PA**

Great appreciation goes to **Eric N. Faerber, MD, FACR**, our outgoing President, for his strong and committed yet gracious and gentlemanly leadership. His efforts on behalf of the society, especially with resident education and participation, will happily continue.

Welcome to our new president, **Mary H. Scanlon, MD, FACR**. Strong applause goes to her for the stirring call to action at her inaugural address. May she have a successful year with the full support of the PRS membership and other radiologists in Pennsylvania.

Kudos once again to **Robert S. Pyatt, Jr., MD, FACR** for the excellent program of the 96th annual PRS meeting. For the 3rd year in a row, Dr. Faerber moderated the "Hot Topics/Issues Facing Radiology Residents in Pennsylvania" panel featuring program directors and residents from central, western and eastern Pennsylvania.

The honored radiologist was **Peter H. Arger, MD, FACR**, Professor Emeritus of Radiology at the University of Pennsylvania. Dr. Arger organized and developed the ultrasound and body CT section at the University of Pennsylvania and started a fellowship program, continuing educational meetings and an ultrasound research section there. He is past president of multiple societies: the Pennsylvania Radiological Society, the American Institute of Ultrasound in Medicine, the Philadelphia Roentgen Ray Society and the Greater Delaware Valley Ultrasound Society. Dr. Arger has also devoted much time and energy to the education of radiology residents in both clinical and political/socio-economic areas of radiology.



At the banquet, Dr. Arger's successor, **Beverly G. Coleman, MD, FACR** gave a wonderful and impassioned talk in his honor on "Radiology under Fire".
Recognition and thanks go to **Rickhesvar Mahraj, MD** for organizing the yearly scientific exhibits.
Recognition and many thanks go to **Robert Powell and Phyllis Smith** who provide the infrastructure for the smooth running of the annual meeting and of the Society throughout the year.

**Thanks to all of the contributors of scientific exhibits to the meeting. They are listed below with recognition of the awards won:**

"Improving Radiology Workflow and Patient Safety by Reducing Unnecessary STAT Examinations On-call" by SC

Chadalavada, MD, MS, MH Scanlon, MD, FACR and JN Itri, MD, PhD; University of Pennsylvania.

"Optimizing Doses for Common Chest CT Examinations Using RADIANCE" by TS Cook, MD, PhD, Woojin Kim, MD, E Barbosa, MD, WW Boonn, MD and Warren Gefter, MD; University of Pennsylvania - **SECOND PLACE**

"Breast Findings on CT Scans of the Chest" by TJ Rolle, MD and AP Dunne MD; Geisinger Medical Center - **THIRD PLACE**

"Congenital Pulmonary Causes of Mediastinal Shift" by J Urbine, MD and D Dinan, MD; St. Christopher's Hospital for Children

"Torticollis: A Pain in the Neck" by J Urbine, MD and EN Faerber, MD, FACR; St. Christopher's Hospital for Children

"A Multi-Modality Pictorial Review of Pelvic Masses in Young Females" by J Urbine, MD and A Malik, MD; St. Christopher's Hospital for Children - **FIRST PLACE**

"Follicular Bronchiolitis: The Next-Age Pulmonary Mimic" by F Alvi, MD and C Chudow, MD; Geisinger Medical Center

"Suprapatellar Fat Pad Impingement" by F Alvi, MD, D Abbott, MD and PR Bolos, MD; Geisinger Medical Center

"Unsuspected Uterine Rupture: Recognition and Understanding the Implications for Treatment and Prognosis" by MJ Carleton, MD and G Mongelluzzo, MD; Geisinger Medical Center

"Developing Pre-Procedural Checklists to Reduce Fluoroscopy Time and Improve Team Performance" by Michael J DeLeo III, Jason Itri, Alexander Ruutianen and Mary Scanlon, University of Pennsylvania. - **HONORABLE MENTION**

**PRS Members in the News:**

Past PRS President **Harvey L. Nisenbaum, MD, FACR, FAIUM, FSRU,** Chairman, Department of Medical Imaging at Penn Presbyterian Medical Center in Philadelphia, PA, was elected Treasurer of the World Federation for Ultrasound in Medicine and Biology (WFUMB-http://www.wfumb.org) at the WFUMB 2011 Meeting, August 26-29, 2011, in Vienna, Austria. WFUMB is a federation of 6 organizations: AIUM (American Institute of Ultrasound in Medicine), AFSUMB (Asian Federation of Societies for Ultrasound in Medicine and Biology), ASUM (Australasian Society for Ultrasound in Medicine), EFSUMB (European Federation of Societies for Ultrasound in Medicine and Biology), FLAUS (Federation of Latin America Societies of Ultrasound), and MASU (Mediterranean and African Society of Ultrasound). WFUMB has almost 50,000 members, involves over 50 countries, and is dedicated to the advancement of ultrasound by encouraging research, promoting international cooperation, disseminating scientific information, and improving communication and understanding in the world community using ultrasound in medicine and biology.

