

Radical Views...

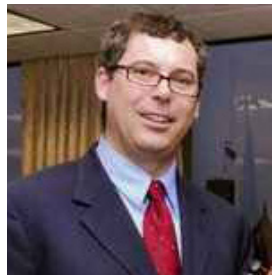
from the Department of Radiology

November 2010

Mon	Tues	Wed	Thurs	Fri
1 3:00-4:00 ED section meeting (monthly) [ED annex, WCC] call Sheila Blalock 4-2506 7:30 - 9:00 (Pedrosa)	2 1:00-2:00 MRI meeting (Weekly) [TCC-484] 7:30 - 8:15 (Romero) 8:15 - 9:00 Breast MR (Dr. Venkataraman)	3 Weekly Wed Section Meetings: 11:00-12:00 MSK clinical conference 12:00-1:00 Thoracic Imaging, GI Oncology/GU Oncology 3:00-4:00 Mammo [TCC-484] 7:30 - 8:15 Lecture- TBA (Litmanovich) 8:15 - 9:00 Bone Scans- Benign (Kolodny)	4 Weekly Thurs Section Meetings: 12:00 - 1:30 Abd [WCC-354] 12:00-1:00 MSK 7:30 - 8:15 Spine Tumors (Hackney) 8:15 - 9:00 Spine DJD (Rojas)	5 8:00-9:00 Grand Rounds: Applying Ergonomics in Health Care: The Challenges and Successes for Radiology (Jack Dennerlein, PhD) 12:00-1:00 Neuro (Moonis)
8 7:30 - 9:00 (Siewert)	9 7:30 - 8:15 Interventional Oncology (Ahmed) 8:15 - 9:00 (Reddy) 10:30-11:30 Nuc Med meeting (GZ-103)	10 7:15 - 8:00 US meeting (WCC-304A Gallery) 7:30 - 8:15 Mediastinum (Hunsaker) 8:15 - 9:00 Cases (Hunsaker)	11 7:30 - 8:15 Radiology of the Hand (Kung/Hall) 8:15 - 9:00 Intro to Infection or Arthritis Cases (Yablon)	12 EVENT: NERRS No Grand Rounds
15 7:30 - 9:00 (Bennett)	16 7:30 - 8:15 Minimizing Risk (CRICO) 8:15 - 9:00 Missed Cancers (Fein-Zachary) 8:00 - 9:00 IR meeting [West Recovery Rm]	17 7:30 - 8:15 Vascular Imaging Cases (Sheiman) 8:15 - 9:00 Brain Scans (Hill)	18 7:30 - 8:15 Advanced Brain Tumors (Rojas) 8:15 - 9:00 White Matter (Moonis)	19 8:00-9:00 Grand Rounds: Chief Rounds 12:00 - 1:00 Neuro (Rojas)
22 7:30 - 9:00 (Wei)	23 7:30 - 8:15 Biliary Interventions (Dr. Perry) 8:15 - 9:00 (Dr. Reddy) 10:30-11:30 Nuc Med meeting (GZ-103)	24 7:30 - 8:15 ICU II (Spirn) 8:15 - 9:00 New Lung Cancer Staging System (Boiselle)	25 Thanksgiving	26 No Grand Rounds 12:00 - 1:00 No noon neuro conference
29 EVENT: RSNA	30 EVENT: RSNA			Save the date: Friday, Dec. 10 for the Radiology Holiday Party Seaport Hotel, Boston World Trade Center

November Distinguished Visiting Professor

Jack Dennerlein, PhD - Applying Ergonomics in Health Care: The Challenges and Successes For Radiology
Friday, November 5 • 8:00 - 9:00 AM Sherman Auditorium, East Campus



