



Radical Views... from the Department of Radiology

Volume 8, Number 10
APRIL 2016



Beth Israel Deaconess
Medical Center



HARVARD MEDICAL SCHOOL
TEACHING HOSPITAL



Alexander Bankier MD PhD
Chief, Cardiothoracic Imaging

After months of intense preparation, the CT Lung Cancer Screening Program at BIDMC was launched in early March with our first patients. The clinical introduction of CT lung cancer screening



is based on the results of the National Lung Cancer Screening Trial (BIDMC Radiology was part of this trial) which found a >20% reduction in mortality for high-risk patients screened with CT compared to patients screened with chest radiographs.

Patients eligible for screening are 55 to 77 years old, and smokers with a >30 pack-year smoking history, or former smokers who quit no longer than 15 years before inclusion. Both initial and follow-up CT examinations are reported using the highly structured Lung-RADS system, which is very similar to the Bi-RADS system used in breast imaging, and attributes potential lung nodules to predefined categories, risk groupings and management recommendations. Eligible patients give written consent for inclusion in the program, which includes not only the diagnostic CT examination, but also counselling about the importance of smoking cessation, adherence to follow-up examinations, structured communication with the referring physicians, a multidisciplinary expert panel for problem cases, and a structured notification system for reminders. The CT Lung Cancer Screening Program at BIDMC is accredited by the American College of Radiology and has



been implemented by its **Program Coordinator, Lauren Taylor**, assisted by **CT Manager, Tim Parritt** and myself.

After getting the program off the ground, the most important task was to make sure that all processes ran smoothly and according to the requirements of the ACR accreditation. Simultaneously, Lauren and I started a number of on-site visits to the clinical practices of referring physicians within the BIDMC network to present the logistics of the program and to seek input from providers. These visits will be continued and intensified during the upcoming months. Simultaneously, Lauren and Tim are implementing the IT basis for the program, which will standardize and automatize important tasks and create the electronic basis for the logistics of the program.

In April, work on the program's website and other PR-related aspects of the program will continue. Once all this is set, roll-out of the program to Chestnut Hill and BID-Needham is planned. Radical Views will inform you about the growth of the program and the upcoming steps. We also plan to present the program at one of the upcoming Brown Bag meetings. Should you have any questions, or wish to receive further information, please contact Lauren Taylor (ltaylor7@bidmc.harvard.edu) at 617-667-5712, or at CTLungCASScreening@caregroup.harvard.edu.

March 8, 2016

Dear All,

I am happy to let you know that we did our first 6 (!) CT lung cancer screening patients today at BIDMC. The program is off and running! Everything went as planned and very smoothly, the patients were happy, their reports are signed and out.

I wanted to thank everybody who has supported the creation of the program in the past and hope that you will continue to support it in the future. We will keep you updated on a regular basis.

In particular, I wanted to thank **Lauren Taylor**, our Program Coordinator, for the formidable job she has done over the past three months. Building this from scratch was an enormous task that she mastered impeccably. Without Lauren, this would not have taken off the ground.

Thank you again,
- Alex

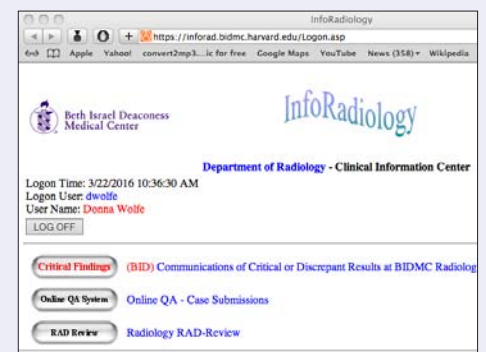
Update: Online QA case submission

From feedback we have received from many of you, there is confusion about where to submit QA cases online. The confusion arises in part from the many different dashboards located in InfoRadiology, and by us calling the submission button **Peer Review Learning**.

Sam Yam has now changed this button back to the original **Online QA System** and has also shifted **RAD Review** (our per review submission and management site) upwards. See screen capture →

Please let me know if you have any other suggestions for improving our online dashboards, thanks!

- Jonny Kruskal



Radiology Calendar APRIL 2016

Check for the most up-to-date schedule at: <https://apps.bidmc.org/departments/radiology/residency/conferences/displayMonth.asp>

Mon	Tues	Wed	Thurs	Fri
Weekly Mon Section Meetings: 3:00-4:00 ED section meeting [ED annex, WCC]		Weekly Wed Section Meetings: 11:00-12:00 MSK clinical conference 12:00-1:00 CardioThoracic, GI/GU Oncology 3:00-4:00 Mammo [TCC-484]	Weekly Thurs Section Meetings: 12:00 - 1:30 Abd [WCC-354] 12:00-1:00 MSK	Friday Grand Rounds: 12 noon Sherman Auditorium, East Campus (unless stated otherwise)
				1 12:00-1:00 Grand Rounds: Breast Imaging and Overdiagnosis of Breast Cancer: Part of the Problem or the Solution? (Constance Lehman)
4 7:30 - 9:00 MRI Imaging of the Ovaries + cases (Karen Lee)	5 7:30 - 8:15 Fetal Abnormalities (Colin Mcardle) 8:15 - 9:00 MDCT Applications in the Abdomen (Vassilios Raptopoulos)	6 7:30 - 8:15 Fetal CNS abnormalities (Deborah Levine) 8:15 - 9:00 Renal Masses (Maryellen Sun) 12:00-1:00 Epilepsy Imaging (Yu-Ming Chang)	7 7:30 - 9:00 Mammography (Da Zhang)	8 7:30 - 8:15 Town Hall (Chiefs) 12:00 - 1:00 Grand Rounds: 2016 Thyroid nodule update: Where are we now? (Mary Frates)
11 7:30 - 9:00 Body Cases (Moon Justaniah) 12:00-1:00 MRI Meeting [Ansin 2]	12 7:30 - 9:00 Sarcoidosis + cases (Alexander Bankier) 10:30-11:30 NMMI meeting [GZ-103]	13 7:30 - 9:00 Neuro Fellows Lecture + cases (TBD) 7:15-8:00 US meeting [WCC-304A]	14 7:30 - 8:15 TBD (Janneth Romero) 8:15-9:00 TBD (Ronald Eisenberg)	15 12:00-1:00 Chief Rounds: Sarah Esaa, Joe Bravoco, Farhana Sharmeen, Bonny Lee
18 7:30 - 9:00 Holiday (TBD) Patriots Day	19 7:30 - 9:00 MSK (TBD) 8:00-9:00 IR Meeting [West Recovery]	20 7:30 - 9:00 MSK (TBD) 12:00-1:00 Orbital Diseases (Will Mehan)	21 7:30 - 9:00 MSK (TBD)	22 7:30-8:15 Resident Case Conference (Chiefs) 12:00-1:00 ARRS
25 7:30 - 8:15 Diffusion MRI (Martin Smith) 8:15 - 9:00 Prostate MRI (Leo Tsai)	26 7:30 - 8:15 Malignant Anorectal Conditions (Koenraad Mortele) 8:15 - 9:00 GU cases (Maryellen Sun) 10:30-11:30 NMMI meeting [GZ-103]	27 7:30 - 8:15 CNS Tumors (Rafeeqe Bhadelia) [pineal, ventricular, cp angle, posterior fossa] 8:15 - 9:00 Neuro fellow cases (tbd)	28 7:30 - 9:00 Nuclear Medicine Physics (Matthew Palmer)	29 7:30 - 8:15 Quality Improvement (Jonathan Kruskal) 12:00-1:00 NERRS/No Grand Rounds

The Gallery presents *Reflections, Landscapes & Critters* by *Leo Hannenberg*

"When I'm not supporting our voice recognition system, I get great joy walking through the parks in the greater Boston area capturing the beauty of the lakes and rivers as well as the creatures I meet along the way. I have been a photographer for more than forty years and my father was an impressionist painter whose style still influences my work." - Leo

To view more of my reflections and landscapes, please visit www.leohannenbergphotography.com



Leo Hannenberg
Photographer & Applications/Data Analyst
in Radiology Informatics



Please contact Donna Wolfe if you, too would like to share your photos, paintings or sculptures: dwolfe@bidmc.harvard.edu or 4-2515

APRIL 2016 GRAND ROUNDS:



Friday, April 1, 2016: 12 noon - 1:00 PM
Sherman Auditorium

Breast Imaging and Overdiagnosis of Breast Cancer: Part of the Problem or the Solution?

Constance D. Lehman, MD, PhD - Chief of Breast Imaging and Director of the Avon Comprehensive Breast Evaluation Center

at Massachusetts General Hospital, Boston; Professor of Radiology, HMS.

After graduating from Duke University, Dr. Lehman received both medical and doctoral degrees at Yale University and completed her internship and residency training at the University of Washington in Seattle. She remained in Seattle and became professor and vice chair of Radiology and division chief of Breast Imaging at the Seattle Cancer Care Alliance. She is currently the new Chief of Breast Imaging at Massachusetts General Hospital.

Dr. Lehman serves on a number of key national committees for the National Cancer Institute and the American College of Radiology (ACR). She has also co-authored breast cancer screening recommendations by the American Cancer Society, the ACR and the National Comprehensive Cancer Network (NC).

Dr. Lehman is PI or co-investigator on numerous single and multi-institutional clinical trials in breast imaging. Her research interests are focused on new methods and applications of MRI in breast imaging and in factors that influence the performance of mammography in early cancer detection. Her research has shaped the American Cancer Society and NCCN recommendations for screening MRI.



Friday, April 8, 2016: 12 noon - 1:00 PM
Sherman Auditorium

2016 Thyroid nodule update: Where are we now?

Mary C. Frates, MD - Assistant Director of Ultrasound at Brigham & Women's Hospital, Boston; Associate Professor of Radiology, HMS

Dr. Frates graduated from the Warren Alpert Medical School at Brown University, Providence, RI and completed her radiology residency at Tufts Affiliated Hospitals and fellowship training at Brigham and Women's Hospital before joining the staff at BWH where she rose to Assistant Director of Ultrasound.

As a nationally and internationally recognized expert in ultrasound evaluation of thyroid disease, she is a founding member of the TIRADS committee of the American College of Radiology, Consensus Conference Director on the management of thyroid nodules at the Society of Radiologists in Ultrasound, and has also received the Presidential Recognition Award from the American Institute of Ultrasound in Medicine.

Her substantial bibliography on thyroid nodules includes: Grant EG, Tessler FN, Hoang JK, Langer JE, Beland MD, Berland LL, Cronan JJ, Desser TS, Frates MC, Hamper UM, Middleton WD, Reading CC, Scoutt LM, Stavros AT, Teefey SA. **Thyroid Ultrasound Reporting Lexicon: White Paper of the ACR Thyroid Imaging, Reporting and Data System (TIRADS) Committee.** J Am Coll Radiol. 2015 Dec;12(12 Pt A):1272-9. PMID: 26419308.

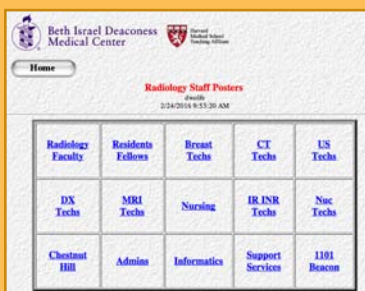
Updated Radiology

Staff, Trainee & Technologist Posters

are available on InfoRadiology in pdf format for viewing, downloading, and printing. New this year are **Informatics, Administrative, Support Staff & Community Site** posters!

Log in to the portal: <https://portal.bidmc.org/>

Click on InfoRadiology → Staff Posters



Help us stay up-to-date:
Please contact Michael Larson (mlarson1@bidmc.harvard.edu) to update your staff (or any other information) on these posters

Save the Date! Support Staff Appreciation

April 27, 2016 • 11 am

Radiology Call Center

Renaissance Center

1135 Tremont Street, Boston, MA 02120

Our Call Center Staff are typically the first in contact with our patients and can set the tone for the rest of the patient's experience through the Radiology Department.

Come see where we work, learn who we are & put a face to a name!

Please join us for lunch and show your appreciation for our support staff or just drop in and say hello.

Let them know they're part of a great team!

RSVP to Peter Cousins by Friday April 22





Jeffrey Bernard, RT
Manager, Community
Radiology Network Services

Harrington Hospital's Lung Screening Program - Impressive First Year Results

Despite local statistics that placed Southbridge at one of the highest levels of lung cancer incidences and mortalities in the region, there wasn't a lot of confidence in the success of an early detection lung cancer screening program when it officially launched at Harrington Hospital last year.

But just 12 months later, the Harrington HealthCare System lung cancer team has reported impressive numbers, confirming that the program is a success not just in terms of screenings provided, but patient lives saved.

Since the program launched, Harrington has completed several hundred patient scans. Among those, approximately 10 percent have required follow-up, and several patients have already undergone successful treatment for early stage lung cancer.

"Historically, by the time people in our community seek treatment for lung cancer, they are Stage III or IV, which typically have a very low survival rate," said Dr. Justin Kung, chief radiologist at Harrington. "Our goal has been to identify those patients sooner, and try to increase their chance of overcoming the cancer."

Last March, Harrington began its early detection screenings by introducing the program to physicians, staff and patients which begins with a consultation from a referring physician and includes a discussion on the patients' commitment to play a proactive role in their health.

"We were not prepared to just screen a number of individuals and then have them become indifferent to further options for treatment," said Lisa Johnson, interventional radiology nurse and nurse navigator of the lung screening program at Harrington. "The success of the program includes a commitment from the patient and the physician to follow through with the appropriate recommendations for care."

The screening is a 10-minute low-dose CT scan offered at Harrington's Southbridge and Webster campuses. Harrington's radiology team in conjunction with leading experts at Beth Israel Deaconess Medical Center and Harvard Medical Faculty Physicians read the results and a multidisciplinary team of radiologists, oncologists, thoracic surgeons and pulmonologists meet regularly to review the findings and plan appropriate treatment pathways.



Lisa Johnson, RN, nurse navigator for the lung screening program and Dr. Justin Kung, Chief Radiologist at Harrington Hospital, confer on a low-dose lung screening CT recently performed at Harrington.

"There are a number of protocols to follow, certain results require follow-up examinations, and certain findings require additional conversations with the patient," Johnson said.

A key component to the program's success has been the close collaboration between Drs. Justin Kung, Christopher Seidler, director of The Cancer Center at Harrington, and Harrington Chief Medical Officer Arthur Russo, who teamed up to present the importance of the program to their primary care and referring physicians.