**Marcela Bohm-Velez, MD, FACR** was vice-chair of the program committee of the annual meeting of the Society of Radiologists in Ultrasound (SRU), October 21-23 in Chicago, IL

**Mindy M. Horrow, MD, FACR** and **Levon N. Nazarian, MD, FACR** were also on the SRU's program committee this year.

Lecturers at the SRU meeting were: **Oksana H. Baltarowich, MD** and **Laurence Needleman, MD, FACR** and also **Drs. Horrow and Nazarian.**

**Dose Reduction Initiative**:

If you or anyone in your practice has instituted a new idea to reduce radiation dose in imaging and/or interventions, please send your idea to me so that it can be featured in the PRS Bulletin and shared with the membership. adunne@geisinger.edu

**FYI: Radioactive Seed Localized Breast Surgery Workshop at Mayo Clinic:**

This is a procedure that obviates, in most cases, the mammographic or sonographic needle localization of breast lesions prior to surgical excision. Under mammographic or sonographic guidance, one I-125 radioactive seed is placed percutaneously in the lesion. This can be done up to 3 days prior to surgery, obviating the need for coordination of needle localizations in the radiology department with operating room schedules. The surgeon locates the lesion in the O.R. similar to finding the sentinel lymph node with lymphoscintigraphy. Mayo Clinic in Rochester, MN has been doing this for 8 years with over 600 cases performed in this manner. They run several workshops on this technique throughout the year.

**Next year's meeting:** The 97th annual meeting of the PRS will be September 7-9, 2012 at the Rittenhouse, in Philadelphia.

Please send ideas/suggestions for the meeting program to Robert S. Pyatt, Jr., MD, FACR at bob_pyatt@hotmail.com

We are saddened by the passing this year of the following PRS members and friend of the PRS and extend heartfelt sympathy to their families:

Charles Andrews, DO; York, PA
James Robinson, MD; York, PA
Theodore Tristan, MD, FACR; Camp Hill, PA
Alan Wolson, MD; Allentown, PA
Donald Ryan, CEO, CareCore

## PENNSYLVANIA RADIATION PROTECTION ADVISORY COMMITTEE

**Joseph G. Och, MS**
**PRS Representative to PRPAC**
**Medical Health Physics**
**Geisinger Medical Center**
**Danville, PA**

**Highlights from the last meeting of the PRPAC in Harrisburg:**

**1. DEP site inspection reports:** Several RPAC members state the final reports of the Department of Environmental Protection (DEP) site inspections contain items not addressed at the exit interview by the inspectors. The DEP was urged to ensure that its inspectors present any citations or recommendations at the exit interview to provide opportunity for discussion. The DEP was also asked to include any recommendations in a separate attachment to the final report. These are recommendations that do not represent violations of regulations but are meant only as advice to the site. However, hospital administrators often regard these recommendations as mandatory which can cause misunderstanding/conflict at the facility.

**2. X-ray operator qualifications:** Section 215.24 of the DEP regulations incorporates by reference the Department of Health (DOH) regulation for x-ray operators. In so doing, hospitals are permitted to allow anyone to operate an x-ray machine provided it is written in their job description and they are properly trained. Unfortunately, "properly trained" is not defined. The DEP believes this is inadequate for the safe use of x-ray devices and feels it is under their authority to define who is qualified to perform x-rays. The DOH accepts the Department of State (DOS) qualifications and criteria for x-ray operators. The DEP technical guidance document of x-ray operator training requires physicians and technologists to participate in continuing education (CE) that addresses radiation safety. It was asked how the DEP will enforce CE when it is not specifically required by DOS regulation. The DEP stated that the Radiation Protection Act gives it the authority to oversee radiation protection and their regulations specifically state that CE is required. This issue is pending further clarification.

**3. Fluoroscopic regulations:** Regulations relating to fluoroscopy need updating and revision, particularly on recording dose and cumulative dose time and values. A current problem is the disparity in available information from different generations of equipment. No facility has the resources to estimate each individual patient dose. A suggestion is to establish something similar to what the NCR has for therapy-such as written procedures to prevent incidents.

In a related matter: currently fluoroscopic output measurements are performed annually and after maintenance. It was proposed that this be done quarterly. RPAC does not favor this because it would quadruple costs without providing relevant information.