Jack Dennerlein, PhD is a Senior Lecturer for Ergonomics and Safety at Harvard School of Public Health and Associate Professor of Orthopedic Surgery at Brigham and Women's Hospital, Harvard Medical School. Dr. Dennerlein holds an undergraduate, master's and doctoral degree in mechanical engineering from SUNY Buffalo, MIT and UC Berkeley, respectively. He spent five years as a design engineer for General Electric Aircraft Engines in Lynn, MA and was a visiting professor in Human Movement Sciences at VU University Amsterdam, The Netherlands, before turning his talents and skills to ergonomics at the Harvard School of Public Health (HSPS) in 2004. In 2006, he became a permanent member of the Safety and Occupational Health Study Section of the US Department of Health and Human Services and in 2008, he was chosen as a juror for the International Bicycle Design Competition in Taichung, Taiwan. Currently, he is Co-director of Occupational Injury Prevention Research Training Program at the Harvard Education and Research Center for Occupational Health and Safety; and Core Faculty for the HSPH Center for Work, Health and Wellbeing in Boston. This year marks his third year as a Fulbright Specialist Roster in Public Health. Most recently, Dr. Dennerlein has co-authored *Repetitive stress symptoms among radiology technologists: prevalence and major causative factors* (JACR, in press) with our own MSK fellow Dan Siegal, and Drs. Debbie Levine, Bettina Siewert and Phil Boiselle, among others. He is also a co-author on an exhibit for RSNA 2010 in Chicago: *An Ergonomic Cognitive Work Analysis Examining Computer Task Exposures in Radiologists: Phase I* (Phillip Boiselle, Ronald Eisenberg, Daniel Siegal, Michelle Robertson, Joe Chang, Marvin Dainoff, Angela Garabet, Jack Dennerlein).

DEPARTMENTAL NEWS, AWARDS & HONORS



FROM THE CHIEF
Jonathan B. Kruskal, MD, PhD

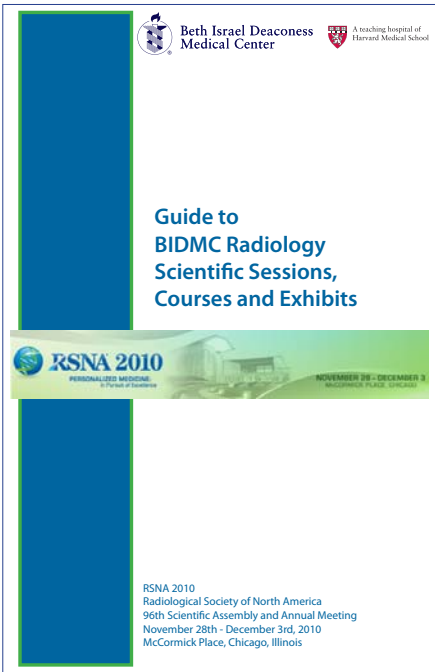
- BIDMC at RSNA**
Our participation at RSNA continues to be impressive with 21 talks, 13 refresher courses, and 10 moderators of scientific sessions (including an Expert Q & A panel by David Hackney), as well as 19 educational exhibits, 3 scientific posters and 3 quality storyboards. Also to be honored at the annual meeting are the 2010 RSNA Outstanding Researcher, Charles A. Mistretta, PhD, of the University of Wisconsin, and the co-recipients of the 2010 RSNA Outstanding Educator Award, **Gillian Lieberman, MD**, of Beth Israel Deaconess Medical Center, and Kitt Shaffer, MD, PhD, of Harvard Medical School. See you in Chicago!

If you require assistance from our Radiology MediaLab to get your posters made, please contact Donna Wolfe as soon as possible.