"We consider this program becoming much like we treat mammography," Dr. Russo explained. "We think of this program like we do other preventive healthcare screening tests and believe that it should be offered to screen for lung cancer in the appropriate group of patients that exhibit high risk (smoking) behavior."

"We have gone above and beyond what we thought in terms of numbers for patient screenings in this program," Johnson said. "But more important, we identified dozens of people with a potential cancer, and helped saved lives by offering a treatment plan earlier than what might have occurred in a few months or years' time."

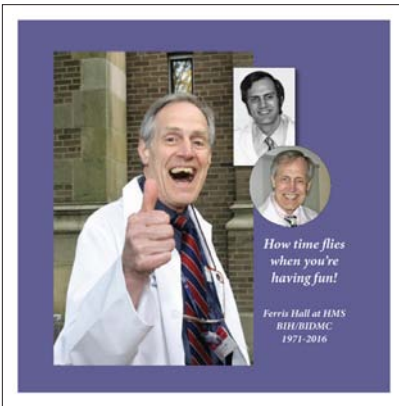
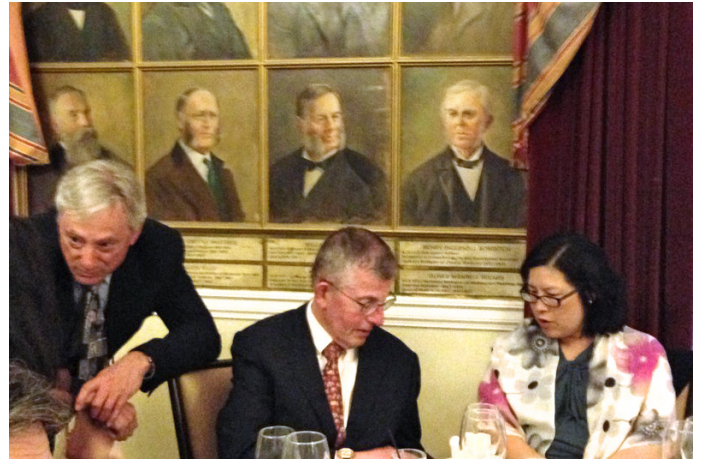
**RADIOLOGY TOASTS FERRIS HALL
AFTER >45 YEARS at BIH/BIDMC/HMS:**

Dr. Hall was roasted, toasted and celebrated at The Harvard Club on Thursday, March 31 where many friends, colleagues and BIH/BIDMC/HMS alumni came out to honor him after more than 45 years in practice. Happy retirement, Ferris!*





*Note that a Department-wide Afternoon Tea for Dr. Hall will be held on Thursday, May 26, 3-5 pm in the Kirstein Living Room, East Campus so that all of us can have the opportunity to bid him farewell!



Congratulations
Ferris Hall, MD
Professor of Radiology, Emeritus
 Beth Israel Deaconess Medical Center • Harvard Medical School
 February, 2016

on the occasion of your retirement
 after more than 45 years in Radiology

The following messages from your friends, colleagues, staff and admirers are but a small representation of the enormous appreciation we hold for the impact you have made on our lives and the overall field of Radiology. Bravo Ferris!

Donna Walls, MFA
 Medical Editor
 BIDMC, Radiology, since 1987
 donnw@bidc.harvard.edu



Dr. Hall was also presented with a 92-page commemorative book of best wishes from friends, colleagues, staff and admirers which we hope will remind him of us here at BIDMC and beyond – and hopefully serves as a “phone book” with email addresses to stay in contact!

Ferris
 Congratulations on your impending retirement which is richly deserved. You had a brilliant career and will be remembered fondly by your colleagues and trainees. I have been fortunate to know you for over 50 years since our time together at Philadelphia General Hospital in 1961 when you were a resident in internal medicine. You made the right choice selecting radiology where you made significant contributions and served as a role model for many of us that were fortunate to work with you. I thoroughly enjoyed serving with you on multiple HMS committees and as a fellow officer in the NERIS where we insisted on prudent financial management including getting our wives to volunteer with running the courses. We enjoyed our time together in Louisville serving as examiners at the ABR even though you preferred to dine at the Executive West rather than exploring the local restaurant scene!

Although we had some professional contact before the merger as residency directors it was only afterwards that I really came to appreciate your advice in professional and administrative matters. Although I have neglected keeping up with the medical literature since my retirement I still look for your prescient letters to the editor in the radiology literature.

Thanks for being a valued friend, let's stay in touch.

– Herb
 Herbert Gorman, MD
 Associate Radiologist
 Vice Chair and Director of Radiology Education
 New England Deaconess Hospital, 1975-1993
 herbert_gorman@bidc.com

Ferris Hall greets the victory sign to special guests Brad Longmaid (left) and Herbert Gorman (right), NEA staff alumni and former residency directors of Radiology (Graduate Course), June 10, 2011 at the Harvard Club.

Colleen and Herb Gorman Nancy and Ferris Hall

Hi Ferris, Greatly appreciate all your teachings. This is the most memorable:

Yvonne Cheung

Yvonne Y Cheung, M.D.
 Associate Professor of Radiology
 Associate Professor of Orthopedic Surgery
 Dartmouth Hitchcock Medical Center
 Dept of Radiology, Lebanon NH
 Yvonne.Y.Cheung@hitchcock.org

BIDMC Attending in MRF 1998

Special thanks to photographers Jonny Kruskal, Chris McArdle and photo finisher Michael Larson!



BIDMC Radiology Team: (L to R) Team Leader Jim Wu and Family: son Alex, daughter Allison and wife Ann, Jim Wu, Anu Shenoy-Bhangle, Laura Perry, Jenny Ni Mhuircheartaigh, Ferris Hall and BIDMC team friend Jim Synder-Grant.

On February 6th, the BIDMC Radiology Team, climbed the Boston Place Building (3rd tallest building in Boston after the Prudential and Hancock) in a stair climb fundraiser for the American Lung Association. Each member climbed 41 floors (82 flights, 789 steps) and the team raised \$1693 to fight lung disease. **Our team place 4th out of 45 teams in the coed division with Ferris Hall and Laura Perry winning their age group, AGAIN!** We hope to recruit more stair climbers next year and to get more folks in the department to participate and/or sponsor the runners. Please join us next year!

- Jim Wu, Team Organizer

Hi everyone!

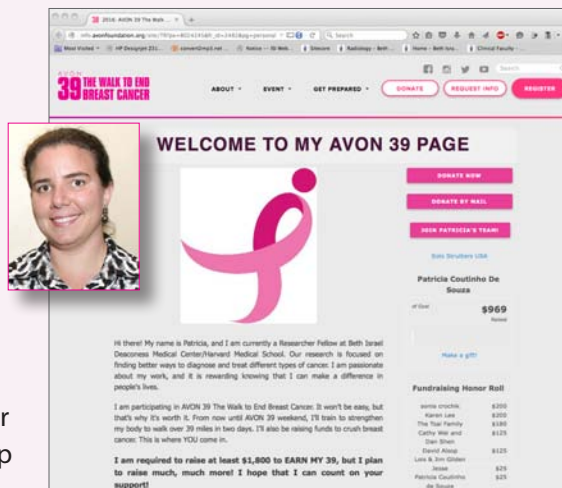
As many of you know, I'm walking in the AVON 39 in Boston this year. When I registered for this event, I knew I was taking on a serious challenge: to raise \$1800 and train to walk 39 miles. I'm really feeling the weight of this commitment, but I am determined to finish this and earn my 39! I just can't do this without YOU!

Please consider making a donation, big or small as I'm going to need everyone's help on this one!

Donate here: <http://www.avonwalk.org/goto/csouzap>

ANY amount will help and be very much appreciated! Everybody will benefit from AVON39: Cancer patients, clinicians, and researchers. Let's do this TOGETHER!!!

Thank you so much!
 Patricia Coutinho de Souza, DVM, PhD
 MRI Research Fellow



RADIOLOGY GRAND OPENING: East Campus 3rd Floor IR Suite +

On March 10th, the radiology department opened its new interventional angiography suite on the East Campus 3rd floor. This state-of-the-art IR facility, complete with an entirely new holding area (pre- and post-procedure) and reception, will replace the older suite located on the 2nd floor, allowing for greater breadth of interventional care on the East Campus which is expected to further bolster our strong Interventional Radiology section. Coming in tandem with new hospital initiatives to provide routine interventional care on weeknights and weekends, we are excited to have this new space and equipment to provide the highest level of care on the East Campus which places its facilities in similar stead with the advanced Interventional Radiology suites on the West Campus.



Jonathan Kruskal cutting the ribbon to open the new East Campus Interventional area in Ansin 3.



Dr. Kruskal with members of the Interventional Radiology Team (L to R): Felipe Collares, Jeffrey Weinstein, Salomao Faintuch, Seth Berkowitz, Ari Sacks (VIR Fellow) and Ammar Sarwar. [Not shown: IR Chief Muneeb Ahmed, Olga Brook and Barry Sacks]



New East Campus Interventional Radiology Suite including the control room, holding and recovery areas



Donna Hallett and Allen Reedy with members of the engineering team who made construction of the new room possible.

That was then, this is now – An overview

by Suzie Konopka Leavitt and Jane Corey

October 1997 – **Dr. Max Rosen**, director of Community Network Services, asked **Jane Corey** for assistance with his business school project. He proposed providing ultrasound services to community-based practices offering quality exams and the convenience of not having to send the patient outside of the office.

The first order of business was hiring a sonographer who was skilled, flexible, and an independent thinker who also possessed a clean driving record! HMFP then purchased an ultrasound machine and a van in which to transport it and the business was born.



On March 18, 1998, HMFP Mobile Ultrasound had its humble beginnings. **Suzie Konopka Leavitt** who had been a staff member of the BIDMC Radiology Ultrasound Section for five years found the job description enticing and applied for the position. The interview process went something like this: "So do you like to drive?" "Does a new van, a new machine and a different location every day appeal to you?"


Lucky for us – Suzie ultimately said yes. We now had a team of three: Max, Jane and Suzie. The team set up meetings with providers in the community pitching the idea and Dr. Renee Goldberg, OB/GYN in Needham jumped at the opportunity as this was also her vision. Schedules were put into place and quickly began to fill, word also spread to other community-based practices and the request for service started to increase.



In the beginning Suzie picked up the van every morning at the Medical Center, drove it to a physician's office, unloaded the machine, scanned a full schedule of patients and returned to the Medical Center at the end of the day to process her paperwork and deliver the paper film images and video tapes to the radiologists for interpretation. Yes – we said videotapes!

Suzie: "It was tough in the beginning. Our very first day followed a snow storm the previous Sunday evening and the parking area had not been plowed. Jane and I were at CVS in Needham at 7:30 am buying a shovel to clear the way for the machine to come off the van."








Our early years were spent rotating in the community-based practices of Needham OB/GYN, Jamaica Plain OB/GYN, South Cove Boston, and alternating weeks at BIDMC Health Care Sharon and BIDMC Health Care Downtown Crossing. The chance to increase our presence in Needham in 1999 afforded us the opportunity to hire **Caroline Comparone** as our second sonographer, acquire another machine and work with Motor Services to have a dedicated driver but this did not stay status quo for long.

Present day - we have four machines and have expanded to a group of 8: Suzie at the helm with expertise in supervision and relationship maintenance; **Caroline Comparone, Lynne Coppens, Judy Eames, Andrea Garvin, April Ramey, Christine Rando and Tiarra Maxwell**. The services are full range: OB/GYN, Nuchal Testing, Abdominal, Small Parts and Breast Ultrasound and Breast Intervention. Thanks to PACS, images are now securely sent to the radiologists as exams are in progress and immediate readings are available when necessary.

 **Radiology at 1101 Beacon Street and Mobile Ultrasound**
• 617-754-0450 •

 Jane Corey Practice Manager 617-754-0455	 Suzie Konopka Leavitt Supervisor, Mobile Ultrasound 32
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Sonographers

 Caroline Comparone 266	 Lynne Coppens 187	 Judy Eames Mobile Ultrasound	 Andrea Garvin 244
 Tierra Maxwell 330	 April Ramey 184	 Christine Rando 179	

The schedules are posted monthly with rotation of assignments by specialty so that vacations and unexpected requests are handled without compromise.

HMFP Mobile Ultrasound provides service at the following locations: Needham OB/GYN, Milton OB/GYN, South Cove Boston, South Cove Quincy (Interpreter assigned to team when working at South Cove Boston and Quincy) and staffs the HMFP Radiology practice site at 1101 Beacon St.

This Spring, HMFP Mobile Ultrasound will be expanding its schedules in existing offices to meet the demand for appointments and curb referrals out of the BIDMC network.

Suzie, looking back on the last 18 years, enjoys her position, the challenges and opportunities and reflects on a few mishaps in the growing years. A walk down memory lane brings images of snow storms and shoveling (more than we wish to remember) the van out of snow banks; the elevator that stopped working and having the machine stuck for a weekend in one location; a water main pipe that burst in Boston and wheeling the machine down the sidewalks over the hoses for almost a block to get to the van; and let's not forget – when Suzie was on leave and our per diem sonographer drove the van forgetting about the van height and shearing the top right off!

Rest assured – HMFP Mobile Ultrasound is a well-oiled, fine-tuned operation that brings accolades from the community sites. They are a professional, compassionate, well skilled group that works independently in referring physician practice sites.

Suzie and Jane also have experience in building a van to custom order. Heer they are shown here picking out the chassis, color, electric lift and designing the caging system to house two units at a time for transportation.



Photo: New England Wheels



Clinical Operations -

The department mission statement has guided our development and focus on high-quality, personalized, patient-centered care. The development of the community-based

network and the **mobile ultrasound** service reflect a commitment to provide a high level of radiologic services in community-based locations with respect to patient needs and convenience. All staff are encouraged to understand communication issues and to assume a service-oriented, patient-centered approach to care.

Radiology 2009 Annual Report



“We think Quality is going the extra mile to provide quality service to the outpatient community” [Imaging Month 2009] – HMFP Mobile Ultrasound 2009: Peggy, Christine, Andrea, Suzie & Judy.