## REPORT ON FDA PUBLIC WORKSHOP ON MRI SAFETY

**Joseph G. Och, MS**
**PRS Representative to PRPAC**
**Medical Health Physics**
**Geisinger Medical Center**
**Danville, PA**

The FDA conducted a public workshop on MRI safety at its headquarters in Silver Spring, MD on October 25&26, 2011. The purpose was to gather comments and information on MRI safety from professionals in the field: physicians, technologists, physicists and vendors. This was timely since the number of incidents and accidents in MRI has increased 500% since the last decade, outpacing the growth in the number of scanners and studies. Although the discussion was wide-ranging, several key points were stressed repeatedly:

- Health care providers need easily understood, pertinent, information to make informed screening decisions at the point-of-care. The general feeling was that the current 'MR Conditional' labeling has resulted in more confusion than clarification.
- A uniform testing procedure for determining spatial gradient must be developed, so that implant tolerance can be easily comprehended.
- There was a general call for adopting universal safety standards. Most attendees supported the adoption of the ACR document on MRI Safety written in 2007 and revised for release in 2012.

One controversial point concerned the labeling of non-implanted items to be taken into the MRI room. Currently, these are labeled: safe, unsafe, and conditional. Several called for simplifying the labeling to safe and unsafe; the latter classification indicating that the item could become a projectile and providing information as to precautions to be followed in its use. It was stated that classifying an item as unsafe, rather than conditional, would alert the user to use extra caution when bringing the object into the exam room.
The FDA is considering the commentary it received and is due to issue a statement concerning MRI safety early in 2012.

## TIPS ON DOSE REDUCTION STRATEGIES
## Low Hanging Fruit: Tips to Minimize CT Radiation Dose

**David P. Mayer, MD, MS, FACR**
**Mercy Health Systems, Darby, PA**

1. Constrain the field covered by CT exams so the minimum number of slices is scanned beyond the body part being examined.
    a. PE studies should not include the abdomen
    b. Abdomen studies should have the minimum number of slices above the diaphragm, as chest CT slices should cover just beyond the lowest level of the diaphragmatic insertions. Given that dose LENGTH product is a measure of radiation exposure, less "LENGTH" is an easy way to minimize dose
    c. Decreasing the scan by 5cm may reduce dose 15-20%*
2. Specially designate some studies for lower dose:
    a. Non-contrast renal stone studies require less X-ray dose since you are looking for a high density stone. A noisier image has less deleterious effect when search is for a high density lesion.

b. Repeat CT for lung nodules requires much lower x-ray dose since the repeat study is done for comparison measurements. With the great difference in density between air and a nodule, a noisier image does not appreciably affect the measurements.

3. Use a single post contrast scan for routine CT of the abdomen and pelvis:
   a. i.e. portal venous phase
4. Decrease the dose for delayed CT IVP scans. The high density of the contrast in the renal collecting system, bladder and ureters will be very different than the density of a mass or most stones, so a somewhat noisier, lower dose scan will not decrease conspicuity.
5. Keep the kVp at 120 or lower except in very large patients
6. Consider external shields:
   a. Gonadal for males
   b. Thyroid for all patients
   c. Breast shields: Controversial
7. Shield all children and potentially pregnant females above and below the scan field with wrap around lead drapes. (X-Ray beam circles around the patient)
8. Center the patient in the CT gantry*:
   a. The "Bowtie" filter in the gantry assumes that the patient is centered.
   b. 6 cm off center may cause the "auto-ma" to increase up to 100%*
9. Set up your CT X-ray dose protocols to differentiate between different size patients:
   a. e.g. up to 150lbs; 150-200lbs and > 200 lbs
   b. Adjust Noise Index to Body size*:
      i. Typical NI = 10-20
      ii. High NI (low x-ray dose) = 30-40
10. Create a culture of Radiation Dose savings with your technologists:
    a. Have them document every time they lower the standard doses on the request form
    b. Empower them (with guidance) to lower X-ray doses and given them constructive feedback on their decisions
    c. Be certain to personally speak with evening and night CT technologists who frequently are not optimally informed of protocol changes and can't be optimally supervised by a radiologist.
11. Purchase proprietary software tools (e.g. ASIR from GE) to lower required dose by decreasing noise
12. Join ACR NRDR (X-Ray Dose Registry)
13. Substitute MRI or Ultrasound when possible.