- Congratulations to Karen Lee**
I am thrilled to announce that Karen Lee has agreed to become the Director of Fellowship Training Programs in our department. A graduate of Williams College and Harvard Medical School, Karen completed her residency and fellowships here at BIDMC and was our Chief Resident in 2006. She has excelled in her teaching, clinical performance and her research, and I cannot think of a more skilled and enthusiastic person to take on this new responsibility. In her new role, Karen will work with the GME office to help align all of the ACGME and non-ACGME fellowships that we currently have, she will coordinate the recruiting, marketing, outreach and hiring processes for all fellows, the fellow orientation and call programs, fellow alumnus relations, a new fellowship brochure, the appointment of Chief fellows and assigning fellow research and teaching awards. Karen will also represent fellows on our Education Committee and on the Education Operations Council. Research fellows will also be incorporated under this umbrella to facilitate appointments and record keeping. Please join me in congratulating Karen and welcome her to this new role!
- Congratulations to David Hackney and Team**
Neuroradiology Chief, **David Hackney**, has been awarded a DOD grant for a 3-year project between BIDMC, Drexel University and the University of Pennsylvania. Dr. Hackney is the overall PI and this project will test the hypothesis that quantitative magnetic resonance imaging techniques can quantify changes in axonal density and myelin content in the white matter of injured spinal cords. Myelin loss is a critical factor in functional deficits, and remyelination strategies may contribute to repair of axonal injury. **The expected outcome of the proposed research is substantially improved methodology for noninvasive characterization of the nature and severity of neural tissue damage.** The long-term goal is to provide noninvasive imaging methods for monitoring the response to therapies that target neuroprotection, remyelination, axonal repair and regeneration..." Dr. Hackney and his team, including Director of MR Research, **David Alsop**, will apply cutting edge MR methods to the problem of *in vivo* assessment of axonal loss, axonal diameter distribution and myelin loss as reliable imaging biomarkers of axonal injury, specific to loss, shifts in diameter distribution, and demyelination would help evaluate initial injuries, select therapy, and monitor response.

- Radiology Residency Directors take to the road**
(L to R) Residency Directors **Drs. Jim Wu, Priscilla Slanetz** and **Kevin Donohoe** at the International Conference on Residency Education in Ottawa, Canada which was held from September 23-25, 2010. They presented two workshops, one on remediation and the other on quality improvement: 1) The Struggling Trainee – a comprehensive approach to remediation; and 2) Teaching continuous practice and performance improvement during residency training.

- Breaking News from AJR**
I was pleased to read in the American Journal of Radiology Editor's Notebook about the new **Career Pathway Series** designed by **Drs. Ronald Eisenberg** and **Corrie Yablon** under the guidance of Dr. Howard P. Forman, section editor for Health Care Policy and Quality. According to AJR Editor in Chief, Thomas Berquist, "The target audience is our trainees and radiologists in the early years of practice. This series will provide articles on vital career planning issues, a topic too often left behind in residency and fellowship programs. Content will include features such as selecting the appropriate fellowships, defining your practice personality, the evolution of teleradiology, and the impact of outside forces on radiology careers." Career Pathways is scheduled to begin in January 2011. Good job, Ron and Corrie!





Not so long ago, **Debbie Levine**, Associate Chief of Academic Affairs, contributed an article discussing the building of a national reputation as a criteria for academic advancement and the opportunities afforded by participation in national societies. Harvard Medical School also provides numerous global opportunities to acquire national and international experience and expertise. The following is a portfolio of **Dr. Rola Shaheen's** achievements as an example of what being in academic medicine can entail. Dr. Shaheen joined our Community Radiology faculty as Chief of Breast Imaging at Harrington Memorial Hospital in 2008 following completion of her Women's Imaging Fellowship under Dr. Levine, and was appointed Chief of Radiology at Harrington in 2009. In addition to developing several community practices in Western Massachusetts, she has also been active on a global scale in her specialty of breast imaging and women's health.

Harrington Hospital opened the Women's Center in June 2009. Currently, we have 2 full field Hologic digital mammography

machines with one add-on stereotactic unit and 2 ultrasound machines. Diagnostic mammograms are offered 5days/week with interventional breast procedures offered 3 days/ week. During 2009, the volume for mammography examinations totaled 6,189 patients. The Southbridge facility also performs breast MRIs and breast MRI guided core biopsies. The Harrington Healthcare at Hubbard opened in May 2009. Mammography was converted from analog to digital during this time. We had a total of 3,100 mammogram exams in the past 12 months at Hubbard. Diagnostic mammograms are offered 2 days/week and breast ultrasound is also performed at this site. Harrington Healthcare at Charlton started performing digital mammography in August 2010. Currently, it is a routine screening site only. All 3 mammography facilities are accredited by the ACR and the Massachusetts Dept. of Public Health. The Harrington Hospital Cancer center opened in December 2009, with the new Comprehensive Breast Clinic in September 2010.