The 9th Annual SILVERMAN SYMPOSIUM Celebrating Improvement

Wednesday, March 30

8 – 9 a.m. | The Joseph B. Martin Conference Center at Harvard Medical School

MICHAEL F. EPSTEIN, MD, LECTURESHIP ON CLINICAL QUALITY AND PATIENT SAFETY



"Pursuing a Culture of Safety and Respect Requires People, Processes and Technology (You can't just talk about it)"

GERALD B. HICKSON, MD

Senior Vice President of Quality, Safety and Risk Prevention, Assistant Vice Chancellor for Health Affairs, and Joseph C. Ross Chair of Medical Education and Administration at Vanderbilt University School of Medicine

10 a.m. – 1:45 p.m. | Shapiro Lobby, East Campus

CELEBRATING IMPROVEMENT POSTER SESSIONS

A celebration of improvement, sustaining gains, spreading best practices and learning from every effort regardless of outcome

bidmc.org/silvermansymposium

Radiology at the 9th ANNUAL SILVERMAN SYMPOSIUM on Quality & Safety

BIDMC's Silverman Institute for Health Care Quality and Safety celebrates improvement and learning through the 2016 Silverman Symposium and Radiology was proud to contribute 14 posters detailing our efforts in quality and safety.



Cheryl Bunting
MRI NP

Claustrophobia is everybody's problem

The Problem

Claustrophobia is a barrier for many patients needing to undergo MRI. As MRI becomes a prevalent diagnostic tool, patients find themselves participating in scans which require them to be in a confined space for a long time. Anesthesia is not an ideal solution due to increased risks to the patient, limited availability of the anesthesia team, and increased wasteful idle time for the MRI machine.

Categories of patients with high anxiety or claustrophobia:

- Patients who know that they are claustrophobic based on personal history events.
- Patients who do not realize that they are claustrophobic until faced with the prospect of a scan in a cylindrical environment.
- Patients who have conjured up scary thoughts about being in a tight space due to past life events.

Aim/Goal

All outpatient requests for MRI exams performed under sedation require additional steps in the ordering/scheduling process. The goal is to create a streamlined guideline to define the differences in sedation types offered, and their additional steps in ordering/scheduling.

-Shared responsibility, for patient comfort by, ordering physicians, midlevel's and technologists to assure a completed uneventful scan.

-Overcome the very real difficulties of claustrophobia and otherwise anxious patients who must have MRI's.

-Provide a pathway which may end in Anesthesia for the patient or provide a solution along the path to a successful scan without major intervention.

The Team

- Cheryl Bunting, RNP – Radiology, Nursing
- ShuangQi Zheng, RT(MR) – Radiology, MRI
- Ines Cabral-Goncalves, RT(R,MR) – Radiology, MRI
- Koenraad Mortelet, MD – Radiology, Physician
- Bridget O'Bryan, RN – Radiology, Nursing
- Donna Halle, RT – Radiology, Administration

The Results

	PO sedation ordering physician	PO sedation onsite sedation staff	General Anesthesia
Ideal for:	Patients with fear based on personal history or events.	Patients who previously attempted an MRI and have failed to complete. Patients impaired with mild tremors, pain, structural limits which prohibit lying straight and still on a flat surface	Patients in whom the referring physician recognizes that the Patient's impairment or claustrophobia will preclude a successful scan.
Pros:	More flexibility for the patient. Patient picks up medication and self-medicates. Can be scheduled at any BIDMC outpatient magnet, but preferably at the West Campus.	Personalized service. NP will sedate patient onsite to a comfortable level before entering scan room. Can only be scheduled at WCC magnets during certain hours.	Helps to obtain diagnostic imaging otherwise unavailable to these patients.
Cons:	None	Availability is limited as additional resources are required to perform study.	Availability is limited. Study must be coordinated with Anesthesia department.

Lessons Learned

There was a clear need from the ordering physicians for guidance and support. This document will provide structure and guidelines for those clinicians to use when scheduling MRI's for patients who request sedation. Given the risks associated with Anesthesia, not to mention the unit and scanner time it takes up, we need to be cautious with offering the claustrophobic patient Anesthesia. We hope to incorporate this guideline as a link in OMR in the near future.

For more information, contact:
Cheryl Bunting, RNP, Radiology Nursing /
cbunting@dibmc.harvard.edu





Caitlin Connolly
Chief Resident

Noncardiac Findings in Cardiac MRI: Does one need to examine all sequences?

The Problem

- Volume of body MRIs has increased steadily causing time pressure to read studies faster
- Our department performs 2-5 cardiac MRIs per day which must be reviewed by the Body MRI section for noncardiac pathology
- There are usually at least 10 sequences, many of which just cover the heart or only demonstrate flow, not anatomy and are therefore not useful for identifying significant noncardiac pathology. Having to review the cardiac specific sequences that do not contribute to detection of noncardiac pathology causes frustration in the Body MRI section.
- Because there are so many irrelevant sequences we often go through all the sequences quickly and are not aware of which sequences to focus on raising the possibility of missing significant findings.

Aim/Goal

- Only examine the scout and thoracic 3D SSFP with multiplanar reconstruction (MPR) sequences thereby improving efficiency and saving significant time.
- Detect 99% of all clinically significant noncardiac pathology (the reference standard in the literature).

The Team

- Caitlin Connolly, MD, Radiology
- Amanda Kappler, MD, Radiology
- Koenraad Mortelet, MD Radiology
- Warren Manning, MD Cardiology
- Alexander Brook, PhD Radiology

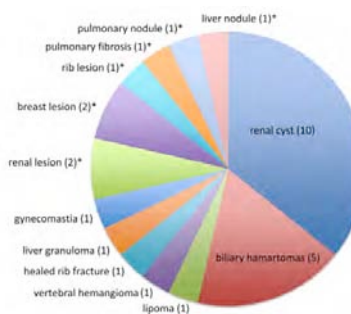
The Interventions

- Retrospectively review all cardiac MRIs performed in this department in a one-year period.
- Document all of the noncardiac findings, which sequences they were detected on and whether they could be seen in retrospect on the scout and SSFP with MPR sequences.
- Gather data on the amount of time spend reviewing each case and each sequence.

The Results/Progress to Date

- In the 447 cases reviewed there were a total of 586 noncardiac findings reported.
- A total of 27 studies (6%) had 28 noncardiac findings that were not detected on the scout of 3D SSFP with MPR sequences. The majority of findings were not clinically significant with only 8 indeterminate findings.

Noncardiac findings not detected on scout or 3D SSFP Sequences



* indicates indeterminate finding

Lessons Learned

- The vast majority of clinically significant noncardiac findings on cardiac MRI are detected on the thoracic scouts, thoracic 3D SSFP with MPR sequences.
- Focusing on these images results in improvements in efficiency.

Next Steps/What Should Happen Next

- Complete data collection including follow up on indeterminate findings
- Review the data to determine whether sensitivity and specificity would be preserved if only the specific sequence were reviewed.
- The data will then be presented to the section to decide whether to change the current practice of reviewing all the sequences.

For more information, contact:
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Betsy Grady
Director,
Diagnostic Imaging

Once Upon A Mattress: Balancing Patient Care with Staff Safety



The Problem

An Increased number of injuries were reported by Radiology Technologists while performing portable exams. A root-cause analysis uncovered that portable exams had become more difficult due to a new mattress/cover on patient beds. Newly purchased mattress/cover combinations were rolled out in the medical center to improve patients' skin integrity. Skin friction and shear are both risk factors for pressure ulcer development and the new mattress material is less slippery and therefore less likely to cause skin sheering. However this "tacky" material works against the mechanics for taking an x-ray because the detector can't be easily maneuvered under the patient. Shoulder and back injuries were reported after technologists attempted to adjust the detector on "tacky" mattress surfaces.

likely to cause skin sheering. However this "tacky" material works against the mechanics for taking an x-ray because the detector can't be easily maneuvered under the patient. Shoulder and back injuries were reported after technologists attempted to adjust the detector on "tacky" mattress surfaces.

Aim/Goal

Reduce staff injuries without compromising patient skin integrity.

The Team

- Betsy Grady, R.T.(R)(CV)(ARRT) - Director Diagnostic Radiology
- Kevin Sands, R.T.(R)(ARRT) - Manager Diagnostic Radiology
- Jacki Chechile PT, MSPT - Safe Patient Handling
- Danielle Nugent PT, DPT - Safe Patient Handling
- Meghan Church PT, DPT - Safe Patient Handling
- Kendra Conlon RN, MSN - Unit Based Educator F5
- Kim Sulmonte, RN, MHA, CSHA, CPHQ - Assoc Chief Nurse, Quality & Safety
- Stacey Lunetta RN, MPH, CPHRM - Patient Safety Coordinator HCO
- Lisa Foster, MS, ANP-BC - Director EOH
- Janice Cunnane BSN, RN, CWOOCN - Nursing
- Christian Gagnon - Sizewise Bed
- Paul Anderson - BSET,BSBA - Technology Coordinator

The Interventions

- A multidisciplinary group met to better understand current state and option to reduce staff injuries.
- First we learned about how skin sheering injuries occur and how the choice of mattress/covers impacts patient skin care.
- Then, the technologists evaluated three mattress/cover combination options. These combinations received a score on ease of use along with a patient safety score. The technologists' preferred option indicated it would compromise patient skin care. Nursing's option ranked the lowest technologists'

score; nursing's preferred "tacky" surface was determined to provide the best protection from skin sheering.

- Multiple interventions to assist the technologists with positioning on the "tacky" surface were evaluated using various bags and boards without success. Using the patient lift equipment was determined to be the best option. The Safe Patient Handling team was contacted to assist with technologist training.
- The Safe Patient Handling Team brainstormed new techniques with the technologists for placing the portable x-ray plate with use of overhead and portable lift equipment. A trial of several techniques was performed to determine the feasibility and efficiency of proposed techniques, then technologists were trained on various techniques.
- All inpatient units were notified via email, indicating this change in practice for taking portable x-rays. Unit representatives attending the Patient Safe Handling's monthly meeting also learned of the change.



The Results/Progress to Date

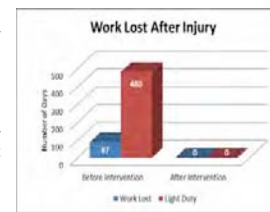
No injuries have been reported since October 2015, since instituting the use of lift equipment.

Lessons Learned

Patient and staff safety is a balance, with both being equally important. By working together we were able to solve the injury problem without sacrificing patient care

Next Steps/What Should Happen Next

- Encourage Safe Patient Handling and advocate for patients to be placed on repositioning sheets for safety of all staff.
- Review quarterly with the technologist on sustainability of equipment use and whether there are concerns
- Continue tracking technologist injuries.



For more information, contact:
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Matthew Del Guzzo
3rd Yr Resident

Utilization of Inpatient MRI Studies: Do We Need Guidelines Beyond Existing American College of Radiology (ACR) Appropriateness Criteria?

(Double Click to Edit)

The Problem

There is increasing concern about overutilization of high-cost imaging studies such as MRI during hospital admissions. Judicious and appropriate use of inpatient MRI services may affect duration of hospital stay and overall healthcare-related costs.

Aim/Goal

Our purpose was to perform a pilot study to assess: (1) the number of inappropriate or redundant inpatient MRI studies, and (2) if existing American College of Radiology (ACR) appropriateness criteria for neuroimaging may be sufficient to identify MRI studies that were inappropriately performed in the inpatient setting.

The Team

Matthew Del Guzzo MD*
Pritesh Mehta MD*
Sanford Brown MD**
Rafael Rojas MD***
Koenraad Mortele MD***
Rafeeqe Bhadelia MD***
*BIDMC radiology Resident
** BIDMC Neuroradiology Fellow
*** BIDMC Radiology Staff

The Interventions

We retrospectively reviewed inpatient MRI scans performed for neurological indications over 1-month period at Beth Israel Deaconess Medical center. We determined the appropriateness of neuroimaging MRI orders based on the existing ACR appropriateness criteria as well as consensus online medical record review. All inpatient studies were classified as:

- (1) Appropriate: ACR rating of 4 > and record review suggesting importance in immediate clinical management.
- (2) Inappropriate: ACR appropriateness criteria of 4 < and/or a record review suggesting that it could be performed as an outpatient study without altering immediate clinical management.
- (3) Redundant: If the clinical question had already been answered by another imaging modality.



The Results/Progress to Date

Of the 293 inpatient MRI studies performed, 235 (80.2%) were considered appropriate, 48 (16.4 %) inappropriate and 10 (3.4 %) redundant.

Several additional studies could have been classified as inappropriate provided: (1) There had been a prospective dialogue between the radiologist and referring physician.

(2) Patient convenience was not accommodated (inpatient MRI to exclude metastasis in the absence of neurologic symptoms).

(3) There existed defined appropriateness criteria for inpatient indications (total spine screening MRI for bacteremia without back pain.)

Lessons Learned

- Our results suggest that at our institution, 1 out of every 5 inpatient MRI exams performed for neuroimaging was either inappropriate or redundant.
- Inpatient MRI studies can be further decreased if there were specific criteria for determination of appropriateness of inpatient studies along with ongoing direct involvement of a radiologist.

Next Steps

- We plan to collect additional retrospective data for 6-12 months
- A second (prospective) phase of the study will consist of ongoing daily determination of appropriateness of an inpatient MRI study (after the study is performed) but while patient is still in the hospital., including a dialogue with the referring physician about rationale for the inpatient study.
- Based on the prospective-phase II study results, we will create new appropriateness criteria.
- A third (prospective) phase of the study will be the implementation of the newly created appropriateness criteria to actually decrease the utilization of inpatient MRI services over a 6-month period.

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Jonathan Kim
4th Yr Resident

Prevalence and Clinical Significance of Unilateral Absent Flow in a Transverse Dural Sinus (TDS) on MR Venography

Jonathan Kim, Rafael Rojas, Yu-Ming Chang, Rafeeqe Bhadelia

The Problem

Unilateral absence of flow signal in a TDS is frequently observed on MR Venography (MRV). In the setting where MRV is performed in isolation without contrast enhanced sequences, the finding of unilateral absence of flow in a TDS presents diagnostic uncertainty as this may relate to either dural venous sinus thrombosis or slow flow.

Aim/Goal

Our purpose was to determine:

- Prevalence of unilateral absence of TDS flow signal on MRV;
- Its clinical significance by assessing thrombosis on contrast-enhanced MRI/CTV; and
- If asymmetry in TDS size explains the phenomenon of absent flow on MRV;

The Team

- Jonathan Kim, MD, Department of Radiology
- Rafael Rojas, MD, Department of Radiology, Neuroradiology
- Yu-Ming Chang, MD, Department of Radiology, Neuroradiology
- Rafeeqe Bhadelia, MD, Department of Radiology, Neuroradiology.