- William P. Shuman, MD: lecture @ SBCTMR
- Annual Meeting; November 2011
  "Five Quick Tricks to Cut CT Patient Radiation Dose by 40%"

## NUDGING RESIDENTS AND ATTENDINGS TOWARDS ORGANIZED RADIOLOGY

**Saurabh Jha, MBBS**
**University of Pennsylvania**
**Philadelphia, PA**

I attended the Pennsylvania Radiological Society annual meeting after nearly six years. Some things have not changed. Radiology continues to live life on the edge. The existential threat remains and radiologists perceive themselves, though not imaging, to be a whisker away from extinction. The reimbursements are *declining* (note the emphasis on the present participle).

A few things have changed. Imaging is now the peerless villain of our healthcare woes. Six years ago it was merely ascending the throne, with few other challengers. We seem to have reconciled with our fear of, or fate to, teleradiology, at least if the phrase "if you can't beat them, join them" is to be believed.

Most importantly, of course, the change in the interim is the Patient Protection and Affordable Care Act. The prospect of radiologists to be at the mercy of a potentially giant bureaucratic leviathan is causing some consternation.

The one immutable fact is the importance of organized radiology. One may be tempted to judge organized radiology by what is has failed to achieve and that the litany of complaints, given the heterodoxy of interests of radiologists, is endless. However, it would be fairer, albeit less easily demonstrable, to judge organized radiology for what it has prevented.

In terms of damage control, organized radiology has been both indefatigable and successful. From the concerted, evidence-based and well-articulated response to the recommendation of the U.S. Preventative Task Force on screening mammography, to the successful lobbying of a reduction in the utilization assumption rate, our representatives in the ACR and the state have fought tooth and claw.

Crucially, it has aligned itself with the interest of patients in a nationwide campaign titled "Radiology Saves Lives". The importance of this is impossible to underscore enough and just as easy to ignore. Ultimately, if our interests are not aligned with the interest of the patient, what are we worth? Only a professional organization has the infra-structure to mount such a vital campaign.

Despite the importance of organized radiology, membership in the ACR, PRS and/ or contribution to the respective political action committees is woefully inadequate. Anything less than 100 % membership is questionable.

What can we do to improve membership and interest? Traditionally, the approaches include peppering residents and practicing radiologists with talks about the future of imaging with an apocalyptic flavor. Despite the sensationalism of such talks, the listeners very quickly return to their lives and ennui and the message is rapidly forgotten.

Articles detailing the importance of radiologists are featured regularly in the JACR and the Pennsylvania Radiological Bulletin. However, if a radiologist is reading the JACR they must already be a member of the ACR (subscription is restricted). As for the Bulletin, I won't say much except if a

radiologist has time to read this paper (alongside Radiographics, Radiology, AJR, NEJM, the New York Times and JACR) then interest in organized radiology must be assumed and probably very high.

In other words, reaching out to the bashful practicing radiologists through the publications is likely to be ineffective. Annual meetings are an opportune time to introduce the challenges facing radiologists. However, again this is likely to be preaching to the choir.

Communicating multiple reminders by mail or electronically also has limited success. It still requires completion of a form, filling out of credit card details and return of the communication.

What then might be the best approach? The landmark tome by Richard H. Thaler and Cass R. Sunstein, "**Nudge: Improving Decisions about Health, Wealth, and Happiness"**, provides some insights. The authors explain that we are not necessarily lazy but suffer from status quo bias. Defaults are important. The authors give an example of the organ donor rates in various countries. In Austria the participation is eight times that in Germany and, given that it is unlikely that the Austrians are proportionally more altruistic, the likely explanation is the default setting. In Austria the default assumption is of organ donation (you have to click a box to not become a donor) and in Germany it is of no donation (you have to click a box to become an organ donor).

How can defaults be used to encourage participation in organized radiology? Academic departments and radiology private practices could automatically deduct the membership fees for ACR and PRS (with perhaps small contribution to the PAC) from the salary of the radiologists. Of course, this would not be intended to coerce- a radiologist may opt out voluntarily but this would not be assumed, but would be accomplished if communicated by the radiologist.

Thaler and Sunstein, drawing on considerable research from behavioral economics about the predictable fallibility of the human mind, talk about creating the appropriate choice architecture. Residency programs may create appropriate choice architecture in order to persuade their residents to participate in organized radiology.

The best way to ensure resident attendance at the PRS, for example, is to get them to participate. The various residency programs could take turns with the organization. The residents in the program would be the speakers and the default assumption (though not mandate) would be that a resident wishes to participate.

Residents could be encouraged to submit a scholarly insight to the JACR and such submission should guarantee funding to attend the national meeting in Washington, D.C.

There are, of course, multiples nudges to improve membership of and participation in organized radiology. Impassioned talks at annual meetings have their acoustic limitations and short half-lives and may not get the participation organized radiology needs to deliver the message its members hope and our patients deserve. (Saurabh.jha@uphs.upenn.edu)

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