- Dr. Shaheen has lead the CME Multidisciplinary breast cancer monthly conference since December 2008. A weekly multidisciplinary breast care clinic was started in September 2010 at the cancer center.
- Dr. Shaheen started a quarterly QA radiology meeting dedicated to Harrington Hospital in May 2010.
- BIDMC radiology participates in the CME monthly grand rounds: Invited Dr. Felicia Knaul (Harvard global equity Initiative) for June 2010, Dr. Steve Reddy (Neuro interventional) for September 2010, and Rola Shaheen for October 2010, (at least 3 talks from radiology per year)
- Harrington Memorial Hospital Breast imaging QA project: *Is there a role for double reading and/or MRI in improving detection of architectural distortion?* – to be presented at RSNA 2010, Chicago.



Congressman Richard E. Neal (L), shown here with CEO Ed Moore and Radiology Chief Rola Shaheen, helped Harrington obtain funding for its state-of-the-art digital mammography machine in the new Women's Center. Congressman Neal toured the hospital and praised our modern technology as well as our focus on providing personal care to the community it serves.

Outreach Activities:

Local: Member of Technical advisory committee of the Advisory Committee of the Global Task Force on Expanded Access to Cancer Care and Control in Developing Countries - Harvard Global Equity Initiative, Harvard Medical School (June 2010)

National: Executive Board member, United States Middle East Partnership for Breast Cancer Awareness and Research Strategic Planning, supported by Susan G. Komen Global Health Alliance Initiative (since June 2010) and previously sponsored by the State Department, Washington DC.

International:

Dec 2009

- Invited faculty for double reading and quality assurance projects at Breast Imaging Center at Dubai City Hospital with Dr. Alexandra Economacos, Dubai, UAE.

Feb 2010

- Invited Dr. Alexandra Economacos, Director of Breast Imaging, Dubai City Hospital, to our breast imaging department in Feb 2010 and gave a talk on Breast Cancer in the Middle East: The Dubai Experience - Collaborative Activity with MGH (Phoebe Freer) and BWH (Sughra Raza and Robyn Birdwell) breast imagers.

Apr 2010

- Breast Cancer Awareness Project in Gaza - published a brochure on the breast cancer screening kit for Gaza women (in Arabic and English)



The board members of the United States Middle East Partnership for Breast Cancer Awareness and Research with Ambassador Nancy Brinker (center) at Susan G Komen head office in Washington DC in June 2010



Dr. Shaheen with Dr. Economacos at Dubai City Hospital (above right) and again here at BIDMC: Drs. Shaheen, Phoebe Freer, Ferris Hall, Alexandra Economacos, and Valerie Fein-Zachary.

June 2010

- Advisory board committee for breast cancer screening guidelines - Jordan breast cancer program, King Hussein Cancer Foundation Committee, including Dr. Lazlo Tabar and Dr. Robert Smith, Director, Cancer Screening, American Cancer Society, Atlanta, GA.

Aug 2010

- Provided training on imaging guided breast procedures at King Hussein Cancer Center for 3 weeks. Amman-Jordan
- Invited faculty (Basics of Breast MRI) at King Fahad Specialist Hospital, Dammam, Saudi Arabia
- Invited faculty for Research collaboration at Sheikh Mohammed Hussein Al Amoudi Center for Breast Cancer Care, Jeddah, Saudi Arabia

Sept 2010

- Invited faculty, lectured on essentials of gynecological ultrasound and fetal MRI, Farah hospital, Amman Jordan

Oct 2010

- Invited faculty, lectured on Practical Approach of Breast MRI Interpretation, Ain Shams University, Cairo, Egypt
- Invited speaker on Challenges of breast imaging in the Middle East, Alexandria Forum of Women's Cancers, Susan G. Komen, Alexandria, Egypt