The Interventions

- 123 patients who had both MRV (2D Time-of-flight and/or 3D Phase-contrast) and gadolinium enhanced 3D-MPRAGE images or CT venography between January 2014 and October 2015 had their imaging reviewed.
- MRV imaging was reviewed to determine the number with unilateral complete absence of flow in a TDS.
- Those cases with unilateral absence of flow in a TDS were evaluated for present or absence of thrombosis on contrast enhanced MRI/CTV.
- Asymmetry in size between the lateral-most portion of the transverse sinuses were measured.
- T-test was performed to determine the correlation of TDS size asymmetry with absent flow on MRV.

The Results/Progress to Date

Of the 123 patients, 25 (20.3%) had absence of flow in one TDS on MRV. The absent TDS flow was seen on the left in 15 and on the right in 10 patients. Comparison with post-contrast images (116 MPRAGE; 7 CTV) showed 5/25 (20%) of patients with unilateral absence of TDS flow had signs of thrombosis on post-contrast images. Patients with absent TDS flow had significant asymmetry of size compared to those without (P<0.001).

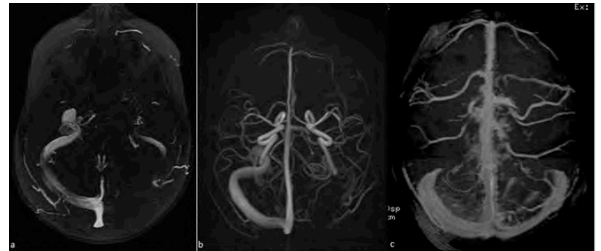


Fig 1) 2D-TOF (a) and 3D-PC (b) demonstrate loss of signal of the left transverse venous sinus while gadolinium enhanced MP-RAGE (c) demonstrates patency.

Lessons Learned

- Unilateral absence of TDS flow is common on MRV examinations, and is a false positive finding in 80% of the patients.
- Size asymmetry appears to contribute to the phenomenon of absent unilateral TDS flow.
- Finding of unilateral absence of TDS flow may warrant additional imaging with contrast enhanced MRI or CTV in order to differentiate between thrombosis and slow flow, as these can appear identical on non-contrast MRV.

Next Steps/What Should Happen Next

- Implement a clinical practice protocol where further evaluation with either contrast enhanced MRI or CTV should be suggested in cases where unilateral absence of flow in a TDS is encountered.
- CTV becomes an important adjunct in those patient populations who cannot receive gadolinium, i.e., pregnant women.
- Education of the radiology residents and Neuroradiology section as well as clinicians in order to recognize this finding and the potential for false positive results.

For more information, contact:

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Radiation Dose Management



Tim Parritt
Manager, CT

The Problem

Traditionally, the Radiology department had a heterogeneous set of CT scanners across BIDMC, BIDN, Chestnut Hill and BIDM, each operating independently without external monitoring. This made it difficult to provide consistency in dose management (setting dose thresholds) among all systems, to compare performance to national indexes, and to meet and document accreditation and regulatory requirements.

Aim/Goal

By designing and implementing a common external tracking system we aim to move from a system that requires a radiologist or technologist to recognize cases where dose thresholds are thought to be anomalous to a system that automatically identifies both systemic and individual anomalies, that compares all scanner dosage levels with industry benchmark values, and that documents and ensures the meeting of accreditation and regulatory requirements.

The Team

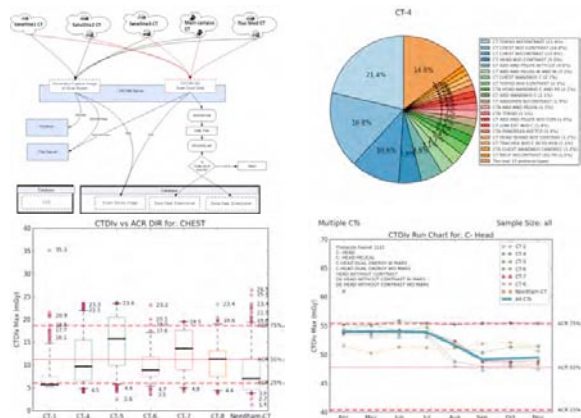
- Matthew Palmer, PhD, Manager, Medical Imaging Physics
- Da Zhang, PhD, DABR, Medical Imaging Physicist
- Carol Wilcox, RT R CT, Advanced Imaging Technologist
- Tim Parritt BS RTR CT, Technical Director
- Larry Barbaras, BS, Senior Programmer/Analyst
- Olga Brook, MD, Associate Director of CT Services

The Interventions

- Install server based software to catalog dose data
- Program all CT scanners to send dose reports to server
- Create reporting tool to extract data from server
- Evaluate and present data at CT Quarterly QA meeting.

The Results/Progress to Date

- Identified protocols where dose levels could be reduced without affecting image quality (chest pain, CT colon, CTA).
- Increased dose levels on brain perfusion studies to improve quality.



Figures show system architecture (top left), frequency distribution of studies by protocol for a single scanner in the network (top right), radiation dose distribution for chest protocols performed across the network (bottom left), and the response to a change in the C-head protocol effected in July 2015.

Lessons Learned

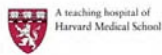
- Each Vendor's scanner has different capabilities in presenting structured reporting and dose reduction features.
- How to separate true triggers from data anomalies and known protocol deviations.
- How to manage the system on a timely basis.

Next Steps/What Should Happen Next:

- Continue to work towards a timelier review of triggers.
- Look for additional opportunities to manage CT protocols across Network.
- Expand system to other diagnostic modalities such as fluoroscopy.



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Hannah Perry
3rd Yr Resident

Patient Preferences & Understanding of the Breast Imager's Role in Performing and Communicating Biopsy Results

The Problem

Health care is becoming more of a value-based system and as a result, radiologists need to increase their visibility and role in clinical medicine. Within the field of breast radiology, staff routinely communicate all results of diagnostic exams with a patient directly, at the conclusion of the study. However, biopsy results are typically communicated to the patient by the referring clinician. Given the breast radiologists understanding of the management of a wide array of pathologic results, perhaps patients would prefer to hear results directly from the clinician performing the biopsy, which would increase radiologist visibility and perceived value.

Aim/Goal

- 1) To evaluate patient understanding of the breast radiologist and their role in breast care.
- 2) To evaluate from whom patients want to hear breast biopsy results, and with what mode of communication.
- 3) To understand if the interaction between the patient and the radiologist impacted the patient's perception of the breast radiologist, and the desired method of communication.

The Team

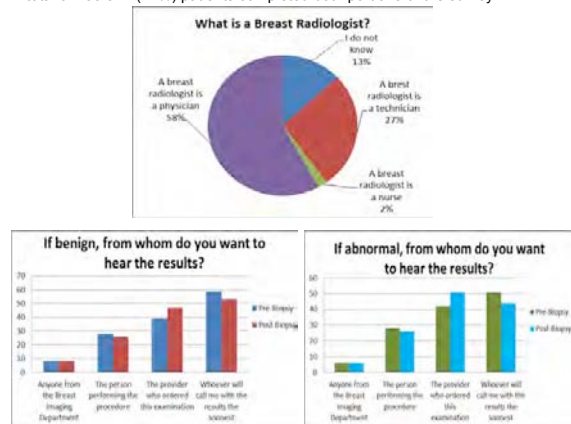
- 1) Breast Imagers: Jordana Phillips, MD, Hannah Perry, MD, MS, Vandana M. Dialani, MD, Valerie J. Fein-Zachary, MD, Evguenia Karimova, MD, Priscilla J. Slanetz, MD, MPH, Shambhavi Venkataraman, MD, Richard E. Sharpe JR, MD, MBA, Tejas S. Mehta, MD, MPH
- 2) Breast Imaging Technologists and Technical Assistants
- 3) Breast Imaging Nurse Practitioner: Nancy Littlehale, NP

The Interventions

For this quality assurance study, an anonymous 2-part survey was given to patients to complete before and after undergoing either an ultrasound-guided core biopsy or a stereotactic biopsy. The survey was created using SurveyMonkey®. Patient information gathered through the survey included data on demographics, familiarity with the BIDMC breast imaging department, and the patient's pre- and post-biopsy understanding of what a breast radiologist is and their role in breast care. Patients were also asked from whom they wanted to hear their biopsy results and with what method. Initial data collection took place during March 2015-October 2015.

The Results/Progress to Date

A total of 155/572 (27%) patients completed both portions of the survey.



Lessons Learned

Only 27% of eligible patients completed the survey. Among patients who responded, fewer than 60% knew that a breast radiologist is a physician, but 95% felt that the breast radiologist was essential to their care. This suggests lack of understanding of the breast radiologist, and is an opportunity for patient education. Regardless of the pathology, patients want to hear biopsy results from whoever will call soonest, followed by the ordering provider. In both groups, patients preferred to receive results communication by phone.

Next Steps/What Should Happen Next

We will provide patient education on what a breast radiologist is and their role in breast health. We will also begin surveying referring physicians to evaluate their preferences regarding biopsy result communication. We will use this data to inform future practice change.



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Pritesh Mehta
4th Yr Resident

Wide Excision Alone for DCIS – What is the optimal screening interval after initial diagnosis? Are there predictors of recurrence?

The Problem Ductal carcinoma in situ (DCIS) of the breast is increasingly diagnosed, and now represents 20-25% of all breast cancers in the United States. An option for treatment of DCIS entails breast conserving surgery (BCS) followed by radiation therapy, however, given recent concerns for over treatment, many providers opt to follow patients with close imaging intervals at 6-month intervals for 2-5 years following surgery, rather than undergoing radiation therapy. There is great variation in practices across providers at our hospital and institutions around the country in terms of how these patients should be followed.

Aim/Goal 1) To determine the optimal imaging interval for women diagnosed with DCIS treated only with wide local excision. 2) To identify patient characteristics and risk factors to predict a higher risk of recurrence.

The Team

- Dr. Pritesh Mehta M.D. [Department of Radiology](#)
- Dr. Alessandra Mele, M.D. [Department of Surgery](#)
- Dr. Abram Recht M.D. [Department of Radiation Oncology](#)
- Dr. Alexander Brook PhD, [Department of Radiology](#)
- Dr. Ranjna Sharma M.D. [Department of Surgery](#)
- Dr. Priscilla Slanetz M.D., MPH [Department of Radiology](#)

Methods

- All patients with DCIS treated with wide local excision alone (WLE) at Beth Israel Deaconess Medical Center, Boston, between 2000 and 2010 were identified.
- Of the 281 patients in this cohort, 59 patients were excluded because they were not followed in our institution after undergoing WLE. 222 patients remained eligible.
- For each patient, we collected data on imaging interval, demographics, parity, risk factors, tumor specific characteristics, personal or family history of breast cancer, exogenous hormone use, tobacco use, comorbidities, and genetic mutation carrier status.
- Statistical analysis entailed the use of a paired t-test and Fischer exact test.

The Results

Study population (n=222), n (%)	Study population (n=222), n (%)
Median age at diagnosis (range)	58 (33-90)
Tumor grade	
I/II	64 (28.8)
II/III	8 (3.6)
III/IV	110 (49.5)
IV	6 (2.7)
n/a	20 (9.0)
14 (6.3)	
Mean follow-up time (yrs, range)	7.9 (0.1-16.6)
Local recurrences	19 (8.6)
Median age at recurrence (range)	57 (39-92)
Median time to recurrence (yrs, range)	4.2 (1.2-7.3)

Results: Demographics (222 patients)

- Mean age of diagnosis: 59.1 years (range 35-90)
- Median follow-up time was 8 years (0.11-16.59)
- Compliance with imaging every 6 months for 2-5 years: 119 women (54%)
- Number of women who underwent annual mammogram after WLE: 81 (36.5%)
- Risk of recurrence lower for nuclear grade (NG) I tumors compared to patients with NG II or NG III tumors (3%, 9%, and 24% respectively, p<0.01).
- Mean margin width was 3.8mm in patients experiencing local recurrence (LR) vs. 2.5mm in patients without LR, p<0.04.
- Patients who had used hormone replacement therapy or oral contraceptives (total) or patients with a history of tobacco use (total) had higher rate of LR than those who did not (42% vs. 6%, p<0.001, and 37% vs 7%, p<0.07, respectively).
- There was no correlation between the mean age at diagnosis of recurrence (54.9), lactation or aromatase inhibitors, and the risk of LR.

Conclusions

- Higher nuclear grade tumors, narrower surgical margin widths, history of use of exogenous hormones, and a smoking history may be associated with higher likelihood of recurrence in women treated with wide excision alone for DCIS, and therefore should be imaged at 6-month intervals.
- Otherwise, women can be safely followed with annual mammography.
- Consideration of individual and histologic tumor characteristics is critical to determining a patient's optimal imaging follow-up interval, or to avoid unnecessary increased radiation.

Next Steps

- The data will be presented to the BIDMC breast radiology section, in hopes of garnering further discussion, and possibly effecting change in individual physician practice.

For more information, contact:
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Maryellen Sun
Director, US & GU Imaging

Procedure kit improvements for needle safety in US

The Problem

Procedure kits stocked in Ultrasound included some products which were identified as suboptimal for needle safety

- Since lidocaine is no longer provided as a sterile vial within the kit, the person performing the procedure must withdraw lidocaine from a vial held by a sonographer
 - Sharp-bevel needles were provided in kits as stocked before the intervention. Staff noticed that this potentially put sonographers at risk of needlesticks.
- Needle/sharp receptacles available in kits were cumbersome to use due to manufacturing details
 - High density closed cell foam meant that some needles could not easily be slid into the needle receptacle
 - Removal of needles required two hands, placing the second hand at risk of a rebound needle stick
 - Because of these difficulties, sharps were being left on the field and safety equipment not used
- Needle receptacles were not available for some procedures not utilizing sterile kits
- Suboptimal needle safety has a potentially large impact in the busy US procedure area, averaging 10-12 procedures per day.
- These issues link directly to the IOM Dimension of Quality Care: Safety

Aim/Goal

Improve needle safety procedures in Ultrasound by replacing supplies with more effective options, and providing additional safety supplies where needed.