Upcoming:

Dec 2010 - RSNA annual Meeting, Chicago - 2 electronic presentations and one poster

March 2011- Conducting a 3-day breast MRI course in Durban, South Africa as a member of ISMRM (International Society of MRI in Medicine) outreach program with Drs. Robyn Birdwell and Sughra Raza

April 2011- Conducting a 2-day breast course in Amman, Jordan at King Hussein Cancer Center with Drs. Priscilla Slanetz and Sughra Raza



The Advisory board committee for the Jordan breast cancer program with HRH Princess Dina Mired in Amman, Jordan June 2010



Dr. Shaheen with Ambassador Nancy Brinker, founder of the Susan G. Komen Foundation, at the opening ceremony of Komen international Global Health Alliance, June 2010, Washington DC.



Do you know... the best way to obtain images from PACS and prepare them for publication?

In previous issues of Radical Views, we have given quick tips for downloading images from PACS but there were issues involving patient information versus optimum quality and saving images for more than one platform - Mac, PC, journals, posters, powerpoint shows...Ouch! I am pleased to announce that Associate Chief for Academic Affairs and Sr. Deputy Editor for the journal Radiology, **Dr. Deborah Levine**, recently published the following very inclusive article which offers step-by-step instructions in the how and why of it all and is currently available on-line via PubMed or Radiology: <http://radiology.rsna.org/content/early/2010/10/05/radiol.10091423.long>

Levine D. How to Obtain Images from Picture Archiving and Communication Systems and Ready Them for Publication. Radiology. 2010 Oct 8. [Epub ahead of print]

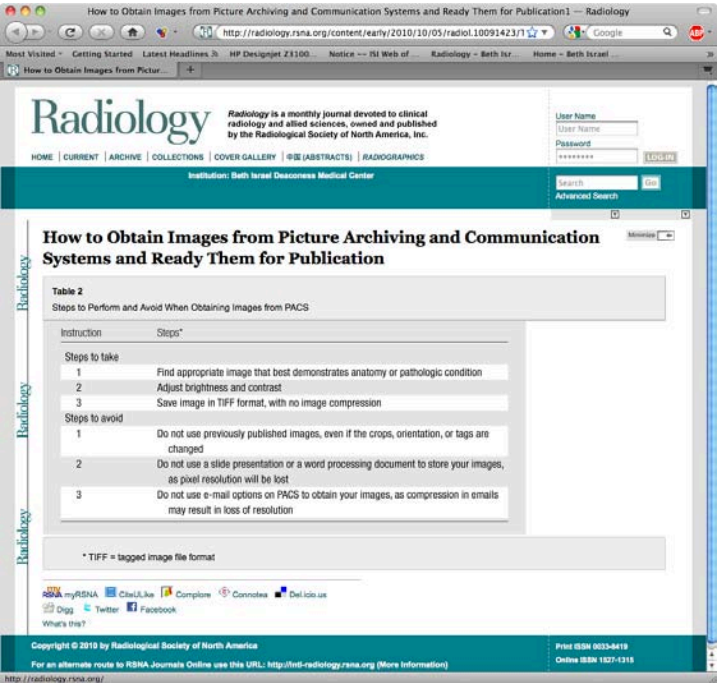


Table 3 Steps to Take and Avoid When Resizing Your Image	
Instruction	Steps*
Steps to take	
1	Menu location
2	Save as gray scale (if appropriate); "Image" pull-down menu "Save as gray scale"
3	Rotate canvas (if appropriate); "Image" pull-down menu "Rotate canvas"
4	Crop identifying information from the image (name, date of birth, or medical record number); "Image" pull-down menu "Crop" or use crop tool on tool bar
5	Change resolution to 300 dpi; "Image Size" pull-down menu, check "Constrain proportions"; use bicubic resampling*
Steps to avoid	
1	Do not crop so much that the reader cannot identify the pertinent surrounding anatomy
2	Do not crop so little that image detail is not sufficient to enable identification of anatomy or pathologic condition
3	Do not resize your image to 300 dpi and then crop and resize again; additional resampling risks potentially loss of digital information due to pixelation
4	Avoid using more than four figure parts in a single figure
* dpi = Dots per inch.	