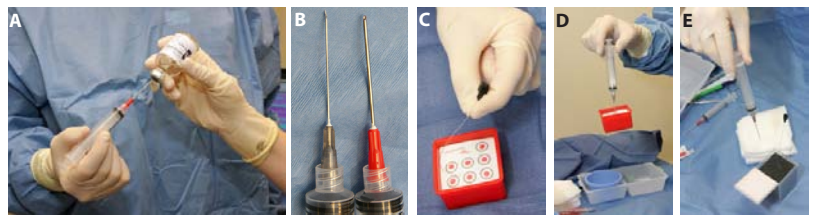
The Team

- Maryellen R. M. Sun, MD, Director of Ultrasound Services
- Bernadette Kennedy, RDMS, Ultrasound Director
- Juanita Cook, RDMS, Ultrasound Manager
- Bridget O'Bryan, RN, Nurse Director, Radiology
- Suzanne Swedeen, RN, Quality Assurance Nurse, Radiology
- Sarah Ghanem, NP, Clinical NP for Ultrasound
- Kate Schmid, NP, Clinical NP for Ultrasound
- Laurie Sammons, RDMS, Advanced Practice Sonographer
- Kelsey Worcester, RDMS, Advanced Practice Sonographer

The Interventions

- Needle safety issues were discussed in Ultrasound Operations meetings and Interventional Radiology Operations meetings
- Input was solicited from colleagues through use of an Ultrasound Idea Board and departmental surveys
- Ultrasound Managers contacted suppliers for demonstrations of additional products
- Open cell foam needle cups were selected and added to US procedure kits

The Results -



Above: Two-operator lidocaine withdrawal procedure using blunt filling needle (A); close up view of old (gray hub) and new (red hub) needles for lidocaine withdrawal (B). Difficulty placing sharp into old needle collection cup (C) resulted in this item being deposited on the sterile field (F). Difficulty withdrawing sharps from old collection cup (D) required use of two handed technique; low profile of cups meant stabilizing hand was close to needle tips. Improved release of needles from new cup often permits one handed removal (E); if stabilization is required, higher profile of cups means hand can be further from needle tip.

Lessons Learned

Unexpected challenges have included long response times from vendors to actualize change. Complacency with existing equipment resulted in development of habits of less-safe use of needles for some individuals during this time (e.g. internal trocar of 22G spinal needle is dropped onto field rather than deposited in needle cup, as the needle was difficult to insert into existing cups). Additional training will be required to remind practitioners of safe use of new equipment.

Next Steps

- The team will continue to ensure that the planned changes are brought to completion in all areas by working with manufacturers and suppliers.
- Feedback from other stakeholders (trainees, sonographers, radiologists, nurses) will be sought
- Frequency of needlestick injuries will be monitored



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Dept of Radiology, Director of Ultrasound Services & Genitourinary Imaging



Suzanne Swedeen
Rad Quality RN

Call for a **LIFT**: Safe Handling for Radiology Transport



The Problem

- Patients frequently arrive in Radiology via stretcher and are unable to independently move from stretcher to exam/procedure table. This resulted in the need for Radiology staff to lift, pull or slide patients onto exam/procedure table using a slideboard.
- In areas that "no lift" equipment was available, it was found to be under utilized.
- Investigation into the reason why "no lift" equipment was under utilized revealed patients who would benefit from this equipment were arriving in Radiology without a green lifting sheet placed under them.
- Additional concerns were expressed that placing a green lifting sheet under a patient while on a stretcher increases risk of injury to both patient and staff. Stretchers simply do not have enough real estate to safely maneuver patients to place a lifting sheet

Aim/Goal

- Decrease staff/patient risk of injury when transferring patient to and from stretcher by increasing use of "no lift" equipment for patient who are unable to independently move from bed/stretcher to exam/procedure table
- Decrease the number of patients who would benefit from "no lift" equipment but did not arrive in Radiology with a green lifting sheet in place.

The Team

Fritz Honore, *Radiology Patient Transport Supervisor*
Suzanne Swedeen, RN MSN CNIV, *Quality Improvement Radiology*
Jacki Chechile PT, MSPT, *Safe Patient Handling*
Betsy Grady, R.T. (R)(CV)(ARRT), *Director Diagnostic Radiology*
Radiology Transporters

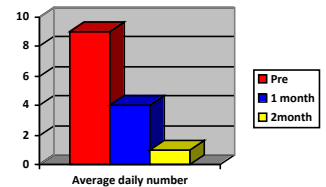
The Interventions

- QA Nurse queried staff to understand the barriers to using lifting equipment.
- To understand the scope of the problem, Radiology Transporters tracked the number of patients arriving in Radiology who were unable to independently move from bed/stretcher to exam/procedure table and did not have a green sheet placed under them.
- Radiology Transport Supervisor, QA Nurse and Safe Patient Handling met to brainstorm solutions for ensuring a green lifting sheet is under all patients needing one.
- Solution: patient's that are unable to independently transfer to stretcher from their inpatient bed are identified by Radiology Transporters at the time of pickup. Transporter confirms with inpatient staff the appropriateness of lifting sheet use for each patient. If no contraindication, Transporters place a green lifting sheet onto the stretcher prior to transferring patient.
- All Transporters were trained in the use of "no lift" equipment.



The Results/Progress to Date

Average daily number of patients arriving in Radiology who could benefit from using "no lift" equipment but do not have a green sheet in place.



Lessons Learned

Go to gemba. Prior to our staff query we speculated that the causative agent might be a need for staff education, a resistance to use or even a lack of knowledge in how to use the equipment; in the end, the impediment was staff did not have the necessary equipment in place when they needed it and no process in place to correct.

Next Steps/What Should Happen Next

Analysis of the current use of "no lift" equipment post change.

For More Information Contact

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Chip Watts
Chief Resident



Getting to the Bottom of Things: Lymphatic Drainage Patterns of the Skin in Patients with Melanoma

George J. Watts, Quang Nguyen, Elisa Franquet, Kevin J. Donohoe
Department of Radiology, Beth Israel Deaconess Medical School • Harvard Medical School, Boston, MA



INTRODUCTION

- Approximately 40,000 new cases of cutaneous melanoma annually (~7,300 US).
- Melanoma first disseminates in an orderly progression through lymphatic channels to the regional lymph nodes.
- Regional lymph node metastatic involvement is the single most important prognostic factor, lowering the 5-year survival rate to approximately 50%.
- Lymphoscintigraphy has proved reliable in demonstrating variability in cutaneous lymphatic flow and identifying the unique drainage pattern.

TRACERS

An Ideal Tracer should:

- Have rapid clearance from the interstitial space into the lymphatic system.
- Produce high-quality images and deliver a low radiation dose to the patient.
- Small particles (<100 nm diameter) to clear the interstitial space and enter the lymphatic channels and regional nodes.
- Tracers: ^{99m}Tc sulfur colloid (US), ^{99m}Tc human serum albumin (Europe), ^{99m}Tc antimony trisulfide colloid (Australia, Europe, Canada), ^{99m}Tc Tlmaxcept (US)

PROTOCOL

- Intra dermal (not subdermal) radiotracer injection is recommended.
- A 25-27-g needle, as tangentially as possible to the skin surface.
- 0.2 mL volume is recommended to avoid collapsing the lymphatic channels.
- 0.1-0.2 mL of air is left behind the radiocolloid.
- Avoid contamination of the skin.
- Total injected activity ranges from 200 to 1000 µCi, divided into aliquots of 100-250 µCi, in a volume of 0.1-0.5 mL (20).
- 2-8 separate injections may be necessary, depending on the excision scar size and are. Avoid inflamed, infected, or scarred areas.
- Inject 0.5-1.0 cm from the scar or tumor margin.

IMAGING

- Planar images including the area of injection and regional lymph node basin.
- Initial large field-of-view (FOV) detector to include injection site to assess for possible field contamination.
- Dynamic phase imaging with static images obtained approximately every 5 min. for 45-60 minutes.
- Later, oblique views and SPECT/CT to facilitate lymph node visualization over injection site or superimposed lymph nodes.

Don't miss these areas!!

- Head and neck:** lateral views for better localization. Consider SPECT/CT
- Trunk:** include both axilla and inguinal areas in the FOV
- Upper extremities:** Image epitrochlear region and ipsilateral supraclavicular, chest & neck base region
- Lower extremities:** Include popliteal region; contralateral inguinal if prior inguinal surgery

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LYMPHATIC DRAINAGE

- In-transit nodes** represent embryonic rests of lymphatic tissue found along the pathway of a lymphatic channel, occasionally seen between a tumor and the regional lymph node basin.
- In-transit nodes may be the first place for tumor or radiocolloid to be trapped and reflect a true "sentinel node".
- Prior studies have shown ~10-20% of in-transit nodes to have metastatic cells with a rare cases of no associated tumor involvement in the regional lymph node basin.

ANATOMICAL AREA	COMMON	LESS COMMON	
HEAD & NECK	<p>GENERAL INFO</p> <p>Scalp vertex and posterior</p> <p>Ear</p> <p>Mandible</p> <p>Lateral Scalp & Cheek</p> <p>Forehead</p>	<p>Multi SNs common, often small and very near or directly under melanoma site</p> <p>Postauricular, Supraclavicular, Level IV</p> <p>Preauricular (parotid)</p> <p>Postauricular</p> <p>Submandibular</p> <p>Level II; Preauricular (parotid)</p> <p>Preauricular (parotid)</p>	<p>Approx. 33% H/N melanoma drains to discordant site</p> <p>5% in transit</p> <p>Postauricular; Level I</p> <p>Level II >> I, III, IV, Bilateral</p>
TRUNK	<p>GENERAL INFO</p> <p>Anterior (above umbilicus)</p> <p>Anterior (below umbilicus)</p> <p>Posterior (above waistline)</p> <p>Posterior (below waistline)</p>	<p>Contrary to classic concept, it has been shown that lymphatic drainage crosses the midline.</p> <p>Axilla*, Supraclavicular, Inguinal</p> <p>Inguinal*</p> <p>Axilla*, Level IV, V, III, Inguinal</p> <p>Inguinal*, Axilla</p>	<p>Costal Margin, Internal mammary, level V > IV, II</p> <p>Axilla</p> <p>Triangular intermuscular space Paravertebral Retroperitoneal</p> <p>Paravertebral Retroperitoneal</p>
EXTREMITIES	<p>GENERAL INFO</p> <p>Upper Extremity</p> <p>Fingers</p> <p>Palm</p> <p>Dorsum of hand</p> <p>Forearm</p> <p>Arm</p> <p>Lower Extremity</p> <p>Toes</p> <p>Sole</p> <p>Dorsum of foot</p> <p>Leg</p> <p>Thigh</p>	<p>Upper Extremity</p> <p>Axilla*</p> <p>Lower Extremity</p> <p>Inguinal*, Popliteal</p> <p>Inguinal*</p> <p>Inguinal*</p>	<p>Upper Extremity</p> <p>Epitrochlear, Supraclavicular, Interpectoral, lateral neck base</p> <p>Lower Extremity</p> <p>Contralateral inguinal if prior inguinal surgery</p>

*Most frequent drainage

CASE EXAMPLES AND TEACHING POINTS

HEAD & NECK

Right neck oblique

Axial and Coronal SPECT/CT

TEACHING POINT: Because LN drainage of the head and neck is highly variable, SPECT/CTs often used for accurate localization. In this case, both postauricular and cervical regions are involved.

TRUNK

Posterior

Axial and Coronal SPECT/CT

TEACHING POINT: Bilateral drainage may be seen in melanoma of the trunk. Drainage may also be bidirectionally superior and inferior, as seen in this case with right axillary and bilateral lower cervical involvement.

EXTREMITIES

Anterior

CoS7 transmission images added

Sub-ungual melanoma of the right 5th finger

TEACHING POINT: Although melanomas from the distal upper extremity drain to the axilla, imaging the epitrochlear region is important in order to include possible in-transit nodes (arrows), as demonstrated in the case above.



Yuri Shif
4th Yr Resident

Reconsidering Routine Coagulation Testing Prior to Imaging Guided Intervention

The Problem

The Musculoskeletal (MSK) Imaging department at BIDMC is a high volume center performing daily imaging guided interventions. Routine use of pre-procedure coagulation testing was identified as a source of excess cost, delay to patient care, and interruption to daily workflow.

- Referring clinicians had to be contacted to place coagulation orders
- Patients had to come for testing on a separate day or early on the day of the procedure leading to delays in care and increased cost
- Nearly \$4,000 was spent in 2014 on coagulation testing prior to MSK biopsies with further costs incurred secondary to additional nursing time utilization
- Eliminating or limiting pre-procedure coagulation testing would make care more efficient and timely

Aim/Goal

The goals of the study were to retrospectively identify all cases of bleeding complications related to MSK interventional procedures and define patient and procedural factors which increase the risk for bleeding. Once these factors are identified, guidelines could be developed to limit pre-procedural coagulation testing to at-risk populations only.

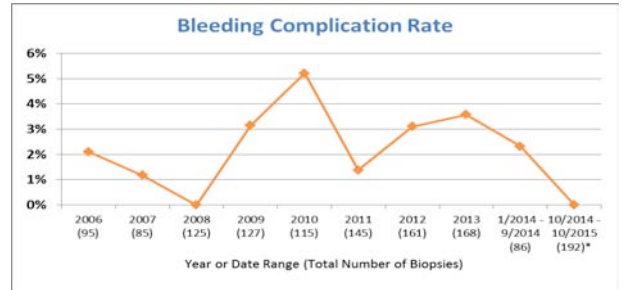
The Team

Musculoskeletal Imaging Department

- Yuri Shif, MD Colm J. McMahon, MD
- Jim S. Wu, MD Jennifer M. Ni Mhuirheartaigh, MD
- Justin Kung, MD

The Interventions

- A database of 1,107 MSK biopsies performed between January 2006 and June 2014 was reviewed and the OMR searched for evidence of bleeding complications, i.e. hematoma, ecchymosis, or excessive bleeding. Additional factors suspected to increase bleeding risks were also recorded.
- New guidelines for coagulation testing were developed and approved by the Interventional Radiology Operations Committee 8/2014 with full implementation 10/2014: As part of the pre-procedural work-up patients were screened for a history of unexplained bleeding, blood disorders, liver disease, or anticoagulation medication and only patients with such risk factors underwent laboratory testing



The Results/Progress to Date

- Over the first 9 years and 1,107 cases, there were 28 bleeding complications
- *In the subsequent year after implementation of the new guidelines from 10/2014 through 10/2015 there were 0 cases of bleeding related complications

Lessons Learned

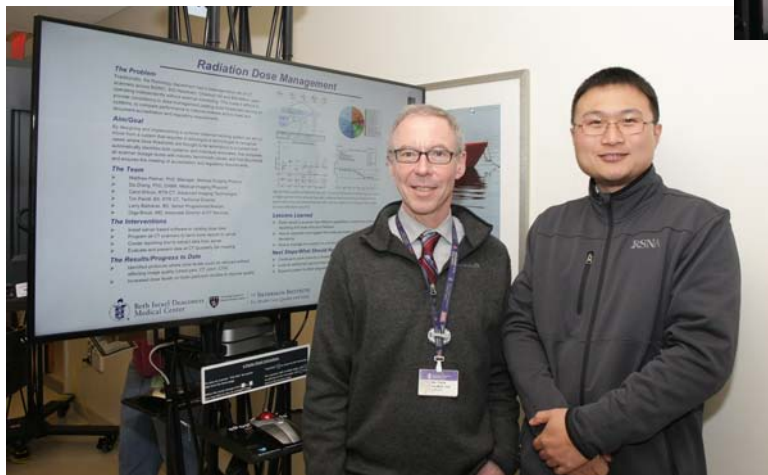
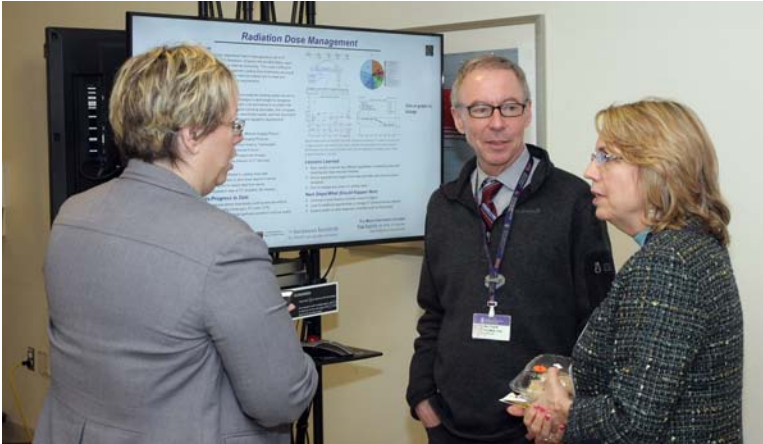
- In general, bleeding complications from imaging guided MSK procedures are rare and all cases in our series were treated conservatively
- Coagulation values may not be sufficiently predictive of bleeding risk as none of the 28 patients with a bleeding complication had coagulation values which prohibited performing the biopsy based on BIDMC guidelines
- After implementation of more strict criteria for pre-procedure testing there was no increase in bleeding complications

Next Steps

- We will continue tracking future biopsies to assure that the rate of complications does not increase with the new policy
- We have also formalized post-procedure observation times for bone and soft-tissue biopsies to increase the detection rate of post-procedure complications prior to discharge
- There is an ongoing effort to identify specific factors which might be more predictive of bleeding, such as the location and imaging appearance of the lesion to be biopsied



For more information, contact:
Yuri Shif, MD, Radiology Resident/ vshif@bidmc.harvard.edu





Karen Lee
Emergency Rad/MRI



Radiology Contrast Agents and Management of Contrast Reactions: Implementation of a Residency Educational Module

Karen S. Lee, MD, Elisa Flower, MD, Sejal Shah, MD, Robin B. Levenson, MD,
Emergency Radiology, Beth Israel Deaconess Medical Center



BACKGROUND

- Emergency radiology (ERad) residents often independently protocol a large number of CT examinations using various intravenous (IV) and oral contrast agents.
- ERad residents are frequently the primary responders called to manage contrast-related reactions in radiology
- Although junior radiology residents rotate in other radiology divisions prior to working in ERad, these residents may experience difficulty with using appropriate contrast agents and with protocoling CT exams in the emergent setting, particularly when complex medical issues compound the use of various contrast agents
- Inefficiencies regarding management of contrast reactions may occur, possibly due to unfamiliarity of setting and treatment algorithms
- Lack of dedicated lectures and practical teaching of contrast agents early in residency may contribute to the relative paucity of knowledge regarding radiology contrast agents

AIM

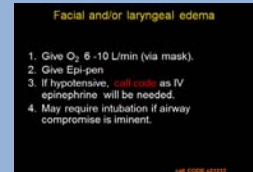
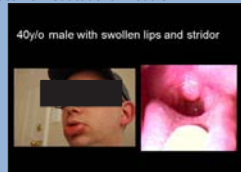
- The aim of this project was to develop a radiology resident educational module to instruct and review information on radiology contrast media, the management of contrast-related reactions, and departmental policies regarding the use of contrast media in various situations

METHODS

- 62-slide, image rich powerpoint educational module was created which reviewed
 - Types of currently available radiology contrast media
 - Practical aspects of contrast administration
 - Patient screening regarding contrast media administration
 - Management of acute contrast reactions
 - Management of IV contrast infiltration
 - Acute kidney injury post-contrast administration
- Radiology residents were required to review this educational module during their first ERad rotation
- 18 question, multiple choice contrast quiz was administered prior to and following review of this educational module which had situational-based questions in order to assess the efficacy of this teaching module
- Answers and scores were only shared with the resident after the post-module exam

METHODS (CONT)

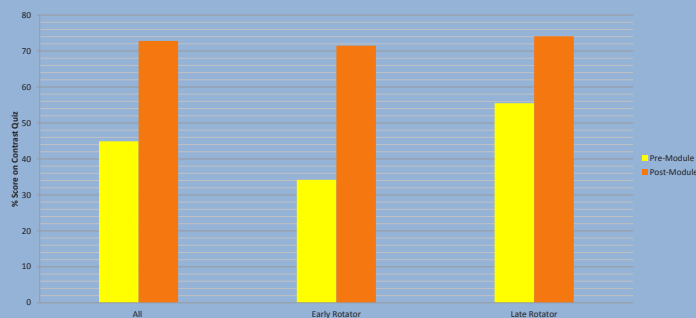
Selected slides from educational module:



Selected questions from contrast quiz:

- How do you treat a patient complaining of a few itchy hives after a contrast-enhanced CT scan?
 - EpiPen
 - PO H₂ blocker
 - 25-50 mg PO Benadryl
 - 50 mg IV Benadryl IV and IV H₂ blocker
- A patient on dialysis requires a contrast-enhanced CT study. Can the patient receive this exam?
 - No
 - Yes, but need to dialyze within 24 hrs.
 - Yes, but need to dialyze within 48 hrs.
 - Yes, regardless of when the patient is to receive dialysis
- A patient comes to the ER with acute right lower quadrant abdominal pain. She has a history of anaphylaxis to iodinated contrast. The ordering physician insists that the patient needs a CT exam to assess for bowel pathology and exclude appendicitis. How would you best protocol this emergent exam?
 - Noncontrast CT of the abdomen and pelvis without oral contrast
 - Noncontrast CT of the abdomen and pelvis with gastrografin
 - Noncontrast CT of the abdomen and pelvis with barium sulfate
 - Preradiate the patient with prednisone and Benadryl and protocol as I+ CT of the abdomen and pelvis
- Which of the following conditions may be a contraindication to receiving IV Contrast for a CT exam?
 - Pregnancy
 - Phlebotomocytoma
 - Thyroid cancer
 - None of the above
 - All of the above

RESULTS



- From October 2014 to November 2015, 12 residents reviewed the educational module and took the contrast quiz pre- and post-module review
- Mean score pre-module was 44.9% which improved to 72.8% post-module
- Mean score of early rotator residents (n=6), those rotating in ERad during 1st 6 months of residency, pre-module was 34.2% and post-module was 71.5%
- Mean score of late rotator residents (n=6), those rotating in ERad during 2nd 6 months of residency, pre-module was 55.5% and post-module was 74.1%

CONCLUSIONS

- Resident knowledge of contrast media, ED contrast enhanced CT protocols, and management of contrast reactions was poor (mean <50%) prior to any dedicated teaching on the subject
- As expected, prior to reviewing the educational module, residents rotating earlier in ERad performed worse than residents rotating later in their first year of radiology residency
- Dedicated educational module on contrast media substantially improved residents' knowledge of this subject, regardless of time in residency program
- Our educational module is an effective teaching tool for instructing residents on contrast agents, familiarizing them with departmental policies on using contrast media, and reviewing treatment algorithms for management of contrast reactions
- Resident use of our educational module will hopefully reduce errors in emergent CT protocols with contrast agents and provide reassurance in residents' management of contrast-related reactions

FUTURE DIRECTIONS

- Our educational module will be updated yearly to reflect any changes in the ACR contrast manual as well as our departmental policies regarding contrast media
- Questions on the pre- and post-contrast quizzes will continue to be developed to highlight new departmental contrast policies or changes and may be integrated into the teaching module to allow for an interactive component with the resident user
- Practical application of contrast reaction management can be developed in the future with the use of the simulation center and mannequins

REFERENCE

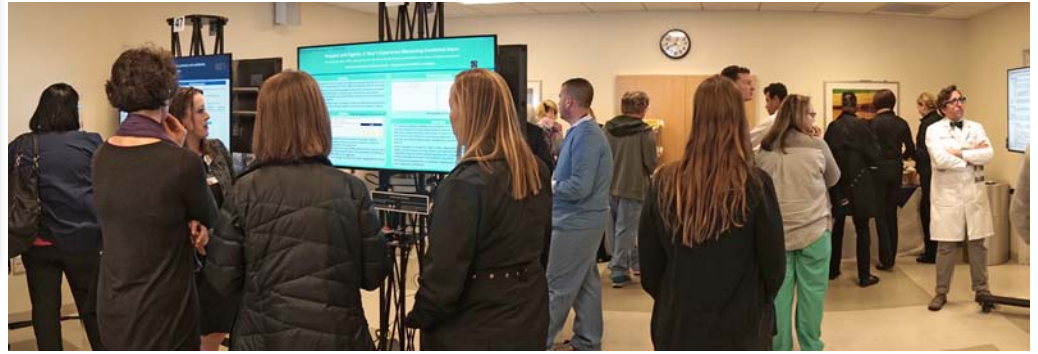
- ACR Committee on Drugs and Contrast Media. *ACR Manual on Contrast Media*, v10.1. Reston: American College of Radiology, 2015. http://www.acr.org/~media/ACR/Documents/PDF/QualitySafety/Resources/Contrast%20Manual/2015_Contrast_Media.pdf



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Olga Augustus
Mgr, Breast Imaging



Beth Israel Deaconess
Medical Center



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Closing the Loop: Follow-up with patients who do not complete same-day mammograms

Scot B. Sternberg, MS²; Adam Christensen, DPT, MBA¹; Gerald Irallien¹; Olga Augustus³; Tejas S. Mehta, MD, MPH³; Nisha Basu, MD¹; Jennifer Beach, MD¹

¹Healthcare Associates; ²Department of Medicine; ³Breast Imaging, Department of Radiology, Beth Israel Deaconess Medical Center



STATEMENT OF PROBLEM

- Regular screening mammography allows for early detection of breast cancer when it is more treatable, reducing mortality.
- Two years ago, Healthcare Associates partnered with Radiology and Breast Health to expand access to screening. Same-day walk-in mammograms were offered to patients at the time of their primary care visit. Overall screening rates increased and it has been very positively received by patients, yet the number of same-day mammograms completed has leveled off at 50-60 per month.
- Meanwhile, 25-30 patients per month go to radiology for a same-day mammogram, but do not complete it. No defined process existed to determine if these patients completed screening at a subsequent scheduled date and no standard outreach was provided to facilitate follow-up.

AIM

To assess follow-up and completion of screening mammography for patients who previously opted out of the same-day mammogram; to identify any patient-specific or service barriers; to assess follow-up outreach and increase timely completion of screening mammograms.

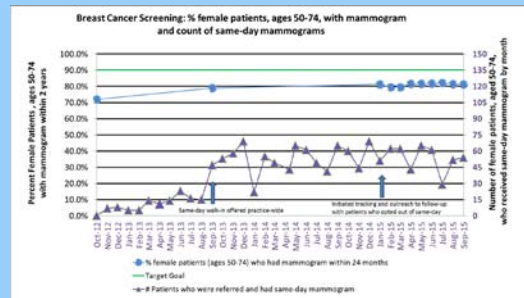
INTERVENTION INCLUDING CONTEXT AND MEASUREMENT

- Healthcare Associates is a large academic primary care practice at Beth Israel Deaconess Medical Center.
- Radiology provided monthly summary data on wait times for patients completing same-day mammograms and lists of patients who opted out.
- A medical record audit was conducted at 2-month intervals to track completion of screening mammograms.
- For those patients who did not show/cancelled the mammogram, telephonic outreach (1-3 calls) was provided to identify any barriers and to engage the patient in following up. A second review of follow-up and outreach was also provided as appropriate.
- Patients who had a significant clinical finding were tracked to ensure appropriate follow-up.

APPROACH TO ASSESS PERFORMANCE AND SUCCESS

- Calculate and track breast cancer screening rates for eligible patients in HCA.
- Track number of patients who had same-day mammograms.
- Track number of patients who did not complete same-day mammography.
 - Of these patients, review number who subsequently completed screening mammography and assess impact of outreach
 - Track any significant clinical findings based on screening and ensure appropriate follow-up.

FINDINGS TO DATE



- Since implementing same-day walk-in mammogram option, overall breast cancer screening rates in HCA have increased from 72.0% to 81.3%
- Between January-September 2015, 618 patients went to Breast Imaging for same-day screening mammography of which 479 (77.5%) completed the screening that day.

FINDINGS TO DATE (CONTINUED)

Between January-September 2015, 139/618 (22.5%) patients, who went to Breast Imaging for same-day screening mammography, chose to reschedule for another time or left without an appointment.

- Subsequent review revealed 60/139(43.2%) patients had a mammogram on the scheduled date.
- 79/139 (56.8%) remaining patients, either missed the scheduled appointment or had yet to schedule a screening mammogram; these patients received outreach.
 - Reasons for previously missing or not scheduling included forgetting appointment, time, and parking cost.
- 55/79 (69.6%) patients subsequently had a mammogram after outreach.

To date, a total of 115/139(82.7%) patients who had gone to Breast Imaging for same-day mammogram, but chose to reschedule for another time or left, subsequently had a mammogram.

Of this group, 10 patients had a screening mammogram identified with BIRADS 0. All 10 had follow-up diagnostic mammograms and biopsy, if clinically indicated, within 1-2 weeks of screening mammogram without need for additional outreach. Three other patients had a screening mammogram identified with BIRADS 3 and had follow-up diagnostic mammograms within appropriate time frames.

LESSONS LEARNED

- A medical neighborhood approach, with collaboration between primary care and radiology, can be an effective model to increase screening rates and improve patient experience.
- While patients valued having same-day access which made it more convenient and easier to follow up on screening referral, some patients opt out due to schedules, needing time to prepare themselves, waiting times, and parking costs.
- Outreach to patients helped to address concerns and/or to facilitate rescheduling which led to an increase in screening.
- Initially, outreach to patients was conducted by a registered nurse. However, review of the outreach in the first period revealed a nurse was not required and outreach has been subsequently provided by a designated health coach.