*While e-mailing an image will remove patient information, the resolution is compromised, so it is best to crop and not rely on the e-mail function to remove patient information.

Table 4 Resolution of Digital Imaging Modalities	
Imaging Study	Matrix Size (pixels)
Nuclear medicine	256 × 256
US	640 × 480
MR imaging	256 × 256
CT	512 × 512
Digital radiography (14 × 17 inch plate)*	2048 × 2508
Note.—Adapted and reprinted, with permission, from reference 2. CT = computed tomography, US = ultrasonography	
* To convert to centimeters, multiply by 2.54.	

In Table 4, Dr. Levine lists PACS image resolution by modality which explains why some images are so much larger than others!

Thanks to Dr. Levine for allowing us to reproduce part of her article here in Radical Views

Do you know... about the 2010 Silverman Symposium?

Presented here is the 2010 Silverman Symposium Improvement Project Posters. Sponsored annually by the Silverman Institute for Health Care Quality and Safety, it celebrates BIDMC's on-efforts to improve quality and safety throughout the medical center every day. This year, approx. 95 Project Teams participated and 13 were from Radiology which will be presented here over the following months.

Utility of Head CT in the setting of Non-traumatic Altered Mental Status in the Emergency Department

The Problem

- Non-traumatic altered mental status (AMS) can account for up to 10% of all emergency department (ED) visits;
- A non contrast head CT is routinely ordered in the ED evaluation of non-traumatic AMS among a battery of other tests;
- Many studies have previously shown the benefit of head CT in the setting of traumatic AMS, however, little data is available to assess whether a head CT is of real benefit to the ED clinician in evaluating non-traumatic AMS;
- Appropriate CT Utilization is important to reduce radiation exposure to patients and the help contain health care costs.

Aim/Goal

- Is Head CT appropriately utilized in nontraumatic AMS?
- Are there any clinical variables that may help more appropriately screen patients with nontraumatic AMS for Head CT?

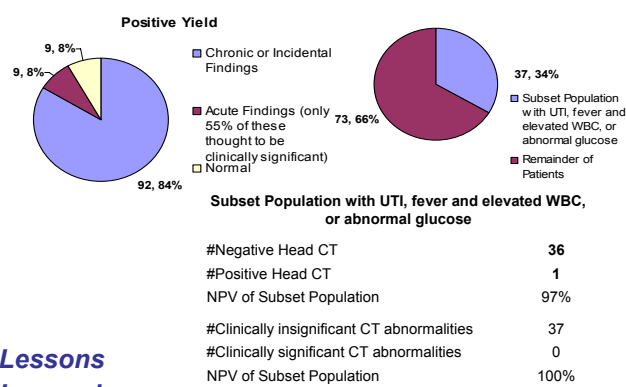
The Team (all with BIDMC Dept of Radiology, unless otherwise stated)

- Sadhna Nandwana MD, Resident
- Ronald Eisenberg MD
- Marc Camacho MD
- Erica Gupta MD, Resident
- Jonathan Edlow MD, Emergency Medicine, BIDMC

The Interventions

- Retrospective review chart review from 1/1/09-4/15/09 for patients evaluated in the ED for non-traumatic AMS who underwent noncontrast head CT;
- Subjects identified by final approved report word search for AMS, confusion, delirium, intoxication;
- Exclusion criteria: patients with non diagnostic head CTs, outside imaging, history of trauma, medical charts unavailable for review;
- Calculation of positive yield (percentage of acute abnormal head CTs) based on final radiology reports;
- Clinical significance of positive head CTs was determined by evaluating clinical discharge summaries for each patient;
- Calculation of NPV/PPV of certain clinical parameters (fever, UA, glucose level, WBC, neurological symptoms)

The Results/Progress to Date



Lessons Learned

- 9/110 (8%) head CTs had acute abnormality;
- 5 of these 9 (55%) were felt to be clinically significant, lowering effective diagnostic yield to ~5%, suggesting utilization may not be indicated;
- No significant PPV of clinical variables exists, therefore unable to identify which studies more likely to be positive prior to testing
- Subset of patient population with fever & WBC, positive UA or abnormal glycemic status not on anticoagulation (34% of all non-traumatic AMS cases) resulted in a NPV of 97% (100% excluding clinically insignificant acute CT abnormalities).