NEXT STEPS

- Continue collaboration with Radiology for access to same-day walk-in mammography.
- Promote patient awareness and education.
- Continue and integrate with outreach for multiple care gaps.
- Develop and pilot system to identify patients calling for an appointment at HCA who also need a screening mammogram and offer to make appointment and schedule it prior to or after HCA visit.

KUDOS - Each month, we share the positive feedback we receive about staff members and ask you to join us in congratulating them; as always, we are especially proud to acknowledge an unprecedented constellation of staff for providing outstanding care and service!

CT



Jim Cooney, CT technologist, was the interventional procedures tech on the day when a patient became anxious about the drilling noise he might hear during his biopsy. Jim handed the patient his head phones and playlist on his cellphone to help calm the patient during the sensitive procedure.



Kim Provencher, CT Technologist, was reviewing her images after a routine CT on an outpatient and noticed pathology that might be urgent and not routine. She contacted the reading room to alert them to review this case urgently. The patient's primary doctor was called with results and the patient who had left already was contacted and a ride to the emergency room was coordinated.

US



Plinio Cabrera, US technical Assistant, has been filling in as the unit coordinator while the position is vacant. He has been very supportive of the department and performed these duties very well. We appreciate his adaptability.



Sheila Nadeau, sonographer, has once again brightened up our doors with seasonal decorations. It brings quite a smile to our patient's faces seeing the various holiday decorations. She is always on the lookout shopping to see that special item that brightens our patient's Ultrasound/Vascular visit.

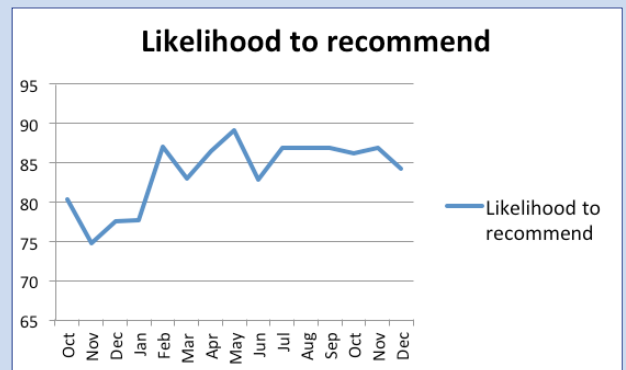


Aideen Snell, MSW
Manager, Service
Excellence Program
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Likelihood to recommend BIDMC Radiology – is a great indicator of patient loyalty: Whether our patients will want to return to BIDMC for future imaging and whether they will recommend us to their friends. It takes something personal and heartfelt to create a loyal customer. We need to create a memory... our patients come to expect us to 'do our job'. That's what happens at any hospital and it's what we all should be doing; creating an ordinary experience. What they don't expect is an *extraordinary experience*. It takes compassion, empathy and creativity on the part of administrators, managers and caregivers to do this. Surprise them with creativity and innovation. Do something memorable so they have a positive story to share about the Radiology staff at BIDMC!

Here is Radiology's Likelihood to Recommend scores from our Patient Satisfaction Survey through FY15 & FY16 Q1 – This score represents patients who are **Very Likely to recommend BIDMC Radiology** to friends and family. Our goal is to be in the 90th percentile at the end of FY16.

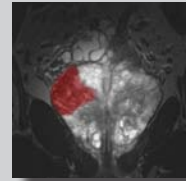
What can you do to create an extraordinary experience for our patients?



Mon **June 6 - June 8, 2016** Wed

ABDOMINAL & PELVIC MRI 2016

Imaging Review of GI and GU Tracts

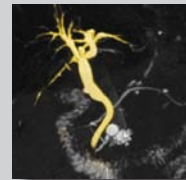


Guest Speakers:

Scott Reeder, MD
University of Wisconsin
Hospital & Clinics

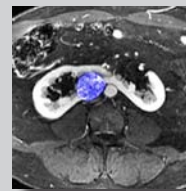
Evis Sala, MD, PhD
Weill Cornell Medical College

Claude Sirlin, MD
University of California
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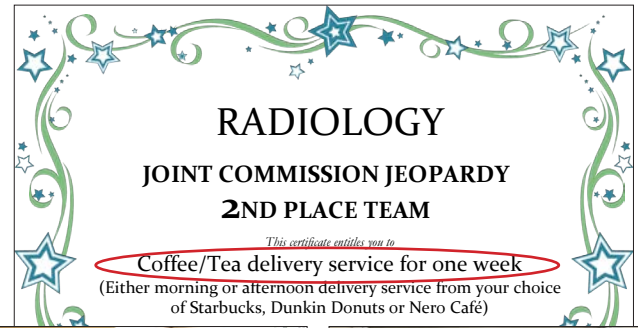
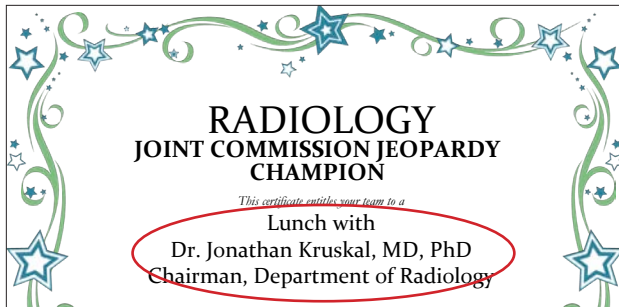
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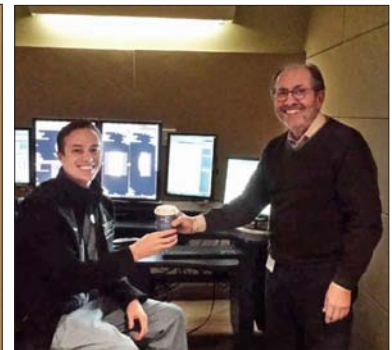
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TJC JEOPARDY PRIZES - As part of Radiology's preparation for the TJC's triennial survey of BIDMC's Quality and Safety expected this spring, Bettina Siewert, Suzanne Swedeen and Bridget O'Bryan hosted a Jeopardy Contest at Grand Rounds on Feb 26, 2016 to help us all prepare and in March, the 4 winning teams were given their prizes!



1st place winners - Matt McMahon (Nucs), Nicole Ford (Nucs), and Meaghan Fox (MRI) were treated to lunch with Suzanne Swedeen, Jonny Kruskal and Bettina Siewert. Unfortunately, Michael Jones (CT) was not able to make it.



2nd place winners - Top L to R: Jenelle Colantuoni (RN), Michelle Baar-Daley (RN), Dana Bordenave (RN) and Michael T. Johnson (Resident) were served by departmental leaders!



3rd place tie

3rd place (tie) - Agnes Regis (Br), Dorothy Sands (Br), Megan Connolly (US), and Jonathan Kim (Resident)



Dr. Siewert and her team reviewed the essentials for our preparation for the TJC site visit and what to expect.

"Based on your responses it is clear we are ready for the Joint Commission to come!" - Dr. Siewert

Link to our Radiology TJC reference manual: <https://portal.bidmc.org/~media/Files/Intranets/Radiology/QA/referencesheets.ashx>



3rd place (tie) - Elena Shimonov (Br), Nancy Littlehale (Br), Jenessa Tutela (US student) and Geunwon Kim (Resident).



The Joint Commission will be conducting its unannounced triennial survey of BIDMC's Quality and Safety (2015-2016). Here is **Tip #7** for helping BIDMC maintain its Joint Commission Accreditation.

A Joint Commission surveyor could ask you questions related to your education and training such as:

How you were trained to perform your job?

- Hospital orientation
- Performance based orientation with preceptor
- MyPath training

How were you trained in age specific care and cultural competency?

- My path training

How do you maintain competency in your job?

- Annual MyPath training
- Attending a class either here at BIDMC or remotely
- Completing semi-annual, annual and bi-annual training
- Continuing education for license renewal or accreditation

How you were trained to perform specific aspects of your job. For example, how were you trained to:

- Clean equipment
- Perform Point of Care Testing such as:
 - o Cre
 - o Glucose Monitoring
 - o ACT
- Administer contrast
- Start an IV

Examples of the training provided may include:

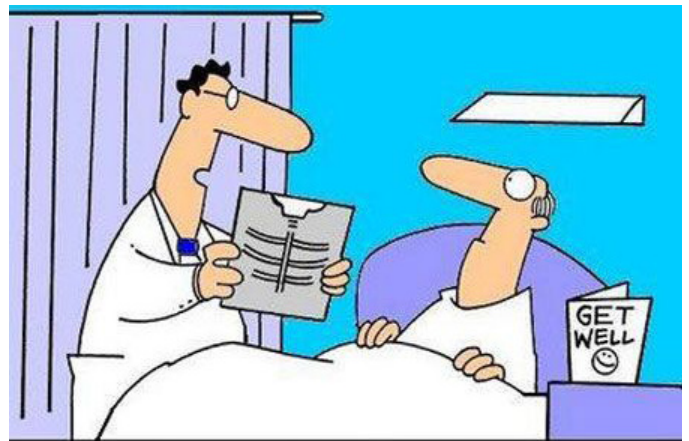
- Views demonstration of task being performed correctly
- Trainee performs return demonstration correctly
- Completion of a written test
- Review associated policy/guideline
- Repeat training 6 months after initial training

How were you trained to perform a new duty/procedure?

- Inservice
- Classroom education
- Percepting

How do you keep up to date of changes in your area?

- By attending staff meetings
- Reading staff meeting minutes
- Email
- Newsletter
- Postings within the department
- 1:1 conversations with your Manager



"Your x-ray showed a broken rib but we fixed it with Photoshop."



KIP Coach TIPS

Protect It! Even When You Trash It

When materials with Protected Health Information (PHI), Personal Information (PI) and private research and business information (such as real estate plans and financial information) are no longer needed, make sure disposal is secure:

ITEM	DISPOSAL LOCATION	DISPOSAL PROCESS
All paper (including paper with PHI or PI)	Gray, locked Shred-It bins	Contents of bins are secure and shredded, which protects PHI.
Blue Patient Cards	Gray, locked Shred-It bins	Contents of bins are secure and shredded, which protects PHI.
Patient ID bracelets	Gray, locked Shred-It bins	Contents of bins are secure and shredded, which protects PHI.
Patient Meal Tray Tickets	Compost buckets with food waste	Contents of buckets are composted. Any meal tickets left in clinical areas should be placed in the gray, locked Shred-It bins.
CDs (including CDs with PHI)	E-waste buckets	Contents of buckets are shredded. CDs should be place in sealed boxes before placed into e-waste buckets.
IV Bags – General	Regular trash	“Blocking Label” is required to cover PHI.
Chemotherapy Drugs containing PHI or PI	Yellow chemotherapy containers	Contents are incinerated. “Blocking Label” is optional.
RCRA High Hazard Drugs containing PHI or PI	Black RCRA containers	Contents are incinerated. “Blocking Label” is optional.
Sharps containing PHI or PI	Sharps containers	Contents of bins are secure and shredded, which protects PHI.
Red Bag Waste containing PHI or PI	Biohazard Red Bag Waste Containers	Contents are rendered non- recognizable and non-infectious, which protects PHI.
Other discarded containers with PHI or PI labels (non-blood contents)	Empty content in toilet/slop sink and place containers in regular trash	“Blocking Label” is required to cover PHI.
Label Maker Printer Ribbons containing PHI or PI	Biohazard Red Bag Waste Containers	Contents are rendered non-recognizable, which protects PHI.



Suzanne Swedeon, RN MSN CNIV
Quality Improvement Specialist

Questions?

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AIDEEN SNELL ON THE PATIENT EXPERIENCE

Radiology Action
Planning Committee's
Patient Engagement
TIP of the Month

**BE MINDFUL &
BE PRESENT**

Be mindful and be present: What does this mean?
Complete this checklist and see how you do

1. Do I take a deep breath and focus before engaging my patient?
2. When I am with the patient do I have a receptive posture?
3. When the patient is speaking, do I maintain eye contact?
4. While the patient is speaking, do I remain quiet, listening and not interrupting?
5. When the patient is speaking to me, do I pay undivided attention, instead of shuffling, typing, taking notes or looking at the computer or other tech device?
6. If I'm interrupted during a patient encounter, do I resist the interruption or at least apologize to the patient before diverting my attention?
7. When I'm on the phone with a patient or family member, do I focus fully on the person?
8. When a colleague and I are talking, do I focus my attention fully on the other person?
9. Do my patients feel listened to and heard by me when they're talking?
 - Quiet your racing mind
 - Focus your undivided attention on the other person
 - Reflect an attitude of kindness, interest and acceptance

Taken from The Language of Caring: Communication Essentials for Patient-Centered Care Wendy Leebov, EdD and Carla Rotering, MD



How to Communicate More Effectively With Colleagues

Communicating with our colleagues is perhaps one of the most important skills to have, yet many of us haven't been taught how to communicate with co-workers or patients. Here are some tips that may help:

- 1) Listen. You may have seen that pin that says "When I listen, people talk." Instead of trying to create our response in our head to what others are saying, try instead to give them your undivided attention and see if your interactions with people grow for the better as a result.
- 2) Don't forget about body language! For instance, a colleague may say that they can meet a deadline but they have a worried look on their face or they are wringing their hands. It may be hard for people to tell you how they feel with words, so don't forget to pay attention to their body language as well as what they say.
- 3) Think about how others like to communicate. For you it may be best to call, but for others they may prefer email. If you happen to call a colleague several times and always seem to get their voicemail, consider stopping by in person or asking them what means of communication they prefer.
- 4) If people do prefer to be in contact via text or email, think about your tone. It is so easy for somebody on the other side of the computer or phone to misread what you are saying, which can cause friction in a work relationship or environment. Re-read what you're about to send to see if any of it could be misconstrued (for instance your sarcastic sense of humor is read as being dismissive or cruel), and make sure that your language is clear. If you are angry about something, sleep on it before you type. (Talking in person is also sometimes better in these cases).
- 5) Here is another tip for communicating well that many may not think to do: Restate what you hear. By repeating what you deem as the important points you are not only showing that you were listening well, but this also gives both you and your co-worker the chance to clarify should anything be revealed as confusing.
- 6) This is a tricky one, but when appropriate, it may be OK to get personal. While there are certainly professional boundaries at work that should not be crossed, people do tend to let their guards down when you talk about your lives outside of work. If you get a friendly vibe from somebody at work, it is more than OK to ask about a birthday that you know they celebrated over the weekend, or a kid's basketball tournament. By building small interactions on a personal level you can go a long way in building trust.
- 7) Practice effective communication often! Just like anything else, practice makes perfect!

In Radiology We Want To Know!

What's new with the Patient Experience?

- **Communication Updates** - Our *Service Excellence & Action Planning Committee* (SEAP) came up with a new way to keep you informed about the Patient Experience and our Patient Satisfaction Survey! This newsletter will be emailed monthly to the Radiology Hospital List. Survey data will also be available on your modality portal pages shortly.
- **Strategy** – Radiology is committed to improving the patient experience. We have dedicated time, resources and capitol dollars towards making a difference and improving the experience for our patients. This will keep us competitive in the local market and insure that our patients will return to us, as well as tell family and friends to come to BIDMC Radiology. We continue to provide more opportunities to get patient feedback and next month we will be launching our 10th survey kiosk in Radiology at Chestnut Hill.
- **Team** – SEAP works to develop and grow the Patient Experience program and analyze the data provided by the survey to make improvements. The current goal is to improve communication throughout the department and roll out **Radiology Service Standards** to provide a better, more consistent experience. Input from our patients emphasizes how important this is to them and how it quells their anxiety. Therefore, insuring this happens during every patient and staff interaction is a priority.
- **Survey** - Our original survey took patients an average of 2.8 minutes to complete. After modification, it now takes patients an average of 1.8 minutes to complete. We have improved access to the survey with 6 additional languages and 5 additional kiosks. The new kiosks are located closer to the staff workflow and patient changing areas. They are also mobile so we can explore new areas when necessary.
- **What's up with the data?** What do we do with all the data? Monthly reports are shared with department managers, the SEAP team and senior leaders. Patient comments have been taken into consideration and used to analyze and prioritize capitol project requests, such as patient waiting areas and reception, as well as on past projects such as the Breast Imaging redesign project. We continue to look for trends and will share the results as we find them.
- **What's happening in the hospital?** Most divisions in the hospital are doing surveys on the Patient Experience. It is required to follow HCAHPS (The Hospital Consumer Assessment of Healthcare Providers & Systems) & CGCAHPS (The Clinician & Group Consumer Assessment of Healthcare Providers & Systems) regulatory standardized measures. Their surveys are long and mailed out 30 days after their appointment. We get our feedback *in the moment* which is more reliable information that we can improve upon. Look at other department's performance via the public website's quality page where the medical center is very transparent with survey result: <http://www.bidmc.org/Quality-and-Safety/Patient-Experience-and-Satisfaction.aspx> An organizational committee is being formed to streamline and brand our Patient Experience efforts across the medical center and I will keep you informed as their work gets underway.

March FY16 Update

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PUBLICATION CALL OUT: Ammar Sarwar was interviewed in a cover story for Radiology Today on cost in radiology

<http://www.radiologytoday.net/archive/rt0316p10.shtml>



March 2016

IR Cost Analysis
By Beth W. Orenstein
Radiology Today
Vol. 17 No. 3 P. 10

Until recently, most interventional radiologists—like most of their physician colleagues—were not very interested in or concerned about the cost of providing their services. With the fee-for-service (FFS) model that has long ruled the health care industry, “interventional radiologists,

in general, were in a very comfortable position from the financial standpoint,” says Marcelo S. Guimaraes, MD, FSIR, division director of vascular IR and an associate professor of radiology at the Medical University of South Carolina (MUSC) in Charleston. Consistent with a charge-based, volume-driven FFS reimbursement system, the more cases they do, the more revenues they generate.

However, The Patient Protection and Affordable Care Act (ACA) enacted in 2010 and other health care market reform are driving health systems to reorganize in ways that shift incentives away from high volumes of services such as imaging, interventions, and lab tests that can be threatening to physicians whose livelihoods have depended upon service volume. Government and private payers are exploring new systems of health care delivery and payment that reward coordination of care while minimizing resource use. To prepare for those coming changes, Guimaraes says interventional radiologists need to seriously focus on quality and their cost of doing business.

“We interventional radiologists need to understand detailed costs per procedure so we can prove the value we add to patient care and earn our fair share in a capitated payment system era,” Guimaraes says. He is not alone in this thinking. The general consensus is that if interventional radiologists don’t get better at cost analysis and proving value, they will not be able to sustain their practices.

The nation’s health care system has been through many changes over the decades. Medicare and Medicaid were expanded in the early 1970s; the medical billing coding system and diagnosis-related groups were introduced in the 1980s. In the 1990s, managed care and capitation emerged temporarily as the preferred frameworks for care delivery and payment, says Meredith Alger, MHA, MS, health care program manager at Harvard Business School’s Institute for Strategy and Competitiveness. “Managed care ultimately failed and only exacerbated the escalating cost crisis because payment was aligned with the wrong unit of analysis—the quantity of covered lives instead of the success of interventions and treatments for medical conditions,” Alger says.

In an effort to avoid replacing one dysfunctional system with another, Alger says the government and leading health care systems have been exploring health care delivery and payment systems that reward value, defined as achieving excellent health outcomes delivered at lower cost.

Incenting Outcomes

“Aligning payment with high-quality outcomes that matter to patients is the only way to eliminate the drivers, such as volume and regulatory pressure, that perpetuate the cost crisis in health care,”

Alger says. Although this type of paradigm shift may seem impossible to accomplish, many leaders in the health care field are already implementing value-based delivery and payment models with great success, she says.

The term accountable care organization (ACO) was coined in 2006, the same year as Michael Porter, PhD’s book, *Redefining Health Care: Creating Value-Based Competition on Results*, was published. ACOs are physicians, hospitals, and other health care providers who voluntarily come together to provide coordinated, high-quality care to their Medicare patients. There are different payment models for ACOs, but the most common is capitated, where the ACO receives a set amount or lump sum for each patient, or “covered life,” and it is up to practitioners to provide high-quality care for the patient that does not exceed the capitated payment. ACOs are expected to result in substantial savings by better coordinating care and reducing duplication of services, although there is still some doubt around whether the “covered life” is the correct unit of analysis for global payment, Alger says.

Another reason that interventional radiologists need to pay attention to their costs where they may not have before: Medicare is expanding its Hospitals Readmission Reduction Program (HRRP) created under the ACA, says Matthew Hawkins, MD, an assistant professor of pediatric radiology at Emory University School of Medicine in Atlanta who is involved in the work of the Society of Interventional Radiology’s (SIR) economics division. When HRRP started in 2012, it applied financial penalties to health systems that readmitted patients within 30 days for treatment of specific conditions: heart attack, heart failure, pneumonia, hip/knee replacement, and COPD. “Now CMS [The Centers for Medicare & Medicaid Services] is tracking 30-day readmission rates for procedures as well,” Hawkins says.

It’s not uncommon for IR practices to be among the top referrers of hospital admissions. “As we continue to treat more patients and admit them overnight, whether for an oncology procedure or uterine artery embolization, if the procedures we do lead to readmissions, it could reduce reimbursements to our hospitals and affect our bottom line,” Hawkins says.

Time-Driven Activity-Based Costing

To better educate interventional radiologists about the costs of their procedures, some departments have begun to employ a method popular in other businesses and management circles known as time-driven activity-based costing (TDABC). Porter and colleague Robert S. Kaplan, PhD, at Harvard Business School are frequently credited for bringing TDABC to health care.

Currently, Medicare and insurance companies determine what they will reimburse a physician for a procedure based on its CPT code and the relative value unit (RVU) assigned to that code by a panel of experts. RVUs take into account the physician’s time, skill, and training needed to perform the procedure, as well as the cost to practice (staff, rent, equipment, supplies, etc), the cost of doing business in different locations, and the cost of malpractice insurance for the specialty.

“Creating RVUs is a rigorous, time-tested process stewarded by the American Medical Association’s Relative Value Scale Update Committee, but after its recommendations are submitted to CMS for approval, the final RVU value for physician services can be somewhat arbitrarily decided,” says **Ammar Sarwar, MD**, a vascular and interventional radiologist at Beth Israel Deaconess Medical Center in Boston. CMS sets the conversion factor that converts RVUs to a dollar payment. Sarwar is involved in SIR’s economics division and is also

the lead author of “Metrics for Radiologists in the Era of Value-Based Health Care Delivery,” which was published in the May-June 2015 issue of **Radiographics**. Alger’s colleague Giles Boland, MD, coauthored the article, which is based on TDABC and Porter’s value equation.

Instead of dividing down overall organizational expenses and backing into a figure that represents the “cost” of delivering care through the ratio of costs to charges (RCC) method, TDABC measures the actual cost of delivering care to a patient with a given medical condition from the bottom up.

“It accounts for all resources that go into caring for a patient, [including] personnel, equipment, facility, and indirect/support costs, and directly attributes, not allocates, the true cost of those resources to the organization’s output of patient-care services,” Alger says, noting that TDABC is significantly more transparent than current methods of costing, “and allows you to correctly estimate the cost of providing services to patients,” she says.

TDABC is the gold standard of most industries, Sarwar says. “What that means is they truly understand costs. They know if I create one unit of a product, what percentage of my manpower, what percentage of my fixed costs such as machines, what percentage of my transportation costs, etc, goes into each unit. I can take this information, add what I want as my profit margin, and determine the price I should charge my customer,” he says. IR departments at some health care systems such as Stanford and the University of Chicago have begun mapping their costs using TDABC and coming up with numbers for different procedures that they perform. Armed with these data, they can have an informed discussion with payers regarding pricing, Sarwar says.

In one study she did, Alger says, the researchers found from doing a TDABC that they could carry out an IR procedure for one-half of what it currently costs according to conventional health care accounting. The result of this type of analysis does not always yield lower TDABC cost estimates compared with RCC charges, she says. Sometimes the cost estimates are much higher. “Either way, identifying true costs is always a good thing,” Alger says.

More Capitation Coming

Like many institutions, Guimaraes’ employer, MUSC, is going to become an ACO. That was one of the impetuses for his IR division to undertake a TDABC analysis to determine its fixed costs when doing procedures, he says. “We are not living under the capitated system yet,” Guimaraes says, “so I can’t tell you our experience. But it’s coming, probably over the next six months. As we cannot predict the future, at least we want to be prepared for it.” Before the IR department did a TDABC analysis of its procedures, it underwent a quality improvement program using Lean Six Sigma. It evaluated every step of every procedure starting with when patients register. It followed the patients through the procedure and until they were discharged to a hospital room or home. “Going through this improvement process, we were able to streamline our operation,” Guimaraes says. “We reduced waste. We reduced duplication. Now we’re to the point where we are working as a well-oiled engine,” he says. Guimaraes recommends that any department interested in determining its true costs of operation start with a process improvement program. His department does 52 interventional procedures. While it started its cost analysis with those it performs most frequently, its goal is to have the TDABC accounting methodology apply to all of its procedures. There is some overlap when looking at the different procedures. For example, the cost of some of the steps involved in the different procedures, such as registering a patient and having the nurse to provide an IV access, is the same or similar and doesn’t have to be recalculated for each, Guimaraes notes.

Sarwar says knowing the true costs of procedures also can help interventional radiologists determine what equipment and supplies

they should use to perform them if they have a choice. For example, he says, “We have submitted a paper in variceal embolization, and others have done similar papers on arterial embolization comparing embolization using coils or vascular plugs. In general, vascular plugs are easier to use but cost more. Coils take more time. The question becomes, does the material cost of the plug pay for the reduced procedure time that may be related to its deployment? If you are able to get out of the room faster because you are using plugs, does that make up for the cost difference?” Interventional radiologists could look at the hard numbers from the TDABC analysis of both and base the decision on them, all else being equal for that particular procedure, Sarwar says.

Hawkins gives a similar example with vein ablation procedures. Vein ablations can be done with chemicals, lasers, or radiofrequency probes. Vendors are combining two or more of these technologies.

“The problem is the new technologies are more expensive and therefore increase the cost of the procedure. Unless you’re able to do more of these procedures in a shorter amount of time, it can become almost impossible to recoup the money the facility or hospital might be making on them,” Hawkins says. In this era of cost containment, Hawkins says, it is incumbent upon interventional radiologists to consider the cost of newer technology when the outcomes are similar and not rush to embrace it just because it’s new.

Having accurate estimation of the cost of delivering services to patients around medical conditions will be extremely important to interventional radiologists when the government and other payers begin pushing bundles down the line, Alger says. “They’ve already started, and it’s only going to continue.” If interventionalists are able to clearly redefine their proposition to provide high-quality care to patients, beginning with correctly estimating true cost of their services, they will position themselves to thrive in the new era of health care delivery, Alger says.

Negotiation Tool

Because of the efficiency and costing work his department has done at MUSC, Guimaraes is confident that when payers come to him wanting to decrease reimbursements, he can respond: “Our operations are very efficient. We understand in detail our global costs per procedure,” Guimaraes says. “After adding a profit margin, we know the minimum we need to get paid in order to keep the doors open.” He says this information will be very relevant during the discussions he anticipates with the health care payers and with the hospital administration.

The patient care cycle may involve multiple specialties. The TDABC accounting methodology puts the IR division at MUSC in a better position to discuss with the administration how and how much money should be allocated to it throughout the patient care cycle, he says.

Cost accounting or cost analysis has not been a key concern for most interventional radiologists and now it must be, Sarwar says. “I think the profession has definitely changed in that way,” he says. “But I don’t think the change is specific to IR. It’s across the board for all physicians. All physicians have started to become more cognizant of the cost of the care they provide.” Because IR is a small specialty, it hasn’t been at the forefront of the movement in health care to understand and contain costs, he says. “We’re rushing to catch up.” If it does, Sarwar says, IR will not only survive but also thrive because many of its procedures are minimally invasive, meaning shorter hospital stays and fewer complications.

Guimaraes agrees: “Understanding the operation costs and proving high-value medical care are key elements to keeping the specialty competitive.”

— *Beth W. Orenstein is a freelance medical writer living in Northampton, Pennsylvania. She is a regular contributor to **Radiology Today**.*

2016 BIDMC Radiology Publications – A PubMed search for new BIDMC publications is made each month; however, if we miss your paper, please send the reference to dwolfe@bidmc.harvard.edu. Note that 1) Epub dates are included only in publications where the Epub and paper publication dates occur in different years, i.e., Epub in 2015 and paper publication in 2016; and 2) doi addresses are only included until citations are updated with hard copy page citations.

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