Next Steps/What Should Happen Next

- Increasing sample size to further evaluate positive/negative predictive value of variables;
- Prospective study with clinical pre-test likelihood and evaluating variables thought to be associated with negative head CT;
- Formal cost-benefit analysis of decreased utilization by identifying those patients with a high negative pre-test probability;
- Evaluate potential change in ED patient throughput, economic impact to health care expenditures, and reduction in patient and population radiation exposure.



Beth Israel Deaconess Medical Center

A teaching hospital of Harvard Medical School

THE SILVERMAN INSTITUTE For Healthcare Quality and Safety

For More Information Contact Sadhna Nandwana MD, Radiology Resident snandwan@bidmc.harvard.edu

Long-Term Outcome In Patients with Normal Cardiac Perfusion Tests

The Problem

- A cardiac perfusion stress test is a study that combines exercise tolerance testing and nuclear imaging to evaluate blood flow to heart muscle. MIBI is a low level isotope used to highlight the heart muscle and evaluate its blood supply. This test is used to diagnose coronary artery disease.
- Negative predictive value of long-term outcomes in patients with normal cardiac perfusion studies has not been well established
 - Identifying co-morbid conditions associated with falsely negative cardiac perfusion stress tests may improve the predictive value of the test and the quality of care for our patients

Aim/Goal

Determine if any co-morbid conditions or other patient demographics exist which improve the negative predictive value for cardiac perfusion stress tests in patients with normal cardiac perfusion stress tests.

The Team

- Dan Anghelescu, MD, Radiology
- Thomas Hill, MD, Radiology, Nuclear Medicine
- Thomas Hauser, MD, Cardiology

The Interventions

- Chart review of 570 randomly selected patients with a normal MIBI from 1998, after exclusion criteria, 452 patients were included in the study
- 10 year review of outcomes were categorized as:
 - cardiac events (none, angina, NSTEMI)
 - cardiac procedures (stent, CABG)
 - death (cardiac, other)
- Patient demographic information collected includes: age, gender
- Co-morbidities include: diabetes, kidney disease
- Statistical analysis performed to determine if specific patient demographics or co-morbidities significantly impact the negative predictive value for cardiac perfusion tests

The Results/Progress to Date

10 Year Follow-up for Patients with a Negative Cardiac Perfusion Test

Outcome	n	% patients
No cardiac event	399	88%
Other Death	8	2%
Stent	17	4%
CABG	13	3%
Angina	9	2%
Cardiac Death	4	1%
NSTEMI	2	0%

452
Cardiac Event 45 patients (10%)

Lessons Learned

- Patient age and gender had no impact on the negative predictive value of cardiac perfusion studies
- Presence of kidney disease decreases the sensitivity of a perfusion study compared to patients with diabetes. This may be due to the fact that kidney disease is more systemic in large vessel disease, which is characterized by greater degrees of medial thickening and calcification than microvascular vessels in diabetes

Next Steps/What Should Happen Next

- Futures studies may be conducted to compare the sensitivity of perfusion studies, cardiac catheterizations, or computed tomography (CT) cardiac angiogram for patients with kidney disease



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For More Information Contact Dan Anghelescu, MD, Radiology danghel1@bidmc.harvard.edu

2010 Publications from our Faculty Members [New citations in Blue]. *We do a monthly PubMed search for new BIDMC publications and may miss those in which your affiliation is not noted. If we miss your paper, please send the reference to dwolfe@bidmc.harvard.edu to be included in next month's issue. Please note that publications do not always appear in Pubmed in the same month they are acutally published.*

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